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Response to Request for Review

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project with the registration number 1257. In case you have any further inquiries please let us know as we kindly assist you.

Your sincerely,

Castro Javier
Certification Body Climate and Energy

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Comment No.1:

The PP shall further demonstrate the additionality of the project activity and provide further evidence in relation to barrier analysis.

Response by project proponent:

Barrier analysis has been used to demonstrate the additionality of the project activity. If this step is used, then it has to be determined whether the proposed project activity faces barriers that:

(a) Prevent the implementation of this type of proposed project activity; and

(b) Do not prevent the implementation of at least one of the alternatives.

The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.

The proposed project activity by Dwarikesh Sugar Industries Limited (DSIL) at its Dwarikesh Puram (DP) plant is the implementation of the high efficiency, high pressure (86 kg/cm^2) co-generation system and the alternative to the proposed project activity is the installation of low efficiency, low pressure cogeneration system (reference plant). The reference plant in context of the proposed project activity is the one with 45 kg/cm^2 pressure configuration with similar thermal firing capacity as the project plant but lower electrical efficiency.

As per the additionality tool, the barriers to the proposed project activity are demonstrated in the following sub-steps:

Sub-step 3a. Identify barriers that would prevent the implementation of the proposed CDM project activity:

Investment barriers:

- *For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. Similar activities are defined as activities that rely on a broadly similar technology or practices, are of a similar scale, take place in a comparable environment with respect to regulatory framework.*

Similar such activities of installation of high pressure cogeneration system (67 or 86 kg/cm^2) have been implemented after taking CDM revenues into consideration. Projects implemented so far with similar technology are as follows:

(i) Balrampur Chini Mills Limited at 2 locations - Balrampur and Haidergarh

(ii) Triveni Sugar at 2 locations - Deoband and Khatauli

(iii) Upperganges Sugar Limited Seohara

(iv) Mawana Sugar Ltd at 3 locations – Mawana, Nanglamal and Titawi

(v) Ramgarh Chini Mills, Sitapur

(vi) Dalmia sugars, Sitapur. The other projects with cogeneration system are:

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(vii) L.H. Sugar works, Pilibhit

(viii) Ajbapur sugar complex, Lakhimpur Kheri

- *No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin.*

As per the Commission for Agricultural Costs and Prices (CACP), Ministry of Agriculture, Government of India, there exists a tremendous potential for bagasse based cogeneration in India, but due to the high capital cost required in setting up a high pressure cogen unit (which is equivalent to setting up a modern sugar mill) and the high interest cost of capital makes the cogeneration less attractive for sugar mills. Thus the lending institutions are reluctant and unwilling to finance such cogeneration projects (Point 25, Report on price policy for sugarcane for the season 2004-05, http://dacnet.nic.in/cacp/sugar-final.htm).

The funding for the project activity has been obtained from Punjab National Bank (PNB) and Indian Renewable Energy Development Agency (IREDA). This funding has been obtained after taking CDM revenues into consideration in the proposals submitted to the lending institutions. This is evident by the fact that the contract with IREDA categorically mentions that a Trust and Retention Account (TRA) has to be opened by the borrower for servicing the repayment to IREDA and all the CDM revenues are to be routed through the TRA. The extract of the Loan agreement between DSIL and IREDA is being submitted (Annexure-1).

Technological barriers:

- *Skilled and/or properly trained labour to operate and maintain the technology is not available, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance;*

As per an article in Cane Cogen India, a quarterly newsletter published by Winrock International India, on sugar mill cogeneration which is sponsored by the Ministry of New and Renewable Energy (MNRE), Government of India, there is still very limited experience and lack of technical awareness with high pressure cogeneration systems, leading to uncertainties with regards to operation, performance, as well as lack of trained personnel (Page 14, Vol 28, Oct-Dec 2006, http://www.winrockindia.org/newsletter_pdf/Cane_Cogen_India-Vol28_Dec06.pdf)

Conventionally the cogeneration systems operating in the sugar industry are of low pressure configuration and are operated either manually or through Programmable Logic Control (PLC) based system. The project activity – high pressure cogeneration system is Distributed Control System (DCS) based. Trained people to operate such high pressure system in sugar industry are not available. This is also due to the fact that the sugar industry is seasonal in nature and does not operate through out the year. The lack of manpower availability for operating such DCS based system is evident from the fact that DSIL had given an advertisement in the newspaper for recruitment of officer for boiler operations on 14th February 2007 and there had been no satisfactory response, therefore subsequently another advertisement was released on 19th September 2007 for the vacant position (Annexure-2).

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Barriers due to prevailing practice:

The project activity which involves implementation of high pressure boiler (86 kg/cm^2) for the cogeneration project is among the first few of its kind being carried out in the region. Most of the sugar industries operating in the region continue to use low or medium pressure boilers for co-generation purpose. Prior to the mid-1970's, the steam pressure used in the majority of boilers located in Indian sugar mills was in the range of 10-15 kg/cm^2, which subsequently increased to the prevailing average of 21 kg/cm^2. The majority of the boiler systems in Indian sugar mills operate at a pressure of 21 kg/cm^2 and temperature of 340 ^{o}C, although some mills employ 14 kg/cm^2/265 ^{o}C or 32 kg/cm2/380 ^{o}C steam systems. In the mid-1980, a few Indian mills installed medium pressure (42 kg/cm^2) boilers[1], this demonstrates that usage of boilers with higher pressures (86 kg/cm^2) is not being practiced in the sugar industry in the region and hence is not a prevalent practice.

Other barriers:

The differences between the project activity and the conventional reference plant are as follows:

S. No.	Description	Remarks	Documentary evidence
1	Capital cost	The cost of the project activity high pressure cogen boiler (86 kg/cm^2, 120 tph) is INR 209.5 million, which is more than twice the cost of similar capacity (reference plant) boilers (45 kg/cm^2, 2x60 tph). The cost of the reference plant boilers comes to around INR 99.0 million. The cost for setting up a cogeneration plant doubles the investments in the sugar mill (http://dacnet.nic.in/cacp/sugar-final.htm, point 25)	Purchase contract for the project activity boiler and the reference plant boiler (Annexure-3 & Annexure-4 respectively)
2	Automation	The project activity requires Distributed Control System (DCS), whereas the reference plant system is usually operated through a programmable Logic Control (PLC) system. The latter being the conventional practice. Getting people to operate such DCS based projects in the seasonally functional sugar industry is difficult.	Purchase contract for the project activity automation and the reference plant automation. (Annexure-5 & Annexure-4 respectively) Advertisement placed in the newspapers for appointment of people to operate such systems. (Annexure-2)

[1] Page 7 of 25 of the report “Promotion of Biomass Cogeneration with Power Export in the Indian Sugar Industry ” http://www.netl.doe.gov/publications/carbon_seq/articles/india.pdf

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3	Maintenance cost	Since the project activity system is of high pressure, high temperature so the spares are relatively costly as compared to the reference plant system.	

These differences prevent the implementation of the project activity. Further to the said differences the institutional barriers that the project activity faces are much more as compared to the alternative. These barriers are owing to the export of power as per the power purchase agreement that the project has with state nodal agency, Uttar Pradesh Power Corporation Limited (UPPCL). These barriers are as follows:

(i) Non-payment by UPPCL

(ii) Lack of maintenance of the transmission line

(iii) Low tariffs

The following sets of documents are being submitted as proofs to substantiate these barriers:

(i) Non-payment by UPPCL: DSIL has been exporting power through its Dwarikesh Nagar plant to UPPCL. UPPCL has till date not paid the escalation amount dues as per the PPA for the years 2003-04, 2004-05 and 2005-06 for the power evacuated by DSIL. The correspondences to the same effect from DSIL to UPPCL are being submitted (Annexure-6).

(ii) Lack of maintenance of transmission line: The transmission line required for power evacuation is laid down by UPPCL on the cost of DSIL. To maintain the transmission line, as per the PPA, UPPCL deducts 1.5% amount of the total cost of the line from the bill. Despite these deductions there has been no proper maintenance of the transmission line leading to frequent tripping problems and thereby financial losses. To this effect the correspondence from DSIL with UPPCL are being submitted (Annexure-7).

(iii) Low tariffs: UPPCL is the sole agency responsible for transmission and distribution of electricity in the state of Uttar Pradesh. The tariffs of UPPCL are much below than the rates offered by other parties. The correspondence to this effect from Tata Power Trading Company Limited (TPTCL) is being submitted (Annexure-8).

The above stated barriers are not applicable to the scenario P4 and P5 since it entails power generation from grid based power plants and lower efficiency power plants which would not result in significant power generation and thereby insignificant or no export to the grid.

Response by TÜV SÜD:

The project proponent has now included information on investment barrier and technological barriers and modified argument for prevailing practice barrier faced by the project activity. Our assessment on the arguments presented by project proponent is as follows:

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Investment barrier

There are 117[2] sugar mills in state of Uttar Pradesh out of which 66[3] are above 2500 tonnes cane crushed per day (TCD) capacity. Through the letter available from UP Sugar Mill Cogen Association, which is the apex organization for sugar mill cogeneration in Uttar Pradesh, it is established that till beginning of year 2007 (project started in May 2006) there were only three sugar mills[4] in the state that were operating high pressure configuration cogeneration systems (above 86 kg/cm^2). Till date, 13 sugar mills out these 66 have installed/are in process of installing similar systems. All these 13 projects have been developed by considering revenues from CDM. The 13 projects are as follows:

1. Balrampur Chini Mills, Balrampur (http://cdmindia.nic.in/cdmindia/project.select.jsp, http://wbln0018.worldbank.org/IFCExt/spiwebsite1.nsf/0/1a8da1ee3d43dcd385256f1c0074e368?OpenDocument)
2. Balrampur Chini Mills, Haidergarh (http://cdmindia.nic.in/cdmindia/project.select.jsp, http://wbln0018.worldbank.org/IFCExt/spiwebsite1.nsf/0/1a8da1ee3d43dcd385256f1c0074e368?OpenDocument)
3. Triveni Sugar, Deoband (http://cdm.unfccc.int/Projects/DB/TUEV-SUED1156433275.07/view.html)
4. Triveni Sugar, Khatauli (http://cdm.unfccc.int/Projects/DB/TUEV-SUED1166781266.9/view.html)
5. Upperganges Sugar Limited, Seohara (http://cdm.unfccc.int/Projects/DB/TUEV-SUED1166188515.27/view.html)
6. Mawana Sugars Limited, Mawana (http://cdm.unfccc.int/Projects/DB/SGS-UKL1166045384.64/view.html)
7. Mawana Sugars Limited, Nanglamal (http://cdm.unfccc.int/Projects/DB/SGS-UKL1166044856.42/view.html)
8. Mawana Sugars Limited, Titawi (http://cdm.unfccc.int/Projects/DB/SGS-UKL1166043658.43/view.html)
9. Ramgarh Chini Mills, Sitapur (http://cdm.unfccc.int/Projects/DB/DNV-CUK1173874501.78/view.html)
10. Dalmia Sugars, Sitapur (http://cdm.unfccc.int/Projects/DB/DNV-CUK1173357593.94/view.html)
11. Dalmia Sugars, Shahjahanpur (http://cdm.unfccc.int/Projects/DB/DNV-CUK1173095684.92/view.html)
12. DSCL Sugar Ajbapur Cogeneration Project, Lakhimpur Kheri (http://cdm.unfccc.int/Projects/DB/BVQI1173177798.18/view.html)
13. LH Sugar Works, Pilibhit (http://cdm.unfccc.int/Projects/Validation/DB/43V853VSZM02FMIUWATPAQ04MQB2JZ/view.html)

As evident from information available at Point 25, Report on price policy for sugarcane for the season 2004-05 (http://dacnet.nic.in/cacp/sugar-final.htm), there exists a tremendous potential for bagasse based cogeneration in India, but due to the high capital cost required in setting up a high pressure cogen unit and the high interest cost of capital makes the cogeneration less attractive for sugar mills. Thus the lending institutions are reluctant and unwilling to finance such cogeneration projects.

[2] http://www.indiainbusiness.nic.in/indian-states/uttarpradesh/Maj_Ind.htm
[3] http://www.sugartoday.com/upmills.htm
[4] http://cdm.unfccc.int/UserManagement/FileStorage/EZHN15ZRYPHUVIDO5UNHSVYSONL73M

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Indian Renewable Energy Development Agency (IREDA), which is one of the lending institutions for the project activity has considered revenues from CDM in its approval to sanction the loan for the project activity. This is evident by the fact that the contract with IREDA categorically mentions that a Trust and Retention Account (TRA) has to be opened by the borrower for servicing the repayment to IREDA and all the CDM revenues are to be routed through the TRA.
Audit team is of the opinion that project activity like other similar projects in sugar industry in Uttar Pradesh is facing investment barrier and is being implemented only through consideration of revenues from CDM.

Technological barrier
As per study published by Winrock International India, on sugar mill cogeneration which is sponsored by the Ministry of New and Renewable Energy (MNRE), Government of India, (http://www.winrockindia.org/newsletter_pdf/Cane_Cogen_India-Vol28_Dec06.pdf) there is still very limited experience and lack of technical awareness with operation of high pressure cogeneration systems in the industry. This often leads to uncertainties with regards to operation and performance of the system. This is further evident by difficulty faced by project proponent in finding expert personnel to operate high pressure cogeneration system for the project activity.

Lack of prevailing practice
As evident from report, "Promotion of Biomass Cogeneration with Power Export in the Indian Sugar Industry (Annexure-9), the use of high pressure cogeneration system is not a prevailing practice in India. Most of the cogeneration systems operate at low pressure configurations (at or below 45 kg/cm^2). This argument in context of project activity is further substantiated by letter available from UP Sugar Mill Cogen Association, which states that till beginning of year 2007 there were only three sugar mills in the state that were operating high pressure configuration cogeneration systems (above 86 kg/cm^2). At the time of the start of the project activity in May 2006 it could be considered as 'first of its kind' in the state of Uttar Pradesh as there were only three similar projects and they have also considered CDM.

Other barriers including institutional barriers
The institutional barriers discussed in the PDD submitted for registration and the revised PDD submitted now are associated with export of electricity to grid by the project activity. Hence the analysis given below compares the project activity with alternative scenario for power only (not biomass and heat).
The alternative scenarios identified for power were:
P4: The generation of power in the grid
P5: The installation of a new biomass residue fired power plant, fired with the same type and with the same annual amount of biomass residues as the project activity, but with a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant industry sector) than the project plant and therefore with a lower power output than in the project case

Scenario P5 essentially represents low pressure configuration cogeneration projects that are installed to meet the captive electrical and thermal energy requirements of sugar plant, **without export to grid** and hence is not considered for further analysis. This is a prevailing practice in the Indian Sugar industry as evident from report, "Promotion of Biomass Cogeneration with Power Export in the Indian Sugar Industry (Annexure-9). Hence, the analysis below provides justification why institutional barriers do not affect the alternative scenario P4.

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The institutional barriers due to poor financial condition of electricity off-taker (UPPCL), uncertainty in rate of power purchase by UPPCL, reduction in limit to purchase energy from renewable and non-conventional energy by Uttar Pradesh Electricity Regulatory Commission (UPERC) and non-payment by UPPCL only affect the private sector project developers investing in the project activity like Dwarikesh Sugar Industries Limited (DSIL). These aspects do not affect the most of the other grid connected projects, which are operated by State and Central Government. The total installed capacity of government owned plants supplying electricity to grid in Uttar Pradesh is 4755.6 MW[5], which is 98.14% of the total installed electricity generation capacity of the state.

Comment No.2:

The DOE shall further clarify how they have validated:

1. Barriers due to prevailing practices and how they prevent the implementation of the project activity
2. Institutional barriers as it is not clear why the barriers do not affect the alternatives to the project activity similarly

Response by TÜV SÜD:

Answering to point no. 1 above, audit team would like to specify that implementation and operation of high pressure configuration cogeneration systems in sugar industry is associated with high capital cost, unwillingness of lending institutions to finance such projects, lack of skilled personnel to operate the plant etc. Considering these facts, the project proponent was reluctant to invest in the 'first of its kind' project activity and hence the project activity faced barriers.
Our argumentation above in "other barriers including institutional barriers" (comment no. 1) clarifies how we have validated institutional barriers and how they do not affect the alternatives to the project activity similarly.

Comment No.3:

In addition, further justification is required to substantiate how the common practice in the region can be considered a barrier which would prevent the implementation of this specific project activity.

Response by project proponent:

The prevailing practice barrier has been revised in the PDD.

Further as per the additionality tool the tests are to be complemented with an analysis of the extent to which the proposed project type (High pressure cogeneration system and export of power to grid) has already diffused in the sugar sector in the region.

This test being a credibility check to complement the barrier analysis and is to be carried out by identifying and discussing the existing common practice through the following sub-steps:

Sub-step 4a. Analyze other activities similar to the proposed project activity:

1. Providing an analysis of any other activities implemented previously or currently underway that are similar to the proposed project activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take

[5] http://www.nreb.nic.in/Reports/ar06-07/Chapter2/Annex2.4.pdf

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place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.

Sub-step 4b. Discuss any similar options that are occurring:

2. If similar activities are widely observed and commonly carried out, it calls into question the claim that the proposed project activity faces barriers. Therefore, if similar activities are identified above, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities did not face the barriers to which the proposed project activity is subject.

There are 117 sugar mills in the state of Uttar Pradesh and such high pressure configuration cogeneration systems (86 kg/cm^2), similar to the project activity have been commissioned in only 13 plants in the region. All of these projects are at various stages of availing CDM funding. Thus they are not to be included in the analysis.

Further with respect to export of power to grid, Uttar Pradesh has a potential of more than 1000 MW from bagasse based cogeneration plants and the installed capacity was around 100 MW in 2004-05, which was likely to increase to 150 MW by the end of the 2005-2006. In terms of power procurement from these sources, UPPCL is currently purchasing around 170 GWh from cogeneration plants out of its total power consumption of around 41000 GWh, which works out to around 0.43 only%[6]. This substantiates the fact that practice of sale of power to grid from bagasse based cogeneration projects has not penetrated in the region.

Thus it can be concluded that similar activities are not widely observed and commonly carried out and the claim that the proposed project activity faces barriers as stated earlier is correct.

Response by TÜV SÜD:

In the PDD version that was initially submitted for registration, the argumentation presented for prevailing practice barrier was similar to that presented for common practice analysis. The argumentation for prevailing practice barrier has been revised in the revised PDD that is enclosed. Further, in our response to comment no. 2 we have clarified how the revised argumentation for prevailing practice barrier justifies that this barrier prevents the implementation of this specific project activity.

Further, we would like to re-instate that the common practice in the region is operation of low pressure configuration cogeneration projects that are installed to meet the captive electrical and thermal energy requirements of sugar plant. The common practice does not face barriers that are faced by high pressure configuration cogeneration project activity.

[6] http://www.uperc.org/Copy%20of%20Order%20-UPERC%20NCE%20Policy%20FINAL%20DT.18-7-2005.pdf

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Comment No.4:

ACM0006 v5 indicates that biomass quantities consumed in the project plant should be measured by weight and volume. Further clarification regarding how this requirement will be complied with is required.

Response by project proponent:

The bagasse getting produced from the crushing of sugarcane is directly being fed to the boilers through the chain conveyor and the excess is stored. Therefore the direct measurement of bagasse would be monitored by monitoring the speed of the rotary feeder. This monitoring instrument would be calibrated to give the amount of bagasse being combusted in the project activity. Also annual mass and energy balance would be carried out to cross check the biomass quantity used in the project activity. The mass balance would be on the basis of the measured quantity of sugarcane crushed, water added, mixed juice and excess bagasse and the energy balance would on the basis of steam quality and quantity generated. Thus the requirement of measurement of bagasse being consumed in the project plant is complied with.

Response by TÜV SÜD:

The quantity of bagasse used in the project activity would be measured and the basis of the measuring system of the equipment installed would be the speed of the rotary feeder. The measuring equipment would be calibrated to give the quantity of bagasse based on speed of rotary feeder. The procedure for monitoring of biomass to be consumed by project activity is now inline with requirements stipulated by ACM0006, version 5, which requires direct measurement of biomass quantity used in the project activity.