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Att: CDM Executive Board

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QUESTIONS RAISED BY CDM EXECUTIVE BOARD MEMBERS	RESPONSE SUMMARY FROM DNV	ACTION TAKEN (IF RELEVANT)
Q1 The DOE is requested to further substantiate the baseline selection and validate whether the list of alternatives considered in the PDD includes all possible baseline alternatives. In particular the DOE shall clarify: (a) why baseline alternatives, such as a combination of fuel types including renewable sources (i.e. bagasse) were not considered as a possible scenario for heat and power generation; and (b) the elimination of alternative scenarios H1 and H3 is appropriate considering that the validation report mentions that the ethanol plant would use bunker fuel oil and bagasse as source of fuel for the boiler (page 19) and bagasse would also be used in the absence of the project activity (page 29). Please refer to VVM v1.2 paragraph 83, 84 and 87, ACM0014 Version 04.1.0.	**(a)** The combination of fuel types was not initially considered as baseline alternatives because this alternative is not mentioned as one of the alternative options within the methodology. However, in order to account for the concerns raised in the requests for review, the list of alternatives scenarios for electricity and heat generation have thus been updated, now including the combination of fuel types with renewable energy as possible scenarios. These alternatives, now E4 and H4, have been assessed E4 was found to be not plausible alternative while H4 was found to be plausible. Thus, the PDD is now in line with VVM v1.2 paragraph 83, 84 and ACM0014 Version 04.1.0. The updated list of alternative scenarios for electricity and heat are now reflected as: *Alternatives scenarios for electricity:* • E1. Power generation using fossil fuels in a captive power plant; • E2. Electricity generation in the grid; • E3. Electricity generation using renewable sources; • E4. Electricity generation using a combination of grid electricity and renewable energy sources; • E5. Electricity generation using a combination of renewable energy sources and biogas undertaken without being developed as a CDM Project. *Alternatives scenarios for heat generation:*	The validation report and PDD have been updated.

	• H1. Co-generation of heat using fossil fuels in a captive cogeneration power plant; • H2. Heat generation using fossil fuels in a boiler; • H3. Heat generation using renewable sources; • H4. Heat generation using a combination of fuel types; including renewable sources; • H5. Het generation using a combination of fuel types: renewable sources and biogas undertaken without being developed as a CDM Project. **(b)** The elimination of alternative scenario H1 is justified as the project activity applies the use of a dual boiler able to burn more than one type of fuel and does not imply the implementation of a co-generation plant. Given the limited availability of the technology, lack of concrete incentives for investors and limited access to financing, scenario H1 (Co-generation of heat using fossil fuels in a captive cogeneration power plant) is not plausible. Hence, this alternative is excluded from further consideration which is deemed reasonable. An intermittent supply of bagasse is not sufficient for a stable production of ethanol, and as a result most factories in the Philippines meet their thermal energy needs with bunker fuel oil (i.e. baseline scenario for heat generation is to burn both, bagasse -when readily available- and bunker fuel oil in a dual boiler). Therefore, given that the supply of renewable energy sources such as biomass (scenario H3) is not readily available for heat production, scenario H3 is not plausible. Thus, the elimination of alternative scenarios H1 and H3 is deemed appropriate. Also, it should be noted that bagasse (a by-product of the sugar industry) is used under both (1) baseline scenario: the bagasse is burnt in the steam boiler, together with fuel oil, to generate just steam (not electricity) and, (2) project scenario: the bagasse is burnt in the steam boiler together with vinasse and biogas to generate steam as well as electricity. Thus the amount of bagasse burnt is the same in the baseline as it is in the proposed project activity. There is no change in the amount considered to be used to the one already being	

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<tr><th></th><th>Baseline Scenario</th><th>Project Activity</th></tr>
<tr><td>Electricity Source</td><td>E2. National Grid</td><td>E5. Biogas+Bagasse+ Vinasse</td></tr>
<tr><td>Heat Source</td><td>H4. Bunker Fuel Oil + Bagasse</td><td>H5. Biogas+Bagasse+ Vinasse</td></tr>
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<td>Q2 The DOE validated in page 19 of the VR that the production of bagasse is not continuous and not sufficient to meet the plant energy demand and that the ethanol plant would use bunker fuel oil and bagasse as source of fuel for the boiler. Therefore it is not clear how the DOE validated the requirements of the applied methodology for the determination of:
a) $EF_{BL,EL,y}$, where the lower emission factor between the grid emission factor and a captive plant should be applied; and
b) $EF_{CO2,FF,boiler,}$ if co-generation of heat using fossil fuels in a captive cogeneration power plant and/ or heat generation using renewable sources apply, then $BE_{HG,y} = 0$. Please refer to VVM v1.2 paragraph 67(b, c), ACM0014 Version 04.1.0.</td>
<td>(a) Determination of $EF_{BL,EL,y}$ – The implementation of a captive co-generation plant in the baseline scenario for electricity generation is not plausible and as such this option is not further considered in the analysis. Therefore, the grid emission factor has been identified for estimating the baseline emissions for generation and/or consumption of electricity.
The baseline scenario for electricity generation is the use of electricity from the grid (E2). Hence, in accordance with ACM0014, the grid emission factor should be used ($EF_{BL,EL,y} = EF_{grid,y}$). The project activity will produce electricity by burning bagasse, vinasse (dehydrated sludge) and biogas. However, in order to be conservative only the emission reductions attributed to the biogas (neither the vinasse nor the bagasse) will be claimed by this project activity.

(b) Determination of $EF_{CO2,ff,boiler}$ – The implementation of a captive co-generation plant in the baseline scenario for heat generation is not plausible, and as such this option is not further analyzed due to the low grid-electricity tariffs.
The baseline scenario for heat generation is the use of bagasse (when readily available) and bunker fuel oil in a dual boiler able to burn both fuels. The project activity will produce heat by burning bagasse, vinasse (dehydrated sludge) and biogas.
Given that the bagasse is a residue of the ethanol plant, it will be sent for combustion first (when available due to its seasonal production). Once all the bagasse has been used, the facility will burn bunker fuel oil in the case of the baseline scenario, while vinasse and biogas will be</td>
<td>The validation report and PDD have been updated.</td>
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	combusted in the project activity scenario. Therefore, the amount of bagasse burnt in the baseline scenario is the same amount of bagasse burnt by the project activity. The GHG emissions generated from burning bunker fuel oil in the baseline scenario are avoided in the project activity through the use of biogas and vinasse (dehydrated sludge). Therefore, the emission factor for bunker fuel oil has been used for the calculation of the baseline emissions from the generation of heat. Also, in order to be conservative, only the emission reductions attributed to the biogas (not with the vinasse) are being claimed by this project activity. Thus, the project activity is in line with VVM v1.2 paragraph 67 (b, c) and ACM0014 Version 04.1.0.	
Q3 The DOE is requested to further clarify why emissions from the sludge treatment are not considered as applicable emission sources in the context of the project activity, as it was observed, that in some sections of the validation report (page 98) it is mentioned that "sludge disposal in the baseline, derived from the anaerobic lagoons, would result in the same disposal method i.e. composting to land" while CL 7 of the VR (page 145) mentions that "In the project scenario, residual sludge will be burnt in the boiler alongside Vinasse". Please refer to VVM v1.2 paragraph 89, 92(c, d), ACM0014 Version 04.1.0.	The project activity has implemented a zero effluent discharge approach, and thus it does not generate any emissions from the sludge treatment. As checked during the site visit, the residual sludge from the anaerobic digester is dried in the evaporator/dewatering facility (the dehydrated product is called vinasse) and then used as fuel in the boiler along with the bagasse and biogas. The validation report has been corrected accordingly, and it is now in line with VMM v1.2 paragraphs 89, 92 (c, d) and ACM0014 Version 04.1.0.	The validation report and PDD have been updated.