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CDM Executive Board

RESPONSE TO REQUEST FOR REVIEW

"Xacbal Hydroelectric Project" (1834)

AENOR performed the validation of "Xacbal Hydroelectric Project" No. 1834 located in Guatemala. The request for registration was submitted on 30/04/2008.

Three requests for review have been issued, which are identical to each other. AENOR was notified of it on 06/10/2008.

We thank the CDM Executive Board and the Secretariat for giving us the opportunity to clarify about our considerations in validating the project mentioned.

Please find below AENOR response to the issues raised by the request for review.

Request for review:

1. The DOE is requested to further clarify how the barriers has been validated, in particular, (a) details of additional investments for infrastructure and their impact on total investment, (b) lack of transmission lines and good roads as technical barriers, (c) hydrological variations as barrier for a PP with the development of hydropower projects as core business, and (d) quantitative assessment or evidence of limited financing and strict lending requirements.

The validation team of AENOR arrived at the conclusion that the "Xacbal Hydroelectric project" is additional, and "not a business as usual case", by means of the barrier analysis. It has been determined that all of the identified barriers specifically apply to "Xacbal Hydroelectric project".

Details about validation process are provided below.

a) Details of additional investments for infrastructure and their impact on total investment.

The additional investments for infrastructure that are faced by Hidro Xacbal Project Activity are shown in the following table:

Additional investments	Investment (US$)	Breakdown
• Access Roads	5,924,000	---
• Environmental Social investment	2,250,415	- Rural Electrification Project: US$826,701 - Acquisition of land rights for the community: US$471,000 - Smaller Municipal Projects: US$400,000 - Community infrastructure and environmental projects: US$ 552,714
• Transmission Line	22,980,000	- Main Transmission Line Contract: US$17,517,857.00 - Substation: US$ 1,620,000 - Rights of way (permits to private land access and temporal use): US$ 3,842,143
TOTAL	**31,154,415**	

Note: These investments do not include financing expenses, legal costs, engineering, development costs, administration, supervision and contingencies.

These additional investments represent 19.9% of the total capital investments in the Xacbal Hydroelectric Project.

To validate the need of these additional investments, the validation team has assessed the following issues:

1) Access Roads.

The investment related to access roads is necessary to improve and rehabilitate the existing track between San Gaspar Chajul and State La Panchita, where the project activity powerhouse is located.

During the on site visit it was possible to evidence the need for the improvement of these routes, as shown in the reports “Recognition of Current Status on the Access Roads to El Tesoro Project” and “El Tesoro Project, Access Road Extensions” performed by Soluziona Ingeniería S.A. They conclude that in the current state of the roads it is impossible to transport the electromechanical equipment to the powerhouse.

Another important component of the access roads is the enhancement of the bridge infrastructure within these routes, which in their current state could not support the weight of the materials and equipment.

These major investments in roads as well as their maintenance are a part of the social infrastructure investments that are established in the Cooperation Agreement nº37-

2005 subscribed between Hidro Xacbal S.A and the Municipality of San Gaspar Chajul, and local communities.

(2) Environment Social Investments:

The Xacbal Hydroelectric Project is located in the northern Region of Guatemala, in the Municipality of San Gaspar Chajul, Department of Quiché, and north of the Cuchumatanes mountain range. The isolated nature of this area has led to a lack of Social Development Policies and infrastructure projects by the Official Authorities of Guatemala. This region is also known as the Ixil Region due to the Ixil and K´iche indigenous groups that live in this area.

From the "National Report of Human Development, Guatemala 2005" of United Nations Development Program, it is possible to assess that Department of Quiché has the lowest Human Development Index (HDI) in Guatemala (0,508) and the Municipality of Chajul, the lowest HDI in Department of Quiché (0,393) and the highest poverty percentage (92,8%).

According to these studies all these facts have led to a distrust of the inhabitants of the region towards any initiative from the private sector.

During the on site visit and through the assessment of the legal document "Cooperation Agreement nº 37-2005", AENOR validation team was able to check the agreement between Hidro Xacbal S.A and the Municipality of San Gaspar Chajul, and local communities, regarding social infrastructures.

The expectations for these investments were confirmed through interviews carried out with local authorities and people from the community during the on site visit.

The implementation of social infrastructure under the mentioned Cooperation Agreement has allowed the project activity to overcome a barrier that would prevent the performance of this type of project in the region.

(3) Transmission Line:

The Xacbal project has to build a transmission line of 120 km at 230 kV voltage to connect the power plant to the main Guatemalan electricity grid. The project activity is located in an area of the country where no high voltage transmission line, without the capability to transport the project activity production to the main grid. The study "Evaluating Interconnect Alternatives for the Xacbal Hydroelectric Project in the Northwest Network of the National Interconnected System", as an evidence, has been validated by the assessment of official network maps of the Electrical Energy National Commission of Guatemala. This study states the technical impossibility to connect the Xacbal power plant to the grid in other places closer than La Esperanza considering the lack of capacity in the San Juan Ixcoy, Barillas (Huehuetenango) and Pologúa substations.

The cost of this additional infrastructure investment is US$22,980,000 as established in the Project Investment Plan and in the contract with COBRA Instalaciones y Servicios, for an amount of $17,517,857. Additional costs in the transmission line project include an expansion to the substation in La Esperanza as well as rights of way (permits to private land access and temporal use) payment to more than 2,000 landowners.

As mentioned before, the additional investments represent 19.9% of the total capital investments in the Xacbal Hydroelectric Project, and were considered to have significant impact on the investment of the project, compared to other CDM hydro-projects and to other hydro-projects in Guatemala.

(b) Lack of transmission lines and good roads as technical barriers,

The lack of transmission lines is a technical barrier shown by the Project Participant in the study "Evaluating Interconnect Alternatives for the Xacbal Hydroelectric Project in the Northwest Network of the National Interconnected System", which states the technical impossibility to connect the Xacbal power plant to the national grid places close to Xacbal such as San Juan Ixcoy, Barillas (Huehuetenango) or Pologúa. The capacity of these nearby transmission lines is not sufficient to transport 94MW.

The most viable solution is to connect the power plant to the grid in "La Esperanza" substation through a new 230 kV transmission line associated to the project.

The resulting solution has a distance of over 120 km and crosses the Cuchumatanes mountain range. Its trace runs through mountains with large slopes, with a lot of vegetation and many other natural obstacles. All these issues affect the design of the transmission line and add to the difficulty in its implementation and subsequent maintenance. It is also necessary to cross three Departments (Quiché, Totonicapán and Quetzaltenango) and to deal with many land owners to achieve their approval concerning the route of the transmission line across their lands. Current maps and designs of the transmission line route as well as the list of 2000 identified owners confirm the legal and financial complication of securing rights of way.

The lack of transmission lines near the project and the resulting solution present a technical barrier considering high electrical losses and outages caused by the long distance to the national grid and Guatemala's large population areas. According to the calculations performed by the Project Proponent the percentage of losses associated to the power plant's transmission line can reach up to 5%. These technical barrier affects, as well, to the energy delivered to the grid at the interconnection by the project activity.

The validation team considers that the access roads to the project site are a technical barrier, since these tracks are necessary to transport large volumes of materials and large heavy electromechanical equipment to build and implement the project activity.

During the on site visit and as shows the photographical report and maps "Recognition of current status on the Access Roads to *El Tesoro* Project Report", performed by Soluziona Ingeniería S.A, it was possible to evidence that tracks do not have the appropriate conditions. The tracks are narrow with many steep curves and large slopes considering they run through the mountain range, without protections and without asphalt from Sacapulas to the project site.

These technical barriers affects Hidro Xacbal as can be demonstrated by examples of other hydroelectric projects in Guatemala which are located near a city that provides paved road access to the plant site.

Attached to this response is the photographic report "Recognition of current status on the Access Roads to *El Tesoro* Project Report" (see Annex I). In addition, a map with the different transmission lines and substations around the country is attached to show the trace of the transmission line of Xacbal project (see Annex II).

(c) Hydrological variations as barrier for a PP with the development of hydropower projects as core business

To define the hydrological conditions of the project site, several reports have been considered by the Project Proponent and provided to the validation team. The main data stated in these documents are a monthly average flow on the Xacbal River between 6 m^3/s minimum and 125 m^3/s maximum, and daily flow ranging from 18 m^3/s minimum and 558 m^3/s. This information shows the high variability of the hydrological cycle of the Xacbal River during different periods of the year.

Considering the above, the "Xacbal hydroelectric project" includes a daily regulating reservoir to minimize the variations associated to the hydrological cycle and to satisfy the country´s electricity needs during the peak hours. However, the best technical option would have been the construction of a yearly, monthly or at least weekly water storage dam whose reservoir design would be the most suitable to overcome longer periods of time without water. Operation of large dam allows generating more electricity during the summer months and avoids to a certain degree the variations between the dry and wet seasons.

Contrary to conventional hydro power plants that include design of yearly, monthly or at least weekly water storage dams, Hidro Xacbal S.A. did not design this type of reservoir for the proposed project activity considering that it would have meant moving local inhabitants' homes and flooding their lands. Xacbal limited itself to a daily reservoir instead of a larger dam and designed it outside the river bed in lands owned by Hidro Xacbal S.A. instead of on the river bed.

AENOR reached the opinion that construction of a larger reservoir would have been a better technical option for the Project Proponent since it provides larger water storage and more generation capacity. This option was not feasible since it would have represented a very high social impact to local communities.

(d) Quantitative assessment or evidence of limited financing and strict lending requirements.

Limited financing and strict lending requirements among others were considered valid as specific barriers for "Xacbal Hydroelectric project". AENOR validated both issues after performing an assessment of evidences provided by the project participant. In the opinion of AENOR, these evidences properly reflect the difficulties faced by Hidro Xacbal S.A. to secure project financing. For example, the Project Participant carried out the process to achieve financing for the Xacbal hydroelectric project, during the period from 2005 to 2007, which is a longer term compared to BAU projects.

AENOR assessed that there were many letters of interest of regional and international banks to participate in the syndicated process of financial structuring, and they ended up not participating for various reasons ranging from lower tenors, higher interest rates, and problems in raising long term financing. This added the pressure to the PP to go out of the region and seek international financing in more sophisticated financial capital markets, as well as, to approach directly Multilateral Institutions such as FMO and

CABEI, even though they imposed strict lending requirements and their overall high financing cost.

Proper evidences were provided by the project participant. The letters received by Hidro Xacbal S.A. from several banks that finally rejected participation in financing the proposed project activity, as they did not participate in the final syndication of the loan, was checked by AENOR:

- CIFI : Commitment to participate in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 1, 2005)

- Banco Occidente de Guatemala: Commitment to participate in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 1, 2005)

- Banco Agricola El Salvador: Commitment to participate in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 5, 2005)

- Banco Industrial S.A. de Guatemala: Letter of intention to analyse participation in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 5, 2005)

- Banistmo Secutities, Inc.(Panama): Letter of interest to participate in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 26, 2005)

- Banco Reformador de Guatemala: Letter of interest to participate in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 10, 2005)

- Banco Agro Mercantil de Guatemala: Letter of interest to participate in financing the construction, operation and maintenance of a hydroelectric generation plant from Hidro Xacbal S.A. (July 01, 2005)

More evidence of strict lending requirements was verified with direct correspondence from two international financial institutions, establishing participating interest and then formally communicating the Project Proponent that they will not participate in the Xacbal financing due to differences in criteria concerning lower tenors and grace periods, higher interest rates, strict security packages and strict covenants structures, such as is demonstrated in the emails of Citibank, N.A. dated, December 2005 and Trust Company West, dated, May 2007.

The fact that regional and international banks could not commit to the overall financing of the Project caused the proposed project activity to be delayed as per original master schedule. As time line of financing was assessed, it was confirmed that the initial mandate granted to RBTT Merchant Bank Limited was of December 2005 and final execution of financing was actually achieved on March 2007.

In order to confirm the financing outlook provided by the PP, information from recognized international financial Entities was considered, such as:

- “Climate of Inversion Assessment Report” April 2005 World Bank.

- "Improvement of Climate of Inversion in Central America" January 2005 World Bank.

According to the validation process AENOR concluded that the financial system in Guatemala and financing for these types of infrastructure projects is significantly influenced by specific circumstances such as strict regulations, limitations to credit availability and high credit cost. These significant barriers were faced by Hidro Xacbal S.A. in the process to close the final financial agreement for the Xacbal hydroelectric project.

2. Further clarification is required on how the DOE has validated the common practice analysis, in particular, how a 60 MW hydro project, implemented in 2004, is different than the project activity.

AENOR validated the common practice analysis based on the assessment of the information provided by official sources from Guatemala, such as CNEE (Electrical Energy National Commission) and AMM (Wholesale Market Regulator).

The common practice was assessed according to the requirements as per the "Tool for the demonstration and assessment of additionality" version 04.

AENOR arrived at the opinion that Xacbal hydroelectric power can be considered not representing common practice based on the following:

- Installed capacity for Xacbal project activity is 94 MW. At validation stage, no other existing power plant was considered to have similar characteristics. A 60 MW power plant operated by RENACE was considered not comparable to Xacbal hydroelectric project due to the differences between them on installed capacity, location and difficulties on access to power transmission line. RENACE connects to the National Interconnected System in San Julián substation with a 36 km long Transmission Line at 69 kV, compared to the 120 Km Transmission Line at 230 kV that the Xacbal hydroelectric project has to overcome.

- According to the comparison of the situation of the Grid from 1999 - 2005 and up to date, it can be confirmed that no other hydroelectric project with such a long Transmission Line since RENACE has been constructed.

- It can be stated that Xacbal has the longest and most complex transmission line of all the hydroelectric projects as listed in the following chart.

Power Plant	MW	Length	Voltage
PASABIEN	12.3	4 kms	69 kV.
POZA VERDE	9.5	8 kms	69 kV.
CERRO VIVO	1.2	1 km	13.8 kV.
RENACE	60	36 kms	69 kV.
PALÍN II	5.8	1 km	138 kV.
MONTECRISTO	13.08	2.8 kms	69 kV.

CANADÁ	43	3.6 kms	69 kV.
HIDROXACBAL	94	120 kms	230 KV.

- Information from Guatemalan official sources shows that hydropower represents 37.6 % of total installed capacity in 2007. Registered CDM project activities represent 15.22 % of total hydropower plants. The rest of the existing power plants were considered not comparable to Xacbal project due to its minor installed capacity (5.8 MW - 16.3 MW).

- In the region of the project no other power plant was under development at the moment of validation. Through the research performed by National Institute of Electrification (INDE), the validation team has assessed the potential of this area to develop hydroelectric projects for up to 300 MW. Nevertheless, no project has been developed before due to the remoteness of this region and its distance to the National Interconnected System.

- These circumstances have not changed at present.

Hence, it was deemed valid that Xacbal Hidroelectric project does not represent common practice.

References:

http://www.cnee.gob.gt/html/memo/Memoria%20CNEE%202008.pdf

http://www.amm.org.gt/

3. The start date of the project activity should be as per the CDM glossary of terms.

The starting date of "Xacbal hydroelectric project" was validated considering the following definition *"The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins" (CDM- glos- 03, page 29).* During validation, AENOR considered that start of construction was the most suitable event to define the starting date for the project according to the "Glossary of CDM terms" Version 03.

This date was determined by the Notice to Proceed for the Xacbal hydroelectric project from the project participant Hidro Xacbal to the contractor Solel Boneh, dated March 30th, 2007. According to this, major construction works started on April 1st, 2007 as the start date included in the PDD.

This date was determined on the basis of the assessment of the following documents provided by the project participant:

- Road Works Contract signed July 5th 2006 between Hidro Xacbal and Agromec
- Letter of Intent (LOI) signed on October 21st 2006 between Hidro Xacbal and Voith Siemens for the electromechanical equipment.
- Letter of Intent (LOI) signed on December 9th 2006 between Hidro Xacbal and Solel Boneh for the equipment, procurement and construction of the plant.
- Road Works Contract Starting Order Notification given to Agromec on December 27th, 2006, from San Gaspar Chajul to Estate ¨La Panchita¨.

- Final Contract between Hidro Xacbal and Solel Boneh for the engineering, procurement, and construction signed on February 2nd, 2007.
- Final Contract between Hidro Xacbal and Voith Siemens for the electromechanical equipment signed on February 15th, 2007.
- Final Contract between Hidro Xacbal and Cobra Instalaciones y Servicios for the transmission line signed on March 1st, 2007.
- Notice to Proceed for Xacbal hydroelectric project from the project participant Hidro Xacbal S.A. to the contractor Solel Boneh, dated March 30, 2007.

In light of the current definition of "Starting date" as stated in the "Glossary of CDM terms" Version 04, approved by the EB on its 41st meeting (July 30th – August 2nd 2008), the *"start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity".*

Considering this, a new start date can be defined for Xacbal hydroelectric project that is December 27th, 2006, when the Starting Order of the Road Works Contract was executed by the Hidro Xacbal to its road works contractor. This Order made the Road Works Contract come into force according to its provisions.

At the same time, prior consideration of the CDM was assessed and validated by AENOR. Evidence to support that the CDM was seriously considered in the decision to implement "Xacbal hydroelectric project" even before the new starting date was provided by the project participant:

- Shareholders agreement including Hidro Xacbal S.A. constitution. This agreement was authorized by Notary public on November 12, 2004. It states that the purpose of the company, among others *is "to develop* (…) *and operate power generation plants, especially hydroelectric plants and those identified with clean, non-contaminant generation*" as well as *"purchase and sale of carbon credits".*
- Consultancy contract between Hidro Xacbal S.A. and Energía y Medio Ambiente signed on January 18, 2005, in order to design and develop the baseline methodology and to start elaborating the Project Design Document (PDD) for the Xacbal Hydroelectric Project under the CDM.

These evidences were deemed appropriate by AENOR to support the serious consideration of the CDM prior to the start date of Xacbal hydroelectric project.