Ref : SML/VT/2007-08
Date : 01 August 2008

To
Project Registration Team Member
UNFCC

Sub. : **Request for Review Project No. 1708 – "SML WHRB CPP"**

Dear Sir

We are pleased to submit hereby reply for the review points for your kind consideration.

Thanking you & With regards

Mahesh Agrawal

Point No.1
Further clarification is required how the DOE has validated the benchmark, in particular, the IRR of a coal based captive power plant, while the project has the provision of exporting surplus electricity to the regional grid.

Reply:
For the determination of the additionality, We have not applied the benchmark analysis (sub-step-2b-Option-III of Tool for the demonstration and assessment of additionality, Ver-04, EB-36-please refer to PDD Page No.19 and 20) .

But have applied Investment comparison analysis (Sub-step 2c – calculation and comparison of financial indicators; only applicable to option II and III of Tools of demonstration and assessment of additionality, please refer to page No.18 and 19 of the PDD). The additionality of the Project is based on sub-step-2c, (Page No.20 of the PDD) as per which levelized cost of Power from WHRB without CDM support was found at Rs.1.69 /kWh and Coal based captive power plant was found at Rs.1.42/kWh. Hence the additionality of project is established due to the higher levelized cost of Power from WHRB without CDM support in comparison to coal based captive power plant.

In addition to the above, comparative cost of project (per MW capacity basis) for WHRB was found to be higher than that of coal based captive power plant.

Hence with the application of these two logics the project additionality is established, in which bench mark analysis has not been used.

The IRR was calculated for the sake of establishing to what extent IRR gets improved with the help of CDM support in project activity in comparison to the IRR without CDM support and the same has been given at Appendix-IV. For the sake of calculating the IRR, the value of entire power generation had been considered (assumed) at the best rate at which grid was purchasing power from other independent power producer

The comparative IRR between both the scenarios (WHRB power without CDM support, viz a viz Coal based captive power plant) was actually not required to be calculated as per the methodology however, while working out the levelized cost of power from the project and baseline scenario, the IRR was calculated for the above purpose, assuming that in case the generated power was only exported to the grid then what would have been the best rate at which it could have been sold. Hence by assuming the best power tariff being paid by the grid (to a power exporting unit), a comparative IRR between both the

scenarios (WHRB power without CDM support, viz a viz Coal based captive power plant) was also got worked out; IRR was found to be 7.67% in case of Project Activity (without CDM support) and 19.39% in case of Coal based captive power plant.

The IRR of a coal based captive power plant as well as for the WHRB Power Plant was validated based on the levelized cost of power generation and by considering the value of generated power as equivalent to the rate at which it would have otherwise been possible to sale by exporting to the grid. (The power tariff considered for calculation of IRR was most appropriate, as the best possible rate at which the power was sold during that period to the grid was considered. We had provided the evidence about this from the tariff petition order of OSERC http://www.orierc.org/new1/Orders/2006/GRIDCOORDER2007-08_55.pdf).

In absence of the project activity the proposed coal based power plant would have been set up in baseline as captive only thus for calculation of IRR the value of the entire power generated (i.e. irrespective of the captive consumption or export to the Grid) was considered as return at the rate of the Best Power Tariff paid by the Grid to any PP. Although the same power tariff would not be applicable to the WHRB power due to poor load factor (lower tariff will be paid to poor load factor), however the same rate was applied for this scenario also.

Hence the method adopted to calculate IRR is correct, which is done to arrive at comparative IRR between two scenarios.

Point-2
Further clarification is required how the plant load factor and the discount factor (7.67%, 17.6%) in appendix IV has been validated.

Reply:
P.L.F.= Plant load factor is average capacity utilization (http://en.wikipedia.org/wiki/Plant_Load_Factor) of the power plant. Plant load factor is calculated as percentage of power generation during a year in proportion to the highest possible designed power generation capacity during the year, for example in any project highest possible power generation can be for 365 days 24 hours and multiplied by installed capacity in MW. As against this if the power is produced in lower quantum; then this is divided by highest annual quantum to arrive at PLF.

In case of WHRB power generation based on flue gases of DRI kiln, it is totally based on Sponge Iron Plant's capacity utilization. In case of sponge iron plant based waste heat recovery boiler power plant, the capacity utilization of the sponge iron plant is the biggest single factor to limit the capacity utilization of WHRB power plant, since the capacity utilization of sponge iron plant itself reveals the production level at about 65% hence as a conservative approach it was considered 66% PLF for WHRB. On going through the Sponge Iron Production based power generation from waste heat and issuance granted by UNFCCC for various WHRB based power plants (a list enclosed as Annex-I) we have found that average PLF is found at 50- to 60% maximum. Hence as a conservative approach we have applied PLF 66% which is appropriately assumed PLF for our WHRB power plant.

Whereas the coal based AFBC captive power plant has no influence of sponge iron plant operation, or not influenced by any other technological and financial etc. barriers, having full freedom of operation, therefore the coal based AFBC can comfortably be operated up to 100% PLF, or even higher PLF.

Hence the PLF was validated based on these concepts, facts, documents and records. A third party data was also made available to the DOE about this. There are many evidences which reveal that the Coal based captive or thermal power plant can be operated at this level or better level.

Discount factor= The IRR of any project automatically gets calculated through the software used to calculate the cost of generation and profitability estimates. Since the baseline Power Plant or Project Activity being a captive power plant, would not be fetching any direct revenue by sale of power, therefore the value of entire generated power was considered as equivalent to the grid power export tariff. Hence to have a fair and conservative comparison between both the scenarios, the highest Power Tariff paid by the

Grid to any IPP was considered. Whereas the fact is that; in case WHRB generated power is proposed to be exported to the Grid; then due to Low P.L.F; the Grid would not be paying so high tariff as considered for the financial calculation for power generated due to the project activity.

The discount factor appearing in appendix-IV gets automatically calculated by the standard software formulae which determines the rate of discount (i.e. IRR) at which the internal returns would become zero within a given period of time. In this case the internal returns during 15 years become zero when discounted @ 7.67% for the scenario without CDM support, the discount rate appearing as 17.67% is an additional software display which calculates the discounted value of return at +10 percentage point higher discount rate than the determined discount rate, for the sake of cross verification only, it has got no significance, therefore has not been used also.

The cost of generation are calculated based on parameters used for calculating the levelized cost of generation and return is calculated as explained above (assuming that the value of the generated power is equal to the best available power tariff which is paid by the grid for the generated power).

Appendix-IV is mainly provided to demonstrate the comparative IRR (http://www.solutionmatrix.com/internal-rate-of-return.html) arrived between Project Activity scenario with CDM and without CDM. On calculating the IRR based on Net Cash Flow by using formulae it was found 7.67% for Project Activity without CDM and 16.39% for Project Activity with CDM support. The same spreadsheet and same formulae has been used in appendix-IV to calculate IRR to establish that CDM support helps to overcome the financial barrier. It demonstrates that how the likely CDM support will alleviate the financial unattractiveness of the project activity.

A C.A. Certificate is already provided to DOE, and on the basis of which DOE has validated the comparative cost analysis.

In short the PLF is established (a) by the actual sponge iron production historical data for WHRB power plant, & practical operational experience; (b) for AFBC power plant, practical operational experience because this option is not having any barrier as well as based on the third party evidence. IRR discount factor gets automatically calculated from the estimates of cost of generation & assumed value of power.

The calculation of IRR is done only for the sake of making comparison between both the scenarios and the impact of the CDM support.

Point-3
The DOE is requested to provide explanation for the delay in submitting the project for validation to show that CDM revenues were considered essential in the decision to invest in the project activity.
The response should provide a detailed timeline of project implementation with relevant, preferably third-party evidences.

Reply:
Kindly note that as per the paragraphs 43 to 52 of CDM modalities and procedures; we are not able to find any fixed (prescribed) procedure for providing the evidence of CDM consideration and also we are not able to find any stipulation of time limit within which the Project Activity has to be submitted for the Registration.

Therefore the decision to implement the project was taken as per the usual decision taken and recorded by the company. As such the company has provided the evidence of the same to the DOE.

Similarly the procedural formalities to register the project with CDM were also taken up as per the usual formalities normally taken up by the company to seek the routine clearances and sanctions from the local, state & national government offices. We were not aware of any deadline limitation of timing to file the PDD for registration. Therefore we had not made any hurry in submission of the PDD, as we were also waiting for various clearances as well as were busy in implementation of the Project. It was not possible to get the HCA in absence of these clearances. Since our project implementation was going on in phases and

last phase was completed by 15/08/2007, hence, there is actually no delay with respect to the date of completion of the project, and submission of the PDD for registration. We have also provided the chronological order of various sanctions & clearances which were issued late.

A. SERIOUS CDM CONSIDERATION:;

It may also be appreciated that it was emphasized in EB-38 (12 to 14 March 2008,Para-59) "…provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity"

The above requirement was emphasized in March 2008, whereas the decision to implement the project activity was taken much earlier than this date and before the date of the approved methodology. Therefore the seriousness of the CDM considerations has to be relied only based on those documents & prevailing circumstances.

The seriousness of the CDM consideration is reflected with this fact that even though;

(a) the whole process to set up a waste heat recovery power plant was completely new and first time in India with so many numbers of small kilns, with very little experience, amongst the experts available in the field and with a number of technology barriers.
(b) the project was financially not attractive.
(c) we had before us, much better financial returns options available to invest (such as expansion of steel & sponge, coal based captive power plant only) than the project activity, but we went ahead with the implementation of the project activity only due to considered returns from CDM support. Hence the comparative IRR was also calculated for this purpose, which shows no financial attraction in the project activity without CDM support as compared to Coal based power plant, the effect of likely CDM benefits as given in Appendix IV help to improve the attraction.
(d) as per requirement we have provided the evidence for serious consideration at the time of validation. Because the decision to implement the project with CDM support was taken in 2002, at that time and till now no particular format of application or procedure are defined by CDM-EB for CDM consideration, hence the company has followed the normal, usual and common corporate practice of taking into records of any important decision taken by the company as board resolution, and CDM consideration are taken in to serious consideration in Board Meeting (copy of which is already webhosted with PDD) basis on which the validator had validated the serious consideration of CDM revenue. The company had approached for amendment in NOC, to the village administrative head (The Sarpanch)on 11/07/2002, informing the company's decision to implement the project by seeking CDM support. The Sarpanch on 18/07/2002 had mentioned that for amendment in NOC for CDM support, we should contact state/central government. The company had also informed IPICOL on 12/07/2002 about its decision to implement the project activity with CDM support, for this requested them for giving guidance to complete the formalities to avail the CDM registration (Copy of the letters is enclosed as Annexure II)
(e) this may also be noted that the Sponge Iron Kiln started production on 16.12.1998 which was operated on grid based power, waste heat contained in the flue gas was released to the atmosphere. This also establishes that had there been any attraction to put up the WHRB power plant without CDM support, then the same would have been implemented between 1998 & 2003 itself.
(f) even today there are number of sponge iron projects of 100 TPD and 50 TPD Kilns, who have not been able to either seek registration from UNFCCC-EB, or have not made any attempt to seek registration with UNFCCC are reluctant to setup WHRB power plant. The prevailing facts of the field are considered as prevailing practice which give enough support that CDM was considered as essential in the decision to invest in the project activity.
(g) in addition to this CDM additionality procedure do also indirectly cross check whether said CDM project is implemented without CDM support requirement or with CDM support requirement.

As being an Industrial unit Technical feasibility & economic attractiveness are the first priority of investing on any project. The proposed project activity was full of technological barriers & uncertainties as well as being financial not attractive; thus WHRB project activity was not in our priority of the projects in decision

making context. Because at that time the company had enough investment opportunity already available before it to invest in more & more sponge iron making, steel making opportunities which had been giving much better & higher returns than generating power. However only on evaluating likely CDM support company had decided to go for putting up Project Activity with seriously considering the CDM benefits.

We had decided to go for this CDM project activity on 10/07/2002, as per available information project was first of its kind in Orissa region, SML is first company in Orissa who had established WHRB power with 100 TPD, and 50 TPD Kiln. Because of which we have to put our extra effort to setup this project activity, and also it involved lot of technological and engineering works. There was uncertainty about success of process. After investing lot of time, our first set of WHRB boilers project got materialized on 19/08/2004 and the last one got completed on 15/08/2007 whose commercial generation started on 21/09/2007 only. The validation process was already started before the completion of the last boiler.

B. **REASONS FOR DELAY**

Since it was not possible to get the PDD prepared before the approval of methodology therefore the delays caused up to end of July 2005 was not in our hands. Simultaneous to this we were in process of seeking number of clearances for ongoing implementation of sponge iron, power and steel making facilities as well as arranging for required finances, procurement of capital equipments, implementation, execution, commissioning etc. We were also delayed for wont of a suitable consultancy company to prepare the documents for CDM, after the first appointed consultant regretted to prepare the documents.

Chronological History for Project

1	CDM Consideration	10/07/2002
2	CDM Consultant appointment (SRB & Associates)	15/07/2002
3	Consultant (SRB & Associates) letters pursuing the matter of CDM Registration	15/11/2002 28/03/2003 25/11/2003
4	Permission to Establish (8 MW) received from State Pollution Control Board	03/06/2003
5	Consent to Operate (8 MW) received from State Pollution Control Board	05/04/2005
6	Approval of Methodology for WHRB	08/07/2005
7	Consultant's (SRB & Associates) regret letter expressing his inability to take up CDM Project	30/09/2005
8	Application for Permission to Establish (9.7 MW) to State Pollution Control Board	10/10/2005
9	Search for and Appointment of another consultant (Indus Technical & Financial Consultants Limited)	28/07/2006
10	Permission to Establish (9.7 MW) – received from State Pollution Control Board which was required essentially to obtain HCA	18/11/2006
11	Validator Appointment	22/01/2007
12	Application for Host Country Approval	16/04/2007
13	Webhosting for Validation	24/04/2007 to23/05/2007
14	Environment Permission from Ministry of Environment and Forest	28/06/2007

15	letter from DNA for submission of documents to establish serious CDM consideration, statutory clearances etc.	14/08/2007
16	Reply to DNA along with documents	17/08/2007
17	Commissioning of 9.7 MW Power plant	21/09/2007
18	Host Country Approval	25/09/2007

All these reasons as explained above and in the reply to the validator are some of the reasons which had caused delay. The delay caused beyond the control of the management should not be viewed as that the revenue from CDM were not considered. As already provided in PDD at page no. 73 (Appendix IV) the impact of CDM revenue was calculated to assess the extent to which the CDM revenue would help in improving the IRR therefore inspite of several other more financially attractive options, we had decided to go for establishing WHRB power plant.(Copy of all these applications & sanctions are provided to DOE)

This may also be appreciated that most of the projects registered in the past also have taken as much time as being consumed by us. The Credible evidence provided by us towards CDM consideration also are at par or more credible than these registered projects also.

Other similar projects which were delayed for various reasons beyond their control & were considered for registration:

	Name of Com.	**UNFCCC Ref**	**CDM consideration**	**Registration Date**
1	TSIL – Waste Heat Recovery Based Power Project	274	23/05/2000	12/05/2006
2	OSIL - Waste Heat Recovery Based Captive Power Project	515	22/07/2000	15/12/2006
3	Usha Martin Limited - Waste Heat Recovery Based Captive Power Project activity	696	06/05/2002	23/12/2006
4	Waste heat recovery based captive power project at Monnet	394	January 2000	07/10/2006
5	Waste heat based 7 MW Captive Power Project Godawari Power and Ispat Ltd (GPIL)	264	July 2002	16/04/2006
6	Energy efficiency through steam optimisation projects at RIL, Hazira,	261	01/11/2002	17/04/2006

It is evident with the above that the projects may get delayed for various reasons beyond the control of the project proponents, hence it is requested to pardon such delays.

C. COMPLIANCES OF MODALITIES & PROCEDURES:-

On going through various Modalities & Procedures we find the following as complied by us:

Paragraph 48 (a) of CDM modalities and producers allows to choose a baseline out of existing actual or historical.

Para 48(a) in the case of Project Activity the Sponge Iron Kiln started production on 16.12.1998 which was operated on grid based power, this establishes that before the start of project activity existing actual emission were due to use of grid power in baseline and emission of waste heat contained in the flue gas was released to the atmosphere. This also establishes that had there been any attraction to put up the WHRB power plant without CDM support, then the same would have been implemented between 1998 & 2003 itself.

However para 48(b) allows to consider emission from a technology that represents an economical attractive course of action. Since we had found coal based captive power plant as economically more attractive hence this was considered as one of the baseline option.

Even as per 48(c) no project activity similar to the Project Activity was carried out in similar social, economic, environmental and technological circumstances in the previous 5 years.

The financial calculation submitted by us with the PDD provide substantial evidence that the project activity is financially not attractive as compared to coal based captive power plant. The CDM modalities and procedures in accordance with paragraph 43 to 52 do not provide any specific method for consideration of CDM revenue as essential in the decision making context. The modalities and procedures as laid down between paragraph 43 to 52 completely rely on the strength of additionality and an intention of the activity which has been willfully decided to be implemented as a CDM project activity. Therefore the evidence submitted by us in the PDD regarding various technology barriers, financial barriers and investment barriers are in itself enough evidence to state that the CDM revenue were the only essential component due to which we had decided to invest in the project activity. The purpose of giving IRR calculation with CDM and without CDM is to provide an evidence that due to support of CDM internal rate of return improved from 7.67% to 16.39%.

We have given enough evidence about various reasons for delay in preparation of PDD and submission of the same to UNFCCC for registration. The delay should not be construed that the project activity have faced no barrier.

The IRR comparison given in appendix-IV reveal that even if the entire power generated by project activity would have been exported to the grid even then only 7.67% IRR would have been achieved, whereas the fact is that grid was not ready to give so good price for export of power to the grid, therefore on considering the actual tariff which would have been paid by the grid for the possible PLF then the IRR would have been even less.

The company has main activity to produce sponge iron and steel and during the period when the company has installed WHRB power plant, the company would have invested more on sponge iron making and steel making where the profit were much more high than making investment in Waste heat recovery power system. We have already explained the number of formalities and clearances which are required to be taken for a project and the remote location of the project. All these factors have attributed to delays in submission, such delays do not change the ground truth and field situation in which it is well established that generated power from waste heat of sponge iron plants faces number of technology barriers and financial barriers.

Subsequently when we came to know about Carbon Credit support then we had decided to set up the WHRB power plant with CDM support.

Point:4
Further clarification is required on the baseline alternative considered, as the PDD and the validation report do not refer to the same baseline alternative.

Reply:
Please refer to Page No. 12 to 14 in which baseline alternative were determined as below:

1. Import of electricity from grid / continuation of current situation.
2. Generation of captive power through coal based captive power plant.

The number of barriers faced by the project activity are well explained in the PDD and hence the project activity was not found as plausible alternative. Out of the above baseline alternatives the most attractive option was coal based captive power plant however as per the conservative approach insisted by the DOE, we have decided to treat grid as baseline for the sake of CER calculations.

As per "combined tools of determination of baseline and additionality", we have to chose the scenario, which have less emission as a conservative approach (i.e. Eastern Region Grid was considered as baseline).

Please refer PDD page No. 16 under heading "Description of identified baseline scenario" the Eastern Regional Grid was selected as identified as baseline scenario.

Please also refer Validation Report to Page No.7 under heading "3.2 Baseline selection and Additionality" it is clearly mentioned that "power import from the grid was selected as the most suitable and conservative baseline scenario for the project activity".