Reply for Request for Review for SHYAM DRI WHR CPP - Ref No. 00001642

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<tr><td>1</td><td>Further clarification is required on how the DOE has validated the appropriateness of the input values used in the calculation of the cost of electricity production from 32 MW coal based power plant, to compare with 17 MW project activity.</td><td>
In a general approach the comparison between the cost of power generation from WHRB is made with large capacity coal based power plants of the grid. On making such comparison it is found that the power generation cost of coal based power plants of grid are normally between 0.90 Rs./kWh to 1.27 Rs./ kWh (Annex-1) . In such comparison also while calculating the cost of power generation through WHRB the entire cost of man power facilities, required backup power etc. are taken in to account due to which the WHRB power generation cost is found at much higher level, whereas while calculating the cost of power from WHRB for the sake of the comparison we have apportioned the man power cost and cost of administrative expenses etc. on prorata basis from the total CPP cost. Therefore as a conservative approach we have adopted to compare the cost of power generation from 15 MW WHRB power plant with the 25 MW coal based captive power plant (and not from the grid based power plants), which would have been implemented in absence of the project activity as a single unit, hence the comparison made by us is more conservative.

Kindly note that in absence of the project activity we would have generated the entire amount of 25 MW power from one single coal based thermal power plant whereas in order to implement the CDM project we were required to set up 2 numbers of WHRB boilers and 1 number of coal based AFBC boilers.

The input values considered for comparison of levelized cost of electricity production are provided at validation report page No. 14 para- II at point number 16 to para-1. The further clarification in the matter is given herewith:

Input Values:
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<tr><th>S.No.</th><th></th><th>Considered value</th><th>Basis</th></tr>
<tr><td>1.</td><td>PLF</td><td>66% for WHRB</td><td>Based on actual production performance of the Sponge Iron Plant during the previous years and experience of similar capacity of plants which was documentarily verified.</td></tr>
<tr><td>2</td><td>Capacity</td><td>15 MW WHRB</td><td>As per actual plan and installation.</td></tr>
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			3	Capacity of Coal based power plant	25 MW Coal based AFBC	Considered that in absence of the project activity the total installed 25 MW power would have been generated by the coal based AFBC. Total installed capacity of Power plant of 25 MW out of which 15 MW will be generated from WHRB have balance 10 MW has been considered as coal based power plant.	
			4	Working days	350 days	Based on standard industrial practice.	
			5	Auxiliary consumption	10 %	As per CEA norms. Whereas in actual case of WHRB power generation the auxiliary consumption is found more than coal based power plant because of frequent shut downs and fluctuations in power generation and due to low PLF. However as a conservative estimate this was considered as 10% even for WHRB power for the sake of financial comparison.	
			6	Manpower cost for WHRB	As per project estimate.	The number of manpower was distributed according to the number of equipments i.e. 2 WHRB boilers, 1 AFBC boilers and 1 Turbines and salaries were calculated as per prevailing rates.	
			7	Depreciation	As per project estimate.	Based on the Indian Companies Act, 1956	
			8	Interest Rate	As per project estimate.	Based on the actual bank loan.	
			9	Backup power assurance cost	7.5 MVA @ 0.2 Million Rs. /MVA /Month	Since the WHRB power fluctuation is well known therefore in order to draw the power from grid at any moment of time, it is essential to keep an assurance of drawing power from the grid. Towards this, the cost	

				is required to be paid to the grid as "minimum demand charges". This cost does not include any power which may be consumed at the time of need, extra payment will have to be made according to the consumption.
10	Repairs and Maintenance cost	3%	Whereas the CERC guidelines provide up to 4% and the repair and maintenance cost for WHRB is in actual conditions even more than this. However as per the conservative approach same rate was considered for both the scenarios.
11	Raw material cost	a) Coal- Rs.800 / Ton b) Middling Rs.300/ton c) Char/Dolocohar Rs.50/Ton	The coal prices are considered as per the actual government notified rates, middling (waste product of coal washery division) are available at even much lower rates and char/dolochar is available free of cost to the plant being generated as waste product from sponge iron process.

Appropriateness of input values for cost of project are established with the following

a) Cost of the project based on the certified cost by third party power plant manufacturer and also compared the cost from the cost of the project mentioned at several web references of Registered Project Activities and it was found that the company had adopted a conservative approach towards this.

b) Cost of fuel for WHRB was considered "Nil". Cost of fuel for coal based captive power was based on the actual prices supported with the third party quotes.

c) We had also provided an evidence of coal based power generation in the similar region generated by independent power plants which were found to be much less than the cost of generation calculated by us for our 25 MW coal based thermal power plant.

		A qualified chartered accountant had validated this data as a financial expert of the team. The above clarification establish that the input values used in the calculations of the levelized cost of electricity production from 25 MW coal based power plant (i.e. baseline scenario) to compare with 15 MW project activity are most appropriate. We would also like to submit that as per the baseline analysis in PDD the coal based power plant was found as the only plausible option, hence was baseline and additional. However in order to further substantiate the additionality the financial analysis was carried out.
2	Further clarification is required on how the DOE has validated the technological barriers, in particular it should be clarified which credible third party evidence has been assessed to determine the prohibitive nature of the barriers.	Since it is not possible to pool Flue gases/waste heat from flue gases emitting from 2 different sponge iron kilns to generate WHRB power through a single boiler, hence in order to utilize waste heat to generate steam from waste heat recovery boilers we have to invest on 3 different boilers and in place of 1 coal based AFBC boiler we had to install 2 AFBC boilers and in place of 1 single turbine we have to install 3 numbers of turbines. This required creating additional infrastructures, like land space, buildings, steam pipelines, additional balancing & auxiliary equipments etc at additional cost. These are the primary & most important evidence of the technology barriers faced by us which does not require any third party evidence. Due to all these reasons the total number of man power requirement also went up several times, whereas the availability of manpower was already in crisis (As also reported in JPC report please refer to PDD Page No. 26 to 27). The additional requirement of certified and qualified manpower (boiler operators) from one to three was also one of the barriers. It also resulted in to huge additional cost of operation The company's technical team of engineers explained the complete process of sponge iron production and its related criticalities and simultaneously also explained the criticalities of operating WHRB power plant with Sponge Iron Kiln. A number of technological issues were explained in sum and summary of which it was found that there are definitely large variation in operating conditions of sponge iron which would definitely influence the operation of WHRB. The previous years capacity utilization of sponge iron plant was also narrated as an evidence to what extent the WHRB power plant can perform during April-07 to December-07 the unit achieved less than 60% capacity utilization in sponge iron production due to a number of operational and technological barriers. The variations in raw material quality i.e. iron ore quality and coal quality, were evidenced through actual analysis report of the past. The impact of change in sponge iron kiln conditions influence on the WHRB was explained as well as the influence of WHRB on sponge iron plant operation was explained. The installation of WHRB power plant in series to

		sponge iron plant may adversely influence the production of sponge iron during stoppage of WHRB or during the malfunction of WHRB. It was also explained that the freedom to operate sponge iron plant independently or captive power plant independently has to be sacrificed for installation of WHRB. A copy of article written by one of the most known metallurgist Mr. A.N.Jha (Annex-2) having more than 20 years experience in the field was produced to substantiate the claim. Also a letter circulated by one of the reputed supplier of sponge iron kilns was produced (Annex-3). Extract of JPC report was made available in PDD Page No.26 to 27. The scarcity of experience and qualified manpower was explained. The WHR boiler are also subject to Nitrous stress and frequent failures, as evidence in an article annexed as Annex-4 In addition to the above the third party evidence about the WHRB with Sponge Iron Kiln process are as follows: a. Validation Report of the registered project. Even the CDM EB has accepted such technological barriers while registering various WHRB based power projects such as **1469 : Recycled Energy Electricity Generation Project by AMLSPL (http://cdm.unfccc.int/Projects/DB/TUEV-SUED1197477081.7/view)** The technological apprehensions expressed in the letters submitted by the various plant suppliers are also valid for the proposed project activity as this project is also established on the same technology, within the same time frame, within the same geographical region. (http://cdm.unfccc.int/UserManagement/FileStorage/I3J0OMT67MB2WEJ2JW212H64YTXY8L) **&** Kohinoor Steel (http://cdm.unfccc.int/Projects/DB/SGS-UKL1187362013.9/view) b. Discussion with the independent power plant consultants dealing with WHRB (enclosed Annex-5- letter from Engg. Consultant namely "Popuri Engineering & Consultancy Services, A copy of letter received from the Sponge iron plant manufacturer M/S Hari Machinery also is enclosed as Annexure-6,) which states the technology barriers faced by WHRB with sponge iron plant.

		All other technological barriers that are given in the PDD are well verified with the relevant documentation. Due to these technology barriers we would have not installed the WHRB power if we had any doubt in our mind that CDM support would not be available. All this submissions are enough evidence to establish the prohibitive nature of technology barriers.
3	Given the time gap between the decision to invest in the project activity and the commencement of validation the DOE should state with what level of assurance it considers that this project activity would not have been implemented without the CDM.	We have already established in the PDD that the only option to meet the power requirement of the project was by setting up a captive power plant because the grid was already facing power crisis. Further to this it has been well explained that the WHRB based power plant faces number of technology barrier as well as not a financially attractive option, hence it would have not been implemented in absence of the CDM support. Therefore as a prevailing practice establishment of coal based captive power plant was only option, implementation of which was therefore planned and executed by us to meet our captive power requirement. It is true that some delay has occurred between the date of decision to invest in WHRB and to get the project registered from CDM-EB. However in light of the barriers faced in implementation of the project activity this delay can not be construed that the project activity was implemented even in absence of likely CDM support. The reasons for delay are explained as below. The chronological order for delay is given below: 1) Board resolution dated 15/01/2004 for setting up WHRB Power plant with consideration of CDM support. 2) MOU with State Government dated 09/02/2004

		3) Issuance of LOI for Turbine dated.: 16/09/2004 4) Letter from financial consultant regarding un-viability of Project on dated 15/12/2004 5) Engagement letter from E&Y dated 03/06/2005 signed on 06/06/2005 6) Consent to Establish for Sponge Iron Plant dated 08/11/2005 7) Consent to Establish received for 18 MW Power Plant dated 04/02/2006 8) Pollution Consent on 09/02/2007. 9) Amended Consent to Establish for 17.5 MW on 17/04/2007 10) Consent to Establish for remaining capacity of CPP dated 22/09/2007 11) May-2007 to June 2007- delayed due to appointment of validators, DOE. 12) Validation process is going on since July 2007. It may please be appreciated that in the starting period of the protocol we were not fully aware with the Procedures, Systems and Formalities required to be completed for seeking the support from the CDM-mechanism. It was a general apprehension that the financial support will be available after the implementation of the project activity, hence we had no hurry in the mind. We believed that that CDM support will be available from the date of generation up to 10 years hence we had no hurry to expedite the registration process. Due to the lack of the complete knowledge about process of CDM mechanism we were looking for the suitable consultants. There were initial delays and subsequently appointed E&Y as their consultants on 03/06/2005. Subsequent to that the delay were caused by several "day to day urgencies" of setting up and operating an Industry like Sponge Iron in which every thing was in crisis, such as arrangements of ore, arrangement of coal, compliances with the massive Government formalities with more than 23 department of Government, (as per list enclosed Annex-7) Marketing of material, arrangement of finance, arrangement of manpower, and so many such tough things were required to be managed in a Green Field Industry. Lack of our experience, lack of adequate staff and manpower, location of the project being in remote and backward area, also added to the problem. Thus our prime focus was firstly on to those priority and pressing issues. Therefore the delay in preparation of documents, submission of the same was caused, which is fully justified looking in to the prevailing circumstances. The limited consultancy and professional services available at the district-Sambalpur had no competence

		to undertake the completion of formalities for CDM process. Thus we had ultimately finalized consultant namely E&Y on 03/06/2005, who also had overburden with the activities and responsibility. We were also waiting to seek the permission to establish for the remaining capacity of power generation, which was received on 09/02/2007. Since no satisfactory progress was received from consultants, thus we started looking for and searching for another consultant who could help us to prepare the document and submit it for registration. With number of verbal enquiries we could finally place our order for providing consultancy in the matter to M/s. I.T.F.C. Ltd. on 15/05/2007. Consultants have enquired for validation to DOE's in June 2007. M/s. BVQI had given their offer on 04/07/2007.After deciding the DOE the process is ongoing on for validation since July 2007. We feel that the above delay caused was beyond our control hence may please be pardoned. Based on these factors as well as looking in to common practice in the region and prevailing practice in the region we state with full assurance that the project activity would have not been implemented, if we had any doubt regarding getting the CDM support.
4	Further clarification is required on how the DOE has validated the baseline determination, in particular that the coal based captive power plant is a more economically attractive alternative than the continuation of grid electricity imports.	Since the region is mainly a coal based mining area, wherein setting up a coal based captive power plant is natural choice. Therefore number of project proponents in region as well as surrounding region of Chhattisgarh has been putting up number of coal based captive power plants. A list of coal based captive power plants set up and being setup are enclosed from the official website of Government of India, Ministry of Environment and Forest as Annex-8. The establishment of coal based captive power plant in itself is evidence that the grid based power is less attractive than the grid power. It has been established in the PDD at Page No.13, Point No.2, under economical analysis of alternative, that the grids was having tripping due to poor infrastructure which results in financial losses, and also not economical attractive hence not a plausible option. Hence the available option to us was only to set up a coal based Thermal Power Plant. Since the WHRB power plant had number of barriers explained in the Section B.5, Page No.20 to 22. Therefore it was not possible to set up a WHRB power plant without CDM support. Hence the most attractive option available to us was to implement the coal based captive power plant only. The cost of importing power from the Grid is determined based on the prevailing tariff as per which the cost of grid power was found above Rs.2.90 per kWh (Copy of tariff Annex-9). Whereas the coal based

		captive generation cost was only Rs 1.14 /kWh. Cost of the coal based captive power generation is given at PDD page No. 19 Section- B.5, Substep-2c. Also with the third party evidence showing the cost of power generation through coal based independent power plant is enclosed (Annex-1), which proves that the grid based power supply is economically less attractive than the coal based thermal power plant. Hence as per the methodology it was selected as baseline. However the PP have adopted the most conservative approach while determining the $EFCO_2$ for the baseline coal based captive power plant, by considering the boiler efficiency as 100%.
5	Monitoring plan should include monitoring of the electricity supplied to the grid and electricity imported from the grid.	Since the methodology requires to monitor the Project Boundary where in the project proponent have full control and the emission reduction calculation is based on the power generated due to the project activity, therefore while monitoring the power generation due to the Project Activity, there is no purpose and need for monitoring of power import or export to the Grid. The auxiliary power consumed by the auxiliary facilities supporting the power generation are monitored independently, transparently and reliably, irrespective of the fact that such auxiliary power is supplied by the captive generation or by the Grid (because at such moments when the CPP is not generating power then emergency support, power has to be drawn from the grid or any other backup source). All such power consumed by the "Project Activity auxiliary" is monitored and deducted from the Gross Generation to arrive at the Net Power Generation; to calculate the net Emission Reduction. Hence there is no need to monitor the import and export of power to the Grid. The methodology also does not require to monitor the import or export of power from Grid. Power may be required to be imported within the Project Boundary only to run the auxiliary power in case of no generation from CPP. In every such case also the entire power even consumed from the Grid by auxiliary system are routed only through the auxiliary meters. The downstream facilities which consume the captive power as well as seek the power from the Grid are outside the project boundary. Also since the baseline selected is coal based captive power hence also the monitoring of Grid power import or export is not required. Moreover the monitoring plan has been prepared in accordance to the approved methodology which does not require to monitor any power import and export from or to the Grid. Hence it is felt that this may not be necessary. However it may be noted that at every Grid interface there exists the import and export metered data of power, which is metered and monitored by Grid for billing purposes. Even if these data are included in monitoring plant even then there seems to be no application of the same for any purposes for determining of emission reduction By the project activity.

		Even if it is required to include then we are ready to include the same.