



## **RESPONSE TO POINTS RAISED DURING REQUEST FOR REVIEW**

**Subject:** Request for review – 9493 San Carlos 18 MW Bio power Power Plant

Bureau Veritas Certification had performed the validation of the CDM Project activity 9493 - "San Carlos 18 MW Biopower Power Plant". Subsequently, there was a Request for Review in which 04 points were raised. Bureau Veritas Certification would like to provide its responses to the issues raised as given below.

- 1. The DOE is requested to further substantiate the suitability of chosen benchmark (20% equity IRR after tax) applied in the investment analysis considering that 1) the DOE has not validated the premium of 3% ,on top of the ERC published cost of equity 17%, based on independent/public evidence and 2) it is not clear whether the premium has been considered in the market risk premium in the calculation of cost of equity using CAPM. Please refer to Paragraph 121, VVS version 02.0.0; Page 15-16, ACM0018 version 02.0.0; Paragraph 13 and 15, "Guidelines on the assessment of investment analysis, version 05.0, EB 62 Annex5".*

**Response:**

Validation Report Section 3.9.3 Investment Analysis is now revised to align with the requirement of Approved Methodology ACM0018, Version 02.0.0. The revised section is reproduced as below for easy verification.

### **Benchmark**

The PP has selected the Equity IRR (EIRR) with the benchmark return on equity (ROE) which is found in accordance with the EB Guideline on Assessment of Investment Analysis, Version 05, EB 62 (Ref/79/).

PP has used to calculate nominal cost of equity based on the formula below:

$$r_e = r_f + \text{Beta}_e \times \text{MRP}$$

Where:

$r_e$	=	nominal cost of equity
$r_f$	=	risk free rate estimated for the Philippines, which was assumed to be 6% based on 10 year yields on Philippine bonds.
$\text{Beta}_e$	=	equity beta for benchmark generation company, calculated as 1.03 on an unlevered basis from the betas of comparable companies provided by Professor Aswath Damodaran of New York University, Stern.
MRP	=	Market Risk Premium, calculated based on a measure of Country Risk Premium provided by Professor Aswath Damodaran of New York University, Stern from data published in January 2012. Professor Stern estimates the Philippines to have a CRP of 4.13% and a Total Risk Premium of 10.13% based on a default spread of 275 basis points and a

country rating by Moodys of Ba2. This gives a total Market Risk Premium of 10.13%.

The calculated nominal cost of equity of 16.44% was confirmed by the Validation Team as derived using above formula. The assumptions for  $r_f$ ,  $\text{Beta}_e$ , and MRP were confirmed based on ERC Case No. 2011-138RC (Ref/55/). The cost of equity for biomass renewable energy projects at 17% was confirmed by validation team as per ERC Case No. 2011-006 RM (Ref/54/).

The benchmarks above are based on market data. The Philippine stock market consists of Publicly Listed companies which are relatively large and diversified operationally and financially. As such the average realised cost of equity for these listed companies is likely to be less for such companies than for individual projects, particularly green field projects. Thus, the PP incorporated a risk premium of 3% on top of the ERC published cost of equity to come up with benchmark applied for the project at 20%. The additional risk premium on top of the ERC approved cost of equity was confirmed by the Validation Team from the Letter dated 31 August 2011 to San Carlos Biopower Inc from Thomas-Lloyd Capital LLC (Ref/53/) which required the project IRR to be more than 20%.

The benchmark IRR rate of 20% was compared with credible sources as listed below:

### ***Third Party Research Reports***

- United Nations Environmental Programme: Private Financing of Renewable Energy – A Guide for Policy Makers (co-produced by UNEP Sustainable Energy Finance Initiative, Bloomberg Energy Finance and Chatham House) [http://sefi.unep.org/fileadmin/media/sefi/docs/publications/Finance\\_guide\\_FINAL-.pdf](http://sefi.unep.org/fileadmin/media/sefi/docs/publications/Finance_guide_FINAL-.pdf) (Ref/50/); and
- Valuation Box from RCBC <http://www.rcbcsec.com/secured/admin/download/August%2024%202012%20Valuation.pdf>, (Ref/51/).

### ***Investment Funds and Investment Banks***

- Maybank MEACP <http://www.greenprospectsasia.com/content/maybank-meacp-stays-dollars-sense-and-profitability> (Ref/52/); and
- Letter dated 31 August 2011 to San Carlos Biopower Inc from Thomas-Lloyd Capital LLC (Ref/53/).

The validation team has confirmed that the selection of the benchmark of 20% is justified based on the 3<sup>rd</sup> part research reports (Ref/50/), (Ref/51/), and investment banks (Ref/52/). (Ref/53/) which are found in excess of 25% in the region. It was also confirmed in the Maybank MEACP report (Ref/52/) that demonstrate that the perception that higher risk profile exists. The CAPM calculation presented in the PDD (Ref/2/) demonstrated that the market considerations were necessary in order to attract equity capital.

This approach of calculating Benchmark value is found acceptable and is in accordance with EB Guideline on Assessment of Investment Analysis, EB 62, Annex 05 (Ref/79/).

The validation team considers that the type of benchmark applied is suitable for the type of financial indicator presented; the risk premiums applied in determining the benchmark reflect the

risks associated with the project activity; it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark.

2. *The DOE is requested to further explain how it has validated the input values applied in the investment analysis, in particular : a) the total investment cost of the project activity considering that the DOE has validated only EPC and non EPC contract which are about 60% of total investment cost whereas with reduction of 9.32% in investment cost the equity IRR crosses the benchmark; and b) the total operating cost including fuel cost, escalation assumptions for the tariff and cost, depreciation rate and interest rates given that no validation has been provided on those input values. Please refer to Paragraph 120 (a) and (b) , VVS version 02.0.0.*

**Response:**

Validation Report Section 3.9.3 Investment Analysis on Input value is now revised to align with the requirement of Approved Methodology ACM0018, Version 02.0.0. The revised section is reproduced as below for easy verification.

***Input value***

The validation team has reviewed the EIRR calculation sheet or Project Financial Model calculation sheet (Ref/27/), and Feasibility Study (Ref/58/) and cross-checked the major input values using local knowledge as well as sectoral and financial expertise and confirms that:

**Table 5: Input values**

<b><u>Input Parameter</u></b>	<b><u>Input Value</u></b>	<b><u>Validation Comment</u></b>
Annual electricity generation, Kwh	<b>127,011,240</b>	The PP has calculated the annual electricity generation in the Project Financial Model calculation sheet (Ref/27/) as the product of the annual hours of operations of 8,769, net electrical capacity of 16,110 kw, and plant load factor of 90%. The validation team has cross-checked the installed capacity and specification of the project from the EPC Contract Agreement (Ref/6/) which was confirmed as correct and hence, accepted.
Net power plant capacity, kw	<b>16,110</b>	The plant net power plant capacity is the gross plant capacity of the at 18,000 kw minus auxiliary load of 10.5%. The validation team has verified the data base on the technical specification of the EPC Contract Agreement (Ref/6/) which was confirmed as correct and hence, accepted.
Total Investment Cost, PHP 1000	<b>2,972,381</b>	<p>The total investment cost involves Plant Capital Cost (i.e. EPC contract at 70% + Non EPC contract at 12% + Fuel capital cost at 18%), Land cost, Development cost, other plant cost (i.e. working capital, start-up fuel costs, and VAT), and pre-operating costs. The validation team has verified and found acceptable as follow:</p> <ul style="list-style-type: none"> <li>• The EPC contract at PHP 1,512,847,358,000.00 is based on the EPC Contract Agreement for SCBP Power Plant dated 10 August 2012 between SCBP and Wuxi Huaguang Electric Power Engineering Co., Ltd (WUXI-HEPECL) (Ref/6/).</li> <li>• The non-EPC contract costs was at PHP 251,915,429,000.00 which consisted of Factory Site Mobile Equipment, Tools, Spare Parts and Consumables, Additional Bldgs., Site Dev. &amp; Civil Works, Fuel Processing Equipment, Owner's Engineer Costs, Bridge without Fence and Site Set-up. The values provided by the PP on the PDD Version 5 (Ref/2/) and Financial Model (Ref/27/) were confirmed transparent and accurate based on the SJR Industrial Construction Miscellaneous Civil and Structural Works proposal dated 11/08/2012 (Ref/29/), West Machinery Proposal No. M072311-1 for Farm Machinery dated 23/07/2011 (Ref/30/), Regreen</li> </ul>

<b>Input Parameter</b>	<b>Input Value</b>	<b>Validation Comment</b>
		<p>Enterprises Pvt Ltd Proposal on Project Execution Management Services dated 26/08/2012 (Ref/31/), Rotogrind Quotation for Fuel Processing Equipment dated 20/08/2010 (Ref/32/).</p> <ul style="list-style-type: none"> <li>The fuel capital cost of PHP 395,774,000.00 based on fuel supply contract/agreement (Ref/15/).</li> <li>Land cost of PHP 37,372,000.00 based on Contract of Lease Between San Julio Realty, Inc and San Carlos (Ref/33/).</li> <li>Development cost of PHP 273,043,000.00 based on the Development Loan Agreement with Cleantech Fund (Ref/67/).</li> <li>Other plant cost for working capital at PHP 131,181,000.00 based on 8.7% of EPC as per ERC Case No. 2011-006 RM <a href="http://www.erc.gov.ph/cgi-bin/issuances/files/Decision_ERCCaseNo.2011-006RM_NREB_pp81-90.pdf">http://www.erc.gov.ph/cgi-bin/issuances/files/Decision_ERCCaseNo.2011-006RM_NREB_pp81-90.pdf</a> (Ref/54/) i.e. working capital at 11% of the EPC, start-up fuel cost at PHP 50,000,000.00 based on developer estimate of fuel likely to be required to commission the plant during construction (Ref/10/), VAT at PHP at 175,122,000.00 based on the 12% VAT rate <a href="http://www.bir.gov.ph/taxinfo/tax_vat.htm">www.bir.gov.ph/taxinfo/tax_vat.htm</a> (Ref/68/), and Pre-operating costs at PHP 145,127,000.00 covering insurance construction (Ref/40/), SCBP organization (Ref/13/), The Local Government Code of the Philippines Book II, Local Taxation and Fiscal Matters-Local Government Taxation (Ref/35/), and Fuel Supply Contract/Agreement (Ref/15/).</li> <li>Pre-operating cost at PHP 145,127,000 based on salaries and expenses for SCBP organization and employees (Ref/13/), O&amp;M contract proposal with SJR Industrial Construction Miscellaneous Civil and Structural Works proposal dated 11/08/2012 (Ref/29/), taxes and permits costs based on Ordinance No. 198, Series of 1998 – An Ordinance Enacting the San Carlos City, Negros Occidental Incentive Code of 1997 and for Other Purposes (Ref/34/), and The Local Government Code of the Philippines Book II, Local Taxation and Fiscal Matters – Local Government Taxation (Ref/35/).</li> </ul>
Conversion factor for USD 1.00	<b>PHP 42.60</b>	The conversion factor at PHP 42.60 to USD 1.00 applied for cost quoted in USD to PHP was confirmed by the validation team as acceptable from <a href="http://www.investing.com/currencies/usd-php-historical-data">http://www.investing.com/currencies/usd-php-historical-data</a> (Ref/49/).
VAT Rate	<b>12%</b>	The 12% VAT rate was confirmed by the validation team in accordance with <a href="http://www.bir.gov.ph/taxinfo/tax_vat.htm">www.bir.gov.ph/taxinfo/tax_vat.htm</a> (Ref/68/).
Depreciation Rate	<b>5%</b>	PP has applied the depreciation rate using the straight line method for 20 years which is based on the Statement of Financial Accounting Standard of the Philippines (Ref/70/). The depreciation rate of 5% is considered on a yearly in the Project Financial Model calculation sheet (Ref/27/). Hence, the depreciation rate presented is correct and acceptable.
Escalation Rate	<b>&lt;4%</b>	Escalation rates applied by the PP is found within the local inflation rate

<b>Input Parameter</b>	<b>Input Value</b>	<b>Validation Comment</b>
		recommended by ERC as per Case No. 2011-006 RM (Ref/54/).
Interest Rate	<b>8.5%</b>	The rate of interest as recommended by ERC Case No. 2011-006RM (Ref/54/) is 10%. The applied interest rate by the PP is found conservative and acceptable.
Electricity Price, PHP/kwhr	<b>6.630</b>	PP has applied Electricity Tariff of PHP 6.63/KWh based on the Philippine Energy Regulatory Commission Resolution No. 10, Series of 2012 on Resolution Approving the Feed-in-Tariff <a href="http://www.erc.gov.ph/cgibin/issuances/files/ResolutionNo.10Seriesof2012_FIT.pdf">http://www.erc.gov.ph/cgibin/issuances/files/ResolutionNo.10Seriesof2012_FIT.pdf</a> (Ref/38/).
Fuel Cost, 20 year average, PHP 1000/year	<b>370,739</b>	The PP has applied values based on fuel supply contract (Ref/15/), and O&M contract with SJR Industrial Construction Miscellaneous Civil and Structural Works proposal dated 11/08/2012 (Ref/29/). The validation has confirmed the values as adequate and correct.
Power Load Factor (PLF)	<b>90%</b>	The PP has applied the Power load factor (PLF) at 90%. The validation team has cross-checked the value in the EPC Contract Agreement (Ref/6/) technical specification which was found correct and acceptable. The PLF considered is in accordance with the requirements as specified by EB 48, Annex 11 (Ref/75/).
Period of Financial Assessment	<b>20 years</b>	The PP has applied the 20 years as the period of financial assessment. The equipment lifetime for this project is considered as 25 years, which has been cross-checked by Validation Team based on equipment life time in accordance with the "Tool to determine the remaining lifetime of equipment" Version 01, EB 50, Annex 15 (Ref/81/). Hence, the value applied is found acceptable.
Revenues, PHP 1000	<b>920,168 (year 1)</b>	The PP has applied the annual revenue component of the Project Financial Model calculation sheet (Ref/27/) as the product sale of electricity to the Grid in net electricity generation X feed-in-tariff X escalation rate. The validation team confirmed and accept that the values applied were Electricity Tariff of PHP 6.63/KWh based on the Philippine Energy Regulatory Commission Resolution No. 10, Series of 2012 on Resolution Approving the Feed-in-Tariff <a href="http://www.erc.gov.ph/cgibin/issuances/files/ResolutionNo.10Seriesof2012_FIT.pdf">http://www.erc.gov.ph/cgibin/issuances/files/ResolutionNo.10Seriesof2012_FIT.pdf</a> (Ref/38/), the annual net electricity generation based on PLF of 90% and net installed capacity based on the EPC Contract Agreement (Ref/6/), and the escalation rate of 3% based on ERC as per Case No. 2011-006 RM (Ref/54/).
Equity	<b>None</b>	The Cost of debt is not considered in the beginning thus the gross profit margin used in the calculation of the E-IRR is in the Project Financial Model calculation sheet (Ref/27/) is found accurate. Verification of the amount was conducted in the financial model under the cash flow sheet that such variable is not part of the Gross profit margin and the model (Ref/27/) shows such variable deduction was only treated once as presented in IRR sheet of the financial model (Free Cash).
Debt Repayment Tenure	<b>Debt equity ratio of 70%</b>	The PP has applied the debt equity ratio for the the proposed project activity at 70%. This was confirmed by the validation team based on Preliminary terms and conditions from San Carlos Biopower, Inc. Debt Term Sheet from ThomasLloyd Capital LLC (Ref/56/) and Project Financial Model calculation sheet (Ref/27/). The debt repayment tenure considered in the investment analysis is 12.5 years which is based on the San Carlos Biopower, Inc. Debt Term Sheet from ThomasLloyd Capital LLC (Ref/56/). The indicative sheet was applicable and available at the time of investment decision and hence the same is accepted by the validation team.
Taxes	<b>10% Corporate income tax</b> <b>1.50% real property taxes</b>	PP has applied the 10% Corporate income as tax with tax holidays for 7 years as per Philippines Renewable Energy Act of 2008 (Ref/18/). Other taxes that the PP applied included 1.50% real property taxes on net fixed assets as per Renewable Energy Law Section 15.C; and 1.5% of gross revenue for

<b>Input Parameter</b>	<b>Input Value</b>	<b>Validation Comment</b>
	<b>1.5% of gross revenue</b>	government share as per Renewable Energy Law Section 13. The Validation Team has confirmed the sources of data have been complete and obtained from current regulatory requirements.

3. *The DOE shall further validate the barrier analysis presented in the PDD, in particular; a) Investment barriers, considering that insufficient financial return is presented as investment barriers which is not in line with the applied methodology which states that "investment barriers, other than insufficient financial returns as analysed in Step 3 i.e.investment analysis"; and b) Technological barriers, considering that the Renewable Energy Act 2008 appears not specifically mention that such technology and equipment are not available in the host country. In doing so, the DOE shall also validate how the CDM will help to alleviate the identified barriers so that the project activity is not prevented by the occurring of the barriers. Please refer to Page 13-14, ACM0018 version 02.0.0; Paragraph 124-127 , VVS version 02.0.0.*

**Response:**

Validation Report Section 3.9.4 Barrier Analysis (127) is now revised to align with the requirement of Approved Methodology ACM0018, Version 02.0.0. The revised section is reproduced as below for easy verification.

Revised Section 3.9.4 :

The PP has used the barrier analysis to demonstrate the additionality of the Project following the Step 2 required by the approved methodology ACM0018 Version 02.0.0 (Ref/76/). As an outcome of the Step 2 PP demonstrated that following alternatives are still available for the proposed project activity which does not face any barrier

P5 : The Generation of Power in the grid

B3 : The Biomass residues are burnt in an uncontrolled manner without utilizing it for energy purposes

From the Validation of host country power scenario it is confirmed that

- There is no power plant of this scale exist and operated by a private company which produces only Power, form the existing power plant list in the host country it is clear that most of power plant are either of cogeneration type or of small scale.(Ref/42/).
- Investment Climate existing in the host country is not favorable for the development of greenfield renewable power plant by a private company due to lack of access to the finance i.e. No private capital is available from domestic or international capital markets.
- There is no specific grant available in the host country for the development of such Greenfield renewable energy power plant.

As an outcome of the barrier analysis PP has concluded that there is only one alternative scenario that is not prevented by any barrier i.e. P5 – The generation of power in the grid with B3 – The biomass residues are burnt in and uncontrolled manner without utilizing it for energy purposes, and this is not the proposed project activity undertaken without being registered as a CDM project.

The proposed project activity faces following barriers :

- **Investment Barriers:** The PP has applied investment barriers to the identified alternative scenario P1. The Equity IRR of 17.17% was determined by the PP to be below the benchmark of 20% Equity IRR. With this barrier, P1 is eliminated as a baseline scenario. CDM alleviates this situation and will increase the Equity IRR to 19.26% which was still lower than the Equity IRR. Thus, the alternative scenario for electric power is that the equivalent electricity supply would be generated by the power grid (P5).
- **Technological Barriers:** The project is found to be the first-of-its kind in the Philippines in terms of scale (size) as a stand-alone biomass power generation plant and its multi-fuel boiler design as confirmed by the validation team from the list of the Renewable Energy Registration and Accreditation for Biomass Projects in the Philippines <http://www.doe.gov.ph/RE%20Regis&accred/Awarded%20Contracts.htm> (Ref/42/). Most of the biomass power generation plants are cogeneration and are small-scale. The boiler allows also firing of multiple biomass fuel including agricultural residues that are by-nature high in alkali as confirmed by the validation team from technical specification of the power plant in the EPC Contract/Agreement (Ref/6/) and article by J Werther, et al on "Combustion of agricultural residues." *Progress in energy and combustion science*" (Ref/60/). The boiler technology and equipment for efficient gathering and collection of biomass residues are available only abroad and would have to be imported into the Philippines as confirmed by the validation team from Section 21c, 22 and 23 of Philippine Renewable Energy Act of 2008 (Republic Act 9513) (Ref/18/).

In accordance with Approved Methodology guidance "*If there are still several alternative scenarios remaining, including the proposed project activity undertaken without being registered as a CDM project activity – proceed to Step3 (Investment Analysis)*", PP has carried out an investment analysis for the proposed project activity to demonstrate that the project activity is additional and CDM benefits will alleviate the identified investment barrier.

The validation team confirms that issues that have a direct impact on the financial returns of the project activity are not considered barriers and have been assessed by investment analysis.

Based on the assessment above, the validation team concludes that the presented barriers are real and the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives, in particular the identified baseline scenario.

Bureau Veritas Certification hereby confirms that the barrier analysis performed is credible.

4. *The DOE is requested to further substantiate on how it has validated that the project activity fulfills the applicability condition 1 of the selected baseline and monitoring methodology which states that "No other biomass types than biomass residues, as defined above, are used in the project plant", considering that the project activity also aims to use grassy and woody energy crops, as supplemental fuel, harvested from dedicated plantations to be established by the*

*project activity whereas the methodology only allows to use biomass residues that is a by-product, residue or waste stream from agriculture, forestry and related industries. Please refer to Page 1 and 3 of ACM0018 version 02.0.0 ;Paragraph 73 and 77, VVS version 02.0.0.*

**Response:**

- Condition no.1 – BV has done ocular inspection of the site and the surrounding catchment area where there is a substantial biomass residue available in the area given that it is a sugarcane district. This is validated using the Philsurin GIS map; SRA report on cane production; Biomass Assessment Report done by third party report (BRI); actual site visit witnessing the common practice of open field burning of sugarcane field residues. The evidences are available in Google map, Philsurin map as presented in the list of documents validated (cite document no in the list). BV also validated the Fuel Supply Agreements, duly notarized – also part of the list of documents, that demonstrates fuel supply would come from biomass residues;
- As far as the condition 1 of Approved methodology is concern it is clear that the project activity is allowed to use only “Biomass Residue”, and as per the definition of Biomass residue given in the approved methodology Forestry waste is also accepted as biomass residue. Please refer below definition taken from the page 1 of ACM0018 / version 02.0.0  
“**Biomass Residue** are defined as biomass that is by-product, residue or waste stream from agriculture, forestry and related industries. This shall not include municipal waste or other waste that contain fossilized and /or no biodegradable material (however, small fractions of inert inorganic material like soil or sand may be included)
- Regarding the justification for the use of grassy and woody energy crops, as supplemental fuel, harvested from dedicated plantations – The Woody and grassy energy crops are considered as biomass residue which is from forestry industry. In absence of the project activity this biomass residue would have been burnt in uncontrolled manner.
- The plantation already exists in the project area, and project proponent has decided to extend it and protect it with the support of local community, this also has plus point from the sustainable development point of view due to implementation of the project activity. Sustainable development is also one of the important parameter of CDM and it is justifying appropriately.
- Also please note that, there is no special Methodology available at the time of PDD preparation that has biomass residues + energy crop plantations as dedicated fuel as a combined Methodology.
- There is a precedence of using woody waste from the Apple plantation under registered project Ref. No. 4079.

We hope you will find above responses in accordance with Review comments raised.

Yours faithfully



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