
VALIDATION REPORT

Adhunik Metaliks Limited

**Waste Heat Recovery based
Captive Power Project of Adhunik
Metaliks Limited**

SGS Climate Change Programme

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Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited.				
Organisation:		Client:		
SGS United Kingdom Limited		Adhunik Metaliks Limited		
Publication of PDD for Stakeholders Consultation				
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Summary:				
<p>Adhunik Metaliks Limited has commissioned SGS to perform the validation of the project: Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited.</p> <p>Methodology used: ACM0012</p> <p>Version and Date: Version 2, valid from 2nd November, 2007.</p> <p>The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.</p> <p>The report is based on the findings of document reviews, the stakeholder consultation process and responses from the project participants to the findings raised in this report.</p> <p>The report and the annexed validation describes a total of 19 findings which include:</p> <ul style="list-style-type: none"> • 12 Corrective Action Requests; • 07 New Information Requests; and <p>All findings have been closed out satisfactorily and the project will be recommended to the CDM Executive Board with a request for registration.</p>				
Subject:				
CDM Validation				
Validation Team:				
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Abbreviations

AML	Adhunik Metaliks Limited
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CO ₂	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
DRI	Direct Reduction Iron
EIA	Environment Impact Assessment
GHG	Greenhouse Gas(es)
I	Interview
IPCC	Intergovernmental Panel on Climate Change
ISHC	International Stakeholder Consultation
MWh	Mega Watt hour
MoEF	Ministry of Environment and Forest, Govt. of India
MoU	Memorandum of Understanding
MoV	Means of Verification
MP	Monitoring Plan
MWh	Mega Watt hour
MT	Metric Tonnes
NIR	New Information Request
OPCB	Orissa Pollution Control Board
PDD	Project Design Document
SPM	Suspended Particulate Matter
t	Tonne
UNFCCC	United Nations Framework Convention for Climate Change
WHRB	Waste Heat Recovery Boiler

Table of Content

1. Validation Opinion	5
2. Introduction	6
2.1 Objective.....	6
2.2 Scope.....	6
2.3 GHG Project Description	6
2.4 The Names and Roles of the Validation Team Members	6
3. Methodology	7
3.1 Review of CDM-PDD and Additional Documentation	7
3.2 Use of the Validation Protocol	7
3.3 Findings	7
3.4 Internal Quality Control	8
4. Validation Findings.....	9
4.1 Participation Requirements	9
4.2 Project Design	9
4.3 Baseline Selection and Additionality	10
4.4 Application of Baseline Methodology and Calculation of Emission Factors	19
4.5 Application of Monitoring Methodology and Monitoring Plan	23
4.6 Choice of the Crediting Period.	24
4.7 Environmental Impacts	25
4.8 Local Stakeholder Comments	25
5. Comments by Parties, Stakeholders and NGOs	26
5.1 Description of How and When the PDD was Made Publicly Available	26
5.2 Compilation of all Comments Received	26
5.3 Explanation of How Comments Have Been Taken into Account	26
6. List of Persons Interviewed.....	27
7. Document References	28

Annexes:

A.1 Annex 1: Local Assessment	31
A.2 Annex 2: Validation Protocol	35
A.3 Annex 3: Overview of Findings.....	74
A.4 Annex 4: Team Members Statements of Competency	109

1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Adhunik Metaliks Limited to perform a validation of the project: Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited in India.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM) and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed of the project design documentation, using a risk based approach and conducted follow-up interviews.

By GHG emission reductions through waste gas based power generation at Adhunik Metaliks Limited which involves utilization of waste heat content of the by-product gasses emanating out of the process by installing Waste heat recovery boilers to generate steam and subsequently power, the project activity will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project correctly applies methodology ACM0012 version 2. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 800,650 tCO₂e over a 10 year crediting period, averaging **80,065 tCO₂e** annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project will hence be recommended by SGS for registration with the UNFCCC.

Signed on Behalf of the Validation Body by Authorized Signatory



Signature:

Name: Siddharth Yadav

Date: 15th April 2009

2. Introduction

2.1 Objective

Adhunik Metaliks Limited has commissioned SGS to perform the validation of the project: Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

2.3 GHG Project Description

The project activity is waste heat recovery based captive power generation to meet the partial electrical energy requirement of the Integrated Iron and Steel Plant of Adhunik Metaliks Limited at Rourkella, Orissa, India. The project involves installation of waste heat recovery based boilers to recover and utilize the sensible heat content of the waste gases generated from five DRI kilns installed at the integrated iron and steel plant. The project activity involves the generation of electrical energy through the steam produced by five nos. WHRBs of capacity 10 TPH each for the five DRI kilns operating at 67 kg/cm² and 485°C. The steam generated from all the WHRBs would be fed to two turbines of 17 MW capacities each via common steam header for generation of power. The project activity is expected to generate 10.7 MW of electrical energy utilizing sensible heat content of the waste gas.

The overall power requirement of the Integrated iron and steel plant would be partially met from the project activity. In absence of the project activity the equivalent quantum of power would have been generated from a carbon intensive source most likely a coal based captive power plant. Further in absence of the project activity the DRI Kiln gas would have been released in the atmosphere after cleaning. Thus the project activity results in prevention of wastage of useful energy along with the overall reduction of Green house gas emissions.

2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Ajoy Gupta	Lead Assessor	SGS India Private Limited.
Kaushik Pal	Local Assessor (trainee)	SGS India Private Limited.

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline. Additional information can be required to complete the validation, which may be obtained from public sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. The results of this local assessment are summarized in Annex 1 to this report.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). New Information Request (NIR) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex A.1 to this report

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- mistakes have been made with a direct influence on project results;
- validation protocol requirements have not been met; or
- there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.2). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

4. Validation Findings

4.1 Participation Requirements

The host Party for this project activity is India. India has ratified the Kyoto protocol on 26th Aug 2002. A Letter of Approval from Host Country was not available during initial PDD review, so CAR 1 was raised. A copy of the letter dated 4th August 2008; issued by the Indian DNA (Reference number 4/7/2008-CCC) has been provided by the project proponent which was verified with the original copy. The participation requirements to the Kyoto Protocol and contribution to the sustainable development of the host country are confirmed from the Host Country Approval letter for the current project activity. The project title as mentioned in the HCA letter was found to be in line with the title mentioned under section A1 of the PDD web hosted for global stake holder's comments towards the CDM project activity.

CAR 1 was closed out.

No Annex I Party has been identified in the PDD and the same also has been verified by cross checking the project investment details and the project proponent also submitted the declaration on non-involvement of ODA (dated 10.11.2008) therefore no further Letter of Approval was available. It is observed that the CDM EB has agreed that the registration of a CDM project activity can take place without an Annex I Party being involved at the stage of registration although it should be noted that before CER can be transferred to an Annex I Party, a Letter of Approval will need to be submitted.

NIR 2 was raised for obtaining the Modalities of Communication by the Participants with the CDM-EB and the UNFCCC Secretariat which is a mandatory requirement for submission of the Project activity to the CDM-EB for a request for registration. The Project Participants have provided the MOC for the project activity as per Modalities of Communication Form (version 1) eb45_repan60, which was found to be in line with the information regarding the particulars provided in the Annex 1 of the Project Design Document leading to a closure of the issue.

NIR 2 was closed out.

4.2 Project Design

The Project Design Document (PDD) for the project activity was developed on the CDM PDD template version 3 of the PDD of large scale project activity and designed as per version 7 of the guidelines for completing CDM-PDD and this was checked and found in accordance with the guideline.

The project activity is waste heat recovery based captive power generation to meet the partial requirement of electricity in the Integrated Iron and Steel Plant of Adhunik Metaliks Limited at Rourkela, Orissa in India. The project activity involves the generation of electrical power through the steam produced by five nos. WHRBs of capacity 10 TPH each for the five DRI kilns operating at 67 kg/cm² and 485 °C. The steam generated from all the WHRBs would be fed to two turbines of 17 MW capacities each via common steam header for generation of power. The project activity is expected to generate 10.7 MW of electrical energy utilizing sensible heat content of the waste gas.

The current project facility i.e. Adhunik Metaliks Ltd. was named as Neepaz Metaliks Ltd., however during August 2005, the name of the company was changed to Adhunik Metaliks Ltd., this fact was cross checked through Fresh Certificate of Incorporation Consequent on Change of Name issued by Dy. Registrar of Companies, Govt. of West Bengal (Letter no. NCR/CN/93945/2005, dt. 09/08/2005) and found satisfactory.

The project activity description as mentioned in the PDD sufficiently covers all relevant elements which provide clear understanding of the nature of the proposed CDM project activity. The detail technical description of the project activity as mentioned, was cross checked with reference to the Purchase Orders along with technical specifications of the respective project equipments such as WHRBs, steam turbo generators etc. as provided in the contract documents and letter of intents issued to the project equipment suppliers i.e. Thermal Systems (Hyderabad) and Greensol Power Systems Pvt. Ltd with the collaboration of M/s, Hangzhou Steam Turbine Co. Limited, China (Ref. no. /33/, /34/, /36/) and found consistent. During validation site visit the project components were found in working stage.

The relevant Consents, Approvals and Clearances issued by the statutory bodies such as Orissa State Pollution Control Board (Ref. no. /17/ and /18/), Ministry of Environment and Forests, Govt. of India (Ref. no. /16/), Department of Water Resources, Government of Orissa (Ref. no. /20/), Directorate of Factories and Boilers (Ref. no. /21/, /22/) was checked and verified during the validation site visit and found evident towards ownership, allowance, implementation and operation of the project activity at that project site.

The initial PDD did not mention anything with regard to the possibility of the project technology likely to be substituted by other or more efficient technologies within the project period. Thus NIR 03 was raised to get a clarification in this regard. An Undertaking provided by the proponent signed by the Director, Adhunik Metaliks Limited, dated 10/11/2008 towards no technology substitution through out the entire crediting period was considered acceptable leading to the closure of the NIR 03.

The requirement of an extensive initial training and maintenance efforts in order to work as presumed during the project period, was checked and verified while carrying out the validation site visit by conducting interviews and discussions with the operating personnel at the power plant site and was found to have knowledge, qualification and prior experience in the said field along with a one day training session held at the power plant on the operation and maintenance procedures.

The project funding for the current activity has not involved any ODA utilization. This was discussed with the project participant during validation site visit and the project proponent has submitted a self declaration on no ODA utilization has been involved in the project funding self declaration letter dated 10/11/2008. The project financing pattern and detail debt: equity ratio of the project investment was cross checked with reference to the self declaration provided on behalf of Adhunik Metaliks Ltd., signed by the Director of the company (Ref. No. /14/) and no ODA/public funding involvement (Ref. No. /13/). Furthermore the entire debt involvement for the project activity was cross checked through the loan agreement signed between the project proponent and financial institutions (Ref. No. /15/). No public funding or ODA utilisation in current project financing was identified. Thus it is evident that there has been no ODA utilisation or public funding from Annex I country is involved during project registration phase.

4.3 Baseline Selection and Additionality

The project activity has been designed on the basis of the approved baseline and monitoring methodology ACM0012: "Consolidated baseline methodology for GHG emission reductions for waste gas or heat or pressure based energy system" version 02. Section B.1 of the PDD, provides the complete reference and currently valid version number of the approved methodology as applicable – ACM0012, version 2, valid from 2nd November 2007.

The baseline methodology as selected for the project activity (ACM0012 version 2) is deemed most applicable for the project activity, as the project activity involves utilization of the heat content of the waste gas generated from Direct Reduced Iron (DRI) kilns as an energy source for generation of electricity. The baseline selection for the current project activity has been carried out, following the guideline laid by Step 1, Step 2 and Step 3 for the identification of the baseline scenario of ACM0012 version 02. According to the step 1 the selection procedure of most plausible baseline scenario is that which is closely related to all of the options stated in the methodology and the project proponent has chosen options i.e. W2/P4 and W2/P6. Selection baseline alternative for waste gas (W2) and power baseline (P4/ P6) has been cross checked and found appropriate for the proposed CDM project activity. Through the selection procedure of step 2, the project proponent has adopted alternative 1 from the above mentioned two alternatives i.e. W2/P4 which states the project proponent would set up a coal based captive power plant to generate electrical energy equivalent to that generated in the project activity. Step 3 clearly shows that the elimination of non feasible options from the selected most plausible baseline scenario with the levelized cost of power generation calculation.

The applicability criteria of ACM0012 version 2 with the project activity has been described under Section B.2 of the PDD, however the justification towards the applicability criteria – *"The waste gas/pressure utilized in the project activity was flared or released into the atmosphere in the absence of the project activity at existing facility."* as mentioned under ACM0012 ver02 was not transparently justified in the initial PDD, as the commercial production had already begun at the time when the project activity was submitted for validation.

CAR 4 was raised to seek the clarification on the aforementioned issue with proper documentary evidences as stated in the methodology.

In response to CAR 4 the project proponent has provided information that the power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited during construction phase and prior to implementation of the current project activity was met by sourcing power either from the grid or by generating power in diesel generator (DG) set. The power requirement of the facility was verified with the Power Requirement calculation provided by Letter issued by M/s, Avant-Garde Engineers and Consultants (P) Limited (ref. no. 24117/NML/00A dated 14th August 2004) and the power balance was cross checked with reference to the monthly energy bills for the said period (Ref. no. /46/), commissioning certificate of DRI Kilns and TG sets (Ref. no. /25/, /27/) along with the audited Annual Report 2005 – 2006 of AML (Ref. no. /23/). It was found that the implementation of the integrated iron steel plant, installation of WHRBs and turbines being carried out in phase wise manner and prior to full functionality of the current project activity the waste gas generated by the DRI kilns was flared or released into the atmosphere and electricity was procured from the grid or generated in diesel generator set. Thus it can be concluded that the applicability criteria is fulfilled with the requirement of the methodology guidelines.

CAR 4 was closed out.

The description towards all emission sources and gasses related to the baseline scenario, project scenario has been described under Section B.3 of the initial PDD but the consideration of sources of GHG emissions due to “Supplemental electricity consumption” for the project activity was not clear as the initial PDD demonstrated the matter like “Power consumption under emergency situation by the power plant equipments will anyway be accounted as auxiliary consumption.” Thus CAR 5 was raised to seek the clarification and justification of non consideration of the “Supplemental electricity consumption” for the project activity. In connection to CAR 5, project proponent has submitted the electricity distribution line diagram of Adhunik Metaliks Limited and the revised PDD containing further elaboration on the supplemental electricity consumption for the project activity under normal operational condition will be catered from the project activity and/or grid power which can be monitored by the energy meter installed at the site, those were checked and the non consideration of the additional source of GHG emissions resulting from supplemental electricity consumption for the project activity was found justified. However the revised PDD has also explained the auxiliary electricity requirement of the power plant equipments will be met through diesel generator sets and the emissions from diesel oil consumption will be deducted as project emissions under extreme emergency situation i.e. power plant trip as well as grid isolation as conservative approach. These were found acceptable.

CAR 5 was closed out.

The integrated iron and steel plant of AML involves installation of a coal fired CFBC boiler also along with the five WHRBs. The description towards the project boundary was not clear and further information was required to confirm why the CFBC boiler which is meant for supplying steam through the common steam header to the turbines has not been included within the project boundary. Hence NIR 6 was raised to obtain a clarification. In response to NIR 6 the PP has provided information on the project boundary referring to the approved consolidated methodology (ACM0012/version 2) applied that the waste gas generation source for the project activity under consideration includes the outlet of the After Burning Chambers (ABC) of the DRI kilns of AML and the ducting system for transportation of waste gases from the respective emission sources to the power plant. Further the waste gas utilization facility where electricity is generated and electricity consumption facilities have been included in the project boundary which is as per the approved methodology. The same has been checked and verified with the project boundary description depicted in the final version of the PDD. The CFBC boiler and the synchronous power generation is not the part of current project activity thus, it has not been considered within the project boundary. The quantity and energy content of the CFBC boiler steam along with its respective monitoring for the purpose of arriving at the baseline emission reduction calculation for the project activity is found in line with the applied methodological requirement and hence accepted. Thus NIR 6 was closed out.

The installation of a coal based captive power plant for generating project equivalent power was selected as the most plausible baseline scenario for the project activity, selection of the baseline scenario has been determined based on the economical attractiveness of the selected baseline alternatives. The application towards selection of most plausible scenario considered all potential realistic and credible baseline scenarios as provided under ACM0012 version 2. In the absence of the project the most likely baseline scenario is

generating power in a coal based captive power plant as it was found to be the most economically attractive option available to the project proponent. To arrive at the plausible baseline scenario for the generation of electricity using the baseline options and combinations for the project activity has been carried out as per the guidelines provided in the ACM0012 version 02 applied.

Out of the realistic and credible baseline alternatives available for the use of waste gas, W2 which states that the waste gas is released in the atmosphere after incineration or waste gas is released to the atmosphere (waste pressure energy is not utilized) is found to be most appropriately considered in relation to the project activity.

Similarly for power generation amongst the realistic and credible baseline alternative(s) provided by the methodology applied, P4 which is the option for on-site or off-site existing/ new fossil fuel based existing captive or identified plants and P6 which is the source Grid connected power plants have been considered to arrive at the baseline scenario.

Thus the potential baseline alternatives available to the project proponent in absence of the project activity are either of the combination of waste gas and power W2/P4 or W2/P6 as per ACM0012 version 02.

With respect to the identification of the baseline scenario CAR 7 was raised as the selection of the most plausible and conservative baseline scenario mentioned in the initial PDD was required to be further substantiated on the basis of following issues:

Non availability of natural gas distribution network in Orissa needs to be further substantiated with traceable references.

All the assumptions used (cost of grid power, cost of power generation from coal based power plant as estimated by AML) towards capital cost investment and cost of power generation for the baseline alternative needs to be further substantiated with traceable references. Further information and substantiation were required to confirm whether or not the CFBC boiler which is supplying steam to the same turbine as the project activity would have been installed in the absence of this CDM project activity.

The availability of the natural gas in the country region wise has been cross checked referring to the web site (<http://petroleum.nic.in/ng.htm>) of Ministry of Petroleum and Natural Gas, Government of India, made publicly available. The web link clearly mentions the predominant availability of the natural gas which is in the western and north eastern parts of the country. It does not mention the availability of natural gas in the eastern part of India. Hence the non availability of natural gas in the eastern part is justified and considered acceptable.

The financial attractiveness of the baseline alternatives have been established through determination of unit cost of power generation for baseline scenario and the project activity. The unit power cost for the baseline alternatives have been computed by M/s, Avant-Garde Engineers and Consultants (P) Limited, a third party power plant consultant. The project proponent has provided the calculation of unit power cost of selected baseline power generation alternatives for Adhunik Metaliks Ltd. In the form of hard and soft copy (Ref. no. /38/, /8/) as well. The unit power cost of generation for the baseline alternative scenarios such as the generation of power in a coal based captive power plant (Alternative 1), import of power from the grid (Alternative 2), are cross checked as INR 3.20/kWh, INR 1.69/kWh respectively. The key assumptions and the critical parameters adopted to arrive at the unit power cost of generation was cross checked and verified referring to the following documents/ web sites –

Unit power cost for coal based captive power plant (Alternative 1):

1. The Auxiliary consumption has been considered 10%, adopted from the Central Electricity Authority data (Performance Review of Thermal Power Stations 2001-02 & 2003-04, Section-11, page no.11. 1), which provides data on auxiliary power consumption in thermal power stations and found acceptable. The same was accessed through the following web links:
http://www.cea.nic.in/god/opm/Thermal_Performance_Review/0102/Sec11%20fin_lo777.pdf
http://cea.nic.in/god/opm/Thermal_Performance_Review/0304/sec11f%7E2.pdf
2. The efficiency of the captive power plant has been considered as 30% (adopted as the higher value between 28% and 30%, data provided by the third party power plant consultants M/s Avant-Garde Engineers and Consultants (P) Limited & M/s, United Consultants (India) Pvt. Ltd.). The efficiency was checked from the supportive documents as provided by M/s Avant-Garde Engineers and

- Consultants (P) Limited & M/s United Consultants (India) Pvt. Ltd. (Ref. no. /39/, /38/) and considered acceptable. The appropriateness of the captive power plant efficiency consideration was also cross checked verified against the Central Electricity Authority, Govt. of India document made publicly available as per the web link: http://cea.nic.in/god/opm/Thermal_Performance_Review/0203/sec-13_sush.pdf and found justified..
3. The calorific values of coal washery rejects, coal char and coal are 1500, 1100 and 3200 kCal/kg was referred from the Test certificates issued by R.V. Briggs & Co. Private Limited test report no. C(S)/04-05/313, dated 28/07/2004, C(S)/04-05/314, dated 28/07/2004 and C(S)/04-05/312, dated 28/07/2004 respectively.
 4. Coal washery rejects cost adopted was cross checked from the sales middlings ledger account of Adunik Metaliks Limited period from 01/04/2004 to 31/03/2005 and found appropriate.
 5. Coal Char cost was not considered as generated in-house, and hence considered acceptable.
 6. Coal Cost considered as INR 702 per MT was checked from Coal purchase Ledger Account of Adhunik Metaliks Limited considered period from 01/04/2004 to 31/03/2005 and rest of the amount is considered as logistics cost towards coal transportation.
 7. Total utility cost (water and chemicals) calculated as INR 0.05/kWh, this was cross checked with the letter issued by United Consultants (India) Pvt. Ltd. dated 04/08/2004 and found satisfactory.
 8. The total cost per MW in a thermal power plant has been adopted as 4 Crore made available publicly in the web site: <http://www.hinduonnet.com/businessline/2003/08/05/stories/2003080501650200.htm> of the News Daily Hindu on 05 August 2003 and found correct.
 9. Consideration of Debt – Equity ratio as 65:35 was cross checked against the actual project financing pattern represented in the self declaration dated 20/11/2008 provided on behalf of Adhunik Metaliks Ltd., signed by the Director of the company (Ref. No. /14/) and found satisfactory.
 10. Depreciation value of Factory Buildings as 3.34% and Plant and Machinery as 5.28% has been adopted from the Company's act schedule checked and verified against the document made publicly available http://www.mca.gov.in/MinistryWebsite/dca/actsbills/pdf/Companies_Act_1956_Part_2.pdf and found appropriately applied.
 11. Operation & Maintenance cost has been considered 2.5% of the Total project cost which is approximately equal to that provided in the CERC guidelines http://www.cercind.gov.in/28032004/finalregulations_terms&condition.pdf and found to have been appropriately applied.

Thus the assumptions along with the values considered by the third party power plant consultant to arrive at the unit power cost of generation in case of a coal based captive power plant (alternative 01) as INR 1.83 was found to be justified and hence accepted.

Grid power Cost (Alternative 02):

The assumption regarding the Grid Power Cost per unit as INR 3.20 has been cross verified against the invoices raised by Western Electricity Supply CO. of Orissa Limited during the phase wise implementation of integrated iron steel plant of Adhunik Metaliks Ltd. and found appropriate.

All the assumptions and data used in the identification of the baseline scenario are justified appropriately supported by evidence and can be deemed reasonable.

Based on the out come of the unit cost comparison of both the alternatives considered to arrive at the baseline scenario, generation of power by implementing a coal based captive power plant is found to be the least cost option and hence the combination W2/P4 was accepted as the most plausible baseline scenario for the project activity.

In the absence of the CDM project activity the three power generation options (i.e. coal based captive power plant, grid power and a combination of waste heat based power generation, coal based captive power generation along with rest amount of power from the grid system) considered on the way to opt for the current project activity to cater to the partial power requirement for the integrated iron and steel plant of M/s

Adhunik Metaliks limited. Out of the two options available based on the least cost option for unit power generation, installation of a coal based captive power plant as the most plausible baseline scenario is considered acceptable. Thus it was accepted that the installation of CFBC boiler is not the part of the current project activity under consideration and that would have installed anyway even in absence of the project activity. Based on the out come of the unit cost comparison of all the three alternatives identified, generation of power by implementing a coal based captive power plant is found to be the least cost option and hence accepted as the most plausible baseline scenario.

CAR 7 was closed out.

The approved baseline methodology i.e. ACM0012 version 2 has been correctly applied to identify the most reasonable baseline scenario and the identified baseline alternative reasonable represents what would occur in the absence of the proposed CDM project activity.

The project proponent has applied the methodological tool “Tool for the demonstration and assessment of additionality” version 5.2 to demonstrate the additionality for the project activity. The project design document has provided a step-wise approach to demonstrate and assess the additionality as per the guidelines provided by the methodological tool. The proponent has carried out an Investment Analysis to determine that the project activity is financially or economically less attractive in comparison to the other baseline alternatives as identified. The investment comparison analysis has been adopted wherein the unit power cost has been used as the financial indicator for the project investment analysis, this was found appropriate.

In connection to the additionality discussion, project proponent is requested to provide third party or publicly available sources to cross check the parameters used in the project investment analysis procedure and the investment comparison analysis calculation sheet as well the sensitivity analysis calculation procedure with clarification of chosen variation was not clear, thus CAR 9 was raised for further substantiation.

The identified baseline alternatives for power generations and the project scenario has been compared with reference to the unit cost of power generation computed by the M/s, Avant-Garde Engineers and Consultants (P) Limited a third party power plant consultant. The detail computation sheet for the unit cost of power generation along with the assumptions considered to arrive at the unit cost as the baseline alternatives was checked against traceable documents/ web links as discussed above in the baseline scenario selection.

The project activity involves generation of power by installation of waste heat recovery boilers which as per the analysis carried out by the third party consultant. The letter provided by the third party consultant, M/s, Avant-Garde Engineers and Consultants (P) Limited (Ref. no. 24117/NML/00A dated 14th August 2004) contains the computation of the unit power cost of generation for the project case. The same was checked and verified along with the key assumptions towards the computation referring to the following documents/ web sites –

1. The waste heat recovery based power plant cost per KW as mentioned in the computation sheet to arrive at the unit power cost of generation was checked against the information provided through the web link http://www.wowenergies.com/images/IETC_May_2007.pdf (last accessed on 14 December 2008) and found appropriate.
2. All the other assumptions considered in computing the unit power cost of generation in the project case along with the data source and its traceability such as Debt-Equity ratio, Interest on loan, return on equity, depreciation, and O&M expenses, total utility cost (water & chemicals) have also been cross checked and discussed above while cross checking the unit power cost of generation for the baseline alternatives and found appropriate.

Thus the assumptions along with the values considered by the third party power plant consultant to arrive at the unit power cost of generation in the project case as INR 2.20 was found to be justified and hence accepted.

With reference to the above discussion it was found that the unit power cost of generation for the identified alternatives computed by the third party power plant consultant, which was cross checked and found that the unit power cost of generation for the project case is not the least cost option.

The project proponent also submitted the detailed sensitivity analysis calculation work sheet. The variables chosen for the sensitivity analysis were Coal price (+10%, –10%), Grid power purchase cost (+10%, –10%) and net power generated with waste gas (+5%, –5%) and were found appropriate. The basis variation range for net power generated with waste gas was cross checked with the endorsement letter issued by Tata Steel Growth Shop, manufacturer of DRI kilns, dated 06/08/2004 (Ref. No. /46/); which clearly states the maximum possible variation of waste gas generation would be in the range of +5% to -5%. Thus it was accepted on most appropriate ground. The inter combinations among the aforementioned three variables against the unit power cost of generation which was checked in the excel sheet provided by the proponent (Ref. No. /9/). The range chosen along with the different combinations were found to be as per the Guidance on the Assessment of Investment Analysis as per the EB 41, Annex 45. The outcome of the sensitivity analysis is found to be robust against the unit power cost of generation for the project case subject to the said variables and variation range and thus accepted.

CAR 9 was closed out.

The initial PDD has also described barrier analysis for determination of project additionality. Description of operational barrier due to inconsistent power generation was not found acceptable, thus a CAR 10 was raised. However, during course of validation the operational barrier could not be substantiated and justified by the project proponent in appropriate manner thus the matter on project operational barrier due to inconsistent power generation has been further withdrawn from the revised version of the PDD, thus CAR 10 was also became null and void.

The common practice analysis was carried out for the project activity as per the “Tools for demonstration and assessment of additionality” version 5.2. The project proponent has mentioned in the initial PDD that the project activity is not a common practice and provided information on the total number of integrated iron and steel plant in the nation, their power generation scenario and that the power generated in such integrated iron and steel plants with installation of waste heat recovery boilers is only with the consideration of revenue from the sale of carbon credits. However the claim was not properly substantiated in the initial PDD and the UN reference number of similar Registered CDM project activity needs to be provided by the project proponent for transparent traceability of the fact. Hence CAR 11 was raised to obtain clarification towards such justification. In response to CAR 11 the Proponent has provided information on the analysis of the other activities implemented previously or currently underway similar to the proposed project activities in the context of national and State (Orissa) scenario with or without CDM modalities in the revised PDD.

The facts and figures used for common practice analysis related to other activities implemented previously or currently underway similar to the proposed project activities in the context of national and State (Orissa) scenario with or without CDM was checked against the following information –

- Annual Report for the year 2006-2007 published by the Ministry of Steel, Government of India, (available online at [http://steel.nic.in/Annual%20Report%20\(2006-07\)/English/Annual%20Report%20\(2006-07\).pdf](http://steel.nic.in/Annual%20Report%20(2006-07)/English/Annual%20Report%20(2006-07).pdf); last accessed on 14 December 2008), The annual report for the year 2006-2007, published by the Ministry of Steel, Government of India has provided information on the total number of integrated iron and plants both under Steel Authority of India-Government of India Enterprise and the private sector which was checked and found correct.
- The integrated iron and steel plants of the Steel Authority of India Limited has been utilizing the non coking coal for the generation of power was checked through the web link: <http://www.sail.co.in/aboutus.php?tag=company-energy>. (Last accessed on 14th December 2008) and found correct.
- The LD gas recovery based power recovery project implemented in Rourkela steel plant has got registered with the CDM-EB was checked and verified against the official web link (<http://cdm.unfccc.int/UserManagement/FileStorage/D0YOKH0N9YHKRWDM5X7I67L0UA9XXW>, last accessed on 14th December 2008) of the UNFCCC made publicly available, and found correct.
- The power requirement of JSW Steel Limited and Jindal Steel & Power Limited is met respectively from a ‘Blast Furnace Gas and Corex Gas based power generation system’ and ‘Coke Oven Gas based power generation system’ which have got registered as CDM projects as per the web links (<http://cdm.unfccc.int/UserManagement/FileStorage/5K5XJ3GMSTGYQE2KT3IL1NP0RGLSVK> and <http://cdm.unfccc.int/UserManagement/FileStorage/XQKW19L92IAYD0XP1QP8YRQIU3ZL8I> last accessed on 14th December 2008) and found correct.

- Essar Steel in the process of setting up a 350 MW natural gas based power generation facility to meet their power demand was checked and verified referring to the web site <http://www.projectsmonitor.com/detailnews.asp?newsid=10794> (last accessed on 14 December 2008) and found correct.

UN reference for the similar registered projects has been provided by the project proponent in the final version of the PDD. The 3 plants (namely, Rourkela Steel Plant (RSP) of Steel Authority of India Limited (SAIL), JSW Steel Limited and Jindal Steel & Power Limited) have already got their projects registered with UNFCCC checked and found correct. The web link provided in the revised PDD could be accessed and the information provided could be checked and verified against the mentioned web links and found correct.

Hence the common practice in the integrated iron and steel plants in India for generating power is installation of a coal base captive power plant and installation of waste heat recovery boilers to generate power has only been taken up considering the revenue from the sale of carbon credits is evident. Thus the project case of generating power by installation of a waste heat recovery based power plant is accepted and CAR 11 was closed out.

The starting date of the project activity has been demonstrated as the date of Contract for Supply of Turbogenerator and auxiliaries to the project equipment supplier M/s, Greensol Power Systems Pvt. Ltd. and M/s, Hangzhou Steam Turbine Co. Limited i.e. 17th April 2006 which was checked as the earliest project initiative on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity and found in line with the CDM project start date definition as provided in the “Glossary of CDM terms”, version 3 and EB 41 meeting report paragraph 67, hence accepted.

The consistency of the project start date with the discussion of the project additionality was not transparent. Further how and when the CDM was taken into serious consideration as per EB 41 Annex 46 guideline in the decision to go ahead with the project activity along with the detail CDM project milestone activities was also not clear. Thus CAR 8 was raised to have clarification along with reliable evidences that the Proponent had prior knowledge about CDM modalities before they have considered the CDM revenues and a consistent approach was made to secure CDM revenue for the project activity.

Below mentioned CDM project chronology table provides clear evidence towards early CDM consideration prior to the start date of the project activity i.e. awareness of CDM, Board approval for the project activity under CDM consideration and the real action taken to implement the project activity.

The CDM project chronology and supporting documentary evidences have been reviewed and prior CDM knowledge and serious CDM consideration for the proposed project activity has been demonstrated in the following milestone activities –

Timeline	CDM Project milestone	Documentary evidences reviewed
09/07/2004	Communication between CDM Consultant and Project Participant regarding procedural formalities of CDM and eligibility of upcoming waste gas based power plant of Neepaz Metaliks Ltd. as CDM project activity.	Email Communications between CDM Consultant and Neepaz Metaliks Limited dated 09/07/2004, along with the CDM Approach Note attached in the same email has been also cross checked and found satisfactory.
14/08/2004	Submission of unit power cost by M/s. Avant Garde Engineers & Consultants (P) Ltd. (recommendation for GHG emission reductions credits through the option of power generation with DRI kiln waste gas.)	Letter from M/s Avant Garde Engineers & Consultants (P) Ltd to M/s. Neepaz Metaliks Limited (Ref. No.- 24117/NML/00A, Dated: 14/08/2004)

Timeline	CDM Project milestone	Documentary evidences reviewed
25/08/2004	Approval of the project activity with CDM consideration.	Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited
18/01/2005 to 09/02/2005	Communication between CDM consultant and Project Participant, related to the following matter – <ul style="list-style-type: none"> – CDM Opportunities, CDM Cycle & process intricacies – Draft proposal from Consultant for CDM project development – Work order placement 	Email Communications between Neepaz Metaliks Limited and CDM Consultant dated 18/01/05, 28/01/05, 01/02/05, and 09/02/05.
09/02/2005	Placement of Work Order to CDM Consultant	Work Order placement for CDM Consultancy services (NML/05/CDM/LOI/01; dt. 09/02/05)
23/02/2005 to 25/04/2005	Communication between CDM consultant and Project Participant, related to the following matter – <ul style="list-style-type: none"> – Project information and development of CDM documentation – Draft Project Idea Note preparation – Final Project Idea Note submission by the CDM consultant. 	Email communications between Neepaz Metaliks Limited and CDM Consultant dated 23/02/05, 07/03/05, 21/03/05, 05/04/05 and 25/04/2005.
11/05/2005 to 20/09/2005	Communication between CDM consultant and Project Participant, related to the following matter – <ul style="list-style-type: none"> – Further project technical information requirement related to total carbon content of coal, percentage of blow down loss and operating condition of CFBC. – Draft PDD preparation based on ACM0004 – Requirement for developing a new methodology. – Communication from the CDM consultant to Project Participant regarding developing process of a new methodology on "Waste Heat Recovery and Power Generation" for one of their client. 	Email communications between Project Participant and CDM Consultant dated 11/05/05, 20/05/05, 27/06/05, 14/07/05, 22/08/05, 30/08/05, 06/09/05 and 20/09/05
17/04/2006	Project Start date – Placement of Purchase Order for Steam-Turbo Generator	'Contract for Supply of Turbogenerator and Auxiliaries' between M/s. Adhunik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd.
30/04/2006	Placement of Purchase Order for Waste Heat Recovery Boilers	Purchase Order from M/s. Adhunik Metaliks Limited (Ref No.- AML/KOL/PO/PP/PO/06-07/5152)

Timeline	CDM Project milestone	Documentary evidences reviewed
May 2006	Submission of new methodology by the respective CDM Consultant in the name of "NM0179: Waste Heat Recovery based Steam and Power Generation" (Round 15)	http://cdm.unfccc.int/methodologies/PAmethodologies/publicview.html?meth_ref=NM0179
04/05/2007	Approval of NM0179 by Executive Board, UNFCCC	http://cdm.unfccc.int/EB/031/eb31rep.pdf .
07/05/2007	Communication from CDM consultant to Project Participant regarding approval of NM0179 during EB 31 meeting.	Email communications between CDM Consultant and Project Participant dated 07/05/2007.
15/06/2007	Phase I commissioning of Power Plant Initiation of commercial production of Turbo-Generator I.	Production Certificate issued by the Office of the Director of Industries, Orissa. (ref. no. /25/)
06/07/2007	Approval of Consolidated Methodology by the Methodology Panel and Executive Board of UNFCCC as 'Approved Consolidated Methodology-ACM0012/ Version 01'	http://cdm.unfccc.int/methodologies/DB/3YL5T8ATMB8NTD9HEBU42EP6OJLAY4/view.html
09/07/2007 to 17/09/2007	Communication between CDM consultant and Project Participant, related to the following matter – – Approval of ACM0012 in EB 32 Meeting and further forward procedure for adopting ACM0012 for the project activity. – Further information requirement as per CDM guideline and specific requirement under ACM0012. – Follow up with Project Participant regarding specific information requested.	Email communications between CDM Consultant and Project participant, dated 09/07/2007, 24/07/2007, 22/08/2007, 17/09/2007.
18/09/2007	Request for CDM validation proposal for AML's proposed CDM project activity developed on ACM0012	Email communication made to SGS, dated 18/09/2007.
03/10/2007 to 03/01/2008	Communication between CDM consultant and Project Participant, related to the following matter – – Draft PDD on ACM0012. – Further project technical information requirement related to designed efficiency & station heat rate of coal based captive power plant, records of the quantity of waste gas flared prior to implementation of the project. – Documentation (PCN & PDD) for submission of HCA application to Indian DNA.	Email communications between CDM Consultant and Project Participant dated 03/10/2007, 26/10/2007, 06/11/2007, 15/11/2007, 21/11/2007, 26/11/2007, 06/12/2007, 20/12/2007, 03/01/2008
14/01/2008	Appointment of DOE for Validation	Contract Agreement between M/s. Adhunik Metaliks Limited and the appointed DOE

Timeline	CDM Project milestone	Documentary evidences reviewed
16/02/2008	Communication between CDM consultant and Project Participant regarding technical limitation and non availability of suitable measuring device for waste gas flow measurement for the DRI kiln and clarification request submitted by SGS to the Meth Panel regarding "Q BL product" determination in cases where no 3 years historic data is available AM_CLA_0071	Email communications between CDM Consultant and Project participant, dated 16/02/2008 and AM_CLA_0071 (http://cdm.unfccc.int/methodologies/DB/3YL5T8ATMB8N TD9HEBU42EP6OJLAY4/view.html)
22/02/2008	Submission of Project Design Document (PDD) and Project Concept Note (PCN) to Ministry of Environment & Forests (MoEF), Government of India. Application for Host Country Approval (HCA) from Indian DNA	Forwarding Letter to the Ministry of Environment and Forests, Government of India from M/s. Adhunik Metaliks Limited, dt. 22/02/2008
04/08/2008	Receipt of Host Country Approval from Ministry of Environment and Forests (MoEF), Government of India	Host Country Approval Letter (Ref. No.- 4/7/2008-CCC)
15/08/2008 to 13/09/2008	Global Stakeholder Consultation	http://cdm.unfccc.int/Projects/Validation/DB/5QWV7D8QN5 RF3LZ0JK2E80C088ZF41/view.html

With reference to the above mentioned chronology of the project milestone activities and the supporting documents, it has been found justified that CDM revenue was considered in the decision to implement the project activity and project participant has demonstrated continued and real actions were taken to secure CDM status for the project in parallel with its implementation as per guidelines set in EB41 Annex 46. Therefore with reference to the above mentioned discussions, the serious prior consideration of the CDM revenue for the project activity has been found evident. Therefore

CAR 8 was closed out.

4.4 Application of Baseline Methodology and Calculation of Emission Factors

The proposed CDM project activity is power generation using waste heat and uses baseline methodology as described under ACM0012 version 2 dated 2nd November, 2007.

The project activity involves generation of electricity (no thermal generation) utilising sensible heat content of waste gases such as DRI kiln gas. Thus the methodological choice for the project activity has been determined based on Baseline emissions for *Scenario 1*, Calculation of the energy generated (electricity and/or steam) in units supplied by waste gas/heat and other fuels adopting *Situation 2* and Capping of baseline emissions following *Method 2* as per the requirement of ACM0012 version 2. The determination of methodological choice is completely justified and in accordance with the applied methodology.

Q_{wg,y} (Quantity of waste gases used for energy generation during year y): The parameter will be monitored continuously with flow meters. The same will also be available in the power plant Distributed Control System (DCS).

ST_{whr,y} (Energy content of the steam generated in Waste Heat Recovery Boilers of DRI kiln gas and Coke Oven Gas and BFG Boiler and fed to turbine via common steam header) : This parameter depends on the following factors-

Steam flow from the Waste Heat Recovery Boilers: The parameter will be monitored with flow meters and will be available in the power plant Distributed Control System (DCS).

Enthalpy of steam generated: The parameter will be determined based on temperature and pressure of steam generated from the Waste Heat Recovery Boilers of DRI kiln gas and Coke Oven Gas and BFG Boiler. The temperature of steam generated will be monitored with temperature gauges and the pressure of steam generated will be monitored with pressure gauges.

ST_{other,y} (Energy content of steam generated in other boilers and fed to turbine via common steam header): This parameter will be determined based on

Steam flow from the other boilers: The parameter will be monitored with flow meters and will be available in the power plant Distributed Control System (DCS).

Enthalpy of steam generated: The parameter will be determined based on temperature and pressure of steam generated from other boilers using Steam Tables. The temperature of steam generated will be monitored with temperature gauges and the pressure of steam generated will be monitored with pressure gauges.

F_{WG} (Fraction of total electricity generated by the project activity using waste gases) :This parameter will be calculated based on the value of ST_{whr,y} and ST_{other,y} monitored as mentioned above.

EG_{i,j,y} (Quantity of electricity supplied to the recipient j by generator which in the absence of the project activity would have been sourced from the i^{th} source (i.e. the coal based captive power plant) during the year y) : The parameter will be measured continuously (online measurement) with energy meter and the same will be available in the plant's Distributed Control System (DCS).

EF_{elec,i,j,y} (CO₂ emission for the electricity source i (i.e. the coal based captive power plant), displaced due to the project activity during the year y) is a calculated parameter based on the factors

EF_{CO2,is,j} (CO₂ emission factor per unit of energy of the fossil fuel (coal) used in the baseline generation source i) The parameter will be determined following the standard testing practice. In absence of plant specific data, country specific data or IPCC default values will be used, and

FF_i (Quantity of fossil fuel type i combusted to supplement waste gases in the project activity during the year y) The parameter will be measured continuously (i.e. whenever auxiliary fuel will be consumed) with a properly calibrated flow meter/weighing system.

NCV_i (Net calorific value of the fossil fuel type i combusted as supplementary fuel): The parameter will be determined following the standard testing practice. In absence of plant specific data, country specific data or IPCC default values will be used.

n_{Plant,j} (Overall efficiency of the existing plant that would be used by j^{th} recipient in the absence of the project activity): Efficiency of the power plant will be determined as the highest of the efficiency values provided by two or more manufacturers for power plants with specifications similar to that which would have been required to supply the recipient with electricity that it receives from the project activity.

The initial PDD has used the equations, steps/calculations in accordance with ACM0012 version 2 during determination of baseline emissions, but the following issues were not clear –

Consideration of Efficiency of the power plant as mentioned in the PDD is not justified as it seems like calculated by the project proponent, how the option (ii) mentioned under ACM0012 version 2 has been applied for the same needed to be clarified.

During baseline emissions calculation how the “Capping of baseline emissions” has been considered following Method-2 of ACM0012 version 2 was not transparent.

Hence CAR 12 was raised to obtain a clarification on how the approved methodology been applied correctly for determining baseline emissions.

The efficiency of the power plant as per the approved methodology is provided by the project proponent based on two sets of manufacturer's data calculated by two different power plant consultant for 55 MW CPP. The first case has been considered as the project case where the combination chosen as M/s, Thermal Systems (Boiler manufacturer, boiler efficiency as 82.5%) and Greensol Power Systems & Hangzhou Steam Turbine Co. Limited (turbine manufacturer, turbine efficiency as 32.01%) to arrive at the overall efficiency of the power plant as 26.4%, where station heat rate is considered as 2687 kcal/kwh, which was checked

against the excel sheet and found appropriate, however project proponent has considered the value of power plant efficiency as 30% from the calculation provided by the power plant consultant named Avant-Garde Engineers & Consultants (P) Ltd where they have chosen the station heat rate value as 2867 kcal/kwh.

The second case has been considered by taking the combination as M/s, Thermal Systems (Boiler manufacturer, boiler efficiency as 82.5%) and Siemens (30 MW turbine manufacturer, turbine efficiency as 32.59%) & Greensol (25 MW turbine manufacturer, turbine efficiency as 33.91%). With the combination of these two turbines the overall power plant efficiency is coming around 28% where station heat rate is considered as 2638.61 kcal/kwh (30 MW) and 2535.99 kcal/kwh (25 MW) respectively. This calculation were checked with the document provided by another power plant consultant named as United Consultants (India) Pvt. Ltd. and the same has been cross checked against the excel sheet and found acceptable.

Thus as per the methodology applied 30% being the highest of the two combinations has been applied in calculating the baseline emission and emission reduction thereafter which is conservative and in accordance with Option (ii) and hence justified. The same was cross checked against the document provided by the power plant consultant and found appropriately applied.

The capping of baseline emissions has been applied in accordance with the Approved Consolidated Methodology-ACM0012, version 02, following the Method 2 by the project proponent as the project activity caters to implementation in a new facility. The selection of Method – 2 for capping of baseline emissions and adopting manufacturer's data for calculation of the same is also in line with the requirement of the further revisions of applied methodology, i.e. ACM0012 version 03, the same was confirmed with the clarification approved by the meth panel (AM_CLA_0071) http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_GU59XMMVIK6RS6RXDL25B0HBHWHAP30 and thus it is accepted.

The values of $Q_{BL,product}$ and $q_{wg,product}$ was taken from the manufacturers data for DRI Kiln, Coke oven batteries and mini blast furnace. These values have been applied for the Emission reduction calculation which was cross checked with the manufacturers data provided and in the detail emission reduction computation excel sheet and found in line.

The values of $Q_{BL,product}$ and $q_{wg,product}$ has been taken from the manufacturers specification for DRI Kiln. This value has been applied for the Emission reduction calculation which was cross checked with the manufacturers data provided and in the detail ER computation excel sheet and found in line. The value of $Q_{WG,y}$ has been taken as the same value as of $Q_{WG,BL}$, hence f_{cap} is 1 which is as per the methodology for the option (ii) adopted Both the parameters $Q_{BL,product}$ and $q_{wg,product}$ have been considered from the manufacturers specification for production output of the individual operational facilities which is acceptable. The values have been incorporated in the revised PDD which is found satisfactory.

Value of $Q_{WG,y}$ which is the quantity of waste gases used for energy generation during year y could be either equal to or less than the value of $Q_{WG,BL}$ and could not be greater in any way. In case the value is equal to the value of the quantity of waste gases generated prior to the start of the project activity ($Q_{WG,BL}$) the value of f_{cap} equals to 1 and similarly when the value is less than that of the quantity of waste gas generated prior to the start of the project activity the value of f_{cap} becomes greater than one. As per the methodological option for the purpose of conservativeness the value has been opted as the same as that of $Q_{WG,BL}$. Hence the calculated value of f_{cap} is thus 1. The proponent would monitor the same *ex-post* during the crediting period is hereby accepted.

CAR 12 was closed out.

One of the important parameter is $Q_{WG,BL}$ (Quantity of waste gas generated prior to the start of the project activity) was not properly mentioned in the initial PDD and the proper documentary evidences, thus NIR 13 was raised.

Project proponent acknowledged the aforementioned issue and responded the matter in the following way that Quantity of waste gas generated prior to the start of the project activity— $Q_{WG,BL}$ has been determined as per the equation (1f-1) mentioned in the methodology ACM0012, version 02.

Where ($Q_{BL,product}$) is 'production by process that most logically relates to waste gases generation in baseline' and ($q_{wg,product}$) is 'amount of waste gases the industrial facility generates per unit of product generated by the process that generates waste gases'. The project proponent has taken these values from

the manufacturer's specification which is in line with the applied methodology requirements. The value of $Q_{BL,product}$ is coming 150000 Tonnes/annum considering 5 DRI kiln capacity as 100 TPD working 300 days in a year. The assumptions has been cross checked with the Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd. Ref. no. AML/KOL/PO/PP/PO/06-07/5152, dated 30/04/2006 and found satisfactory.

The value of $q_{wg,product}$ is coming 5760 Nm³/tonne considering the waste gas flow data from manufacturer's specification i.e. 24000 Nm³/hr. The assumptions has been cross checked with the Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd. Ref. no. AML/KOL/PO/PP/PO/06-07/5152, dated 30/04/2006 and found satisfactory. Hence NIR 13 was closed out.

The current version of the PDD has used the ACM0012 version 2 during determination of *ex-ante* emission reductions. But the application of the methodology was not clear as the input factors used and sources of the input factors used towards *ex-ante* emission reductions calculations was not clearly provided.

The excel sheet for calculation of emission reductions was not available during initial review, which was also required to be submitted along with evidences for the assumptions used. Hence CAR 14 was raised.

In response to the CAR 14, the detail excel sheet provided by the project proponent, same has been checked and found satisfactory.

The baseline emission is calculated as per the following equation:

$$BE_{En,y} = BE_{Elec,y} = f_{cap} \times f_{wg} \times \sum_j \sum_i (EG_{i,j,y} \times EF_{Elec,i,j,y})$$

The input factors for the calculation of baseline emission depends on the above mentioned equation parameters.

i) $f_{cap} = \frac{Q_{WG,BL}}{Q_{WG,y}}$ and $Q_{WG,BL} = Q_{BL,product} \times q_{wg,product}$ - All the parameters have been cross checked with

the manufacturers specification of the respective equipments/installations that is DRI Kiln, Coke oven batteries and mini blast furnace.

ii) $f_{wg} = \frac{ST_{whr,y}}{ST_{whr,y} + ST_{other,y}}$, where $ST_{whr,y}$ and $ST_{other,y}$ are the calculated figures from the parameters

(steam flow rate, steam temperature and steam pressure) to be monitored *ex-post*. The same has been checked and verified with the revised version of the PDD dated 16/12/2008 and found satisfactory.

iii) $EG_{i,j,y}$ = Quantity of electricity supplied to the recipient j by generator which in the absence of the project activity would have been sourced from the i^{th} source (i.e. the coal based captive power plant) during the year y (in MWh) which is a monitored parameter *ex-post*.

iv) $EF_{Elec,i,j,y} = \frac{EF_{CO2,is,j}}{n_{Plant,j}} \times 3.6 \times 10^{-3}$,

where $EF_{CO2,is,j}$ (CO₂ emission factor per unit of energy of the fossil fuel (coal) used in the baseline generation source i (in tCO₂ / TJ), obtained from reliable local or national data if available, otherwise, taken from the country specific IPCC default emission factors which was checked against the "2006 IPCC Guidelines for National Greenhouse Gas Inventories" and $n_{Plant,j}$ which is the overall efficiency of the existing plant that would be used by j^{th} recipient in the absence of the project activity has been applied as per option (ii) of the methodology ACM0012 version 2 correctly as proponent has chosen the value from two different manufacturers data which were cross checked with the documents provided and found satisfactory.

Project emission calculation has been carried out as per the following equation as mentioned in the methodology ACM0012, version 2 i.e.

$$PE_{AF,y} = \sum FF_{i,y} \cdot NCV_i \cdot EF_{CO2,i}$$

Where, Quantity of fossil fuel type i combusted to supplement waste gases in the project activity during the year y ($FF_{i,y}$)- No fossil fuel consumption is considered by the project proponent for *ex-ante* computation of project emissions.

Net calorific value of the fossil fuel type i combusted as supplementary fuel (NCV_i)- In accordance with '2006 IPCC Guidelines for National Greenhouse Gas Inventories' depending on the type of fuel used.

CO_2 emission factor per unit of energy of the fuel type i ($EF_{CO_2,i}$)- In accordance with '2006 IPCC Guidelines for National Greenhouse Gas Inventories' depending on the type of fuel used.

Project proponent will measure the fossil fuel consumption data in the exigency condition and they will use the aforementioned equation to derive the value of project emission, which is found acceptable.

The equations and parameters mentioned in the PDD have been correctly applied as per the approved methodology ACM0012 version 2. All the above mentioned parameters to be monitored to calculate and arrive at the emission reduction as mentioned in the final version of the PDD was cross checked with the detail Emission reduction calculation excel spread sheet and found correct. Thus CAR 14 was closed out.

The final version of the PDD has used the ACM0012 version 2 during determination of project emissions, according to the PDD, Project emissions due to combustion of auxiliary fuels used to supplement the waste gas and Project emissions due to electricity consumption of gas cleaning equipment has not been considered, as in the project activity, no auxiliary fuel is used to supplement waste gas and hence there would be no emissions from combustion of auxiliary fuels for supplementing the waste gas. Further the gas is not cleaned before its use in generating electricity and therefore there are no related emissions due to electricity consumption for cleaning of gas.

How ever provisions have been kept open in case of any consumption of auxiliary fuel for supplementing the heat content of the waste gases, emissions for the same would be accounted for during the computation of the emission reduction annually on an *ex-post* basis.

No leakage effect has been considered for the project activity as no leakage is applicable under ACM0012, thus it was accepted.

4.5 Application of Monitoring Methodology and Monitoring Plan

The Monitoring Methodology and Monitoring Plan has been developed as per the Approved consolidated baseline and monitoring methodology ACM0012 version 2 in a project specific manner. The description towards the data/ parameters monitored under section B.7.1 of the PDD has been provided in project specific customized manner correlating with ACM0012 version 2.

According to the PDD version 1, under section B.7.1 the parameters related to computation of f_{WG} is not transparent because Steam flow, Steam temperature and Steam pressure of WHRBs and other boilers should be measured separately to calculate the Energy content of the steam generated in WHRBs and other boilers.

CAR 15 was raised.

In response to the CAR 15 project proponent incorporated all the parameters such as steam flow, steam temperature and steam pressure for the waste heat recovery boiler as well as other boiler separately in the final version of the PDD where it is very transparent.

CAR 15 was closed out.

In the section monitoring plan of the initial PDD did not mention the information regarding the Distributed control system but does not provide information regarding the on site energy meters, steam flow meters, thermocouple for steam temperature and pressure gauges monitoring and pressure gauges for steam pressure monitoring, however the respective position of the respective monitoring equipments were missing. Thus CAR 16 was raised for proper clarification.

The project participant has provided the electricity distribution line diagram specifying the on-site energy meter location along with the details. The steam metering system has also been provided specifying the location of the steam flow meters, temperature and pressure gauges along with their details. During site visit the respective locations of aforementioned meters were checked and found acceptable.

CAR 16 was closed out.

The initial PDD was not giving the proper information regarding operations and maintenance of monitoring equipment and their periodic calibration. NIR 17 was raised to seek the aforementioned fact.

During site visit it was observed that the operations and maintenance of monitoring equipment is solely given to the third party named as M/s, Enmas O&M Services Pvt. Ltd. and the calibration of all relevant equipments were under the control of the management of Adhunik Metaliks Limited. The project proponent has provided the Service order copy for ENMAS O & M Services Private Limited. (Ref. No. /43/) same was checked and found acceptable.

NIR 17 was closed out.

NIR 18 was raised for the exact procedures towards dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems.

In response to the NIR 18, the project proponent has established a robust monitoring plan to ensure the reliability of monitoring parameter through on line measurement procedure. The electrical parameters and steam data will be captured and recorded by the online non editable version of Distributed Control System (DCS) which ensures optimum reliability. The PP has further provided information on the monitoring system that the data would be recorded shift wise in the log sheets in parallel to DCS and hence there will be minimum possibility of missing data. Further the PP has provided information that there will be a main meter along with the check meter and hence will ensure reliability of the metering system. This seems to ensure procedures towards dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems. The day to day recording of the data and subsequent checking and reviewing of the same seems to ensure the data quality. The PP has further explained that any discrepancy in data, identified in any one of the above mentioned data reviewing process, will be addressed immediately by undertaking appropriate corrective actions. Finally the internal audit to be conducted once a year and any non conformance reported to be attended and dealt with immediate necessary action clearly indicate the issue of chances of possible monitoring data adjustment rare. The same is considered satisfactory and hence acceptable.

Therefore the monitoring approach seems to deliver data with reliable and acceptable accuracy as the monitoring of the parameters would be carried out through calibrated instruments and DCS for registration would be in practice. The data recorded would further be reviewed by designated personnel with assigned roles and responsibilities.

NIR 18 was closed out.

The monitoring plan describes the data capturing, recording and review procedures, calibration procedure for the monitoring equipments, procedures towards emergency preparedness, modalities & procedures towards periodic training of the monitoring personnel and procedures towards annual CDM internal audit, which ensures the data quality.

The monitoring methodology and the monitoring plan developed for the proposed project activity ensuring the data quality is found to be in accordance with the Approved methodology ACM0012 version 2 applied; in a project specific manner to arrive at the emission reductions is adequate and hence accepted.

4.6 Choice of the Crediting Period.

The proposed CDM project activity has selected 10 years fixed crediting period. As per the final PDD the expected crediting period start date of the project activity is 1st August 2009. Phase I commissioning of Power Plant (initiation of commercial production of Turbo-Generator I was occurred and commissioning of TG II was pending during course of validation) has been materialised on 15/06/2007 and expected operational lifetime of the project activity is 20 years. Therefore the length of the crediting period is falling within the operational lifetime of the project activity. Hence it can be concluded that the project meets the requirements of the choice of crediting period.

4.7 Environmental Impacts

The project proponent has carried out an environmental impact assessment study for the current project activity as required by the host Party in accordance with procedures. The environmental impacts have been identified and a Rapid Environmental Impact Assessment (REIA) study has been conducted which has an Environmental Management Plan, to take care of the adverse environmental impacts. The Impact study has been carried out in three distinct phases of its implementation as Impacts during Construction, Operational Phase and Maintenance phase which was required to be further substantiated against documentary evidence. During site visit the copy of Rapid Environmental Impact Assessment (REIA) was checked and found in line with all the norms and regulations of the host country as well as the State Govt. regulations. Ambient air quality monitoring report and stack emission monitoring reports were checked during the site validation on 16th September 2008 and found satisfactory.

4.8 Local Stakeholder Comments

Identification of relevant local stakeholders for the consultation as described in the PDD was found appropriate. The description related to the invitation of local stakeholder's feedback for the current project activity was not clarified enough, thus NIR 19 was raised to seek appropriate evidence regarding appropriate mode of communication for local stakeholder consultation process as well as their feedbacks received towards the project activity.

In response to the NIR 19 the project proponent has provided the letter of appreciation/ no objections, received from the local stake holders who were informed and invited to attend the interactive sessions on the project activity to be implemented by Adhunik Metaliks Limited. The local stakeholders to the project activity appreciated the approach of Adhunik Metaliks Limited in commissioning the project activity of generating power with the utilization of waste gas and provided there positive opinion on the project activity. The local stakeholders have provided letters addressing their positive attitude on the project activity and those letters were checked with the documents such as Letter from Adhunik Metaliks karmachari Sangha, dated 12/03/2008, Letter from Avant – Garde Engineers and Consultants (P) Ltd. Dated 06/12/2007, Letter from Thermal Systems (Hyderabad) Pvt. Ltd. Dated 20/12/2007, Letter from Nav Nirman Sanstha, dated 20/02/2007 and found satisfactory.

NIR 19 was closed out.

5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

5.1 Description of How and When the PDD was Made Publicly Available

The Project Design Document for this project was made available on the UNFCCC website and was open for comments from 15-08-2008 until 13-09-2008. Comments were invited through the UNFCCC CDM homepage

<http://cdm.unfccc.int/Projects/Validation/DB/5QWV7D8QN5RF3LZ0JK2E80C088ZF41/view.html>

5.2 Compilation of all Comments Received

Comment Number	Date Received	Submitter	Comment
NA	NA	NA	NA

5.3 Explanation of How Comments Have Been Taken into Account

No comments received during global stakeholder consultation procedure.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
16/09/2008	Mr. Narendra Prasad	President (Works)	Project proponents view on CDM project activity and CDM consideration.
16/09/2008	Mr. J.S. Ari	Sr. Vice President (Energy)	Technical description of the project activity.
16/09/2008	Mr. J.L.Srivastava	G.M. (CPP)	Technical description of the project activity. Project instrumentation and monitoring equipment details.
16/09/2008	Mr. Rahul Kundu	Technical Assistant	Baseline and data monitoring for project activity, Board Minutes. Project Financials Project additionality issues.
16/09/2008	Mr. Prabir Sarkar	Senior Executive, (CDM Projects)	Assessment of Project Boundary (Site)/ Interviews about the project activity and project technology Monitoring plan and reporting procedure. Stakeholder Consultation Process Awareness towards the project activity and type and extent of socio- economic and environmental well being by the project activity.
16/09/2008	Saunak Saha Payel Ghosh	CDM-Consultant CDM-Consultant	Project Baseline and Additionality

7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

- /1/ PDD version 1 dated 10/08/2008 (submitted for international stake holder's comments)
- /2/ PDD version 2 dated 19/01/2009 (intermediate)
- /3/ PDD version 3 dated 18/02/2009 (Intermediate)
- /4/ PDD version 4 dated 07/04/2009 (Final)
- /5/ Host Country Approval,(ref. no. 4/7/2008-CCC dated 4 August 2008)
- /6/ Modalities of Communication dated 26/03/2009
- /7/ 'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metlaiks Limited', dated 25th August 2004.

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

- /8/ Emission reduction calculations excel worksheet.
- /9/ Unit Power Cost Computation excel worksheet
- /10/ Sensitivity calculation excel worksheets
- /11/ Overall power plant efficiency calculation excel worksheet
- /12/ Undertaking issued by Adhunik Metaliks Ltd. on "No Technology Substitution during the selected crediting period" dated 10/11/2008
- /13/ Undertaking issued by Adhunik Metaliks Ltd. on "No ODA utilisation" dated 10/11/2008
- /14/ Self declaration issued by Adhunik Metaliks Ltd. on "Debt-equity ration of project investment" dated 20/11/2008
- /15/ Common rupee loan agreement signed between AML, The Banks and State Bank of India, dated 14/06/2006
- /16/ Environmental Clearances from Ministry of Environment and Forests, Government of India. (Ref. No.-J-11011/61/2005-IA II (I) dated 21st June 2005 and Ref. No.-J-11011/346/2006-IA II (I) dated 9th March 2007)
- /17/ Consent to Establish from State Pollution Control Board, Orissa. (Ref. No.- 12665/Ind-II-NOC-3025 dated 8th April 2005)
- /18/ Consent to Operate from State Pollution Control Board, Orissa. (Ref. No.-16081/IND-I-CON-5060 dated 1st July 2008)
- /19/ Agreement for the supply of Electrical Energy with Western Electricity Supply Company of Orissa Limited. (Ref. No.-CSO/ WESCO/194 dated 4th May 2004)
- /20/ Approval from Department of Water Resources, Government of Orissa for supply of water. (Ref. No.-25748/WR/Irr.II-WRC-12/2004 dated 10th August 2004)
- /21/ Registration and License to Work a Factory. (Reg. No.-SG-492, Serial No.-04462 dated 14th May 2008)
- /22/ Provisional Order under Section 9 of the Indian Boilers Act of 1923. (Ref. No.- 2/2008 dated 19th March 2008, Ref. No.- 3/2008 dated 19th March 2008, Ref. No.- 4/2008 dated 2nd April 2008, Ref. No.- 5/2008 dated 2nd April 2008 and Ref. No.- 6/2008 dated 2nd April 2008)
- /23/ AML audited annual report, 2005-2006
- /24/ Letter issued by M/s, Avant-Garde Engineers and Consultants (P) Limited (ref. no. 24117/NML/00A dated 14th August 2004) related to unit power cost for baseline alternatives.
- /25/ Production Certificate issued by the Office of the Director of Industries, Orissa. (Memo No. 15022/Ind, dt. 20/12/2008)
- /26/ Inspection Report issued by Office of the Superintending Engineer (Projects), Govt. of Orissa (Report no. 38/2006-07 dt. 30/03/2007 & Report no. 35/2008-09 dt. 15/11/2008) for commissioning of TG1 and TG 2 respectively.
- /27/ EB Guidance on the Assessment of Investment Analysis (version 02) http://cdm.unfccc.int/EB/041/eb41_repan45.pdf
- /28/ Adhunik Metaliks Limited – Electricity distribution line Diagram
- /29/ Rapid Environmental Impact Assessment & EMP by Min Mec Consultancy Pvt. Ltd, New Delhi
- /30/ Letter from Adhunik Metaliks Karmachari Sangha, dated 12/03/2008.
- /30/ Letter from Avant – Garde Engineers and Consultants (P) Ltd. Dated 06/12/2007
- /31/ Letter from Thermal Systems (Hyderabad) Pvt. Ltd. Dated 20/12/2007
- /32/ Letter from Nav Nirman Sanstha, dated 20/02/2007.
- /33/ Technical Data Sheet for Steam Generator and Auxiliaries- Technical Specifications of the Waste Heat Recovery Boilers
- /34/ Purchase Order for Waste Heat Recovery Boilers issued to M/s. Thermal Systems (Hyderabad) Pvt. Ltd. by M/s. Adhunik Metaliks Limited (Ref. No.-AML/KOL/PO/PP/PO/06-07/5152 dated 30th April 2006)
- /35/ Contract for Supply of Turbo-Generator and Auxiliaries between M/s. Adhunik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd. (dated 17th April 2006)- Purchase Order for Steam-Turbo Generators.
- /36/ Official website for Ministry of Petroleum, Govt. of India (<http://petroleum.nic.in/ng.htm>) for non availability of natural gas supply in the project region.

- /36/ Calorific values of coal, coal char and coal washery based rejects are obtained from third party report of R.V.Briggs & Co. Private Limited. (test report no. C(S)/04-05/313, dated 28/07/2004, C(S)/04-05/314, dated 28/07/2004 and C(S)/04-05/312, dated 28/07/2004)
- /37/ Cost of coal washery middlings, coal from AML's Ledger account period from 01/04/2004 to 31/03/2005.
- /38/ Letter from M/s United Consultants (India) Private Limited, dated 04/08/2004
- /39/ Letter from M/s Avant Garde Engineers & Consultants (P) Ltd to M/s. Neepaz Metaliks Limited (Ref. No.-24117/NML/00A), dated 14/08/2004
- /40/ Work Order to CDM Consultant (Ref. No. NML/05/CDM/LOI/01), dated 09/02/2005
- /41/ E-mail Communication between CDM consultant and M/s Adhunik Metaliks Limited regarding the requirement for a new methodology, dated 20/09/2005.
- /42/ [http://steel.nic.in/Annual%20Report%20\(2006-07\)/English/Annual%20Report%20\(2006-07\).pdf](http://steel.nic.in/Annual%20Report%20(2006-07)/English/Annual%20Report%20(2006-07).pdf)
- /43/ <http://www.sail.co.in/aboutus.php?tag=company-energy>
- /44/ Maintenance of monitoring equipments and installations Service order copy for ENMAS O & M Services Private Limited dated (Ref. 6800000003; dated 25/04/2007)
- /45/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories'
- /46/ Monthly power invoices for the period 2003 – 2007.
- /47/ Tata Growth Shop letter dated 06/08/2004 regarding designed waste gas generation from DRI kiln.
- /48/ Email communication between CDM consultant and Project Participant during January 2005 to September 2005; 07/05/2007 to 17/09/2007; 03/10/2007 to 03/01/2008

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for “Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited”

It serves as a “**reality check**” on the project that is completed by a local assessor from SGS India

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
Host Country Approval letter ensuring the participation requirements being met by the project activity.	Host Country Approval from the Ministry of Environment & Forests (Indian DNA) was provided in original which was checked and verified during the validation site visit and found acceptable.	HCA Letter Ref. No. - 4/7/2008-CCC dated 4 August 2008.	Not required.
The appropriate Modalities of Communication for the project activity have to be submitted by the Project participant before submitting a request for registration.	The letter on the Modalities of Communication with the Executive Board and the UNFCCC Secretariat signed by the project participant could not be provided by the PP during the document review process of the validation site visit at Rourkella, Orissa. Hence the correctness of the contact information PP as provided in the PDD Annex 1 could not be checked. A NIR has been raised.	The modalities of Communication was not provided during the validation site visit, hence NIR 02 was raised.	NIR 02 raised. NIR 02 closed out.

<p>The appropriate project ownership and requisite approval/ license required for establishment of the project activity at the mentioned geographical location needs to be checked.</p>	<p>The project participants have the necessary licenses as the project activity is well within the premises of the project boundary indicated.</p>	<p>Deed of Sale.</p> <p>Consent to Establish from State Pollution Control Board, Orissa. (Ref. No.- 12665/Ind-II-NOC-3025 dated 8th April 2005)</p> <p>Consent to Operate from State Pollution Control Board, Orissa. (Ref. No.-16081/IND-I-CON-5060 dated 1st July 2008)</p> <p>Environmental Clearances from Ministry of Environment and Forests, Government of India. (Ref. No.-J-11011/61/2005-IA II (I) dated 21st June 2005 and Ref. No.-J-11011/346/2006-IA II (I) dated 9th March 2007)</p> <p>Agreement for the supply of Electrical Energy with Western Electricity Supply Company of Orissa Limited. (Ref. No.-CSO/ WESCO/194 dated 4th May 2004)</p> <p>Approval from Department of Water Resources, Government of Orissa for supply of water. (Ref. No.- 25748/WR/Irr.II-WRC-12/2004 dated 10th August 2004)</p> <p>Registration and License to Work a Factory. (Reg. No.-SG-492, Serial No.-04462 dated 14th May 2008)</p> <p>Provisional Order under Section 9 of the Indian Boilers Act of 1923. (Ref. No.- 2/2008 dated 19th March 2008, Ref. No.- 3/2008 dated 19th March 2008, Ref. No.- 4/2008 dated 2nd April 2008, Ref. No.- 5/2008 dated 2nd April 2008 and Ref. No.- 6/2008 dated 2nd April 2008).</p>	
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The Purchase Orders along with technical specification of the respective project equipments installed/ to be procured for this proposed project activity needs to be checked during site visit.	Project technical description has been reviewed through the signed contract and interviewing the PP and Project contractor. The technical description provided in the PDD is found consistent with the actual scenario.	<p>Review of the following documents:</p> <p>Technical Data Sheet for Steam Generator and Auxiliaries- Technical Specifications of the Waste Heat Recovery Boilers.</p> <p>Purchase Order for Waste Heat Recovery Boilers. (Ref. No.-AML/KOL/PO/PP/PO/06-07/5152 dated 30th April 2006)</p> <p>Turbine Manual-Technical Specifications Steam-Turbo Generators.</p> <p>Contract for Supply of Turbo-Generator and Auxiliaries between M/s. Adhunik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd.(Ref. letter dated 17th April 2006- Purchase Order for Steam-Turbo Generators.)</p>	Not required.
Detail documentary description and record of initial extensive training programme conducted for the project personnel needs to be checked during site visit.	During site visit, it has been verified that the project personnel involved in running the power plant are technically well qualified and trained in the relevant field with adequate experience. As required the Shift operators will be provided extensive on-the-job training including plant operation, data monitoring and report generation under the guidance of the Shift In charge. This has been found in line with the information provided in the PDD.	-Onsite interview with the designated Officials and project staff in the project site.	Not required.
The information on public funding involvement for the project activity financing needs to be checked during the site visit and PP should provide proper substantiation for the same.	The project funding for the current activity has not involved any ODA utilization. This was discussed with the Project participant during site visit and project proponent provided the loan sanction document during site visit with various bank under one agreement copy.	Self declaration submitted by the project proponent dated 10/11/2008.	Not required.

Whether the power plant is grid connected needs to be ascertained during the site visit.	The project activity is not grid connected. The captive power plant to be implemented stage wise and phase wise would cater to the partial in-house electricity demand of the integrated iron and steel plant.	Onsite interview and physical verification.	Not required.
The modalities followed for Local Stakeholder Consultation procedure needs to be checked.	The stake holders being informed regarding the project activity and requested to express their views and provide their feedback on the same. The Proponent has provided the written communication letters issued to the local stakeholders to the project activity informing them regarding the project activity to be set up and the time, date and venue of the interactive session organized for the same requesting them to join and provide their feedbacks.	Document review for the following was carried out: Letter from Adhunik Metaliks karmachari Sangha, dated 12/03/2008. Letter from Avant – Garde Engineers and Consultants (P) Ltd. Dated 06/12/2007. Letter from Thermal Systems (Hyderabad) Pvt. Ltd. Dated 20/12/2007. Letter from Nav Nirman Sanstha, dated 20/02/2007.	Not required.
The local stakeholders' feedback regarding the project activity needs to be cross checked during the site visit.	The positive comments and feedback provided by the local stake holders regarding the project activity set up by Adhunik Metaliks Limited and the same was discussed during the validation site visit by on-site interviews, and no negative comments towards the project activity has been observed.	Feedback letters/ email communications from local stakeholders such as: Letter from Adhunik Metaliks karmachari Sangha, dated 12/03/2008. Letter from Avant – Garde Engineers and Consultants (P) Ltd. Dated 06/12/2007. Letter from Thermal Systems (Hyderabad) Pvt. Ltd. Dated 20/12/2007. Letter from Nav Nirman Sanstha, dated 20/02/2007.	Not required.

A.2 Annex 2: Validation Protocol

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

Requirement	Reference	Comments	Conclusion
All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	Marrakech Accords, CDM Modalities §30	Both the parties have ratified the Kyoto Protocol and India has ratified the protocol on 26th August 2002 and is allowed to participate. The web link is http://unfccc.int/parties_and_observers/parties/items/2109.php http://maindb.unfccc.int/public/country.pl?country=IN	Y
The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	Marrakech Accords, CDM Modalities §29 and §30	No annex I Party is involved in the proposed CDM project activity at the stage of Registration. The Project will assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Y

Requirement	Reference	Comments	Conclusion
The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	The project activity is likely to contribute to sustainable development of the non-Annex I Party, India. Letter of approval from Host Country (India) Designated National Authority (DNA) to be submitted by the project proponent .	CAR 01 CAR 01 closed
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	The project was listed on UNFCCC website as a procedure towards Global Stakeholder Consultation Process: Website: http://cdm.unfccc.int/Projects/Validation/D B/5QWV7D8QN5RF3LZ0JK2E80C088ZF 41/view.html Starting date: 15 August 08 Closing date: 13 September 08 Number of comments received: 0	Y
The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	The project has used Guidelines for completing CDM-PDD, version 6.2 format correctly.	Y
The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration	EB-09 F_CDM_REG form	The Modalities of Communication would have to be submitted by the Project participant before submitting a request for registration.	CAR 02 CAR 02 closed

Requirement	Reference	Comments	Conclusion
For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?	Not relevant as the project is not an AR project.	Not Applicable	Not Applicable

Table 2 PDD

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
General Description of Project Activity					
Project Title					
Does the used project title clearly enable to identify the unique CDM activity?	01	DR	The title of the project activity "Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited" is clear and self explanatory towards the unique CDM activity.	Y	Y
Are there an indication of a revision number and the date of the revision?	01	DR	The current PDD indicates the version number (01) and date of the version (10/08/2008) under section A.1.	Y	Y
Is this in consistency with the time line of the project's history?	01	DR	The date of PDD version 01 is 10/08/2008, whereas the starting date of the project activity mentioned in the PDD is 17/04/2006. Therefore the time line is consistent with the project's history.	Y	Y
Description of the Project Activity					
Is the description delivering a transparent overview of the project activities?	01	DR	The current PDD under Section A.2 provides information towards purpose of the project activity, type of technology used and contribution towards sustainable development.	Y	Y
Is all information provided in compliance with actual situation or planning?	01, 24, 25	DR	The same would be cross checked during site visit.	Pending site visit	Site visit performed and found satisfactory.
Is all information provided consistent with details provided in further chapters of the PDD?	01, 02, 03	DR	Pending for closure of CAR's & NIR's.	Pending	Closed
Project Participants					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the table required for the indication of project participants correctly applied?	01	DR	The table under section A.3 of the PDD version 01 required for the indication of project participants has been applied correctly.	Y	Y
Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	01	DR	All the information regarding project participants is consistent with details provided by further chapters of the PDD (in particular annex 1, contact information on participants in the project activity).	Y	Y
Technical Description of the Project Activity					
Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude of the site indicated (decimal points)	01	DR	The information provided regarding the location of the project activity is clear. The project activity is situated at Chadrihariharpur, P.O. Kuarmunda in the District of Sundargarh, Orissa, India. The geographical co-ordinates of the project activity are Latitude- 21°35' to 22°32' and Longitude- 83°32' to 85°22'.	Y	Y
Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	01, 15, 16 & 17	DR	In the PDD it has been identified. The documentary evidence to be provided by the PP with regard to the ownership and relevant licenses and approvals allowing the implementation of such a project activity to establish and operate.	Pending site visit	Y
Is the category(ies) of the project activity correctly identified?	01	DR	The project correctly applies the category of the project activity as Scope 1&4 – Energy Industries (renewable/non-renewable source) & Manufacturing Industries.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Does the project design engineering reflect current good practices?	01, 21 & 20	DR	<p>The description towards project design engineering shows the implementation of Waste Heat Recovery Boilers (WHRB) to capture the waste gas coming out from DRI kilns after complete combustion in the After Burning Chamber (ABC) and then introduced to steam turbo generator for power generation. After transferring the heat, the waste flue gas is passed through the Electro Static Precipitator (ESP) and vented to atmosphere.</p> <p>The Purchase Orders along with technical specification of the respective project equipments such as WHRBs, steam turbo generators etc. installed/ to be procured for this proposed project activity has to be provided by the PP.</p>	Site visit	Y
Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance and is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	01,02, 03	DR	The description of the technology to be applied provides information towards the explanation how the project will reduce greenhouse gas emissions related to the baseline scenario, project scenario has been provided under current version of the PDD.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is all information provided in compliance with actual situation or planning as available by the project participants?	01, 15, 16, 17, 20 & 21	DR	<p>The actual situation of the project installation and the following permits/clearances needs to be checked during site visit.</p> <p>NOC, Consent to Establish and Consent to Operate from Orissa Pollution Control Board, Environment Clearance from MoEF.</p> <p>Factory License.</p> <p>Boiler license and testing certificate for the WHRB.</p> <p>Clearance from Department of Irrigation.</p>	Site visit	Y
Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	01.,02 & 03	DR	According to the project technical description provided under PDD, the project activity does not implement any state of the art technology; however the project technology description reveals the use of improved technology.	Y	Y
Is the project technology likely to be substituted by other or more efficient technologies within the project period?	01,11	DR	Whether the project technology likely to be substituted by other or more efficient technologies within the project period is not clear, the same needs to be substantiated by the project proponent.	NIR 03	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	48	DR	The PDD version 01 does not state anything regarding initial extensive training and maintenance efforts required for functional operation of the project activity. Detail documentary description and record of initial extensive training programme conducted for the project personnel needs to be provided by the project proponent.	Site visit	Y
Does the project make provisions for meeting training and maintenance needs?	48	DR	Pending site visit	Site visit	Y
Is a schedule available on the implementation of the project and are there any risks for delays?	01	DR	According to the PDD, the project activity has been already implemented.	Y	Y
Is the table required for the indication of projected emission reductions correctly applied?	01,02, 03 & 07	DR	The table at section A.4.4 and B.6.4 required for the indication of projected emission reductions has been applied correctly in accordance with the Guidelines for completing the project design document (CDM-PDD) version 6.2, as the description of the crediting period years are clear.	Y	Y
Public Funding					
Does the information on public funding provided conform with the actual situation or planning as presented by the project participants?	01, 12	DR	The PDD states that no public funding will be invested in the project activity. The same should be checked during the site visit and PP should provide proper substantiation for the same.	Pending site visit	Y
Is all information provided consist with details provided by further chapters of the PDD (in particular annex 2)?	01	DR	All information regarding Public Funding provided under PDD is consistent with details provided by further chapters of the PDD.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	01	DR	As per PDD no public funding from Annex I party has been identified for the project activity. Please refer section A.5.1 above.	Pending	Y
Baseline and Monitoring Methodology					
Choice and Applicability					
Is the baseline methodology previously approved by the CDM Methodology Panel?	01	DR	Section B.1 of the PDD, provides the complete reference and currently valid version number of the approved methodology as applicable – ACM0012: “Consolidated baseline methodology for GHG emission reductions for waste gas or heat or pressure based energy system” version 2.	Y	Y
Is the baseline methodology the one deemed most applicable for this project?	01	DR	The baseline methodology as selected for the project activity (ACM0012 version 2) is deemed most applicable for the project activity, as the project activity involves utilization of waste gas of the Direct Reduced Iron (DRI) kilns as an energy source for generation of electricity.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the choice of the methodology correctly justified by the PDD and is the project in conformance with all applicability criteria of the applied methodology?	01	DR	<p>The applicability criteria of ACM0012 ver. 02 with the project activity has been described under Section B.3 of the PDD, however the justification towards the applicability criteria – <i>“The waste gas/pressure utilized in the project activity was flared or released into the atmosphere in the absence of the project activity at existing facility.”</i> as mentioned under ACM0012 ver02 is not transparent under PDD, as the commercial production had already began at the time when the Project Activity is submitted for validation.</p> <p>However the Project Proponent is requested to demonstrate the matter through the financial documents that no energy was generated and sold to other facilities.</p>	CAR 04	CAR 04 closed out.
Project Boundary					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Are all emission sources and gasses related to the baseline scenario, project scenario and leakage clearly identified and described in a complete manner?	01,02 & 03	DR	<p>The description towards all emission sources and gasses related to the baseline scenario, project scenario has been described under Section B.3 of the PDD.</p> <p>However consideration of sources of GHG emissions due to “Supplemental electricity consumption” for the project activity is not clear, as under Section B.3 Table-B.1 of the PDD, it has been mentioned that “Power consumption under emergency situation by the power plant equipments will anyway be accounted as auxiliary consumption.”</p> <p>The point should be justified by the project proponent that how auxiliary consumption during emergency situation will be met?</p>	CAR 05	CAR 05 closed out.
In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	01	DR	The project activity is grid connected. However the same will be verified during site visit.	Pending site visit.	Y
Are the project’s spatial boundaries (geographical) and the project’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?	01, 02 & 03	DR	Description towards the project boundary is not clear, further information is required to confirm why the CFBC boiler which is supplying steam to the same turbine as the project activity has not been included in the project boundary.	NIR 06	NIR 06 closed out.
Identification of the Baseline Scenario					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the chosen baseline transparent?	01, 08	DR	<p>The current version of the PDD under Section B.4 provides the description towards identification of the most likely baseline scenario in accordance with the Step 1 to Step 4 for identification of baseline scenario as mentioned under ACM0012 version 02. However, the selection of the most plausible and conservative baseline scenario needs to be further substantiated on the basis of following issues –</p> <p>Non availability of natural gas distribution network in Orissa needs to be further substantiated with traceable references.</p> <p>All the assumptions used (cost of grid power, cost of power generation from coal based power plant as estimated by AML) towards capital cost investment and cost of power generation for the project activity needs to be further substantiated with traceable references.</p> <p>Project proponent needs to describe further that how the conservative approach has been taken during evaluation of coal and coal washery based captive power generation and Sourced Grid-connected power on the basis of available baseline fuel with the lowest carbon emission factor.</p> <p>Further information and substantiation are required to confirm whether or not the CFBC boiler which is supplying steam to the same turbine as the project activity would have been installed in the absence of this CDM project activity.</p>	CAR 07	CAR 07 closed out
Does the application consider all potential realistic and credible baseline scenarios in the discussion taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations??	01	DR	The application towards selection of most plausible scenario considers all potential realistic and credible baseline scenarios as provided under ACM0012 version 02.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the choice of the baseline compatible with the available data?	01	DR	Pending closure of CAR 07	Pending	Y
Is conservativeness addressed in the way of identifying the baseline?	01	DR	Pending closure of CAR 07	Pending	Y
Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	01	DR	Selection of most likely scenario among other possible and/or discussed scenarios needs to be further substantiated. Pending closure of CAR 07.	Pending	Y
Additionality					
Does the PDD clearly demonstrate the additionality using the approach as given by the methodology and by following all the required steps?	01, 02, 03	DR	The additionality of the project activity has been described with reference to the 'Tool for the demonstration and assessment of additionality', version 05, for detail discussion on additionality check please refer B.4.2.	Y	Y
In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	01, 02, 03	DR	According to the version 01 of the PDD, the project additionality has been discussed with reference to the "Tools for the demonstration and assessment of additionality" (version 5). All the steps of additionality tool have been followed, but the facts described towards step 2: Investment Analysis and step 3: Barrier analysis are not clear. Pending closure of CAR 07	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<p>Is the discussion on additionality and the evidence provided consistent with the starting date of the project</p> <p>If the project has started before the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity</p>	01, 02, 03 & 47	DR	<p>The starting date of the project activity as per the PDD version 01 is 17/04/2006 which is considered as the placement of purchase order.</p> <p>However the consistency of the project start date with the discussion of the project additionality is not transparent.</p> <p>How and when the CDM was taken into serious consideration in the decision to go ahead with the project activity is not clear and the same has to be properly substantiated.</p> <p>Project proponent needs to substantiate along with reliable evidences that they had prior knowledge about CDM modalities before they have considered the CDM revenue to mitigate the project risk.</p> <p>Please explain how the benefits of the CDM were considered as a decisive factor in the decision to proceed with the project.</p>	CAR 08	CAR 08 closed out.

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<p>Is the discussion on additionality consistent with the identification all potential realistic and credible baseline scenarios</p> <p>Do the identified alternative include technologies and practices that include outputs (e.g) cement or services comparable with the proposed CDM project activity</p>	01, 02, 03	DR	<p>Response to B.4.4-</p> <p>All the plausible and credible alternatives to the project as per the requirement of ACM 0012 version 02 have been discussed in section B.4 of the PDD version 01. The alternatives to the project activity have been evaluated based on Steps 1 to 4 using Additionality Tool version 05, as required by the ACM0012 version 02. Based on (a) fuel choice and availability, (b) taking into account national and/or Sectoral policies, the most plausible baseline alternative has been chosen. However conservative approach towards baseline selection is not transparent.</p> <p>Pending closure of CAR 07.</p>	Pending	Y
<p>If an investment analysis has been used, has it been shown that the proposed project activity is economically or financially less attractive than at least one other alternative without the revenue from the sale of CERs?</p>	01, 02, 03, 08, 09, 10	DR	<p>Please provide the documentary evidence for the assessment of all parameters and assumptions used in the calculation of the relevant financial indicator. Please substantiate the suitability of such parameters which have been used in the investment comparison analysis procedure.</p> <p>Project proponent is requested to provide third party or publicly available sources to cross check the parameters used in the investment analysis procedure.</p> <p>Please provide the Investment comparison analysis calculation sheet as well as sensitivity analysis calculation procedure with clarification of chosen variation.</p>	CAR 09	CAR 09 closed out.

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	01	DR	<p>Barrier analysis is not clear as there is no such description of barrier during the project implementation time i.e. pre project scenario, however the barrier shown in the PDD is post project scenario i.e. operational barrier. Please justify the matter that how the project activity faced the barrier to arrange the required project investment.</p> <p>Please justify Barrier presented in the PDD is sufficient to prevent the implementation of the project activity but would not be sufficient to prevent the implementation of a coal and coal washery rejects fired captive power plant.</p> <p>Provide further evidence to support the conclusion that the fossil fuel CFBC boiler would have been installed without the development of the waste heat recovery boilers.</p> <p>The barrier analysis listed in the PDD are supported by the investment comparison analysis which is not transparent with respect to the total cost of power generation and unit cost of power generation, as well as the sources of values used in the analysis method need to be substantiated.</p>	CAR 10	<p>Barrier analysis has been withdrawn out from the PDD by project proponent in the revised version of the PDD.</p> <p>Y</p>

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Has it been shown that the project is not common practice?	01	DR	<p>The analysis of the other activities implemented previously or currently underway similar to the proposed project activities in the context of national and State (Orissa) scenario without CDM modalities needs to be substantiated more clearly with proper direct traceable references.</p> <p>The UN reference number of similar Registered CDM project activity needs to be provided by the project proponent for transparent traceability of the fact.</p> <p>The similar activities are required to be identified properly and the project proponent needs to demonstrate why the existence of those identified activities does not contradict the claim that the proposed project activity is financially unattractive or subject to barriers.</p>	CAR 10	CAR 10 closed out.
Is it demonstrated/justified that the project activity itself is not a likely baseline scenario			Pending closure of above additionality CAR 08, CAR 09, CAR 10.	Pending	Y
Application of the Baseline Methodology					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Has the approved methodology been applied correctly for determining baseline emissions ?	01, 02, 03 & 07	DR	<p>The current version of the PDD has used the equations, steps/calculations in accordance with ACM0012 version 02 during determination of baseline emissions, however the following issues are not clear –</p> <p>Consideration of Efficiency of the power plant as mentioned in the PDD is not justified as it seems like calculated by the project proponent, how the option (ii) mentioned under ACM0012 version 02 has been applied for the same needs to be clarified.</p> <p>During baseline emissions calculation how the “Capping of baseline emissions” has been considered following Method-2 of ACM0012 version 02 is not transparent.</p>	CAR 11	CAR 11 closed out.

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Has the approved methodology been applied correctly for determining project emissions ?	01,02 & 03	DR	<p>The current version of the PDD has used the ACM0012 version 02 during determination of project emissions, according to the PDD, Project emissions due to combustion of auxiliary fuels used to supplement the waste gas and Project emissions due to electricity consumption of gas cleaning equipment has not been considered, as in the project activity, no auxiliary fuel is used to supplement waste gas and hence there would be no emissions from combustion of auxiliary fuels for supplementing the waste gas. Further the gas is not cleaned before its use in generating electricity and therefore there are no related emissions due to electricity consumption for cleaning of gas.</p> <p>However, in case of the current project activity Project Emissions are applicable to the project activity as power from coal and coal washery rejects based CFBC boiler is used for generation start-up/ maintenance of the WHRB, in emergencies etc. Thus, as a conservative approach towards project emissions and how this was calculated from the consumption of additional electricity by the project activity as per ACM0012 version 02.</p> <p>However consideration of sources of GHG emissions due to "Supplemental electricity consumption" for the project activity is not clear, as under Section B.3 Table-B.1 of the PDD, it has been mentioned that "Power consumption under emergency situation by the power plant equipments will anyway be accounted as auxiliary consumption."</p> <p>The point should be justified by the project proponent that how auxiliary consumption during emergency situation will be met?</p> <p>Pending closure of CAR 05</p>	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Has the approved methodology been applied correctly for determining leakage ?	01	DR	No leakage effect has been considered for the project activity as no leakage is applicable under ACM0012.	Y	
Where applicable, has the approved methodology been applied correctly for the direct calculation of emission reductions	01, 02, 03 & 07	DR	Pending closure of CAR 11.	Pending	Y
Have all the methodological choices been explained, have they been properly justified and are they correct	01, 02, 03	DR	The methodological choice towards the baseline and project emission calculation has represented and explained under PDD, with reference to ACM0012 version 02, which is justified, however consideration of Efficiency of the power plant and Capping of baseline emissions is not clear. Pending closure of CAR 11.	Pending	Y
Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	01	DR	.No such information regarding uncertainties in the calculations, data sources or assumptions been discussed under PDD. Pending closure of CAR 11.	Pending	Y
Ex-ante Data and Parameters Used					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Are the data provided in compliance with the methodology?	01, 02, 03, 08, 23, 31, 32, 33	DR	<p>The ex-ante data and parameters that are mentioned in the methodology are included under PDD in project specific manner, however the followings issues needs to be further clarified</p> <p>Consideration of “Baseline efficiency of the captive power plant” - η_{BL} (30%) as mentioned in the PDD is not justified as it seems like estimated by the project proponent, how the option (ii) mentioned under ACM0012 version 02 has been applied for the same needs to be clarified.</p> <p>Consideration of “Production process which most logically relates to waste gas generation in baseline” - $Q_{BL, Product}$ is not clear, project proponent has to justify how the requirement under ACM0012 version 02 has been met while estimation of $Q_{BL, Product}$.</p> <p>Pending closure of CAR 11.</p>	Pending	Y
Is all the data derived from official data sources or replicable records and have these been correctly quoted?	01, 02, 03, 08, 23, 31, 32, 33	DR	<p>Proper documentary evidence towards source data (manufacturer’s specification) for Quantity of waste gas generated prior to the start of the project activity - $Q_{WG,BL}$ needs to be provided by the project proponent.</p> <p>Proper documentary evidence towards source data (manufacturer’s specification) for Specific waste gas production per unit of sponge iron - $q_{wg, Product}$ needs to be provided by the project proponent.</p>	NIR 12	NIR 12 closed out

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the vintage of the baseline data correct?	01, 02, 03, 08, 23, 31, 32, 33	DR	Pending closure of CAR 11 and NIR 12.	Pending	Y
Calculation of Emissions Reductions					
Has the approved methodology been applied correctly for determining emission reductions ?	01, 02, 03, 07	DR	<p>The current version of the PDD has used the ACM0012 version 2 during determination of ex-ante emission reductions.</p> <p>But the application of the methodology is not clear –</p> <p>Consideration of “Baseline efficiency of the captive power plant”, “baseline cap for the project activity” towards determination of emission reductions are not transparent, the correlation of the same with requirement of ACM0012 version 2 needs to be further substantiated.</p> <p>The input factors used and sources of the input factors used towards ex-ante emission reductions calculations are not clearly provided.</p> <p>The excel sheet for calculation of emission reductions is required to be submitted along with evidences for the assumptions used.</p>	CAR 13	Y
Are the emission reduction calculations documented in a complete and transparent manner?	01, 02, 03, 07	DR	Pending closure of CAR 13.	Pending	Y
Have conservative assumptions been used to calculate emission reductions?	01, 02, 03, 07	DR	Pending closure of CAR 13.	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the projection based on provable input parameter?	01, 02, 03, 07	DR	Pending closure of CAR 13.	Pending	Y
Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	01	DR	The ex-ante projection is based on same procedures as used for ex-post monitoring, following ACM012 version02.	Y	Y
Is the calculation of the emission reduction correct?	01, 02, 03, 07	DR	Pending closure of CAR 13.	Pending	Y
Emission Reductions					
Will the project result in fewer GHG emissions than the baseline scenario?	01, 02, 03, 07	DR	Pending closure of CAR 13.	Pending	Y
Is the form/table required for the indication of projected emission reductions correctly applied?	01	DR	The table at section A.4.4 and B.6.4 required for the indication of projected emission reductions has been applied correctly in accordance with the Guidelines for completing the project design document (CDM-PDD) version 6.2, as the description of the crediting period years are clear.	Y	Y
Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	01	DR	According to the current version of the PDD, The project activity has been already implemented and start date of 10 years fixed crediting period would be 01/08/2009 or subsequent to the date of registration of the project, which ever is later, which is a future date, however representation of emission reduction projections during the 10 years fixed crediting period has been properly described as per the yearly milestone.	Y	Y
Monitoring Methodology					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
<p>Does the monitoring methodology provide a consistent approach in the context of all parameter to be monitored and further information provided by the PDD?</p> <p>Are all parameters and data that is available at validation consistent with the approved methodology</p>	01, 02, 03	DR	<p>The description towards the data/ parameters monitored under section B.7.1 of the PDD has been provided in project specific customized manner correlating with ACM0012 version 2, however the description towards monitoring methodology is not entirely transparent and the following issues needs to be justified further –</p> <p>The source towards the value of data applied for the purpose of calculating expected emission reductions in section B.5 for the parameters as mentioned under Section B.7.1 “Quantity of waste gas used for energy generation during year y”, “Total steam inlet to the turbine”, “Enthalpy of steam at turbine inlet” are not transparent.</p> <p>The source towards the value of data applied for the purpose of calculating expected emission reductions in section B.5 for the parameters as mentioned under Section B.7.1 “Total steam generation from WHRB”, “Total steam generation from CFBC”, are contradictory with the values as already mentioned under Section B.6.3 of the PDD.</p> <p>No parameters required to monitor Project Emissions due to “Supplemental electricity consumption from the coal or coal washery rejects fired power plant during start-up/maintenance of WHRB or during exigencies for the project activity has been included under PDD.</p> <p>Pending closure of CAR 11</p>	Pending	Y
Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	01, 02, 03	DR	<p>According to the PDD the monitoring methodology towards Baseline emissions and Project emissions has been described in accordance with ACM0012 version 02, however the description towards monitoring methodology is not entirely transparent.</p> <p>Pending closure of CAR 11.</p>	Pending	Y
Data and Parameters Monitored					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	01, 02, 03, 32	DR	According to the PDD version 01, under section B.7.2 the parameters related to computation of f_{WG} is not transparent because Steam flow, Steam temperature and Steam pressure from WHRBs and other boilers should be measured separately to calculate the Energy content of the steam generated in WHRBs and other boilers. The project proponent is requested to clarify the same with proper logic for the estimation of f_{WG} .	CAR 14	Y
Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	01, 02, 03, 32	DR	According to the PDD the monitoring methodology towards Baseline emissions and Project emissions has been described in accordance with ACM0012 version 02, however the description towards monitoring methodology is not entirely transparent. Pending closure of CAR 14.	Pending	Y
Will it be possible to determine the specified project GHG indicators?	01, 02, 03, 32	DR	According to the description towards the monitoring plan provided under PDD, the GHG indicators will be possible to determine, as the monitoring plan does not involve any critical parameter to be monitored or any critical monitoring equipment to be used. However the project specific description towards the monitoring plan for the project activity is not fully transparent. Pending closure of CAR 14.	Pending	Y
Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	01, 02, 03, 32	DR	Pending closure of CAR 14.	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	01, 02, 03, 32	DR	The QA-QC procedure for every data/parameters has been described under the monitoring plan; however some of the issues are not fully transparent under monitoring plan. Pending closure of CAR 14.	Pending	Y
Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	01, 02, 03, 32	DR	Pending closure of CAR 14	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	01, 02, 03, 08, 32	DR	<p>The current version of the PDD has used the ACM0012 version 02 during determination of project emissions, according to the PDD, Project emissions due to combustion of auxiliary fuels used to supplement the waste gas and Project emissions due to electricity consumption of gas cleaning equipment has not been considered, as in the project activity, no auxiliary fuel is used to supplement waste gas and hence there would be no emissions from combustion of auxiliary fuels for supplementing the waste gas. Further the gas is not cleaned before its use in generating electricity and therefore there are no related emissions due to electricity consumption for cleaning of gas.</p> <p>However, in case of the current project activity Project Emissions are applicable to the project activity as power from coal and coal washery rejects based CFBC boiler is used for generation start-up/ maintenance of the WHRB, in emergencies etc. Thus, as conservative approach project emissions from consumption of additional electricity by the project activity has been calculated as per ACM0012 version 02.</p> <p>No parameters required to monitor Project Emissions due to “Supplemental electricity consumption from the coal or coal washery rejects fired power plant during start-up/maintenance of WHRB or during exigencies for the project activity has been included under PDD.</p> <p>However pending closure of CAR 14.</p>	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Quality Control (QC) and Quality Assurance (QA) Procedures					
Is the selection of data undergoing quality control and quality assurance procedures complete?	01	DR	The selected data/parameters will be meeting the reliable QA-QC procedure through regular calibration of monitoring equipments by competent agency and maintenance of monitoring equipments and also periodic quality review and approval by Head (Power Plant) and Management Representatives for collected monthly and annual production data and GHG performance of the project activity respectively.	Y	Y
Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	01	DR	The uncertainty levels for each ID have been determined in reliable manner.	Y	Y
Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	01	DR	Please refer Section B.11.1	Y	Y
Is it ensured that data will be bound to national or internal reference standards?	01	DR	The monitoring data will be clearly reproducible and comparable and will not be dependent on site-specific adjustments.	Y	Y
Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	01	DR	The monitored data will be meeting the reliable QA-QC procedure through regular calibration of monitoring equipments by competent agency and maintenance of monitoring equipments and also periodic quality review. However the same would be verified during site visit.	Site visit	Y
Operational and Management Structure					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Is the authority and responsibility of project management clearly described?	01, 02, 03	DR	According to the Annex-4 of the PDD version 01, the CDM team would be overall responsible for the monitoring, reporting, performance and overall GHG calculation of the power plant.	Y	Y
Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	01	DR	In the Annex-4 of the PDD the hierarchy of job responsibility for registration, monitoring, measurement and reporting is provided clearly.	Y	Y
Are procedures identified for training of monitoring personnel?	01, 48	DR	Pending site visit	Site visit	Y
Monitoring Plan (Annex 4)					
Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	01, 02, 03	DR	The monitoring plan has been developed in a project specific manner, however pending closure of CAR 14.	Pending	Y
Does the monitoring plan completely describes all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	01, 03	DR	The monitoring plan describes the data capturing, recording and review procedures, calibration procedure for the monitoring equipments, procedures towards emergency preparedness, modalities & procedures towards periodic training of the monitoring personnel and procedures towards annual CDM internal audit, which ensures the data quality.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	01, 02, 03	DR	According to the PDD, the monitoring plan towards the project activity provides the information regarding the Distributed control system but does not provide information regarding the on site energy meters, steam flow meters, thermocouple for steam temperature and feed water temperature monitoring and pressure gauges for steam pressure monitoring, however the respective position of the respective monitoring equipments has not been mentioned.	CAR 15	CAR 15 closed out.
Are procedures identified for calibration of monitoring equipment?	01	DR	The procedures towards periodic calibration of the monitoring equipments have been described under Section B.7.1 and Annex 4 of the PDD.	Y	Y
Are procedures identified for maintenance of monitoring equipment and installations?	01, 02, 03, 43	DR	No such information regarding maintenance of monitoring equipment and installations has been provided under Monitoring Plan of the PDD.	NIR 16	NIR 16 closed out
Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	01, 02, 03, 43	DR	Pending closure of NIR 16	Pending	Y
Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems??	01, 02, 03, 43	DR	No such procedures towards dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems has been described under monitoring plan of the PDD.	NIR 16	NIR 16 closed out
Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	01, 02, 03	DR	The procedures towards annual CDM internal Audit has been provided under Section B.7.1 and Annex 4 of the PDD.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	01, 02, 03, 43	DR	The PDD does not identify for project performance reviews prior to submission of data for verification. Pending closure of NIR 16	Pending	Y
Baseline Details					
Is there any indication of a date when determine the baseline?	01	DR	As per the PDD version 1 dated 10/08/2008 the date of completion of the application of the baseline study is 10/08/2008 mentioned under the section B.8. The baseline study has been done by Adhunik Metaliks Limited.	Y	Y
Is this in consistency with the time line of the PDD history?	01	DR	It seems to be consistent with the time line of the PDD history as completion date for baseline study and PDD Version 01 is 10/08/2008.	Y	Y
Is all data required provided in a complete manner by annex 3 of the PDD?	01. 02, 03	DR	Pending closure of CAR 11.	Pending	Y
Duration of the Project / Crediting Period					
Are the project's starting date and operational lifetime clearly defined and reasonable?	01	DR	The starting date of the project activity as mentioned in the PDD is 17/04/2006 and expected operational life time of the project activity is 20 years 0 months.	Y	Y
Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	01	DR	The PP has stated that starting date of crediting period is 01/01/2009. The length of the crediting period is 10 years 0 months which is fixed and the same is acceptable to DOE.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Does the project's operational lifetime exceed the crediting period	01	DR	According to the PDD version 01, the operational lifetime is exceeding the crediting period.	Y	Y
Environmental Impacts					
Does the project comply with environmental legislation in the host country?	01, 15, 16, 17, 18	DR	Environmental Clearance, No Objection Certificate and Consent to Operate from Ministry of Environment and Forests; Government of India and State Pollution Control Board along with Permission from Department of Water Resources, Govt. of Orissa, Factory License, Boiler license from relevant government department or agency needs to be provided by the project proponent. Pending site visit	Pending	Y
Has an analysis of the environmental impacts of the project activity been sufficiently described?	01	DR	The description towards environmental aspects due to Construction Activity, Project Operation and impacts on the ambient air quality, water resource & water quality, noise level, ecology and impact on socio-economic structure by the project activity mainly has been sufficiently described under current version of the PDD.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	01, 02, 03	DR	<p>EIA study is required for the project activity for receiving Environmental Clearance as per the Host Country regulation and according to the current version of the PDD EIA study has been carried out for the project activity.</p> <p>The detailed EIA report and relevant environmental clearances from state Pollution Control Board and Ministry of Environment and Forests; Government of India has to be provided by the project proponent.</p> <p>Pending site visit.</p>	Pending	Y
Will the project create any adverse environmental effects?	01, 02, 03	DR	<p>According to the current version of the PDD, the project activity will not create any adverse environmental effects.</p> <p>Same has to be checked during site visit.</p>	Pending site visit.	Y
Are transboundary environmental impacts considered in the analysis?	01	DR	<p>According to the current version of the PDD, no trans-boundary environmental impacts have been identified due to the project activity.</p> <p>Pending site visit.</p>	Pending site visit.	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Have identified environmental impacts been addressed in the project design?	01, 02, 03	DR	<p>According to the current version of the PDD, the mitigation plan for identified environmental impacts through installation of Electro-Static Precipitator for ambient quality control, re-circulation system for water system & effluent treatment facility for water resources & water quality control, Personal Protective Equipment for Noise level control, afforestation scheme, has been incorporated under project design.</p> <p>However, the periodic analysis report of the environmental parameter as carried out needs to be provided by the project proponent.</p> <p>Pending site visit.</p>	Pending site visit.	Y
Stakeholder Comments					

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Have relevant stakeholders been consulted?	01	DR, I	<p>The stake holders identified for the project activity as per the PDD are as follows:</p> <p>Village Panchayat.</p> <p>Employees of AML.</p> <p>Consultants.</p> <p>Equipment suppliers.</p> <p>Non-Governmental Organizations (NGO).</p> <p>Orissa Pollution Control Board (OPCB).</p> <p>Environment Department, Govt. of Orissa.</p> <p>Western Electricity Supply Company (WESCO) of Orissa Limited.</p> <p>Ministry of Environment and Forest (MoEF), Govt. of India.</p> <p>The PP would have to provide information on how the above mentioned stake holders have been consulted for the said project activity.</p>	NIR 17	NIR 18 closed out.

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Have appropriate media been used to invite comments by local stakeholders?	01, 02, 03	DR	<p>The PDD, version 01 does not state anything about the involvement of the media to invite comments by the local stakeholders on the project activity. In turn it states that the stakeholders were communicated verbally on behalf of the project proponent for comments and feedback on the project activity.</p> <p>Proof of communication towards Local Stakeholder Consultation procedure has to be provided by the Project Proponent.</p> <p>Pending closure of NIR 17.</p>	Pending	Y
If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	01, 02, 03	DR	<p>The requirement of stakeholder consultation process by regulations/laws in the host country is not clearly indicated in the version 01 of the PDD.</p> <p>Pending closure of NIR 17.</p>	Pending	Y
Is the undertaken stakeholder process described in a complete and transparent manner?	01, 02, 03	DR	<p>As per the PDD version 01, local stakeholder consultation procedure has been carried out by the project proponent as a significant requirement under CDM modalities.</p> <p>Pending closure of NIR 17.</p>	Pending	Y
Is a summary of the stakeholder comments received provided?	01, 02, 03	DR	<p>The concerns and comments received from the local stakeholders have been described in the version 01 of the PDD.</p> <p>Feedback received from relevant local stakeholders to be provided by the project proponent. Pending closure of NIR 17.</p>	Pending	Y



Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
Has due account been taken of any stakeholder comments received?	01, 02, 03	DR	No adverse comment identified in the PDD. Same has to be cross checked during site visit.	Pending site visit	Y

Table 3 Additional Requirements for AR Projects

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
3.1 Does the PDD specifically consider impacts on biodiversity and natural ecosystems, in addition to socio-economic and environmental impacts?			Not applicable as the project activity is not an AR project	N.A	N.A
Are management activities, including harvesting cycles and verification programmes chosen to avoid a systemic verification of peaks in carbon stocks?			Not applicable as the project activity is not an AR project	N.A	N.A
Have the project participants indicated whether they choose to account using ICERs or tCERs as defined in Section K, paras 38 – 60 of Decision 19/CP.9			Not applicable as the project activity is not an AR project	N.A	N.A
Has the project undergone international public consultation for a period to 45 days?			Not applicable as the project activity is not an AR project	N.A	N.A
Have selected carbon pools been be ignored in accordance with the conditions described in Para 21 of Decision 19/CP.9 and does the project avoid double counting?			Not applicable as the project activity is not an AR project	N.A	N.A
Has a project lifetime of 20 years renewable three times or 30 years been selected?			Not applicable as the project activity is not an AR project	N.A	N.A
Does the monitoring plan take account of issues related to biodiversity and natural ecosystems identified elsewhere in the PDD?			Not applicable as the project activity is not an AR project	N.A	N.A
Is the application of ICERs and tCERs accounting regimes consistent with Sections J and K and Decision 19/CP.9?			Not applicable as the project activity is not an AR project	N.A	N.A
Note Appendix B highlighting the differences in the PDD, the PDD template for AR projects and the guidelines, available at http://cdm.unfccc.int/Reference/Documents			Not applicable as the project activity is not an AR project	N.A	N.A

References

Reference ID	Title / Description	Comments
01	Project Design Document- PDD version 01, dated 10/08/2008.	This has been referred to assess the applicability of CDM Modalities, baseline and monitoring methodology with the project design.
02	ACM0012 version 02	This has been referred to assess the applicability and justification of baseline and monitoring methodology with the project design and baseline selection.
03	Tool for the demonstration and assessment of additionality – Version 5.	This has been referred to assess the most plausible baseline scenario selection approach and project additionality.
04	Guidelines for completing the project design document (CDM-PDD) version 06.2	This has been referred to validate the completeness of the PDD

A.3 Annex 3: Overview of Findings

Findings Overview

Findings from validation of “Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited”

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.

Description of Table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	Refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Please Note: This is an open list and more findings may be added as validation progresses.

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	01	Type:	CAR	Issue :	Participation Requirements for Clean Development Mechanism (CDM) Project Activities-HCA	Ref.:	Table 1-3
Lead Assessor Comment					Date: 15/09/2008		
Letter of approval from Host Country (India) Designated National Authority (DNA) to be submitted by the project proponent.							
Project Participant Response:					Date: 19/09/2008		
The same has been provided to the Validator. Please refer to the Host Country Approval Letter (Ref. No.- 4/7/2008-CCC dated 4 August 2008) for the project activity of “Waste Heat Recovery based Captive Power Project of Adhunik Metaliks Limited”.							
Acceptance and Close out by Lead Assessor:					Date: 23/11/2008		
Information Provided: Letter of approval from Host Country (India) Information Verified: Letter of approval from Host Country (India) was verified with the letter ref. no. 4/7/2008-CCC dated 4 August 2008.					Verified Document Reference: LoA letter ref. no. 4/7/2008-CCC dated 4 August 2008.		
Reasoning for not acceptance or acceptance and close out: Letter of approval from Host Country (India) was verified with the letter ref. no. 4/7/2008-CCC dated 4 August 2008 and satisfactory. Thus CAR 01 was closed out.							

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	02	Type:	NIR	Issue :	Participation Requirements for Clean Development Mechanism (CDM) Project Activities-Modalities of Communication.	Ref.:	Table 1-6
Lead Assessor Comment					Date: 15/09/2008		
The Modalities of Communication would have to be submitted by the Project participant							
Project Participant Response:					Date: 19/09/2008		
The Modalities of Communication for the project activity has been provided to the Validator.							
Acceptance and Close out by Lead Assessor:					Date: 23/11/2008		
Information Provided: Modalities of Communication Information Verified: Modalities of Communication was verified with the letter dated 06/11/2008					Verified Document Reference: Modalities of Communication letter dated 06/11/2008.		
Reasoning for not acceptance or acceptance and close out: Modalities of Communication were verified with the letter dated 06/11/2008 and found acceptable. Thus NIR 02 was closed out.							

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	03	Type:	NIR	Issue :	Technical Description of the Project Activity-Technology Substitution.	Ref.:	A.4.8
Lead Assessor Comment					Date: 15/09/2008		
The PP would have to provide a declaration that the technology is not likely to be substituted by more efficient one during the entire crediting period.							
Project Participant Response:					Date: 19/09/2008		
The project activity will follow the same technology throughout the entire crediting period. The project proponent has provided an undertaking in support of the same.							
Acceptance and Close out by Lead Assessor:					Date: 23/11/2008		
Information Provided: Declaration from the project proponent regarding same technology Information Verified: Declaration from the project proponent regarding same technology has been checked with the letter ref. dated 10/11/2008.					Verified Document Reference: Declaration from the project proponent regarding same technology letter ref. dated 10/11/2008.		
Reasoning for not acceptance or acceptance and close out: The project activity will follow the same technology throughout the entire crediting period. The project proponent has provided an undertaking which is verified with the letter ref. dated 10/11/2008. Thus NIR 03 was closed out.							

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	04	Type:	CAR	Issue:	Baseline and Monitoring Methodology-Choice and Applicability	Ref.:	B.1.3
Lead Assessor Comment					Date: 15/09/2008		
<p>The applicability criteria of ACM0012 ver. 02 with the project activity has been described under Section B.2 of the PDD, however the justification towards the applicability criteria – “<i>The waste gas/pressure utilized in the project activity was flared or released into the atmosphere in the absence of the project activity at existing facility.</i>” as mentioned under ACM0012 ver02 is not transparent under PDD, as the commercial production had already began at the time when the Project Activity is submitted for validation.</p> <p>However the Project Proponent is requested to demonstrate the matter through the financial documents that no energy was generated and sold to other facilities.</p>							
Project Participant Response:					Date: 19/09/2008		
<p>Before the implementation of the project activity, the power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited was met by sourcing power either from the grid or by generating power in Diesel Generator (DG) Set. The Validator has been provided with the Energy Bills to demonstrate that electricity was procured commercially before the implementation of the project activity. The audited copy of the Director's Report demonstrating that electricity procurement from the grid or generation in Diesel Generator Set before the implementation of the project activity has also been provided to the Validator. This will demonstrate that waste gas was not utilized before the implementation of the project activity.</p>							
Acceptance and Close out by Lead Assessor:					Date: 23/11/2008		
<p>Information Provided:</p> <p>Overview on gases and sources included in the project boundary and clarified where gasses and sources are not included</p> <p>Information Verified:</p> <p>The information regarding supplemental electricity consumption has been verified with the section B.3 under table B.1 of the PDD version 01 and the current version of the PDD.</p>					<p>Verified Document Reference:</p> <p>PDD version 01, dated 10/08/2008</p> <p>ACM0012, version 02, dated 02/11/2007</p>		
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>The project proponent has provided information that the GHG emission source due to supplemental electricity consumption for the proposed project activity has been excluded as the electricity for the auxiliary consumption under normal operational condition would be sourced from the project activity power plant and/or from the grid. The electricity supplied by the project activity power plant includes the auxiliary electricity requirement as well. The PP has further clarified that in case of emergency due to non availability of power both from the project activity power plant and the relevant grid, DG sets would provide the auxiliary power requirement of the power plant equipments and the same would be monitored and deducted as project emission which is considered acceptable.</p> <p>Thus CAR 04 was closed out.</p>							

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	05	Type:	CAR	Issue :	Project boundary	Ref.:	B.2.1

Lead Assessor Comment	Date: 15/09/2008	
<p>The description towards all emission sources and gasses related to the baseline scenario, project scenario has been described under Section B.3 of the PDD.</p> <p>However consideration of sources of GHG emissions due to “Supplemental electricity consumption” for the project activity is not clear, as under Section B.3 Table-B.1 of the PDD, it has been mentioned that “Power consumption under emergency situation by the power plant equipments will anyway be accounted as auxiliary consumption.”</p> <p>The point should be justified by the project proponent that how auxiliary consumption during emergency situation will be met?</p>		
Project Participant Response:	Date: 19/09/2008	
<p>The project proponent wishes to clarify here that electricity is consumed within the project boundary only to cater to the auxiliary electricity requirement of the power plant equipments. Under normal operational condition, the auxiliary electricity will be sourced from the project activity power plant and/or from the grid. The same will be monitored with energy meters. However under normal operational condition, the emission reductions resulting from the project activity is computed based on the quantity of electricity supplied by the project activity power plant which is determined considering the auxiliary electricity requirement of the power plant equipments. This can be substantiated with the Electricity Distribution Line Diagram of M/s. Adhunik Metaliks Limited (the same has been provided to the Validator). Therefore under normal operational condition, the project proponent is not required to consider any additional source of GHG emissions resulting from supplemental electricity consumption for the project activity.</p> <p>Under extreme emergency situations wherein the project activity power plant has tripped as well as there is a grid isolation, the auxiliary electricity requirement of the power plant equipments will be met through Diesel Generator Sets and the emissions from Diesel consumption will be deducted as project emissions.</p> <p>The above explanation clearly justifies the non-consideration of any additional GHG emissions due to supplemental electricity consumption for the project activity.</p>		
Acceptance and Close out by Lead Assessor:	Date: 23/11/2008	
<p>Information Provided:</p> <p>Electricity Distribution line diagram of Adhunik Metaliks Limited.</p> <p>PDD version 02, dated 24/11/2008</p> <p>Information Verified:</p> <p>Electricity Distribution line diagram of Adhunik Metaliks Limited and PDD version 02, dated 24/11/2008 have been verified.</p>	<p>Verified Document Reference:</p> <p>Electricity Distribution line diagram of Adhunik Metaliks Limited.</p> <p>PDD version 02, dated 24/11/2008</p>	
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>According to the PDD version 02 and electricity distribution line diagram of Adhunik Metaliks Limited the supplemental electricity consumption for the project activity under normal operational condition will be catered from the project activity and/or grid power which can be monitored by the energy meter installed at the site, therefore the non consideration of the additional source of GHG emissions resulting from supplemental electricity consumption for the project activity is justified.</p> <p>However the project proponent has explained the auxiliary electricity requirement of the power plant equipments will be met through Diesel Generator Sets and the emissions from Diesel consumption will be deducted as project emissions under extreme emergency situation i.e. power plant trip as well as grid isolation as conservative approach.</p> <p>Therefore CAR 05 was closed out.</p>		

Date:	15/09/2008	Raised by:	Ajoy Gupta
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No.:	06	Type:	NIR	Issue :	Project boundary	Ref.:	B.2.3
Lead Assessor Comment					Date: 15/09/2008		
Description towards the project boundary is not clear, further information is required to confirm why the CFBC boiler which is supplying steam to the same turbine as the project activity has not been included in the project boundary.							
Project Participant Response:					Date: 19/09/2008		
<p>As per the Approved Consolidated Methodology-ACM0012/ Version 02, the geographical extent of the project boundary shall include:</p> <p><i>"1. The industrial facility where waste gas/heat/pressure is generated (generator of waste energy);</i></p> <p><i>2. The facility where process heat in element process/steam/electricity are generated (generator of process heat/steam/electricity). Equipment providing auxiliary heat to the waste heat recovery process shall be included within the project boundary; and</i></p> <p><i>3. The facility/s where the process heat in element process/steam/electricity is used (the recipient plant(s)) and/or grid where electricity is exported, if applicable."</i></p> <p>Therefore in accordance with the guidance of the methodology, the project boundary shall include:</p> <p>Waste gas generation source- For the project activity under consideration, this will include the outlet of the After Burning Chambers (ABC) of the DRI kilns of M/s. Adhunik Metaliks Limited and the ducting system for transportation of waste gas from its emission source to the power plant;</p> <p>Waste gas utilization facility where electricity is generated- For the project activity under consideration, this will include the DRI kiln gas based WHRBs where the waste gas i.e. DRI kiln gas will be utilized for generation of steam as well as the Steam-Turbo Generators where the steam will be utilized for generation of power. This will also include the equipment required to cater to the auxiliary power demand of the power plant.</p> <p>Electricity consumption facilities- For the project activity under consideration, this will include the integrated iron and steel plant of M/s. Adhunik Metaliks Limited.</p> <p>Therefore non-consideration of the CFBC boiler within the project boundary is in accordance with the guidance of the Approved Consolidated Methodology-ACM0012/ Version 02. The project proponent is only required to monitor the steam generated in the CFBC boiler, the temperature and the pressure of the CFBC steam just to determine the baseline emissions (and hence emission reductions) for the project activity under consideration. The same will be monitored in accordance with the guidance of the Approved Consolidated Methodology-ACM0012/ Version 02 which has been validated during the site visit.</p>							
Acceptance and Close out by Lead Assessor:					Date: 24/11/2008		
<p>Information Provided:</p> <p>Approved consolidated methodology-ACM 0012, version 02.</p> <p>Revised PDD version 02, dated 24/11/2008</p> <p>Information Verified:</p> <p>Revised PDD version 02, dated 24/11/2008 has been verified with the Approved consolidated methodology-ACM 0012, version 02 for non-consideration of CFBC boiler within the project boundary.</p>						<p>Verified Document Reference:</p> <p>Approved consolidated methodology-ACM 0012, version 02.</p> <p>Revised PDD version 02, dated 24/11/2008</p>	

Reasoning for not acceptance or acceptance and close out:

Revised PDD version 02, dated 24/11/2008 has been verified with the Approved Consolidated Methodology-ACM 0012, version 02 for non-consideration of CFBC boiler within the project boundary and the explanation provided by the project proponent found in line with the methodology and clarifies the issue in a transparent manner.

Thus NIR 06 was closed out.

Date:	15/09/2008			Raised by:		Ajoy Gupta		
No.:	07	Type:	CAR	Issue :	Identification of the Baseline Scenario		Ref.:	B.3.1
Lead Assessor Comment						Date: 15/09/2008		
<p>The selection of the most plausible and conservative baseline scenario needs to be further substantiated on the basis of following issues –</p> <p>Non availability of natural gas distribution network in Orissa needs to be further substantiated with traceable references.</p> <p>All the assumptions used (cost of grid power, cost of power generation from coal based power plant as estimated by AML) towards capital cost investment and cost of power generation for the project activity needs to be further substantiated with traceable references.</p> <p>Further information and substantiation are required to confirm whether or not the CFBC boiler which is supplying steam to the same turbine as the project activity would have been installed in the absence of this CDM project activity.</p>								
Project Participant Response:						Date: 19/09/2008		

<p>The project proponent wishes to provide the following clarifications for the above issues:</p> <p><u>Non availability of natural gas distribution network in Orissa (i.e. eastern region of the country)</u>- The natural gas availability in India is very much limited to Western India and in North-East Indian states with practically no availability in Orissa which is a part of Eastern India. The same can be substantiated with natural gas availability as published by the Ministry of Petroleum and Natural Gas, Government of India at http://petroleum.nic.in/ng.htm.</p> <p><u>All the assumptions used (cost of grid power, cost of power generation from coal based power plant as estimated by AML) towards capital cost investment and cost of power generation for the project activity –</u> The unit power cost in case of import of power from the grid, generation of power in a coal based captive power plant and in the project scenario for M/s. Adhunik Metaliks Limited were calculated by a third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited. All the assumptions used for unit power cost computation have been provided by the Consultant based on standard industrial practices and norms. The report on unit power cost computation by M/s. Avant-Garde Engineers and Consultants (P) Limited has been provided to the Validator. Please refer to the letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) in this regards (Ref. No.-24117/NML/00A dated 14th August 2004).</p> <p><u>Further information and substantiation on installation of CFBC boiler</u>- The project proponent has considered the following three options for catering to the power demand of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited namely</p> <p>Import of entire power from the grid,</p> <p>Installation of a coal based power plant with CFBC boiler and</p> <p>Installation of the project activity power plant with surplus waste gas alongwith with a CFBC boiler for partial generation of power and the import of remaining power from the grid</p> <p>Accordingly the project proponent has requested a third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited for computation of unit power cost for all these options. As per the feedback received from the Consultant, the unit power cost in case of power generation in a coal based power plant was found to be the lowest. The same has been elaborated in Section B.4 of the Project Design Document. Therefore in absence of the project activity, a coal based power plant with CFBC boiler would have been installed to generate steam and subsequently power to cater to the power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited. The same can also be evidenced from the discussion of the Board of Directors of M/s. Neepaz Metaliks Limited (formerly M/s. Adhunik Metaliks Limited was known as M/s. Neepaz Metaliks Limited. The “Fresh Certificate of Incorporation Consequent on Change of Name” from M/s. Neepaz Metaliks Limited to M/s. Adhunik Metaliks Limited dated 9th August 2005 has been provided to the Validator) before the approval of the project activity under consideration. Please refer to the ‘Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited’, dated 25th August 2004.</p>	
Acceptance and Close out by Lead Assessor:	Date: 24/11/2008

<p>Information Provided:</p> <p>Board resolution, Unit power cost calculation by third party power plant consultant.</p> <p>Information Verified:</p> <p>Board resolution, Unit power cost calculation by third party power plant consultant were cross checked with the 'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metlaiks Limited', dated 25th August 2004. and letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) in this regards (Ref. No.-24117/NML/00A dated 14th August 2004) respectively and found satisfactory.</p>	<p>Verified Document Reference:</p> <p>http://petroleum.nic.in/ng.htm</p> <p>'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metlaiks Limited', dated 25th August 2004.</p> <p>letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) in this regards (Ref. No.-24117/NML/00A dated 14th August 2004).</p>
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Reasoning for not acceptance or acceptance and close out:

Non availability of natural gas distribution network in Orissa has been properly explained with reference to the available statistics of availability of natural gas in India from Ministry of Petroleum and Natural Gas (MoPNG), Govt of India, the same has been cross checked with the MoPNG website (<http://petroleum.nic.in/ng.html>, Table on All India Region Wise and Sector wise Gas Supply by GAIL – 2003-04) and found satisfactory.

The project proponent has provided the calculation of unit power cost of Adhunik Metaliks Limited assessed by a third party power plant consultant M/s, Avant-Garde Engineers and Consultants (P) Limited as per letter ref. no. 24117/NML/00A dated 14th August 2004 in the form of hard and soft copy as well. The unit power cost of generation for the baseline alternative scenarios such as the entire power sourced from grid, entire power generated in a coal based captive power plant and partial power generation with surplus by product waste gasses along with installation of a CFBC boiler and the remaining power being sourced from the grid are INR 3.20/kWh, INR 1.83/kWh and INR 2.20/kWh respectively. The assumptions applied in computing the unit power cost of generation for the alternatives identified by the third party power plant consultant was checked as follows:

Unit Power Cost for coal based captive power plant:

The Auxiliary consumption has been considered 10% adopted from the Central Electricity Authority data. (Performance Review of Thermal Power Stations 2001-02 & 2003-04, Section-11 PAGE NO 11. 1), which provides data on auxiliary power consumption in thermal power stations and found acceptable. The same could be accessed through the web link: http://www.cea.nic.in/god/opm/Thermal_Performance_Review/0102/Sec11%20fin_lo777.pdf
http://cea.nic.in/god/opm/Thermal_Performance_Review/0304/sec11f%7E2.pdf

The efficiency of the power plant has been considered from the supportive documents as provided by M/s, Avant-Garde Engineers and Consultants (P) Limited & M/s, United Consultants (India) Pvt. Ltd. as 30% & 28% respectively, the higher of the two as 30% have been adopted. The same was checked against the documents referred to and considered acceptable. The same was also checked and verified against the document made publicly available as per the web link: http://cea.nic.in/god/opm/Thermal_Performance_Review/0203/sec-13_sush.pdf.

The calorific values of coal washery rejects, coal char and coal are 1500, 1100 and 3200 kCal/kg was referred from the Test certificates issued by R.V. Briggs & Co. Private Limited test report no. C(S)/04-05/313, dated 28/07/2004, C(S)/04-05/314, dated 28/07/2004 and C(S)/04-05/312, dated 28/07/2004 respectively.

Coal washery rejects cost was applied appropriately from the sales middlings ledger account of Adunik Metaliks Limited period from 01/04/2004 to 31/03/2005.

Coal Char Cost was not considered as generated in-house, and hence considered accepted.

Coal Cost considered as INR 702 per MT was checked from Coal purchase Ledger Account of Adhunik Metaliks Limited considered period from 01/04/2004 to 31/03/2005 and rest of the amount is considered as logistics cost towards coal transportation.

Total utility cost (water and chemicals) calculated as INR 0.05/kWh this was cross checked with the letter issued by United Consultants (India) Pvt. Ltd. dated 04/08/2004 and found satisfactory.

The total cost per MW in a thermal power plant has been adopted as 4 Crore made available publicly in the web site: <http://www.hinduonnet.com/businessline/2003/08/05/stories/2003080501650200.htm> of the News Daily Hindu on 05 August 2003 and found correct.

Debt: Equity as 65:35 considered against the AML's declaration letter dated 20/11/2008

Depreciation value of Factory Buildings as 3.34% and Plant and Machinery as 5.28% has been adopted from the Company's act schedule checked and verified against the document made publicly available http://www.mca.gov.in/MinistryWebsite/dca/actsbills/pdf/Companies_Act_1956_Part_2.pdf and found appropriately applied.

Operation & Maintenance cost has been considered 2.5% of the Total project cost which is approximately equal to that provided in the CERC guidelines http://www.cercind.gov.in/28032004/finalregulations_terms&condition.pdf and found to have been appropriately applied.

Grid power Cost:

The assumption regarding the Grid Power Cost per unit as INR 3.20 has been cross verified against the invoices raised by Western Electricity Supply CO. of Orissa Limited during the phase wise implementation of integrated iron steel plant of Adhunik Metaliks Ltd. and found appropriate.

Project case:

The waste heat recovery based power plant cost per KW was checked against the information provided through the web link made publicly available which was last accessed on 14 December 2008 and found to have appropriately referred. The weblink is http://www.wowenergies.com/images/IETC_May_2007.pdf.

Based on the out come of the unit cost comparison of all the three alternatives identified, generation of power by implementing a coal based captive power plant is found to be the least cost option and hence accepted as the most plausible baseline scenario.

The Proponent has provided information on the issue of installation of a CFBC boiler in the absence of the CDM project activity the three options considered on the way to opt for the current project activity to cater to the partial power requirement for the integrated iron and steel plant of M/s, Adhunik Metaliks Limited. The three options available to the proponent are import of entire power from grid, installation of a coal based captive power plant with CFBC boiler and installation of the project activity power plant with surplus waste gasses generated as process by-product along with the installation of a CFBC boiler to generate steam and subsequently power and the import of remaining power from the grid. Based on the outcome of the assessment for the unit power cost of generation carried out by a third party power plant consultant, M/s, Avant-Garde Engineers and Consultants (P) Limited, the least cost option is installation of a coal based captive power plant. Thus the claim of consideration of installing a coal based captive power plant based on the least cost option of unit power generation in absence of the CDM project activity seems to be justified. The Project Proponent has provided documentary evidence in the form of a hard copy of the Extracts of the Minutes of Board Resolution passed at the meeting on 25/08/2004 in support of the same. The information on the unit power cost for AML has been further substantiated against the document provided by the third party power plant consultant letter ref. no. 24117/NML/00A dated 14th August 2004 for computation of unit power cost of AML. The least cost option for unit power generation has been checked with the power plant consultants calculation submitted in the form of soft excel sheet copy and hence considered acceptable.

Thus CAR 07 was closed out.

Date:	15/09/2008	Raised by:	Ajoy Gupta				
No.:	08	Type:	CAR	Issue:	Additionality	Ref.:	B.4.3
Lead Assessor Comment				Date: 15/09/2008			

The starting date of the project activity as per the PDD version 01 is 17/04/2006 which is considered as the placement of purchase order. Please provide the evidence to substantiate the same.

However the consistency of the project start date with the discussion of the project additionality is not transparent. Please discuss the issue as per UNFCCC guidelines i.e. EB 41 annex 46.

How and when the CDM was taken into serious consideration in the decision to go ahead with the project activity is not clear and the same has to be properly substantiated with the year wise milestone.

Project proponent needs to substantiate along with reliable evidences that they had prior knowledge about CDM modalities before they have considered the CDM revenue to mitigate the project risk.

Project Participant Response:

Date: 19/09/2008

The project proponent wishes to provide the following clarifications for the above issues:

1. Evidence of Purchase Order-The 'Contract for Supply of Turbogenerator and Auxiliaries' between M/s. Adhinik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd. dated 17th April 2006 has been provided to the Validator.

2. Consistency between project start date and additionality- The project proponent has considered the following three options for catering to the power demand of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited namely

Import of entire power from the grid,

Installation of a coal based power plant with CFBC boiler and

Installation of the project activity power plant with surplus waste gases alongwith with a CFBC boiler for partial generation of power and the import of remaining power from the grid

Accordingly the project proponent has requested a third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited for computation of unit power cost for all these options. As per the feedback received from the Consultant, the unit power cost in case of power generation in a coal based power plant was found to be the lowest. The Board of Directors of M/s. Neepaz Metaliks Limited (formerly M/s. Adhunik Metaliks Limited was known as M/s. Neepaz Metaliks Limited. The "Fresh Certificate of Incorporation Consequent on Change of Name" from M/s. Neepaz Metaliks Limited to M/s. Adhunik Metaliks Limited dated 9th August 2005 has been provided to the Validator) has considered this power costing before the approval of the project activity. However the power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited has also appraised the Management of M/s. Neepaz Metaliks Limited about the potential of the project activity to avail carbon revenue under the Clean Development Mechanism of Kyoto Protocol. Based on the potential of the carbon revenue to be accrued from the project activity, the Management of M/s. Neepaz Metaliks Limited has approved the project activity under consideration. Please refer to the 'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited', dated 25th August 2004 for the same. This demonstrates the additionality aspects of the project activity under consideration.

Subsequently the project proponent has proceeded with the implementation of the project activity. As per Paragraph-67 of EB-41 Meeting Report,

"the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity"

In accordance with this guidance, the start date of the project activity has been considered as 17th April 2006 when the purchase order for turbo-generators and auxiliaries have been placed by the project proponent.

Furthermore, as per Paragraph-5(a) and 5(b) of Annex-46 of EB-41 Meeting Report,

"The project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project". – The same can be demonstrated from the letter from M/s United Consultants (India) Private Limited to M/s. Neepaz Metaliks Limited dated 4th August, 2004 , letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (Ref. No.-24117/NML/00A dated 14th August 2004) and from the 'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited', dated 25th August 2004. This will demonstrate the CDM awareness of the project proponent before the start date of the project activity i.e. 17th April 2006.

"The project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation". - Immediately after the approval of the project activity from the Management of M/s. Adhunik Metaliks Limited (formerly known as M/s. Neepaz Metaliks Limited), the project proponent has appointed the CDM Consultant (the Work Order with CDM Consultant dated 9th February 2005 has been provided to the Validator) in parallel with the actual implementation of the project activity.

However at that point of time, no approved methodology was available which covers all the aspects of the project activity. The CDM Consultant was in the process of development of a new methodology for one of their projects which was submitted in Round-15 in May 2006 in the name “NM0179: Waste Heat Recovery based Steam and Power Generation” to cover both the aspects of waste gas based steam and power generation (Reference: <http://cdm.unfccc.int/methodologies/PAMethodologies/publicview.html?single=1&OpenNM=NM0179>). This methodology was developed covering all the aspects of the project activity under consideration. The same was consolidated and approved by the Methodology Panel and Executive Board of UNFCCC as “Approved Consolidated Methodology-ACM0012: Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system” in July 2007 and subsequently revised as ACM0012/ Version 02 in November 2007 (<http://cdm.unfccc.int/methodologies/DB/3YL5T8ATMB8NTD9HEBU42EP6OJLAY4/view.html>). Consequent to the availability of ACM0012/ Version 02, the Project Design Document for the project activity was finalized and submitted to Ministry of Environment and Forests, Government of India (Indian DNA) for Host Country Approval in 22nd February 2008 (the Forwarding Letter to the Ministry of Environment and Forests, Government of India from M/s. Adhunik Metaliks Limited dated 22nd February 2008 has been submitted to Validator). The project activity was presented to the Indian DNA on 25th April 2008 (please refer to the Host Country Approval Letter, Ref. No.- 4/7/2008-CCC dated 4th August 2008). Subsequently the Project Design Document was submitted to the Validator for Global Stakeholder Consultation and the same was web-hosted from 15th August 2008 to 13th September 2008. This demonstrates that the project proponent has undertaken all necessary measures to secure the CDM revenue in parallel with the actual implementation of the project activity.

CDM Consideration and Yearwise Milestone- The CDM consideration aspect for the project activity under consideration has been elaborated under “Project Participant’s Response against Point-2 of CAR-11”. Please refer to the same for details. The year wise milestone for the project activity is presented below for further substantiation:

Details of Events	Date	Documentary Evidence
Clarifications from M/s United Consultants (India) Private Limited to M/s Neepaz Metaliks Limited (formerly M/s. Adhunik Metaliks Limited was known as M/s. Neepaz Metaliks Limited) regarding financial and technical aspects of power plant.	4 th August, 2004	Letter from M/s United Consultants (India) Private Limited
Appointment of M/s Avant Garde Engineers & Consultants (P) Ltd. for analysis of unit power cost for M/s. Neepaz Metaliks Limited (formerly M/s. Adhunik Metaliks Limited was known as M/s. Neepaz Metaliks Limited)	10 th August 2004	Letter from M/s. Neepaz Metaliks Limited to M/s Avant Garde Engineers & Consultants (P) Ltd.
Submission of unit power cost by M/s. Avant Garde Engineers & Consultants (P) Ltd.	14 th August 2004	Letter from M/s Avant Garde Engineers & Consultants (P) Ltd to M/s. Neepaz Metaliks Limited (Ref. No.- 24117/NML/00A)
Approval of the project activity with CDM consideration	25 th August 2004	Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited
Appointment of Consultant for project designing	14 th January 2005	Work Order to Consultant (Ref. No.-NML/PP/PO-01)

Placement of Work Order to CDM Consultant	9 th February 2005	Work Order
Letter of Intent to M/s. Thermal Systems (Hyderabad) Pvt. Ltd. from M/s. Neepaz Metaliks Limited for design, engineering, supply erection and commissioning of Waste Heat Recovery Boilers	21 st April 2005	Letter from M/s. Neepaz Metaliks Limited to M/s. Thermal Systems (Hyderabad) Pvt. Ltd. (Ref No.- NML/PP/LOI-01)
Letter of Intent to M/s. Greensol Power Systems Pvt. Ltd. from M/s. Neepaz Metaliks Limited for Steam-Turbo Generator Packages	4 th May 2005	Letter from M/s. Neepaz Metaliks Limited to M/s. Greensol Power Systems Pvt. Ltd. (Ref No.- NML/PP/LOI-01)
Communication between CDM consultant and M/s Adhunik Metaliks Limited regarding the requirement for a new methodology.	20 th September, 2005	Mail communication
Placement of Purchase Order for Steam-Turbo Generator	17 th April 2006	'Contract for Supply of Turbogenerator and Auxiliaries' between M/s. Adhunik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd.
Placement of Purchase Order for Waste Heat Recovery Boilers	30 th April 2006	Purchase Order from M/s. Adhunik Metaliks Limited (Ref No.- AML/KOL/PO/PP/PO/06-07/5152)
Submission of new methodology by CDM Consultant in the name of "NM0179: Waste Heat Recovery based Steam and Power Generation"	May 2006 (Round-15)	http://cdm.unfccc.int/methodologies/PAMethodologies/publicview.html?single=1&OpenNM=NM0179
Approval of Consolidated Methodology by the Methodology Panel and Executive Board of UNFCCC as 'Approved Consolidated Methodology-ACM0012/ Version 01'	July 2007	http://cdm.unfccc.int/methodologies/DB/3YL5T8ATMB8NTD9HEBU42EP6OJLAY4/view.html
Revision of ACM0012/ Version 01 and availability of ACM0012/ Version 02	November 2007	

Appointment of DOE for Validation	14 th January 2008	Contract Agreement between M/s. Adhunik Metaliks Limited and the appointed DOE
Submission of Project Design Document (PDD) and Project Concept Note (PCN) to Ministry of Environment & Forests (MoEF), Government of India-Application for Host Country Approval (HCA) from Indian DNA	22 nd February 2008	Forwarding Letter to the Ministry of Environment and Forests, Government of India from M/s. Adhunik Metaliks Limited
Presentation at Ministry of Environment and Forests (MoEF), Government of India for obtaining Host Country Approval (HCA)	25 th April 2008	Host Country Approval Letter (Ref. No.-4/7/2008-CCC)
Receipt of Host Country Approval from Ministry of Environment and Forests (MoEF), Government of India	4 th August 2008	
Global Stakeholder Consultation	15 th August 2008-13 th September 2008.	http://cdm.unfccc.int/Projects/Validation/index.html
<p>4. Project Proponent's prior knowledge on CDM- The renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited, appointed for computation of unit power cost for all the options suggested by M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited), has appraised the Management of M/s. Neepaz Metaliks Limited about the potential of the project activity to avail carbon revenue under the Clean Development Mechanism of Kyoto Protocol. Please refer to the letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited in this regards (Ref. No.-24117/NML/00A dated 14th August 2004). The same was subsequently considered by the Board of Directors of M/s. Neepaz Metaliks Limited and the project activity was approved based on the consideration of the CDM revenue to be accrued. Please refer to the 'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited', dated 25th August 2004 for the same.</p>		
Acceptance and Close out by Lead Assessor:		Date: 12/01/2009

<p>Information Provided:</p> <p>Project consultant appointment letter to carry out unit power cost calculation, work order to CDM consultant and e-mail communication between CDM consultant and M/s Adhunik Metaliks Limited regarding the requirement for a new methodology.</p> <p>Information Verified:</p> <p>Project consultant appointment letter to carry out unit power cost calculation, work order to CDM consultant and e-mail communication between CDM consultant and M/s Adhunik Metaliks Limited regarding the requirement for a new methodology were checked with the documents mentioned in the verified document reference column.</p>	<p>Verified Document Reference:</p> <p>Letter from M/s United Consultants (India) Private Limited, dated 04/08/2004</p> <p>Letter from M/s Avant Garde Engineers & Consultants (P) Ltd to M/s. Neepaz Metaliks Limited (Ref. No.-24117/NML/00A), dated 14/08/2004</p> <p>Work Order to Consultant (Ref. No.-NML/PP/PO-01), dated 14/01/2005</p> <p>E-mail Communication between CDM consultant and M/s Adhunik Metaliks Limited regarding the requirement for a new methodology, dated 20/09/2005.</p>
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Reasoning for not acceptance or acceptance and close out:

The starting date of the project activity has been considered as 17/04/2006 when contract copy was signed in between Adhunik Metaliks Limited and Greensol Power Systems Pvt. Ltd. for the delivery of Turbogenerator and auxiliaries. The contract copy has been verified with "Contract for supply of Turbogenerator and auxiliaries" dated 17/04/2006 and found acceptable.

The proponent has considered three options of meeting the in-house requirement of electricity for the integrated iron and steel plant of Adhunik Metaliks Limited, Rourkella, and Orissa. A third party power plant consultant M/s, Avant-Garde Engineers & Consultants (P) Ltd. was appointed to compute the unit power cost for all the three options. The Participant has provided the enquiry letter issued to M/s, Avant-Garde Engineers & Consultants (P) Ltd. signed by the director of M/s, Neepaz Metaliks Limited (which is the former name of Adhunik Metaliks Limited) dated 10/08/2004 to determine the unit power cost for all the three scenarios of power generation to cater to the in-house requirement of the plant in the form of a hard copy document, which was checked and verified and considered acceptable. In response to the enquiry M/s, Avant-Garde Engineers & Consultants (P) Ltd. had provided AML the computation of the unit power cost for all the three scenarios. The document in the form of a hard copy has been provided by the proponent (Ref No. 24117/NML/00A, dated 14/08/2004) which was checked, verified and considered acceptable. The outcome of the computation reveals that installation of a coal based captive power plant being least cost option is the most attractive and reliable option economically. Based on the documentary evidence provided by M/s, Avant-Garde Engineers & Consultants (P) Ltd. it is hereby considered acceptable. The unit cost of power generation in the project case in spite of being a costlier option along with existing elements of uncertainty could only be considered based on the revenues from the sale of the carbon credits seems to be justified. The Board note in the form of the 'Extracts of the resolution passed at the meeting of the Board of Directors of Neepaz Metaliks Limited held on the 25th day of August 2004 at the registered office of the company at 14 N.S Road, Kolkata-700001' where the project activity was approved with CDM revenue consideration, has been provided in the form of a hard copy document which has been considered acceptable on checking and verification.

Justification for the delay and the CDM mile stone activities:

The proponent has provided information on the chronology of events for the CDM project mile stone activities:

The Proponent has provided hard copy document of the Board note in the form of 'Extracts of the resolution passed at the meeting of the Board of Directors of Neepaz Metaliks Limited held on the 25th day of August 2004 at the registered office of the company at 14 N.S Road, Kolkata-700001' where the project activity was approved with CDM revenue consideration and the document was checked and found acceptable.

Securing approval from the Board of Directors regarding the implementation of the project activity under CDM revenue consideration project proponent took the real actions on 14/01/2005 and 09/02/2005 by engaging CDM consultant for the project activity designing under Kyoto protocol. The project proponent submitted the letter of intent to M/s. Thermal Systems (Hyderabad) Pvt. Ltd. for design, engineering, supply erection and commissioning of Waste Heat Recovery Boilers on 21/04/2005 and Letter of Intent to M/s. Greensol Power Systems Pvt. Ltd. for Steam-Turbo Generator sets on 04/05/2005. But the placement of purchase order for the steam turbo generator sets were given on 17/04/2006, therefore the delay occurred in between LOI submission and order confirmation was addressed by the project proponent producing the email communication with the CDM consultant regarding the submission of new methodology on 20/09/2005. The PP has referred to the official web link of the UNFCCC regarding the Submission of new methodology NM 0179 for Waste Heat Recovery Based Steam and Power Generation dated 08/05/2006. http://cdm.unfccc.int/methodologies/PAMethodologies/publicview.html?meth_ref=NM0179 Hence the justification towards the delay till May 2006 for the Participant awaiting the proposed new methodology to come into force replacing the earlier methodology ACM0004 which did not had clear guidelines towards the steam apportioning in case of steam being generated from both the Waste heat recovery based boilers and fossil fuel combustion based boilers, fed to the common steam header thereafter generating power seems to be justified and is therefore considered acceptable. The time gap since the proposed new methodology ACM0012 version 01 replacing the earlier methodology ACM0004 available for the waste heat recovery projects coming into force and valid from 06 July 2007 to 01 November 2007 followed by version 02 which came into force and is valid from 02 November 2007 to 15 August 2008 which is the version of the methodology against which the initial version of the PDD dated 31/07/2008 was drafted and web hosted inviting global stake holders comments. The same was checked and verified against the official web link of the UNFCCC and information made publicly available : <http://cdm.unfccc.int/methodologies/PAMethodologies/publicview.html?single=1&OpenNM=NM0179>.

The Appointment of Validator was cross checked with the Contract with SGS UK dated 14/01/2008 and found correct.

Presentation at Ministry of Environment and Forests was checked with the Invitation letter issued by MoEF on 25/04/2008 and received the Host Country Approval 04/08/2008.

Finally publication of PDD for Global Stake holders Consultation from 15 August 2008 – 13 September 2008 available at UNFCCC website: <http://cdm.unfccc.int/Projects/Validation/index.html> which was cross checked against the website and found correct.

With reference to the above mentioned chronology of the project milestone activities and the supporting documents, it has been found justified that CDM revenue was considered in the decision to implement the project activity and project participant has demonstrated continued and real actions were taken to secure CDM status for the project in parallel with its implementation as per guidelines set in EB41 Annex 46.

Project Proponent's prior knowledge on CDM:

The project proponent's awareness of CDM was quite evident from the early engagement of power plant consultant seeking the analysis of unit power cost of the proposed project activity prior to the Board Resolution. The project proponent asked clarifications from M/s United Consultants (India) Private Limited to M/s Neepaz Metaliks Limited (formerly M/s. Adhunik Metaliks Limited was known as M/s. Neepaz Metaliks Limited) regarding financial and technical aspects of power plant on 04/08/2004 and the fact was verified with the Letter from M/s United Consultants (India) Private Limited and found justified. In addition to that project proponent also engaged M/s Avant Garde Engineers & Consultants (P) Ltd. for analysis of unit power cost for M/s. Neepaz Metaliks Limited on 10/08/2004 and M/s Avant Garde Engineers & Consultants (P) Ltd submitted the letter to M/s. Neepaz Metaliks Limited (Ref. No.-24117/NML/00A) regarding total unit power cost calculation and the fact is also cross checked with the letter ref. no. 24117/NML/00A, dated 14/08/2004 and found acceptable.

Thus CAR 08 was closed out.

Date:	15/09/2008				Raised by:	Ajoy Gupta			
No.:	09	Type:	CAR	Issue :	Additionality			Ref.:	B.4.6
Lead Assessor Comment						Date: 15/09/2008			
Please provide the Investment comparison analysis calculation sheet as well as sensitivity analysis calculation procedure with clarification of chosen variation.									
Project Participant Response:						Date: 19/09/2008			

The project proponent wishes to provide the following clarifications for the above issues:

Investment Comparison Analysis and Sensitivity Analysis- The Investment Comparison Analysis and the Sensitivity Analysis for the different alternatives available to M/s. Adhunik Metaliks Limited were carried out by a third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited. The detailed calculation procedure, as provided to M/s. Adhunik Metaliks Limited by the Consultant, has been submitted to the Validator. Please refer to the letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) in this regards (Ref. No.-24117/NML/00A dated 14th August 2004).

The Sensitivity Analysis for the unit power cost was carried out by the third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited with variation in coal price, grid power purchase cost, net power generated with waste gas and their suitable combinations. The range of variation for coal price and grid power purchase cost have been selected through a trend analysis on past records.

The variation in net power generation with waste gas will depend on availability of waste gas from the DRI kilns of M/s. Adhunik Metaliks Limited. In determining the unit power cost in the project scenario, the net power generated with waste gas has been calculated based on realistic availability of waste gas from the DRI kilns as indicated by the manufacturer. The waste gas generation from the DRI kilns, as considered in the determination of net power generated with waste gas, will not vary significantly as the same is determined based on output capacity of the DRI kilns. This will justify the range selected by the Consultant for net power generated with waste gas in the Sensitivity Analysis.

Acceptance and Close out by Lead Assessor:

Date: 12/01/2009

Information Provided:

Third party power consultant letter and Power cost analysis excel calculation work sheet as well as EB 41 annex-45 for sensitivity analysis procedure.

Information Verified:

Third party power consultant letter and Power cost analysis excel calculation work sheet were verified with the documents as mentioned in the verified document reference column.

Verified Document Reference:

letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) in this regards (Ref. No.-24117/NML/00A dated 14th August 2004).

Power cost analysis excel calculation work sheet.

Reasoning for not acceptance or acceptance and close out:

Third party or publicly available sources for cross-checking the unit power cost-

The project proponent has asked one power plant consultant to carry out power cost calculation and investment analysis calculation for the concerned project activity just providing them the power requirement of the plant of the different sections. In response to that the power plant consultant M/s, Avant-Garde Engineers and Consultants (P) Ltd. has submitted the detailed calculation regarding the same vide letter ref. no. 24117/NML/00A, dated 14/08/2004, which was cross checked with each and every parameter as per the requirement and their calculation and found satisfactory. Thus it can be concluded that the independent power plant consultant Avant-Garde is not biased with the project proponent and they can be considered as third party which is acceptable to the DOE.

Investment Comparison Analysis and Sensitivity Analysis-

The PP has provided a sensitivity analysis work spreadsheet in soft copies for comparing the various alternatives available for Adhunik Metaliks Limited has been carried out by a renowned third party power plant consultant, M/s Development Consultants Private Limited. The summary of the out come of the analysis has also been included in the PDD version 02 dated 21/11/2008. The sensitivity analysis for the unit power cost has been carried out with a variation in coal price, grid power purchase cost, net power generated with waste gasses along with their suitable combinations. A variation of 10% is considered in the coal price and the grid power cost per unit based on the past trend and a variation of 5% in case of waste gas generation based on uncertainty in generation and availability of waste gasses, which is in accordance with the Guidance on the Assessment of Investment Analysis as per the EB 41, Annex 45. In accordance to the Guidance provided by the UNFCCC EB, the variables considered in computing the sensitivity analysis has shown considerable material impact on the unit power cost both in base case as well as in the project case in spite of %age variation considered being below 20%, hence found correctly adopted and applied. The results of sensitivity analysis against the unit power cost of generation for the base case (coal based captive power plant) and the project case and taking variation of the different essential parameters and a combination of them which has been checked and verified and considered acceptable.

Thus CAR 09 has been closed out.

Date:	15/09/2008				Raised by:	Ajoy Gupta		
No.:	10	Type:	CAR	Issue :	Additionality		Ref.:	B.4.7
Lead Assessor Comment						Date: 15/09/2008		
<p>Barrier analysis is not clear as there is no such description of barrier during the project implementation time i.e. pre project scenario and during project implementation time, however the barrier shown in the PDD is post project scenario i.e. operational barrier. Please justify the matter that how the project activity faced the barrier to arrange the required analysis for the project activity.</p> <p>Please justify Barrier presented in the PDD is sufficient to prevent the implementation of the project activity but would not be sufficient to prevent the implementation of a coal and coal washery rejects fired captive power plant.</p> <p>Provide further evidence to support the conclusion that the fossil fuel CFBC boiler would have been installed without the development of the waste heat recovery boilers.</p>								
Project Participant Response:						Date: 19/09/2008		

The project proponent wishes to provide the following clarifications for the above issues:

Barrier to arrange required project investment- The project proponent hereby wishes to clarify that that the project activity will be subjected to only operational barriers resulting from non-availability of waste gas and/or inconsistency in waste gas parameters leading to insufficient power generation thereby jeopardizing the operation of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited. The same was anticipated by the Management of Neepaz Metaliks Limited .(Refer to the Board Resolution dated 25th of August,2004).

Preventive nature of barriers- The project proponent hereby wishes to clarify that the project activity will be catering to the power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited. Operation of an integrated iron and steel plant is based on some key power driven equipments and machineries and the aggregate power requirement of these equipments and machineries are termed as 'critical load' power demand for the integrated iron and steel plant. In order to ensure safety, reliability and operational stability of an integrated iron and steel plant operation, it is essential to ensure reliable and consistent power supply to all these equipments and machineries. Any disruption in power supply to these equipments and machineries may lead to capital damages *i.e.* damages in operational life of these key equipments and machineries. The operational stability of an integrated iron and steel plant is of huge importance which can not be compromised under any circumstance even if that may result in production downtime. With this background, the critical load power requirement of an integrated iron and steel plant is preferred to be met from fossil fuel based power generation system which will ensure consistent and reliable power supply throughout. However with the implementation of the project activity, the critical load power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited will be partially catered from the waste gas based power generation system. The reliability of such a system is much lower as compared to a fossil fuel based power generation system since power generation is subject to the availability and consistency in waste gas parameters generated from the DRI kilns. Any non-availability of waste gas and/or inconsistency in waste gas parameters will lead to insufficient power generation thereby jeopardizing the safety, reliability and operational stability of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited. This can be further substantiated by the existing practice being followed in the Indian integrated iron and steel plants where fossil fuel based power generation is found to be the prevailing practice (please refer to 'Step 4: Common practice analysis' under Section B.5 of the Revised PDD/ Version 02 for details). This explains the preventive nature of the operational barriers faced by the project activity which would not have existed in case of a coal based power plant.

Installation of CFBC boiler in absence of project activity- The project proponent has considered the following three options for catering to the power demand of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited namely

Import of entire power from the grid,

Installation of a coal based power plant with CFBC boiler and

Installation of the project activity power plant with surplus waste gas alongwith with a CFBC boiler for partial generation of power and the import of remaining power from the grid

Accordingly the project proponent has requested a third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited for computation of unit power cost for all these options. As per the feedback received from the Consultant, the unit power cost in case of power generation in a coal based power plant was found to be the lowest. The same has been elaborated in Section B.4 of the Project Design Document. Therefore in absence of the project activity, a coal based power plant with CFBC boiler would have been installed to generate steam and subsequently power to cater to the power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited. The same can also be evidenced from the discussion of the Board of Directors of M/s. Neepaz Metaliks Limited (formerly M/s. Adhunik Metaliks Limited was known as M/s. Neepaz Metaliks Limited. The "Fresh Certificate of Incorporation Consequent on Change of Name" from M/s. Neepaz Metaliks Limited to M/s. Adhunik Metaliks Limited dated 9th August 2005 has been provided to the Validator) before the approval of the project activity under consideration. Please refer to the 'Extracts of the Resolution passed at the Meeting of the Board of Directors of Neepaz Metaliks Limited', dated 25th August 2004.

Acceptance and Close out by Lead Assessor:

Date: 18/02/2009

Information Provided: PDD version 03, dated 18/02/2009	Verified Document Reference: PDD version 03, dated 18/02/2009
Information Verified: The revised PDD was verified to cross check the barrier analysis.	
Reasoning for not acceptance or acceptance and close out: The initial PDD has also described barrier analysis for determination of project additionality. Description of operational barrier due to inconsistent power generation was not found acceptable, thus a CAR 10 was raised. However, during course of validation the operational barrier could not be substantiated and justified by the project proponent in appropriate manner thus the matter on project operational barrier due to inconsistent power generation has been further withdrawn from the revised version of the PDD, thus CAR 10 was also became null and void.	

Date:	15/09/2008				Raised by:	Ajoy Gupta			
No.:	11	Type:	CAR	Issue :	Additionality			Ref.:	B.4.8
Lead Assessor Comment						Date: 15/09/2008			
<p>The analysis of the other activities implemented previously or currently underway similar to the proposed project activities in the context of national and State (Orissa) scenario with or without CDM modalities needs to be substantiated more clearly with proper direct traceable references.</p> <p>The UN reference number of similar Registered CDM project activity needs to be provided by the project proponent for transparent traceability of the fact.</p>									
Project Participant Response:						Date: 19/09/2008			
<p>The project proponent wishes to provide the following clarifications for the above issues:</p> <p><u>Analysis of other activities</u>- The analysis of similar activities implemented previously or currently underway similar to the project activity under consideration has been elaborated under ‘Step 4: Common practice analysis’ of Section B.5 of the Revised PDD/ Version 02. For this purpose, the project proponent has considered the power generation practice being followed in the integrated iron and steel plants (like M/s. Adhunik Metaliks Limited) in India. As per this analysis, there are 12 integrated iron and steel plants in India (excluding the project activity plant). Out of these 12 integrated iron and steel plants, 7 plants are generating power with fossil fuels (the details of the same have been provided in the Revised PDD/ Version 02). The remaining 5 plants are generating power partially with waste gases and all of them have been conceptualized with CDM revenue under consideration (the details of all these projects in the CDM cycle are provided in the Revised PDD/ Version 02). This justifies that in absence of CDM revenue, waste gas based power generation practice has no penetration in the Indian integrated iron and steel sector and is therefore not a common practice.</p> <p><u>UN Reference for similar registered projects</u>- As discussed above, 5 out of 12 integrated iron and steel plants (excluding the project activity plant) in India have implemented waste gas based power generation facility to partially cater to their power requirement. Out of these 5 plants, 3 plants (namely, Rourkela Steel Plant (RSP) of Steel Authority of India Limited (SAIL), JSW Steel Limited and Jindal Steel & Power Limited) have already got their projects registered with UNFCCC. The UNFCCC Reference Numbers for these three registered projects have been incorporated in the Revised PDD/ Version 02. Please refer to ‘Step 4: Common practice analysis’ of Section B.5 of the Revised PDD/ Version 02.</p>									
Acceptance and Close out by Lead Assessor:						Date: DD/MM/YYYY			

<p>Information Provided:</p> <p>Final version of the PDD.</p> <p>Information Verified:</p> <p>Final version of the PDD has been checked for the common practice analysis and found the weblinks as described in the PDD and UN reference no. as well.</p>	<p>Verified Document Reference:</p> <p>Final version of the PDD.</p>
<p>Reasoning for not acceptance or acceptance and close out:</p> <p><u>1) Analysis of other activities:</u></p> <p>The Proponent has provided information on the analysis of the other activities implemented previously or currently underway similar to the proposed project activities in the context of national and State (Orissa) scenario with or without CDM modalities in the PDD version 02 dated 21/11/2008.</p> <p>The web link(http://steel.nic.in/Annual%20Report%20(2006-07)/English/Annual%20Report%20(2006-07).pdf , last accessed on 14 December 2008) of the Annual Report for the year 2006-2007 published by the Ministry of Steel, Government of India, clearly state that there are five integrated steel plants under the Steel Authority of India Limited (SAIL) registered under the Companies Act 1956, a Government of India Enterprise, made publicly available and referred by the proponent for the facts and figures regarding the the integrated iron and steel plant in India under SAIL was checked and verified and found correct. The same Report has also mentioned that the first shore based integrated iron and steel plant, RINL (Rastriya Ispat Nigam Limited) was set up in Visakhapatnam and mentioned about the Tata Steel Limited, Essar Steel Limited, JSW Steel Limited, Jindal Steel and Power Limited (JSPL), Ispat Industries Limited (IIL) as private entities setting up integrated iron and steel plants in the country. Thus the information provided that there are 12 number of integrated iron and steel plant existing nation wide excluding Adhunik is found justified and hence accepted.</p> <p>The integrated iron and steel plants of the Steel Authority of India Limited has been utilizing the non coking coal for the generation of power which has been clearly stated in the website referring to the official web link made publicly available. Web site: http://www.sail.co.in/aboutus.php?tag=company-energy. The LD gas recovery based power recovery project implemented in Rourkela steel plant has got registered with the CDM-EB could be checked and verified against the official web link of the UNFCCC made publicly available on access found correct. Web site: http://cdm.unfccc.int/UserManagement/FileStorage/D0YOKH0N9YHKRWDM5X7I67L0UA9XXW.</p> <p>The power requirement of JSW Steel Limited and Jindal Steel & Power Limited is met respectively from a 'Blast Furnace Gas and Corex Gas based power generation system' and 'Coke Oven Gas based power generation system' which have got registered as CDM projects as per the web link provided below accessed and found correct.</p> <p>Web site: http://cdm.unfccc.int/UserManagement/FileStorage/5K5XJ3GMSTGYQE2KT3IL1NP0RGLSVK .</p> <p>Web site: http://cdm.unfccc.int/UserManagement/FileStorage/XQKW19L92IAYD0XP1QP8YRQIU3ZL8I.</p> <p>Essar Steel in the process of setting up a 350 MW natural gas based power generation facility to meet their power demand could be checked and verified referring to the web site provided which on access found correct. Web link: http://www.projectsmonitor.com/detailnews.asp?newsid=10794 .</p> <p><u>2) UN reference for the similar registered projects</u> has been provided by the PP in the PDD version 02 dated 19/01/2009. The 3 plants (namely, Rourkela Steel Plant (RSP) of Steel Authority of India Limited (SAIL), JSW Steel Limited and Jindal Steel & Power Limited) have already got their projects registered with UNFCCC. The web link provided in the PDD version 02 could be accessed and the information provided could be checked and verified against the web link and found correct.</p> <p>Thus CAR 11 was closed out.</p>	

Date:	15/09/2008	Raised by:	Ajoy Gupta
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No.:	12	Type:	CAR	Issue :	Application of the Baseline Methodology	Ref.:	B.5.1
Lead Assessor Comment					Date: 15/09/2008		
<p>Consideration of Efficiency of the power plant as mentioned in the PDD is not justified as it seems like calculated by the project proponent, how the option (ii) mentioned under ACM0012 version 02 has been applied for the same needs to be clarified.</p> <p>During baseline emissions calculation how the “Capping of baseline emissions” has been considered following Method-2 of ACM0012 version 02 is not transparent.</p>							
Project Participant Response:					Date: 19/09/2008		
<p>The project proponent wishes to provide the following clarifications for the above issues:</p> <p><u>Efficiency of baseline power plant</u>- As per the guidance provided in Option (ii) of Approved Consolidated Methodology-ACM0012/ Version 02, the overall efficiency of the existing plant that would be used by the jth recipient in absence of the project activity (<i>i.e.</i> $\eta_{Plant,j}$) is calculated as the highest of the efficiency values provided by two or more manufacturers for power plants with specifications similar to that which would have been required to supply the recipient with electricity that it receives from the project activity. In accordance with the guidance, the project proponent has considered the efficiency of the baseline coal based power plant that would have been installed in absence of the project activity to cater to the power requirement of the integrated iron and steel plant of M/s. Adhunik Metaliks Limited as the highest efficiency value provided by two renowned Consultants <i>i.e.</i> M/s. Avant-Garde Engineers and Consultants (P) Limited and M/s. United Consultants (India) Pvt. Ltd. The efficiency values provided by the two Consultants have been provided to the Validator. Please refer to the letter from M/s. Avant-Garde Engineers and Consultants (P) Limited to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) in this regards (Ref. No.- 24117/NML/00A dated 14th August 2004) and letter from M/s. United Consultants (India) Pvt. Ltd. to M/s. Neepaz Metaliks Limited (former name of M/s. Adhunik Metaliks Limited) dated 4th August, 2004..</p> <p><u>Capping of baseline emissions</u>- As per the Approved Consolidated Methodology-ACM0012/ Version 02, in case of implementation of a project activity in a new facility (similar to the project activity under consideration), project proponent is required to follow Method-2 for capping of baseline emissions. In accordance with the guidelines of Method-2, the project proponent has determined the factor f_{cap} as a ratio of</p> <p>Quantity of waste gases generated prior to the start of the project activity ($Q_{WG,BL}$)- Since the project activity is implemented in a new facility, therefore the parameter is determined following the guidance of the methodology as a product of ‘production by process that most logically relates to waste gases generation in baseline ($Q_{BL,product}$)’ and ‘amount of waste gases the industrial facility generates per unit of product generated by the process that generates waste gases ($q_{wg,product}$)’. Both the parameters ($Q_{BL,product}$ and $q_{wg,product}$) have been considered from the manufacturer’s specification on production output of the DRI kilns and the corresponding waste gas generation. The manufacturer’s specifications have been provided to the Validator.</p> <p>Quantity of waste gases used for energy generation during year y ($Q_{WG,y}$)- The same will be monitored <i>ex-post</i> during the proposed crediting period of the project activity under consideration. However for <i>ex-ante</i> computation of baseline emissions (and hence emission reductions) for the project activity under consideration, the parameter is considered to be same as that of $Q_{WG,BL}$.</p>							
Acceptance and Close out by Lead Assessor:					Date: 12/01/2009		

<p>Information Provided:</p> <p>Purchase order of WHRBs and turbogenerators.</p> <p>Information Verified:</p> <p>Purchase order of WHRBs and turbogenerators were verified with the</p> <p>Purchase Order for Waste Heat Recovery Boilers issued to M/s. Thermal Systems (Hyderabad) Pvt. Ltd. by M/s. Adhunik Metaliks Limited (Ref. No.-AML/KOL/PO/PP/PO/06-07/5152 dated 30th April 2006) and Contract for Supply of Turbo-Generator and Auxiliaries between M/s. Adhunik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd. (dated 17th April 2006)- Purchase Order for Steam-Turbo Generators respectively and found satisfactory.</p>	<p>Verified Document Reference:</p> <p>Purchase Order for Waste Heat Recovery Boilers issued to M/s. Thermal Systems (Hyderabad) Pvt. Ltd. by M/s. Adhunik Metaliks Limited (Ref. No.- AML/KOL/PO/PP/PO/06-07/5152 dated 30th April 2006)</p> <p>Contract for Supply of Turbo-Generator and Auxiliaries between M/s. Adhunik Metaliks Limited and M/s. Greensol Power Systems Pvt. Ltd. (dated 17th April 2006)- Purchase Order for Steam-Turbo Generators.</p>
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Reasoning for not acceptance or acceptance and close out:

Efficiency of baseline power plant

The efficiency of the power plant as per the approved methodology is provided by the project proponent based on two sets of manufacturer's data calculated by two different power plant consultant for 55 MW CPP. The first case has been considered as the project case where the combination chosen as M/s, Thermal Systems (Boiler manufacturer, boiler efficiency as 82.5%) and Greensol Power Systems & Hangzhou Steam Turbine Co. Limited (turbine manufacturer, turbine efficiency as 32.01%) to arrive at the overall efficiency of the power plant as 26.4%, where station heat rate is considered as 2687 kcal/kwh, which was checked against the excel sheet and found appropriate, however project proponent has considered the value of power plant efficiency as 30% from the calculation provided by the power plant consultant named Avant-Garde Engineers & Consultants (P) Ltd where they have chosen the station heat rate value as 2867 kcal/kwh.

The second case has been considered by taking the combination as M/s, Thermal Systems (Boiler manufacturer, boiler efficiency as 82.5%) and Siemens (30 MW turbine manufacturer, turbine efficiency as 32.59%) & Greensol (25 MW turbine manufacturer, turbine efficiency as 33.91%). With the combination of these two turbines the overall power plant efficiency is coming around 28% where station heat rate is considered as 2638.61 kcal/kwh (30 MW) and 2535.99 kcal/kwh (25 MW) respectively. This calculation were checked with the document provided by another power plant consultant named as United Consultants (India) Pvt. Ltd. and the same has been cross checked against the excel sheet and found acceptable.

Thus as per the methodology applied 30% being the highest of the two combinations has been applied in calculating the baseline emission and emission reduction thereafter which is conservative and in accordance with Option (ii) and hence justified. The same was cross checked against the document provided by the power plant consultant and found appropriately applied,

Capping of baseline emissions

The capping of baseline emissions has been applied in accordance with the Approved Consolidated Methodology-ACM0012/ Version 02, following the Method 2 by the Proponent as the project activity caters

to implementation in a new facility. The value of $f_{cap} = \frac{Q_{WG,BL}}{Q_{WG,y}}$ depends on the values of $Q_{WG,BL}$ and

$Q_{WG,y}$. Further $Q_{WG,BL} = Q_{BL,product} \times q_{wg,product}$ which is the requirement of the methodology as well as for a new facility? The values of $Q_{BL,product}$ and $q_{wg,product}$ has been taken from the manufacturers specification for DRI Kiln. This value has been applied for the Emission reduction calculation which was cross checked with the manufacturers data provided and in the detail ER computation excel sheet and found in line. The value of $Q_{WG,y}$ has been taken as the same value as of $Q_{WG,BL}$, hence f_{cap} is 1 which is as per the methodology for the option (ii) adopted Both the parameters $Q_{BL,product}$ and $q_{wg,product}$ have been considered from the manufacturers specification for production output of the individual operational facilities which is acceptable. The values have been incorporated in the final version of the PDD dated 19/01/2009 which is found satisfactory.

Value of $Q_{WG,y}$ which is the quantity of waste gases used for energy generation during year y could be either equal to or less than the value of $Q_{WG,BL}$ and could not be greater in any way. In case the value is equal to the value of the quantity of waste gases generated prior to the start of the project activity ($Q_{WG,BL}$) the value of f_{cap} equals to 1 and similarly when the value is less than that of the quantity of waste gas generated prior to the start of the project activity the value of f_{cap} becomes greater than one. As per the methodological option for the purpose of conservativeness the value has been opted as the same as that of $Q_{WG,BL}$. Hence the calculated value of f_{cap} is thus 1. The proponent would monitor the same ex-post during the crediting period is hereby accepted.

Hence CAR 12 has been closed out.

Date:	15/09/2008	Raised by:	Ajoy Gupta
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No.:	13	Type:	NIR	Issue :	Application of the Baseline Methodology	Ref.:	B.6.2
Lead Assessor Comment					Date: 15/09/2008		
Proper documentary evidence towards source data (manufacturer's specification) for Quantity of waste gas generated prior to the start of the project activity - $Q_{WG, BL}$ needs to be provided by the project proponent.							
Project Participant Response:					Date: 19/09/2008		
<p>The project proponent wishes to provide the following clarifications for the above issues:</p> <p><u>Documentary evidence for $Q_{WG, BL}$</u>- As explained under CAR-15, the parameter $Q_{WG, BL}$ is determined following the guidance of the methodology-ACM0012/ Version 02 as a product of 'production by process that most logically relates to waste gases generation in baseline ($Q_{BL, product}$)' and 'amount of waste gases the industrial facility generates per unit of product generated by the process that generates waste gases ($q_{wg, product}$)'. Both the parameters ($Q_{BL, product}$ and $q_{wg, product}$) have been considered from the manufacturer's specification on production output of the DRI kilns and the corresponding waste gas generation. The manufacturer's specifications have been provided to the Validator.</p>							
Acceptance and Close out by Lead Assessor:					Date: 24/11/2008		
<p>Information Provided:</p> <p>Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd.</p> <p>Information Verified:</p> <p>Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd. Verified with the letter ref. no. AML/KOL/PO/PP/PO/06-07/5152, dated 30/04/2006 and found satisfactory.</p>					<p>Verified Document Reference:</p> <p>Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd. Ref. no. AML/KOL/PO/PP/PO/06-07/5152, dated 30/04/2006.</p>		
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>Quantity of waste gas generated prior to the start of the project activity - $Q_{WG, BL}$ has been determined by the following equation as mentioned in the methodology ACM0012, version 02</p> $Q_{WG, BL} = Q_{BL, product} \times q_{wg, product}$ <p>Where ($Q_{BL, product}$) is 'production by process that most logically relates to waste gases generation in baseline' and ($q_{wg, product}$) is 'amount of waste gases the industrial facility generates per unit of product generated by the process that generates waste gases'. The project proponent has taken these values from the manufacturer's specification which is in line with the applied methodology requirements. The value of $Q_{BL, product}$ is coming 150000 Tonnes/annum considering 5 DRI kiln capacity as 100 TPD working 300 days in a year. The assumptions has been cross checked with the Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd. Ref. no. AML/KOL/PO/PP/PO/06-07/5152, dated 30/04/2006 and found satisfactory.</p> <p>The value of $q_{wg, product}$ is coming 5760 Nm³/tonne considering the waste gas flow data from manufacturer's specification i.e. 24000 Nm³/hr. The assumptions has been cross checked with the Purchase order issued by Adhunik Metaliks Limited to Thermal Systems (Hyderabad) Pvt. Ltd. Ref. no. AML/KOL/PO/PP/PO/06-07/5152, dated 30/04/2006 and found satisfactory.</p> <p>Thus NIR 13 was closed out.</p>							

Date:	15/09/2008	Raised by:	Ajoy Gupta
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No.:	14	Type:	CAR	Issue :	Calculation of Emissions Reductions	Ref.:	B.7.1
Lead Assessor Comment					Date: 15/09/2008		
<p>The current version of the PDD has used the ACM0012 version 2 during determination of ex-ante emission reductions.</p> <p>But the application of the methodology is not clear –</p> <p>The input factors used and sources of the input factors used towards ex-ante emission reductions calculations are not clearly provided.</p> <p>The excel sheet for calculation of emission reductions is required to be submitted along with evidences for the assumptions used.</p>							
Project Participant Response:					Date: 19/09/2008		

The project proponent wishes to provide the following clarifications for the above issues:

Input factors used for ex-ante computation of emission reduction- The input factors used for *ex-ante* computation of emissions reductions resulting from the project activity alongwith their sources are summarized below:

Ex-ante computation of Baseline Emissions

Energy that would have been produced in project year y using waste gases generated in base year expressed as a fraction of total energy produced using waste gases in year y (f_{cap})- The parameter is determined based on $Q_{WG,BL}$ and $Q_{WG,y}$ in accordance with the guidance of the methodology-ACM0012/ Version 02. The parameter $Q_{WG,BL}$ is calculated as a product of $Q_{BL,product}$ and $q_{wg,product}$. Both $Q_{BL,product}$ and $q_{wg,product}$ are considered from the manufacturer's specifications and the same have been provided to the Validator. The parameter $Q_{WG,y}$ is considered to be same as that of $Q_{WG,BL}$ for *ex-ante* computation of emission reductions.

Fraction of total electricity generated by the project activity using waste gases (f_{WG})- The parameter is determined based on $ST_{whr,y}$ and $ST_{other,y}$ in accordance with the guidance of the methodology-ACM0012/ Version 02. $ST_{whr,y}$ is determined with the quantity of steam generated with waste gases and the temperature and pressure of steam generated. Similarly $ST_{other,y}$ is determined with the quantity of steam generated in CFBC boiler and the temperature and pressure of steam generated. The quantity of steam generated with waste gases and in the CFBC boiler is considered from the unit power cost computation by the third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited and the same has been provided to the Validator. The temperature and pressure of steam generated with waste gases and in the CFBC boiler are considered from the Technical Specifications of the Boilers. The same has also been provided to the Validator.

Quantity of electricity supplied to the recipient j by generator which in the absence of the project activity would have been sourced from the i^{th} source (*i.e.* the coal based captive power plant) during the year y ($EG_{i,j,y}$)- The parameter is considered from the unit power cost computation by the third party renowned power plant consultant- M/s. Avant-Garde Engineers and Consultants (P) Limited and the same has been provided to the Validator.

CO₂ emission for the electricity source i (*i.e.* the coal based captive power plant), displaced due to the project activity during the year y ($EF_{elec,i,j,y}$)- The parameter is determined based on $EF_{CO2,is,j}$ and $\eta_{Plant,j}$. The parameter $EF_{CO2,is,j}$ is considered from '2006 IPCC Guidelines for National Greenhouse Gas Inventories' for sub-bituminous coal. The parameter $\eta_{Plant,j}$ is considered as the highest efficiency value provided by two renowned Consultants *i.e.* M/s. Avant-Garde Engineers and Consultants (P) Limited and M/s. United Consultants (India) Pvt. Ltd. in accordance with the guidance of the methodology-ACM0012/ Version 02. The efficiency values provided by the two Consultants have been provided to the Validator.

Ex-ante computation of Project Emissions

Quantity of fossil fuel type i combusted to supplement waste gases in the project activity during the year y ($FF_{i,y}$)- No fossil fuel consumption is considered by the project proponent for *ex-ante* computation of project emissions.

Net calorific value of the fossil fuel type i combusted as supplementary fuel (NCV_i)- In accordance with '2006 IPCC Guidelines for National Greenhouse Gas Inventories' depending on the type of fuel used.

CO₂ emission factor per unit of energy of the fuel type i ($EF_{CO2,i}$)- In accordance with '2006 IPCC Guidelines for National Greenhouse Gas Inventories' depending on the type of fuel used.

Emission Reduction Computation with supportive documents- The excel sheet for emission reduction computation alongwith all the supportive documents (as explained above) have been provided to the Validator.

Acceptance and Close out by Lead Assessor:

Date: 24/11/2008

<p>Information Provided:</p> <p>Rephrased version of the PDD and Emission reduction calculation sheet.</p> <p>Information Verified:</p> <p>Rephrased version of the PDD and Emission reduction calculation sheet was verified with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and found satisfactory.</p>	<p>Verified Document Reference:</p> <p>Final version of the PDD</p> <p>Emission reduction calculation sheet.</p> <p>2006 IPCC Guidelines for National Greenhouse Gas Inventories'</p>
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Reasoning for not acceptance or acceptance and close out:

The baseline emission is calculated as per the following equation:

$$BE_{En,y} = BE_{Elec,y} = f_{cap} \times f_{wg} \times \sum_j \sum_i (EG_{i,j,y} \times EF_{Elec,i,j,y})$$

The input factors for the calculation of baseline emission depends on the above mentioned equation parameters.

i) $f_{cap} = \frac{Q_{WG,BL}}{Q_{WG,y}}$ and $Q_{WG,BL} = Q_{BL,product} \times q_{wg,product}$ - All the parameters have been cross checked with

the manufacturers specification of the respective equipments/installations that is DRI Kiln, Coke oven batteries and mini blast furnace.

ii) $f_{wg} = \frac{ST_{whr,y}}{ST_{whr,y} + ST_{other,y}}$, where $ST_{whr,y}$ and $ST_{other,y}$ are the calculated figures from the parameters

(steam flow rate, steam temperature and steam pressure) to be monitored ex-post. The same has been checked and verified with the revised version of the PDD dated 16/12/2008 and found satisfactory.

iii) $EG_{i,j,y}$ = Quantity of electricity supplied to the recipient j by generator which in the absence of the project activity would have been sourced from the i^{th} source (i.e. the coal based captive power plant) during the year y (in MWh) which is a monitored parameter *ex-post*.

iv) $EF_{Elec, is, j, y} = \frac{EF_{CO2, is, j}}{n_{Plant, j}} \times 3.6 \times 10^{-3}$,

where $EF_{CO2, is, j}$, (CO₂ emission factor per unit of energy of the fossil fuel (coal) used in the baseline generation source i (in tCO₂ / TJ), obtained from reliable local or national data if available, otherwise, taken from the country specific IPCC default emission factors which was checked against the "2006 IPCC Guidelines for National Greenhouse Gas Inventories"

and $n_{Plant, j}$ which is the overall efficiency of the existing plant that would be used by j^{th} recipient in the absence of the project activity has been applied as per option (ii) of the methodology ACM0012 version 02 correctly as proponent has chosen the value from two different manufacturers data which were cross checked with the documents provided and found satisfactory.

Project emission calculation has been carried out as per the following equation as mentioned in the methodology ACM0012, version 2 :

$$PE_{AF, y} = \sum FF_{i,y} \cdot NCV_i \cdot EF_{CO2,i}$$

Where, Quantity of fossil fuel type i combusted to supplement waste gases in the project activity during the year y ($FF_{i,y}$)- No fossil fuel consumption is considered by the project proponent for *ex-ante* computation of project emissions.

Net calorific value of the fossil fuel type i combusted as supplementary fuel (NCV_i)- In accordance with '2006 IPCC Guidelines for National Greenhouse Gas Inventories' depending on the type of fuel used.

CO₂ emission factor per unit of energy of the fuel type i ($EF_{CO2,i}$)- In accordance with '2006 IPCC Guidelines for National Greenhouse Gas Inventories' depending on the type of fuel used.

Project proponent will measure the fossil fuel consumption data in the exigency condition and they will use the aforementioned equation to derive the value of project emission, which is found acceptable.

The detail excel sheet provided by the proponent has been checked and found satisfactory.

Thus CAR 14 was closed out.

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	15	Type:	CAR	Issue :	Data and Parameters Monitored	Ref.:	B.10.1
Lead Assessor Comment					Date: 15/09/2008		
<p>According to the PDD version 01, under section B.7.1 the parameters related to computation of f_{WG} is not transparent because Steam flow, Steam temperature and Steam pressure of WHRBs and other boilers should be measured separately to calculate the Energy content of the steam generated in WHRBs and other boilers.</p> <p>The project proponent is requested to clarify the same with proper substantiation for the estimation of f_{WG}.</p>							
Project Participant Response:					Date: 19/09/2008		
The parameters required for computation of f_{WG} has been incorporated in Section B.7.1 in Version 02 of the PDD.							
Acceptance and Close out by Lead Assessor:					Date: 24/11/2008		
<p>Information Provided:</p> <p>Revised PDD</p> <p>Information Verified:</p> <p>Section B.7.1 of the Revised PDD version 02, dated 24/11/2008 has been verified.</p>						<p>Verified Document Reference:</p> <p>Section B.7.1 of the Revised PDD version 02, dated 24/11/2008</p>	
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>According to the section B.7.1 of the rephrased PDD version 02, dated 24/11/2008 the steam flow, steam temperature and steam pressure for the waste heat recovery boiler as well as other boiler have been measured separately and that is found acceptable.</p> <p>Thus CAR 15 was closed out.</p>							

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	16	Type:	CAR	Issue :	Monitoring Plan (Annex 4)	Ref.:	B.13.3
Lead Assessor Comment					Date: 15/09/2008		
<p>According to the PDD, the monitoring plan towards the project activity provides the information regarding the Distributed control system but does not provide information regarding the on site energy meters, steam flow meters, thermocouple for steam temperature and pressure gauges monitoring and pressure gauges for steam pressure monitoring, however the respective position of the respective monitoring equipments has not been mentioned.</p>							
Project Participant Response:					Date: 19/09/2008		
<p>The Validator has been provided with:</p> <p>Electricity Distribution Line Diagram which specifies the on-site energy meter locations and their details</p> <p>Steam Metering System which specifies the location of the steam flow meters, temperature and pressure gauges and their details</p> <p>The monitoring details have also been incorporated in "Annex-4: Monitoring Information" of the Revised PDD/ Version 02.</p>							

Acceptance and Close out by Lead Assessor:	Date: 24/11/2008
<p>Information Provided:</p> <p>Location details of the on-site energy meters and steam metering system.</p> <p>-Monitoring details in annex-4 in the revised version of the PDD</p> <p>Information Verified:</p> <p>The information provided has been checked and verified against the verified documents as stated in the verified document reference column and found satisfactory.</p>	<p>Verified Document Reference:</p> <p>Electricity distribution line Diagram.</p> <p>- PDD version 2 dated 19/01/2009.</p>
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>The project participant has provided the electricity distribution line diagram specifying the on-site energy meter location along with the details. The steam metering system has also been provided specifying the location of the steam flow meters, temperature and pressure gauges along with their details. During site visit the respective locations of aforementioned meters were checked and found acceptable.</p> <p>Hence CAR 16 was closed out.</p>	

Date:	15/09/2008	Raised by:	Ajoy Gupta
No.:	17	Type:	NIR
Issue :	Monitoring Plan (Annex 4)		Ref.: B.13.5
Lead Assessor Comment		Date: 15/09/2008	
No such information regarding maintenance of monitoring equipment and installations has been provided under Monitoring Plan of the PDD.			
Project Participant Response:		Date: 19/09/2008	
<p>All the monitoring equipments will be maintained through periodic testing/calibrations. The calibration frequencies will be determined as per the recommendations of the manufacturers and standard industry norms. Operation and maintenance of all these monitoring equipments will be taken care off by M/s. Enmas O&M Services Pvt. Ltd.-an international organization having vast experiences in power plant operation and maintenance. Adherence to the calibration frequencies will be scrutinised by the Management of M/s. Adhunik Metaliks Limited.</p>			
Acceptance and Close out by Lead Assessor:		Date: 24/11/2008	
<p>Information Provided:</p> <p>Maintenance of monitoring equipments and installations.</p> <p>Service order copy for ENMAS O & M Services Private Limited for operation and maintenance of captive power plant.</p> <p>Information Verified:</p>		<p>Verified Document Reference:</p> <p>PDD version 02 dated 19/01/2009.</p> <p>Service order copy for ENMAS O & M Services Private Limited.</p>	
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>The project proponent has provided the engagement document of third party client for the operation and maintenance services for the current project activity equipment and on the basis of their scrutiny the management of AML will take the necessary action for better operation of the project activity.</p> <p>Thus NIR 17 was closed out.</p>			

Date:	15/09/2008			Raised by:	Ajoy Gupta		
No.:	18	Type:	NIR	Issue :	Monitoring Plan (Annex 4)	Ref.:	B.13.7
Lead Assessor Comment					Date: 15/09/2008		
No such procedures towards dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems has been described under monitoring plan of the PDD.							
Project Participant Response:					Date: 19/09/2008		
<p>The electricity parameters and the steam data will be available in the power plant Distributed Control System (DCS). The data available in the DCS system are non-editable and hence will ensure optimal reliability. Furthermore, as explained above, all the monitored parameters will be reviewed by the Shift In-charge, Head (Power Plant) and the Management Representatives. Any discrepancy in data, identified in any one of the above mentioned data reviewing process, will be addressed immediately by undertaking appropriate corrective actions. Finally internal audit will be conducted once in a year to assess the overall GHG performance of the project activity. The audit findings and the necessary corrective actions will be documented and reported to the Management Representative(s) for their immediate actions. The Plant Management will also be informed on the same. Compliance with the audit findings and evaluation of implementation of the corrective actions will be a part of the subsequent audit.</p>							
Acceptance and Close out by Lead Assessor:					Date: 24/11/2008		
<p>Information Provided:</p> <p>Procedure towards dealing with possible monitoring data adjustment.</p> <p>Procedure towards dealing with Missing data allowing redundant reconstruction of the data in case of monitoring problems</p> <p>Latest version of the PDD</p> <p>Information Verified:</p> <p>Annex 4 i.e. monitoring plan of current version of PDD has been verified along with the monitored parameters' description of measurement methods and procedures.</p>					<p>Verified Document Reference:</p> <p>PDD version 02, dated 19/01/2009</p>		
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>The project proponent has established a robust monitoring plan to ensure the reliability of monitoring parameter through on line measurement procedure. The electrical parameters and steam data will be captured and recorded by the online non editable version of Distributed Control System (DCS) which ensures optimum reliability. The PP has further provided information on the monitoring system that the data would be recorded shift wise in the log sheets in parallel to DCS and hence there will be minimum possibility of missing data. Further the PP has provided information that there will be a main meter along with the check meter and hence will ensure reliability of the metering system. This seems to ensure procedures towards dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems. The day to day recording of the data and subsequent checking and reviewing of the same seems to ensure the data quality. The PP has further explained that any discrepancy in data, identified in any one of the above mentioned data reviewing process, will be addressed immediately by undertaking appropriate corrective actions. Finally the internal audit to be conducted once a year and any non conformance reported to be attended and dealt with immediate necessary action clearly indicate the issue of chances of possible monitoring data adjustment rare. The same is considered satisfactory and hence acceptable.</p> <p>Thus NIR 18 was closed out.</p>							

Date:	15/09/2008			Raised by:	Ajoy Gupta		
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No.:	19	Type:	NIR	Issue :	Stakeholder Comments	Ref.:	E.1.1
Lead Assessor Comment					Date: 15/09/2008		
The PP needs to provide the evidence regarding appropriate mode of communication for local stakeholder consultation as well as the local stakeholder feedbacks received towards the project activity.							
Project Participant Response:					Date: 19/09/2008		
<p>The project proponent hereby wishes to clarify that all the non-governmental parties (like Village Panchayat, Employees of M/s. Adhunik Metaliks Limited, Consultants, Equipment Suppliers and Non-governmental Organizations) have been invited individually by the Management of M/s. Adhunik Metaliks Limited for a discussion on the project activity. The invitation letters from the Management of M/s. Adhunik Metaliks Limited to these identified stakeholders have been provided to the Validator. During the meeting, the stakeholders have been briefed about the project activity and its associated socio-economic and environmental benefits. Based on the discussion, the stakeholders have appreciated the initiative of the project proponent and provided their feedback through written communications. All these stakeholder consultation letters have also been provided to the Validator.</p> <p>In case of government parties (like Orissa Pollution Control Board, Western Electricity Supply Company of Orissa Limited, Ministry of Environment and Forests, Government of India), the project proponent has applied for the relevant consents and approvals where the project activity details have also been detailed. The project proponent has already received the necessary approvals from these government parties. The same has been provided to the Validator.</p>							
Acceptance and Close out by Lead Assessor:					Date: 24/11/2008		
<p>Information Provided:</p> <p>The positive comments and feedback provided by the local stakeholders regarding the project activity set up by Adhunik Metaliks Limited.</p> <p>Information Verified:</p> <p>The information provided has been verified against the documents referred to and found acceptable.</p>					<p>Verified Document Reference:</p> <p>Letter from Adhunik Metaliks karmachari Sangha, dated 12/03/2008.</p> <p>Letter from Avant – Garde Engineers and Consultants (P) Ltd. Dated 06/12/2007.</p> <p>Letter from Thermal Systems (Hyderabad) Pvt. Ltd. Dated 20/12/2007.</p> <p>Letter from Nav Nirman Sanstha, dated 20/02/2007.</p>		
<p>Reasoning for not acceptance or acceptance and close out:</p> <p>The Proponent has provided the letter of appreciation/ no objections received from the local stakeholders informed and invited to attend the interactive sessions on the project activity to be set up by Adhunik Metaliks Limited. The local stakeholders to the project activity appreciated the the approach of Adhunik Metaliks Limited in commissioning the project activity of generating power with the utilization of waste gas and provided there positive opinion on the project activity. The local stakeholders have provided letters addressing their positive attitude on the project activity and those letters were checked with the documents as stated in the verified document reference column above and found satisfactory.</p> <p>Hence NIR 19 has been closed out.</p>							

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Ajoy Gupta

SGS Affiliate: SGS India Pvt. Ltd.

Status

- | | | |
|---------------------------|-------------------------------------|--------------------------|
| - Product Co-ordinator | <input type="checkbox"/> | |
| - Operations Co-ordinator | | <input type="checkbox"/> |
| - Technical Reviewer | <input checked="" type="checkbox"/> | |
| - Expert | <input checked="" type="checkbox"/> | |

Validation

Verification

- | | | |
|---------------------------------------|-------------------------------------|-------------------------------------|
| - Local Assessor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Lead Assessor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Assessor
/ Trainee Lead Assessor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Scopes of Expertise

- | | |
|---|-------------------------------------|
| 1. Energy Industries (renewable / non-renewable) | <input checked="" type="checkbox"/> |
| 2. Energy Distribution | <input type="checkbox"/> |
| 3. Energy Demand | <input type="checkbox"/> |
| 4. Manufacturing | <input checked="" type="checkbox"/> |
| 5. Chemical Industry | <input type="checkbox"/> |
| 6. Construction | <input type="checkbox"/> |
| 7. Transport | <input type="checkbox"/> |
| 8. Mining/Mineral Production | <input type="checkbox"/> |
| 9. Metal Production | <input type="checkbox"/> |
| 10. Fugitive Emissions from Fuels (solid, oil and gas) | <input type="checkbox"/> |
| 11. Fugitive Emissions from Production and
Consumption of Halocarbons and Sulphur Hexafluoride | <input type="checkbox"/> |
| 12. Solvent Use | <input type="checkbox"/> |
| 13. Waste Handling and Disposal | <input type="checkbox"/> |
| 14. Afforestation and Reforestation | <input type="checkbox"/> |
| 15. Agriculture | <input type="checkbox"/> |

Approved Member of Staff by Siddharth Yadav Date: 11/01/2009