Mr. R K Sethi
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UNFCCC Secretariat
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19th June 2008

Re Request for review of the request for registration for the CDM project activity "20 MW Bagasse Based Co-generation Power Project at Bannari Amman Sugars Limited, Satyamanglam, Tamil Nadu. " (Ref. no. 1572)

Dear Mr. Sethi,

SGS has been informed that the request for registration for the CDM project activity "20 MW Bagasse Based Co-generation Power Project at Bannari Amman Sugars Limited, Satyamanglam, Tamil Nadu." (Ref. no. 1572) is under consideration for review because four requests for review have been received from members of the Board.

The requests for review are based on the same reasons outlined below. SGS would like to provide a response to the issue raised by the request for review:

Request for clarification to the DOE/PP:

1. *Due to the delay between the project start date and the commencement of validation the DOE is requested to explain why a corrective action request was not raised to require the evidence of prior consideration of the CDM to be detailed in section B5 of the PDD. Furthermore the given time delay, the DOE is requested to describe with what level of assurance it can be stated that the barriers identified are prohibitive (i.e. that the project could not proceed without CDM) given that the project activity was operational for a number of years prior to validation.*

SGS Reply: A brief description of the prior consideration of CDM was provided in section B.5 of the PDD (page 33) so corrective action request was not raised, but this was discussed in detail with project participant and copies of documents for the same were obtained as evidence. An elaborate description of the CDM consideration, commencement of the CDM process and reasons for delay in Validation are being presented below. These are also being included in the revised PDD (Annex 1.a) being submitted along with this response. Initially, the concept of CDM and its benefits were learnt by PP from power plant engineering consultant during the project feasibility assessment report. The same is reflected in their Detailed Project Report (DPR) prepared in October 2000 (Annex 1.b – Extracts from the DPR). In December 2000, the contact person for this project activity (Mr.R. Murugesan) attended a seminar on "Business opportunities in Bagasse based Cogeneration" organized by the Confederation of Indian Industries (CII), USAID[1] and WII[2]. The carbon trading opportunities in the bagasse cogeneration sector was elaborated in this seminar. This

[1] United States Agency for International Development
[2] Winrock International India

was verified from the Annex 1.c - Seminar invitation and delegate pass. The CDM concept and prospective benefits for the proposed cogeneration project were presented to Board of Directors, during their meeting in September 2000. After deliberations, it was decided to implement the project activity taking into account the benefits of CDM. Copy of the Board Meeting Minutes book (a register recording all the minutes of the Board meetings) is being submitted as Encl 1.a with PP response. The board minutes book (hard bound) is a consolidated document in which board decisions are documented and any alteration is not possible at later date. The Purchase Orders (PO) for the major project equipments were placed on 5 March 2001. This is considered as the starting date for the project activity.
The Delay was validated from the following documents and justifications.

- The project activity started operation from March 2004.
- The CDM consultant was appointed by PP on 21 March 2003. This was checked from the Annex 1.d – Copy of work order and bank cheque for advance fee payment.
- The DOE for validation was appointed on 08 December 2003. This was checked from the Annex 1.e – Letter from DOE on receipt of work order.
- The Project Design Document (PDD) was prepared and the application for obtaining the Host Country Approval (HCA) was submitted to the Designated National Authority (DNA) in January 2004[3].
- The HCA was received on 11 May 2004[4] . This was checked from the original copy and attached as Annex 1.f.
- A suitable approved CDM methodology was not available.
- In September 2003, CDM consultants submitted a new methodology for grid connected renewable energy projects, NM0030, though for a different project activity[5] worked by them. PP awaited the approval of this methodology for completing the PDD and commencing the validation process.
- In September 2004, the Meth Panel recommended not to approve NM0030-rev. Though AM0015 was approved at the same time, it could not be applied to this project due to constraints in applicability conditions[6]. Subsequently, PP awaited the approval of a similar methodology, NM0050, submitted in April 2004 for another project activity, which was in consideration by the Meth Panel.
- Though this methodology got approved as ACM0006 V1 in September 2005, it was applicable only to projects with back-pressure turbines. Once ACM0006 V2 was approved in March 2006, the PDD was submitted for Validation and web-hosted in April 2006[7], 3 years and 6 months after the starting date. http://cdm.unfccc.int/Projects/Validation/DB/K4W8ASB1VZF8H3VAVYATYC6QA4WGCI/view.html
- However, on account of delays during the validation process, the validation was re-assigned to different DOE because of more experience in this sector (at that point in time). The project was web-hosted again in May 2007[8] applying ACM0006 V4.
  http://cdm.unfccc.int/Projects/Validation/DB/HQQDJ57HPUBUZK6UX621RUEMU2I1F6/view.html

From the above facts it was concluded that the procedural and methodological issues had caused the delay. Furthermore the project is under validation since 2006. All the documents mentioned above were checked during site visit and UNFCCC website was also checked for the PDD for international stakeholder consultation. The documents are attached with this response. Thus, SGS found the arguments and evidences convincing and reached to the conclusion that CDM played a major role in implementation of project activity and the project was delayed for requesting registration because of above reasons.

[3] The DNA was formed only in November 2003
[4] Please note that a revised HCA was issued later (on 28 Feb 2005) as per the DNA's new format, which is uploaded by the DOE with the registration request.
[5] NM0030 was submitted for the bagasse co-generation project activity implemented by Balrampur Chinni Mills Limited, which was also worked by our CDM consultant.
[6] AM0015 stated that the plant should use only bagasse generated in-house. However, the project activity may have to run on purchased biomass residues or fossil fuels during emergencies like drought.
[7] http://cdm.unfccc.int/Projects/Validation/DB/K4W8ASB1VZF8H3VAVYATYC6QA4WGCI/view.html
[8] http://cdm.unfccc.int/Projects/Validation/DB/HQQDJ57HPUBUZK6UX621RUEMU2I1F6/view.html

2. *The evidence to support the stated barriers is generic and anecdotal; the barriers must be supported by credible third party evidence.*

SGS Reply: The major barrier to the project activity was the inherent performance uncertainties of any new technology. The 87 ata system was first of its kind in the region at the time of conceptualization. The Ministry of Non-Conventional Energy Sources (MNES) is now known as Ministry of New and Renewable Energy (MNRE) Government of India annual report dated 2002 -2003 was checked and found that the extracts on page 11 & 14 of chapter 5 mentions that this is the one of the first high pressure system installed in the region. Based on the commissioning certificate for boiler which is of August 2002 this was concluded to be first of its kind for 87 ata pressure. This is supported with the published evidence of Ministry of Non-conventional Energy Sources (MNES). This is a Government of India report. This is a publicly available document which supports that project activity is first of its kind in the region so this was accepted. This is attached as Annex 2 with this response. This was also checked from the website of MNES as mentioned http://mnes.nic.in/annualreport/2002_2003_English/ch5_pg11.htm. This was also checked during site visit by interviewing the management as well. MNES has appointed nodal agencies to represent it in each of the states. Tamil Nadu Energy Development Agency (TEDA) is the nodal agency for Tamil Nadu. The list of co-generation plants commissioned till date is published by TEDA. This is enclosed as Encl 2.1 with PP response. This was checked from http://www.teda.gov.in/page/Bio-Ann19.htm website as well. This was checked during site visit. Table below shows the various plants commissioning date and their details.

Table 2.1

S.No	Name	Capacity	Commissioning date	Date of construction start[9]	Details
1	MRK Co-operative Sugar Mills Ltd	7.5	15.6.92	Oct 1990	Co-operative sector. 43 ATA low pressure. Refer S.No.2 of Encl 2.3 with PP response[10].
2	Cheyyar Co-operative Sugar Mills	7.5	18.3.93	July 1991	Co-operative sector. 43 ATA low pressure. Refer S.No.5 of Encl 2.3 with PP response.
3	Dharani Sugars & Chemicals Ltd	15	29.11.96	Mar 1995	64 ATA pressure. Implemented under USAID Alternative Bagasse Co-gen (ABC) scheme[11] (page 5 of Encl 2.4 with PP response).
4	Rajashree Sugars & Chemicals Ltd, Theni district	12	29.3.96	July 1994	Low pressure, 43 ATA system. Refer page 1 of Encl 2.5 with PP response [12]

[9] This is arrived based on subtracting the gestation period for co-generation plants of 20 months, from the date of commissioning. The project activity was commissioned in 18 months (March 2001 to August 2002)

[10] http://www.avantgarde-india.com/services/showdetails.php?id=17

[11] http://www.renewingindia.org/newsletters/canecogen/current/Cane-15.pdf

[12] http://www.bee-india.nic.in/sidelinks/EC%20Award/Download/sugar/Rajshree%20Sugars%20and%20Chemicals%20Limited%20Varadaraj%20Nagar.pdf

5	Kothari Sugars & Chemicals Ltd, Kattur, Trichy	12	24.12.96	Apr 1995	67 ATA pressure[13].
6	Thiru Arooran Sugars Ltd, Kotthumangudi – 609 403 A. Chittore, Vellore	18.68	6.5.97	Sep 1995	67 ATA pressure. Implemented under USAID ABC scheme (page 5 of Encl 2.4 with PP response)
7	S.V. Sugar Mills Ltd	6	25.12.97	Apr 1996	Low pressure system. Page 13 of their CDM PDD[14] states they have no prior experience in operating high pressure systems.
8	Subramania Siva Co-operative Mills Ltd	5	19.6.98	Oct 1996	Co-operative sector. Low pressure[15].
9	Thiru Arooran Sugars,Thirumandangudi, Thanjavur District	28.42	13.11.95	Mar 1994	64 ATA pressure. Refer page 9 of their PDD[16].
10	EID Parry India Ltd, Nellikuppam, Cuddalore dist	30	17.5.97	Sep 1995	67 ATA pressure. Implemented under USAID ABC scheme (page 5 of Encl 2.4 with PP response)
11	Sakthi Sugar Mills,Sivagangai Unit	5.5	19.4.02	Aug 2000	33 ATA pressure. Refer S.No.3 of Encl 2.3 with PP response.
12	Arunachalam Sugar Mills Ltd, Seomachipadi – 606 611	19	31.5.02	Sep 2000	ADB funds received. Refer page 7 of ADB report[17]. 67 ATA pressure
13	Bannari Amman Sugars Ltd, Sathyamangalam	20	26.8.02	March 2001	**Project activity**
14	Auro Energy Ltd, Thanjavur district	16	23.12.02	April 2001	Planned later than project activity
15	Supreme Renewable Energy Ltd at Sri Ambika Sugar Mills, Pennadam, Cuddalaore	40	21.3.04	July 2002	Planned later than project activity
16	Sakthi Sugar Mills Pvt. Ltd, Erode	32	15.11.2003	Mar 2002	Planned later than project activity
17	Rajashree Sugars Chemicals Ltd., Munchiambakkam, Villupuram	22	1.6.2005	Oct 2003	Planned later than project activity
18	EID Parry India Ltd., Pudukottai	18	30.3.2006	July 2004	Planned later than project activity

[13] http://www.aee-idea.in/kothari.asp
[14] http://cdm.unfccc.int/UserManagement/FileStorage/3MC84W74L94LSBAQ3UEC82IZ8FHJEY
[15] The first high pressure (67 ATA) system in a co-operative sugar mill was installed during 2003-04 in Maharashtra - http://mnes.nic.in/annualreport/2003_2004_English/ch5_pg8.htm
[16] http://cdm.unfccc.int/UserManagement/FileStorage/FS_808689329
[17] http://www.adb.org/Documents/PCRs/IND/pcr-ind-27068.pdf

19	Kothari sugars and Chemicals Ltd., Ariyalur, Perambalur District	22	31.3.2007	July 2005	Planned later than project activity

It may be noted from Table T2.1 above that there were no plants with 87 ATA high pressure technology operating/planned in the state of Tamil Nadu, during conceptualization of this project activity (in March 2001). The project activity was the first of its kind in the region. Only 6 cogeneration plants were with pressure configuration of above 60 ATA. Three of these plants (S.No. 3, 6 and 10 of Table T2.1 above) were implemented under the USAID-ABC Scheme.
It is clearly established that during the conceptualization of the project activity (in March 2001), the high pressure technology, especially the 87 ATA, was first of its kind in the region. Few of the plants installed with 67 ATA technology were also implemented under special financial scheme of USAID-ABC.

Performance uncertainties:

Following are the critical factors of importance in high pressure cogeneration technology as stated by Avant-Garde Engineers and Consultants Pvt. Ltd. (AG), renowned consultants in the Indian Cogeneration sector.

- Water quality management – silica carryover

At higher operating pressures, maintaining proper feed water quality is of paramount importance. This was checked from the technical paper of Avant-Garde Engineers and Consultants Pvt. Ltd. This paper is attached as Encl 2.8 with PP response. This paper states:-

"This is one area that needs more attention. Extraction steam at low pressures is supplied to the sugar plant for processing. About 90% of the steam supplied to the sugar processing is returned as condensate to the steam generator feed water system, at a temperature of around 95 Deg.C. Generally there could be no contamination of this condensate. Sincere and disciplined efforts should be made to keep this condensate free from contamination. We are not recommending the usage of the vapor condensate for the feed water application as the quality of this condensate varies. Generally the pH is low, the TDS and silica are high and there could be traces of ammonia and organic compounds. We could use this with a lot of monitoring, but the repercussions could be serious if the monitoring system malfunctions or fails. This aspect of water management needs some more study and a lot more of discipline."

Lack of spares and servicing network:

The high pressure technology being in its nascent stages and 87 ATA system being the first of its kind in the region, PP was particularly concerned with the availability of suitable spare parts and experienced servicing manpower. Avant-Garde Engineers and Consultants Pvt. Ltd technical paper states as follows (pages 2-3 of Encl 2.9 with PP response):
"The major issues in adopting higher pressure cycles are the selection / availability of proven high capacity boilers and fuel handling / firing system. The availability of servicing facility and spares for imported high capacity turbo generators could also be a specific problem."
"However there is a specific problem with regard to the servicing and spares availability. There are a number of suppliers who can supply the machines, but other than One or Two, there is none that has set up an adequately staffed service network and stocks adequate spares. This could pose major problems, specifically after the warranty periods. Most of the suppliers, import the turbine steam path components, generators, AVRs and a few auxiliary equipment, and in such cases spares and servicing could pose serious problems."

3. *The common practice analysis should make reference to similar plants operated by the company and to plants which were planned or in construction at the time of the investment decision.*

SGS Reply: BASL was operating a 67 ATA cogeneration system at its sugar plant at Nanjangud, Karnataka state and BASL was operating a 32 ATA cogeneration system at its sugar plant at Satyamanglam, Tamil Nadu (existing system at project site).
Similar plants include those cogeneration plants that are of similar technical configuration (pressure and temperature) and those which operate in a similar policy/regulatory framework (like power purchase tariff).The other plants which were planned or in construction at the time of investment were checked from the documents published by Tamil Nadu Energy Development Agency (TEDA) attached with this response as Annex 3. The other plants are also mentioned in table 2.1 in response to query 2 above. There were only 3 plants of 67 ata pressure operated before 2001 Implemented under USAID ABC scheme (page 5 of Encl 2.4 with PP response).

4. *The PDD indicates that the project applies scenario 14, the validation report indicates scenario 16. This should be clarified.*

SGS Reply: This was a typo in the report and the scenario used is scenario 14 of ACM0006 version 4 as mentioned in CAR14 of the validation report on Page 8. The validation report has been revised and attached with this response as Annex 4.

5. *It should be further clarified that the existing cogeneration plant would have operated throughout the proposed crediting period and that the cane crushing capacity of the sugar mill has not been increased.*

SGS Reply: The existing cogeneration plants would have operated throughout the proposed crediting period was judged on the basis of the remaining lifetime of the existing Turbo generators and boilers. The existing cogeneration plant was inspected by Chartered Engineer to assess its remaining useful lifetime. As per the remaining life certificates (Encl 5.a attached with PP response) issued by the Chartered Engineer, the remaining lifetimes of the existing boilers and TGs are as given below. This was checked during the validation site visit.

Boiler Registration No.	Rated Pressure and Temperature	Rated Steam Output (Tonnes per Hour - TPH)	Remaining life as on 20.01.2003	End of lifetime
T 4972	32 kg/cm2, 380 deg.C	30 TPH	15 – 17 years	Year 2019
T 6001	32 kg/cm2, 380 deg.C	40 TPH	18 – 20 years	Year 2022

Remaining lifetime of TGs:
The TGs normally have a useful lifetime of around 20-25 years (i.e., 160,000 hours – 200,000 hours). The remaining life of the existing (baseline) low pressure TGs was assessed by a third party Engineering agency experienced in the erection and servicing of TGs. The life of the existing TGs was estimated to be around 100,000 hours from the year 2006. The life assessment certificate (Encl 5.b attached with PP response) was checked during Validation site visit. Based on 250 days operation per year, the remaining lifetime in years may be assessed as follows:
Remaining lifetime in years = 100,000 hours / (250 days X 24 hours) = 16-17 years (i.e., 2022)

Since the end of lifetime of the 30 TPH boiler (2019) is earlier than that of the TGs (2022), the same is being adopted as the end of lifetime of the existing cogeneration plant (2019). The end of lifetime of the existing plant (2019) is not within the proposed crediting period (2018) and therefore complies with the requirement of ACM0006 version 4 and baseline scenario 14. This was concluded that the existing cogeneration systems had sufficient lifetime to continue operating throughout the crediting period (2008 – 2018).

The cane crushing capacity is not increased due to project activity. The cane crushing capacity was a planned increased from 2500 TCD to 4000 TCD and the power plant in the baseline was having the capacity to run the 4000 TCD plant as well. This was checked from the energy requirement to run the 4000 TCD plant.

Parameter	**Unit**	**Value**	**Remarks**
Crushing capacity	TCD TPH	4000 166.67	
Specific power consumption of sugar plant	kWh/Tonne	25	
Power required for 4000 TCD	MW	4.17	25*166.67 = 4166 kW
Specific steam consumption of sugar plant	% on cane	42	
Steam required for 4000 TCD	TPH	70	42%*166.67 TPH = 70 TPH
Capacity of existing system			
Rated power capacity	MW	4.5	Sufficient
Rated steam capacity	TPH	70	Sufficient

It may be noted that the increase in the sugar crushing capacity to 4000 TCD is a business as usual scenario. The increase in crushing capacity would have happened even in the absence of the project activity as the decision to increase the TCD capacity was taken in late 1999 and early 2000. This was checked while interviewing the management personnel during the site visit. As described in the energy balance above, PP would have operated the 4000 TCD sugar plant with the existing cogeneration system. The project activity is purely to improve the efficiency of bagasse utilization and has not influenced by the crushing capacity increase. There has been no increase in crushing capacity as checked during the site visit. The crushing capacity license for the years 2003-04 and 2006-07 indicate 4000 TCD only. Refer Encl 5.c attached with PP response. The crushing capacity licenses were also checked during the site visit.

We apologize if the initial validation report has been unclear and hope that this letter and the attached information address the concerns of the members of the Board.

Pankaj Mohan (0091 9871794671) will be the contact person for the review process and is available to address questions from the Board during the consideration of the review in case the Executive Board wishes.

Yours sincerely

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Annex 1 a Revised PDD
b Extracts from DPR
c Seminar Invitation and delegate pass
d Consultant work order copy
e DOE Receipt of work order
f HCA received on 11th May 2004

Annex 2 MNES document
Annex 3 Similar plants planned or installed by TEDA
Annex 4 Validation report