# VALIDATION REPORT

## Hanuman Agro Industries Limited

## 2.5 MW Rice husk based cogeneration plant at Hanuman Agro Industries Limited



SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com
Member of SGS Group (Société Générale de Surveillance)

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|---|---|
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| Project Title: | Organisational Unit: |
| 2.5 MW Rice husk based cogeneration plant at Hanuman Agro Industries Limited | SGS United Kingdom Limited |
| Revision Number: | Client: |
| 2 | Hanuman Agro Industries Limited |

**Summary:**

SGS India Pvt. Ltd., an affiliate of SGS United Kingdom Ltd. has made a validation of the CDM project activity 2.5 MW Rice husk based cogeneration plant at Hanuman Agro Industries Limited, by Hanuman Agro Industries Limited, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The scope of validation is the independent and objective review of the project design document, baseline study and monitoring plan and other relevant documents of the project. The information in this document is reviewed against the criteria defined in the Marrakech Accords (Decision 17) and the Kyoto Protocol (Article 12) and subsequent guidance from the CDM Executive Board.

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

The overall validation process, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (UK.PP.12 issue 3 dated 19/01/2007).

The first output of the validation process is a list of Corrective Actions Requests and New Information Requests (CAR and NIR), presented in Annex 2 of this document. Taking into account this output, the project proponent revised its project design document.

The purpose of the project activity is to implementation of rice husk based cogeneration facility involving one 2.50 MW condensing cum extraction turbine and one 22 TPH boiler. The steam and electricity generated from the project activity will be replacing steam generated through coal fired low pressure 12 TPH boiler and electricity which would have been procured from the fossil fuel intensive State Grid system from the baseline scenario.

In summary, it is SGS's opinion that the proposed CDM project activity correctly applies the baseline and monitoring methodology as mentioned in AMS-I.C. version 10 adopted for the proposed project activity and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. The project activity is likely to achieve the estimated amount of emission reductions i.e. yearly average 32563 tCO2e for the selected seven year renewable crediting period.

| Subject: | | **Indexing Terms** | |
|---|---|---|---|
| CDM Validation | | | |
| Work Carried Out by: | | | |
| Mr. Pankaj Mohan – Lead Assessor<br>Mr. Ajoy Gupta – Local Assessor | | | |
| Technical Reviewer: | | ☒ | No Distribution (without permission from the Client or responsible organisational unit) |
| Name: Irma Lubrecht, Sanjeev Kumar<br>Aurea Nardelli (Trainee Technical Reviewer)<br>Date: 23rd January 2008, 28th July 2008 | | | |
| Authorized Signatory: | | ☐ | Limited Distribution |
| Name: Siddharth Yadav | | | |
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## Abbreviations

| | |
|---|---|
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CEA | Central Electricity Authority |
| CER | Certified Emission Reductions |
| $CO_2$ | Carbon Dioxide |
| CREDA | Chhattisgarh Renewable Energy Development Authority |
| CECB | Chhattisgarh Environment Conservation Board |
| DNA | Designated National Authority |
| DOE | Designated Operational Entity |
| DR | Document Review |
| EIA | Environment Impact Assessment |
| GHG | Green House Gas(es) |
| I | Interview |
| IPCC | Intergovernmental Panel on Climate Change |
| ISHC | International Stakeholder Consultation |
| kWh | Kilo watt hour |
| MNES | Ministry of Non Conventional Energy Sources |
| MoEF | Ministry of Environment and Forest |
| MoV | Means of Verification |
| MP | Monitoring Plan |
| MWh | Mega watt hour |
| MT | Metric Tonne |
| NIR | New Information Request |
| PDD | Project Design Document |
| UNFCCC | United Nations Framework Convention for Climate Change |

## Table of Content

# 1. Introduction

## *1.1 Objective*

The Hanuman Agro Industries Limited has commissioned SGS to perform the validation of the project: "2.5 MW Rice husk based cogeneration plant at Hanuman Agro Industries 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.

## *1.2 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.

## *1.3 GHG Project Description*

The primary purpose of the proposed project activity to co generate process steam and electricity through one 22 TPH boiler and one 2.5 MW extraction cum condensing turbine, which will be powered by steam generated from the combustion of biomass (rice husk), a renewable biomass that is produced as a by-product of the rice mills.

Baseline Scenario:
Under the baseline scenario, the process steam requirement was being met through coal fired 12 TPH boiler and electricity was being procured from State Grid system.

With Project Scenario:
The project activity uses biomass as fuel for generation of steam, which in turn utilised for power generation and fulfilling process steam requirement, thus the project activity contributes towards the conservation of fossil fuel (coal) which would have used power steam generation and electricity generated by the project activity thus displaces equivalent amount of electricity from grid which is predominantly generated from thermal (fossil fuel based) power plants. Thereby the project activity contributes towards reduction of GHG emissions from baseline scenario.

Leakage:
As per the methodology AMS-I.C. version 10; the project equipment(s) has not transferred from another activity and as per leakage effect for "Competing uses for the biomass" of Revised General Guidance on Leakage in Biomass Project Activities' as attachment C to Appendix B – para 18, EB 28_Annex 35, the independent biomass assessment report establishes there are surplus availability of biomass in the project region, thus no leakage is to be considered.

Environmental & Social Impacts:
The probability of the impacts of the project activity towards the surrounding environmental and social scenario has been verified during the site validation. Compliance of the project operation with the relevant environmental legislative requirement of the host country has been verified with reference to the Consent to

Operate issued by Chhattisgarh Environment Conservation Board ref. no. 1206/TS/CECB dated 01-11-2006, where no such issue towards negative environmental impact has been identified. Moreover the issue also verified during interviewing local stakeholders, where no negative impact towards local environmental and social scenario has been identified. Thus, according to the validation site visit there is no negative environmental and social impact expected due to the project activity.

### *1.4 The Names and Roles of the Validation Team Members*

| ***Name*** | ***Role*** |
|---|---|
| Pankaj Mohan | Lead Assessor |
| Ajoy Gupta | Local Assessor |

Statement of Competence of team members are attached at Annex IV.

## 2. Methodology

### *2.1 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.

### *2.2 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*** | ***Means of verification (MoV)*** | ***Comment*** | ***Draft and/or Final Conclusion*** |
|---|---|---|---|
| *The various requirements are linked to checklist questions the project should meet.* | *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 2 to this report

### *2.3 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:

I. mistakes have been made with a direct influence on project results;

II. validation protocol requirements have not been met; or

III. 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 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

### *2.4 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.

## 3. Determination Findings

### *3.1 Participation Requirements*

The Host Party for this project is India. India has ratified the Kyoto protocol on 26th Aug 2002. A Letter of Approval was missing so CAR01 was raised. The project proponent provided the letter dated 2nd April 2007; issued by the Indian DNA (reference - F.No. 4/2/2007-CCC) which was verified from the original copy and the project title provided in the HCA letter has been also verified with the same mentioned in the PDD version 02. Hence CAR 01 was closed out.

The implementation of the project activity did not involve any use of Official Development Assistance from Annex I countries, this was cross checked and verified during the site visit. The basis of the project investment has been cross checked with term loan sanction letter from State Bank of India (dated 16.03.05) for INR 8 million and Minutes of the Hanuman Agro Industries Ltd. Board meeting dated 16th March 2005 and beside that the project proponent has submitted one self declaration letter regarding non involvement of ODA during project investment. Thus it has been accepted that no ODA/Public Funding has been involved in the financing of the project activity.

### *3.2 Baseline Selection and Additionality*

In the pre project scenario, the process steam requirement was being met through coal fired 12 TPH boiler and electricity was being procured from State Grid system and the project activity i.e. implementation of 2.5 MW cogeneration plant containing 22 TPH biomass fired boiler replaces the coal fired 12 TPH boiler used for thermal energy generation and grid electricity from the pre project scenario, thus the conservative baseline emission reduction calculation has been configured on the basis of pre project scenario.

However, the investment analysis provided under additionality assessment of the project activity has been configured on the basis of the most plausible alternative scenario, which would have been occurred in absence to the project activity, i.e. 2.5 MW coal based co-generation plant, as the project proponent has initially conceived the plan towards installation of 2.5 MW coal based co-generation plant and afterwards receiving the appraisal towards utilisation of renewable biomass residue as boiler fuel and Carbon Credit revenue from Chattishgarh Renewable Energy Generation Authority, Department Of Energy, Government of Chattishgarh, the project proponent has taken the decision towards implementation of biomass (rice husk) fired 2.5 MW cogeneration plant containing 22 TPH boiler. Thus towards investment analysis for establishment of project additionality, the most plausible baseline alternative scenario, i.e. 2.5 MW coal based co-generation plant has been considered.

The baseline emission calculation for “On site Carbon Emission Reduction due to avoidance of use of fossil fuel” has been calculated considering boiler efficiency (76.7%) of the old 12 TPH boiler and the efficiency of the old 12 TPH boiler has been configured as the highest of the last six years (2001 to 2006) boiler efficiency data which has been calculated on the basis of actual monitored data. The efficiency of the old 12 TPH boiler has been cross checked with the “Baseline 12 TPH coal fired FBC boiler efficiency calculation” document provided by the project proponent and the yearly coal consumption values used towards the boiler efficiency calculation has been cross checked with the yearly audited Director’s report for the period 2001 - 2006 and found justified. Whereas the boiler efficiency 85% for coal and 82% for rice husk has been taken from boiler manufacturer’s data for the new 22 TPH boiler, which has been cross checked with the under Operations & Maintenance Manual of new 22 TPH boiler by Cheema Boilers Limited and found justified.

The project proponent has considered the coal based steam generation facility for thermal energy and carbon intensive fossil fuel based thermal power generation scenario of the western regional grid of India for electrical energy generation as the most likely baseline scenario for the project activity. The baseline selected by the project proponent was the most likely baseline scenario in accordance with the small scale methodology AMS. I.C. version 10 as per the CDM project activities as applied.

The expected fate of the biomass residues utilised by the project activity at the baseline scenario was not clear, thus NIR 08 was raised to get further elaboration on the same.

The explanation towards expected fate of the biomass residues utilised by the project activity at the baseline scenario as provided by the project proponent has been cross checked along with the facts towards availability of ample amount of biomass residues in the project region with reference to the crop production statistics from Department of Agriculture, Government of Chhattisgarh (available at http://agridept.cg.gov.in/agriculture/kharif.htm,http://agridept.cg.gov.in/agriculture/Rabi_Cereal.htm#SPaddy and http://chhattisgarh.nic.in/download/agri.pdf last accessed on 5th Dec 2007) and found justified. In contrast to the availability of ample biomass residues in the project region, use and consumption of the biomass residues has been cross checked with the biomass consumption statistics provided under third party "Biomass Assessment Study" report prepared by SR Corporate Consultants Pvt. Ltd., Raipur, Chhattisgarh and the letter from CREDA (Ref. No. CREDA/CO-GEN/2007/ dated 20-06-2007) stating non existence of no other biomass based co-generation plant exists within the range of 15 km from project locality i.e. village Paragaon, Dist. Raipur. All the documents found satisfactory, thus the fact towards natural degradation of the biomass residues in the baseline scenario in absence of the project activity has been accepted. Hence, NIR 08 was closed out.

The description towards additionality issues of the project activity was not fully substantiated under PDD version 01, thus CAR 11 was raised seeking for further clarification with full reference. As the reply, project proponent has portrayed the additionality of the project activity as financially non attractiveness of the biomass based cogeneration activity using the Investment Comparison analysis considering two investment options viz. coal based co-generation plant and biomass based cogeneration plant.

The assumptions and data used for comparative steam generation cost analysis for coal fired and biomass fired boiler provided under baseline emissions calculation worksheet "HAIL_Baseline_4.0_Jan 08" has been checked and found satisfactory and all the facts have been properly represented under PDD version 03.

The description towards establishment of project additionality through investment barrier analysis in terms of Investment Comparison Analysis considering two investment options viz. coal based co-generation plant and biomass based cogeneration plant has been assessed with reference to the IRR calculations of investment options as provided under calculation worksheets named "Investment Analysis_biomass" and "Investment Analysis_coal", the modalities of the IRR calculation has been found justified and the IRR calculations during the project period has been thoroughly validated with cross checking the assumptions and data used during calculation and found justified.

The description towards non attractiveness of the biomass based cogeneration project activity with the extent of lower IRR (10.59% for the project life time 20 years) for the biomass based cogeneration project option along with high investment (INR 121.84 million) involvement in comparison to the comparatively higher IRR (14.07% for the project life time 20 years) for the coal based cogeneration project option along with less investment (INR 108 million) involvement and escalation of IRR (24.70%) of the project activity while considering CDM revenue has been found justified.

The project financing of INR 121.84 million for the biomass based cogeneration project activity as provided in the PDD, has been cross checked with the term loan sanction (letter from State Bank of India, dated 16.03.05, for INR 8 million at effective interest rate of 11.50% per annum) for the coal based cogeneration captive power plant at the facility of Hanuman Agro Industries Ltd, additional term loan request (letter to State bank of India (SBI) from Hanuman Agro Industries Ltd., dated 02-02-2005; letter from SBI dated 04.02.2005; minutes of Hanuman Agro Industries Ltd. Board meeting dated 16th March 2005) and found satisfactory regarding the involvement of investment risk towards the financing of the project activity along with the higher capital investment of additional INR 13.84 million & less payback in comparison to the coal based cogeneration project alternative and burden of repayment of term loan of INR 8 million with the interest rate of 11.50% per annum. Thus project activity was not the most cost effective option to the project proponent is well established and justified.

The statement provided in the PDD for operational barrier or risk towards the project activity regarding the non-availability of the biomass due to unforeseen disruption in crop cycle due to imbalance of natural conditions and alteration in governance policy regarding paddy crop in comparison to the steady supply chain of coal as the baseline fuel is justified.

The entire project mile stone activities starting from early project conception stage to submission for validation of the project activity has been reviewed with reference to the proper documentary evidences

obtained from the project proponent. The detail description on the same has been summarised in the table below -

| Timeline | Milestone activity | Documentary Evidence |
|---|---|---|
| October 2004 | Pre-feasibility study of 2.5 MW Biomass based Co-generation Plant including CDM revenue. | Pre-feasibility study report of 2.5 MW Biomass based Co-generation Plant. |
| 18/11/2004 | Hanuman Agro Industries Limited Management Board resolution towards CDM revenue consideration for the project activity. | Certified true copy of Board resolution note of Hanuman Agro Industries Limited dated 18th Nov 2004. |
| 16/03/2005 | Hanuman Agro Industries Limited Management Board resolution towards involvement of additional funding for rice husk based power project. | Certified true copy of Board resolution note of Hanuman Agro Industries Limited dated 16th March 2005 |
| March, 2005 | Chhattisgarh Renewable Energy Development Authority (CREDA) appraisal regarding benefits including CDM benefits associated with biomass based cogeneration plant. | CREDA letter (Ref. No. 5214/CREDA/RG/08, dated 11.02.2008 and Ref. No. CREDA/CO-GEN/2007/3148, dated 18.10.2007) |
| 08/02/2005 | Placement of Purchase Order for 22 TPH boiler to Cheema Boilers Ltd | Purchase Order for 22 TPH Boiler (Ref. HAIL/KOL/1033/FEB./2004-2005 dated 8 Feb 2005) |
| 08/02/2005 | Purchase order for 2.5 MW Steam Turbine to Pentagon Turbines (P) Ltd. | Purchase Order for 2.5 MW Steam Turbine (Ref. HAIL/KOL/1035/FEB./2004-2005 dated 8 Feb 2005) |
| 16/03/2005 | Term loan sanctioned by State Bank of India, Industrial Finance Branch. | Term loan sanction letter from State Bank of India, (Ref. IFB/ADB/12/1387, dated 16.03.05) |
| 18/03/2005 | Letter from Hanuman Agro Industries Ltd. towards invitation of comments from the local stakeholder regarding the project activity. | Letter from Hanuman Agro Industries Ltd. (Ref. HAIL/RPR/06-07 dated 18-03-2005) |
| 23/05/2005 | No Objection Certificate obtained from local village authority | Minutes of the local village authority meeting dated 23/05/2005. |
| 15/09/2005 | Consent to Establish for the proposed 2.5 MW Co-Generation Captive Power Plant from Chhattishgarh Environment Conservation Board. | Consent to Establish issued by Chhattishgarh Environment Conservation Board. (Ref. No. 4374/TS/CECB/2005, dated 15/09/2005). |
| 17/04/2006 | Consent to Operate obtained from Chhattishgarh Environment Conservation Board. | Consent to Operate under Water Act and Air Act issued by Chhattishgarh Environment Conservation Board, Govt. of Chhattisgarh (Ref. no. 1918/TS/CECB/2006, dated 17/04/2006 and Ref. no. 1920/TS/CECB/2006, dated 17/04/2006). |
| 28/09/2006 | No Objection Certificate obtained from Chhattisgarh Renewable Energy Development Authority (CREDA). | NOC issued by Chhattisgarh Renewable Energy Development Authority (CREDA) ref. no. 2924/CREDA/BM/RSB/2006 dated 28.09.06. |
| 22/01/2007 | Application for Host Country Approval from Indian DNA. | Application letter for Host Country Approval (Ref. HAIL/RPR/2006-07/439; dated 22/01/2007). |
| 02/04/2007 | Host Country Approval obtained from Indian DNA. | Letter of Approval from Indian DNA (F.No. 4/02/2007-CCC dated: 02-April-2007) |
| 04/04/2007 | Signing of CDM Validation contract agreement with SGS | CDM Validation contract agreement (Ref. CDM.Val1052 rev.1 dated 29/03/2007) |
| 23/05/2007 | Web-hosting of PDD for International Stakeholder Consultation Procedure. | UNFCCC website reference http://cdm.unfccc.int/Projects/Validation/DB/0N96JQ4WGNMTW7LI7OSSCZ3MLILAW9/view.html |

As described under reply of question no. 01 above, the project start date has been validated as 08/02/2004 and the during the early stage of project conception the concept towards installation of 2.5 MW coal based cogeneration plant has been conceived by Hanuman Agro Industries Ltd. to meet the internal heat & electricity requirements of the facility but afterwards through internal discussions based on the pre-feasibility

study report of 2.5 MW Biomass based Co-generation Plant including CDM revenue prepared by S.R. Corporate Consultant (P) Ltd. and subsequent receiving the appraisal for utilisation of renewable biomass residue as boiler fuel and Carbon Credit revenue from Chattishgarh Renewable Energy Generation Authority (CREDA), Department Of Energy, Government of Chattishgarh, the project proponent has taken up the decision towards implementation of biomass (rice husk) fired 2.5 MW cogeneration plant.

The early consideration of CDM modalities towards the project activity has been validated with reference to the Pre-feasibility study of 2.5 MW Biomass based Co-generation Plant including CDM revenue prepared by S.R. Corporate Consultant (P) Ltd.; dated October 2004, CREDA letter (Ref. No. 5214/CREDA/RG/08, dated 11.02.2008 and Ref. No. CREDA/CO-GEN/2007/3148, dated 18.10.2007), certified true copy of the Board resolution of Hanuman Agro Industries Ltd. dated 18th Nov 2004 & 16th March 2005 and term loan sanction letter from State Bank of India (dated 16.03.05) for INR 8 million.

The documents were found justified towards the acceptance of the fact that the CDM modalities have been considered for the project activity prior to the start date of the project activity.

The project milestone activities as validated with reference with the proper substantiation as described above are self explanatory regarding the gap between this start date and the commencement of validation, beside that it has been verified during site visit that the project proponent was also with the opinion that the project activity can be submitted for validation procedure only after receipt of Host Country Approval from Indian DNA, thus the project proponent has entered into the contract agreement with SGS for project validation after they have received the HCA for the project activity from Indian DNA on 2nd April 2007.

Thus CAR 11 was closed out.

The project proponent is claiming credits for seven years crediting period from date of registration.

Based on the findings above, it was concluded that the project activity was not a likely baseline scenario and hence additional to any that would occur in absence of project activity.

### *3.3 Application of Baseline Methodology and Calculation of Emission Factors*

The proposed CDM project activity is the power generation using biomass and uses baseline methodology as described under AMS-I.C. version 10 as per small scale CDM project activities.

The detailed calculation for baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system was not clear and detail calculation worksheet was not available for cross checking, thus a NIR 09 was raised asking for a full reference. The project developer provided all the calculation excel sheets to verify all data and basis of the baseline emission factor calculations. The detail emission reductions calculation excel worksheet named “HAIL_Baseline_4.0_Jan 08” as provided by the project proponent has been checked and found satisfactory in terms of calculation of baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system with traceable references, default values and assumptions used for calculation in accordance with AMS-I.C. version 10.

The methodological choice and calculation modalities have been properly represented under PDD version 03. Thus NIR 09 was closed out.

The availability of surplus biomass in the project region and requirement of leakage calculations due to “Competing uses for the biomass” for the project activity was not clear under PDD version 01, thus CAR 12 was raised seeking proper substantiation.

As per the requirement under Revised General Guidance on Leakage in Biomass Project Activities’ as attachment C to Appendix B – para 18, EB 28_Annex 35, the surplus availability of the biomass in the project region has been cross checked with reference to the third party “Biomass Assessment Study” report prepared by SR Corporate Consultants Pvt. Ltd., Raipur, Chhattisgarh along with the sample field survey questionnaires and forms used during the assessment study. The basis and extent of the third party Biomass Assessment Report has been found satisfactory and thus the availability of the surplus availability of the main biomass residue i.e. rice husk in the project region and non requirement of leakage calculations due to “Competing uses for the biomass” for the project activity has been accepted. Thus CAR 12 was closed out.

NIR 07 was raised to get the full substantiation towards the applicability of the project activity under the threshold limit for the small scale project activity as specified under AMS-I.C. As the response the project proponent has provided the calculation worksheet for thermal energy production capacity of the project activity, the calculation has been reviewed and the value 20MWthermal found satisfactory in line with the threshold limit provided by AMS-I.C. Thus NIR 07 was closed out.

The emission factor for the grid electricity to be displaced by the power generated from the project activity has been configured on the basis of the national standard value for Combined Margin for western regional grid emission factor (0.79 Kg CO2 per kWh) as provided by Central Electricity Authority, Ministry of Power, Government of India and provided the full reference of the $CO_2$ Baseline Database for the Indian Power Sector Version 3.0, 15th December 2007 (available at http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm, last accessed on 4th Feb 08).The CO2 Database is designed to be consistent with the "Tool to calculate the emission factor for an electricity system (Version 01), adopted by EB 35 (Annex 12)" and Version 07 of ACM0002. The emission factor for western regional grid of India as selected for the project activity will be fixed for the entire crediting period and the same has been properly incorporated in the baseline emissions reduction calculation sheet and version 03 of the PDD. The project proponent has also provided the emission reduction calculation excel sheets to verify all data and basis of the baseline emissions reduction calculation. All the calculation has been checked by the local assessor and found that the emission factors are calculated in accordance with the methodology.

### *3.4 Application of Monitoring Methodology and Monitoring Plan*

The present CDM project activity uses monitoring methodology as described in AMS. I.C. version 10, EB31 as per small scale CDM project activities.

The description (monitoring/ measurement methods, source & value of data, collection & archiving procedure etc.) of all the data/parameters to be monitored for determining baseline emissions and project emissions, for the project activity was no clear under PDD version 01, thus CAR 13 to get the proper elaboration on the same.

The modified description towards monitoring/ measurement methods of all the data/parameters to be monitored for determining baseline emissions and project emissions, for the project activity as provided under Section B.7.1 of the PDD version 03 has been checked and found complete up to the satisfactory level and appropriate to the circumstances of the project activity. This was accepted and thus, CAR 13 was closed out.

The description towards the project monitoring plan such as description towards equipments or procedures for monitoring of parameters as required under monitoring plan, detail roles and responsibility for project management, description towards data collection/ recording & archiving procedure, maintenance of equipments, QA-QC procedure, training of project personnel, internal audit and corrective actions was not clearly represented under PDD version 01, thus NIR 14 was raised to get the further clarity. The project proponent has modified the description towards the project monitoring plan under revised PDD version 02 and the detail description towards the project monitoring plan provided under Section B.7.2, Annex 4 of the PDD version 03 and "HAIL CDM Monitoring Manual" has been checked and found monitoring plan towards the project activity reflects the approach towards the good monitoring practice and appropriate to the circumstances of the project activity. This was accepted and hence NIR 14 was closed out.

### *3.5 Project Design*

The final Project Design Document (PDD) version 03 was designed as per version 4 of guidelines laid for preparing PDD of small scale CDM project activity hence the format of the present PDD was checked against it and found satisfactory.

The continuation of the implemented project technology during the entire project crediting period was not clear, thus NIR 04 was raised to receive the full explanation. The technical specifications of project equipments installed towards the biomass based cogeneration facility has been cross checked with reference to the Purchase Order for 22 TPH Boiler (Ref. HAIL/KOL/1033/FEB/2004-2005 dated 08-02-05) and 2.5 MW Steam Turbine (Ref. HAIL/KOL/1035/FEB/2004-2005 dated 08-02-05) and found as implementation of updated technology of the recent industry standard, along with that a self declaration

regarding the project technology will not be changed or replaced by any further improved technology with in the project period has been submitted by the project proponent. Thus NIR 04 was closed out

The details of initial training modules imparted towards the project personnel for functional operation of new project equipments, was not clear, thus NIR 05 was raised seeking further explanation.

The project activity is implementing biomass residue based cogeneration facility and does not involve any complicated nature of operation, thus extensive initial training and maintenance efforts are not required for this project activity.

The initial training imparted to the project personnel to ensure proper operation of the project activity by the equipment suppliers has been checked with reference to the Purchase Orders for the project equipments i.e. Boiler, Turbine, PLC system (Ref. No. HAIL/KOL/1033/FEB./2004-2005 dated 8th Feb 05 and Ref. No. HAIL/KOL/1035/FEB./2004-2005 dated 8th Feb 05) and the certification from the equipment supplier regarding training imparted to the project personnel towards the operation of Programmable Logic Controller (PLC) system Ref. EV/INS/C/HAIL/01. The same fact also has been cross checked through interviewing project personnel during the validation site visit and found satisfactory. Thus NIR 05 was closed out.

The consideration of starting date of the project activity was not clear in the PDD version 01 thus NIR 06 was raised.
The purchase order for the major project equipments i.e. boiler and steam turbine has been placed by the project proponent on 08/02/2005, the purchase orders placed for 22 TPH boiler to Cheema Boilers Ltd (Ref. HAIL/KOL/1033/FEB./2004-2005 dated 8 Feb 2005) and 2.5 MW Steam Turbine to Pentagon Turbines (P) Ltd. (Ref. HAIL/KOL/1035/FEB./2004-2005 dated 8 Feb 2005) has been checked and found appropriate. In accordance with Glossary of CDM terms (Version 03) “The starting date of a CDM programme activity is the earliest date at which either the implementation or construction or real action of a programme activity begins.” Thus for the start date for the project activity under consideration configured on the basis of date of Placement of Purchase Order for 22TPH boiler and 2.5 MW steam turbine i.e. 8th February 2005 is the earliest date at which either the implementation or construction or real action of the project activity began, thus the project start date as 08/02/2005 has been accepted. Hence NIR 06 was closed out.

### *3.6 Environmental Impacts*

The project activity is in full compliance with the relevant regulations of the Host Country; the same has been cross checked with the Consent to Operate from Chhattisgarh Environment Conservation Board ref. no. 1206/TS/CECB dated 01-11-2006.

NIR 10 was raised to cross check the compliance with local environmental regulations in that EIA requirement for the project activity The requirement of mandatory EIA study for the project activity has been cross checked with reference to the Environment Impact Assessment Notification S.O.60(E), dated 27/01/1994 along with amendment up to 7th July 2004 (available at http://www.envfor.nic.in/legis/eia/so-60(e).html, last accessed on 5th Dec 07) and found that the project activity does not require to undertake any compulsory EIA study under applicable Host Country legal requirement and the fact has been properly provided under PDD version 03. Thus NIR 10 was closed out.

### *3.7 Local Stakeholder Comments*

The local stakeholder consultation process mentioned in the PDD version 01 does not provided clear impression about the procedure used to invite local stake holder comments, procedure towards the local stakeholder meeting and the summary of comments received by stakeholder consultation process, thus NIR 02 & NIR 03 was raised respectively asking for the full reference regarding the LSC process.

The communication on behalf of Hanuman Agro Industries Ltd. (Ref. HAIL/RPR/06-07 dated 18-03-2005) to the locally elected representatives of the local village ‘Paragaon’ towards invitation of local stakeholder comments for the project activity has been checked and found satisfactory. A copy of the same has been obtained from the project proponent.

The detail minutes of the local stakeholder consultation meeting in the presences of all locally elected representatives of the local village ‘Paragaon’ held on 23-05-2005 has been checked and found satisfactory. The ‘No Objection Letter’ (NOC) received from the village representatives dated 25.05.05 towards the project activity as the proceedings of the LSC meeting and procedure also has been submitted by the project

proponent which has been reviewed and cross checked during discussions with the local stakeholders. Along with that the NOC from Chhattisgarh Renewable Energy Development Authority (CREDA) ref. no. 2924/CREDA/BM/RSB/2006 dated 28.09.06 and Consent to Operate from Chhattisgarh Environment Conservation Board ref. no. 1206/TS/CECB dated 01-11-2006has been cross checked and found the local stakeholder consultation towards the project activity has been carried out in complete and transparent manner. The copies of all the documents have been obtained from the project proponent.

Thus, NIR 02 and NIR 03 were closed out.

## 4. 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.

### *4.1 Description of How and When the PDD was Made Publicly Available*

The PDD and the monitoring plan for this project were made available on the SGS website http://cdm.unfccc.int/Projects/Validation/DB/0N96JQ4WGNMTW7LI7OSSCZ3MLILAW9/view.html and were open for comments from 23/05/07 until 21/06/07. Comments were invited through the UNFCCC CDM homepage

### *4.2 Compilation of all Comments Received*

| *Comment number* | *Date received* | *Submitter* | *Comment* |
|---|---|---|---|
| 1 | 31-05-07 4:20pm | Name: Avdhesh<br>Organization: Individual<br>City: Indore<br>Country: India | The Project depends on 126.938 thousand MT surplus rice husk within 15 KM radius, against which only 44126 tonnes of rice husk is required. This means the surplus rice husk would be available almost free of cost.<br><br>In such situation the project would be financially most attractive. Whereas the cost of raw material is considered as Rs.1.25 /Kg for coal and Rs.1.31/Kg considering on rice husk. These statements do not validate the claim of surplus biomass.<br><br>The major risk is considered as supply of rice husk. It is projected that the project is only based on rice husk; The risk parameters stated about the government policy influencing the rice husk availability don't seem to validate the risk, when the coal is available also as cheaper fuel; which can always used. In such situation can the project barrier considered as valid?<br><br>The project seems to be switching over to rice husk as a natural choice as business as usual, since there is no technology barrier for the project; in implementing rice husk based (which always is a co-fired) boiler.<br><br>Hence the firing of rice husk seems to be the baseline.<br><br>The DOE must ensure the proper and authenticated survey about the surplus availability of biomass. The project should not impose leakage on the existing users. |

### *4.3 Explanation of How Comments Have Been Taken into Account*

Reply from Project proponent:-

The statistics towards surplus availability of biomass residues within 15 km radius of the project site is now revised in accordance with the biomass balance captured under biomass assessment report and represented under PDD version 03. The availability of surplus biomass residues (rice husk) within 15 km of project site has been estimated as 75,651 tonnes per annum and out of that the annual requirement of biomass predominantly rice husk is estimated at 51,912 tonnes per annum at 100% capacity utilization (6.555 tonnes x 24 Hours x 330 Days). The plant is expected to consume 44,126 tonnes of rice husk at 100% capacity utilisation assuming a fuel mix ratio of 85:15 (rice husk: coal).

The surplus rice husk remains uncollected and decays naturally. Though, surplus biomass was available in the study area at negligible cost initially but we were aware that when the sudden demand for the waste will create, the prices would shoot up sharply as it happened in other states with similar projects. Exactly same has happened. The copy of latest purchase bill of rice husk which were provided to DOE during the site visit also supports the claim of the cost of raw material considered in the PDD.

HAIL was using 12 TPH coal fired boiler for meeting the process steam requirement and using grid electricity for meeting their power requirements, thus during consideration of the project activity (biomass based cogeneration plant), 2.5 MW coal based co-generation plant was under consideration as an alternative to meet the heat & electricity requirements of the company. The detail investment comparison analysis of the Option I (Coal based cogeneration plant) and Option II (Biomass based cogeneration plant) represented under PDD version 02, shows implementation of the Option I (Coal based cogeneration plant) was the most cost effective option for HAIL, thus Investment Barrier is the most important barrier towards implementation of the Rice husk based cogeneration project activity and that is taken up by the project proponent only due to serious consideration of CDM revenue at the project inception stage. All biomass based power plants carries the inherent risk of supply of biomass because the biomass generation is totally dependent on nature. Any crop failure due to natural calamity will adversely affect the supply of biomass to the plant; this fact has been rephrased as operational barrier towards the project activity under PDD version 03. In case of shortage of biomass supplies, the project activity may use coal as an alternate fuel which would duly be monitored as the mandatory data & the emission reduction would be calculated accordingly.

Thus switching over to rice husk is not a natural choice as business as usual to HAIL and the fact is further substantiated through the Letter from Chattisgarh State Renewable Energy Development Authority dated 20.06.07 stating the fact of non existence of no other biomass based cogeneration plant within a range of 15 Km of the project site. Hence, implementation of biomass based project activity was neither the most cost effective for HAIL nor the decision towards going ahead with the project plan was a business as usual scenario.

*DOE Comments:-*

The biomass balance i.e. generation, consumption and surplus availability as represented under PDD version 03 has been cross checked with reference to the biomass assessment report and found to be satisfactory.

The expected fate of the biomass residues utilised by the project activity at the baseline scenario has been discussed NIR 08 above (Section 3.2) and the cost escalation of the rice husk rate has been cross verified with reference to the rice husk procurement invoices showing an escalation trend in the rate of INR 1000 per MT to INR 1300 per MT of rice husk, thus the fact towards significant cost involvement related to purchase of rice husk and possibility of further increase in future has been found well justified.

The facts and figures towards Investment Comparison Analysis between coal based cogeneration plant and rice husk based cogeneration plant as represented under PDD version 03, has been cross checked with the Project IRR calculation sheets and Certification of IRR value from independent Chartered Accountant, all the facts and figures are found to be satisfactory. The Letter from Chattisgarh State Renewable Energy Development Authority (ref. CREDA/CO-GEN/2007, dated 20.06.07) stating the fact of non existence of no other biomass based cogeneration plant within a range of 15 km of the project site has been verified and found justified. The fact that the project activity is not the most cost effective option to the project proponent and implementation of biomass based cogeneration plant is not the default BAU scenario is well established and justified.

The fact towards operational barrier to the project activity due to crisis in availability of rice husk resulting form any uncertain conditions i.e. crop failure, natural calamity has been found justified and accepted with the spirit of uncertainty and unavoidable imbalance of natural conditions.

The detail discussion towards justification and acceptance of Baseline Selection and Additionality of the project activity has been discussed under Section 3.2 of this validation report.

The availability of surplus biomass in the project region and requirement of leakage calculations due to “Competing uses for the biomass” for the project activity was not clear under PDD version 01, thus CAR 12 was raised seeking proper substantiation of the matter and already discussed under Section 3.3 of this validation report, with reference to the Biomass Assessment Report and the availability of the surplus availability of the main biomass residue i.e. rice husk in the project region and non requirement of leakage calculations due to “Competing uses for the biomass” for the project activity has been accepted.

## 5. Validation Opinion

SGS has performed a validation of the project: “2.5 MW Rice husk based cogeneration plant at Hanuman Agro Industries Limited”, by Hanuman Agro Industries Limited. The Validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by SGS for registration with the UNFCCC.

Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by SGS for registration with the UNFCCC.

SGS has received confirmation by the host Party that the project activity assists it in achieving sustainable development.

By utilizing the biomass residues for cogeneration of electricity and process steam, the project results in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the technological and other associated barriers with prevailing practice demonstrates that the proposed project activity 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 and hence the project activity is likely to achieve the estimated amount of emission reductions i.e. yearly average 32563 tCO2e for the selected seven year renewable crediting period.

The validation is based on the information made available to SGS and the engagement conditions detailed in the report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence SGS can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

The DOE declares herewith that in undertaking the validation of this proposed CDM project activity it has no financial interest related to the proposed CDM project activity and that undertaking such a validation does not constitute a conflict of interest which is incompatible with the role of a DOE under the CDM.

## 6. List of Persons Interviewed

| *Date* | *Name* | *Position* | *Short description of subject discussed* |
|---|---|---|---|
| 04-06-2007 | Mr. Avijit Roy Chowdhury | General Manager (Power Plant) | Project proponents view on CDM project activity, baseline and data monitoring for project activity, technical description of the project activity and monitoring plan. |
| 04-06-2007 | Mr. Raj Kumar Thakur | Commercial Manager | Project financial information such as, project funding, debt-equity ratio, project cost sheet etc.<br>Biomass supply chain, procurement storage and data capturing procedure. |
| 04-06-2007 | Mr. Kamod Choudhury | In-charge (Boiler) | Project instrumentation, monitoring equipment details, monitoring plan, reporting and review procedure for steam generation data. |
| 04-06-2007 | Mr. Asif Jamal | In-charge (TG) | Project instrumentation, monitoring equipment details, monitoring plan, reporting and review procedure for electricity generation data. |
| 04-06-2007 | Mr. Pradeep Rath | Site In Charge | Overall data capturing system and record maintenance. |
| 04-06-2007 | Mrs. Lalita Gautam | Head – Local village Head | Awareness towards the project activity and type and extent of socio- economic and environmental well being by the project activity. |
| 04-06-2007 | Mr. Durga Prasad Gautam | Local village people | Awareness towards the project activity and type and extent of socio- economic and environmental well being by the project activity. |

## 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/ Letter of Approval from Indian DNA (F.No. 4/02/2007-CCC dated: 02-April-2007)
/2/ Modalities of communication
/3/ PDD version 1 dated 10th May 2007 (web hosted)
/4/ PDD version 2 dated 25th November 2007 (Intermediate)
/5/ PDD version 3 dated 18th Feb 2008 (Intermediate)
/6/ PDD version 4 dated 16th July 2008 (Present)

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):

/7/ Baseline emission reduction calculation worksheet, version 02
/8/ Excel calculation sheets for Investment Analysis for biomass and coal named "Investment Analysis_biomass" and "Investment Analysis_coal" respectively.
/9/ Biomass Assessment Report
/10/ Biomass assessment ground survey form
/11/ Purchase order for 22 TPH Boiler dated 8 Feb 2005
/12/ Purchase order for 2.5 MW steam Turbine dated 8 Feb 2005
/13/ Purchase order for old 12 TPH baseline FBC boiler dated 2 Sep 1989
/14/ Term loan sanction letter from State Bank of India, dated 16.03.05
/15/ Letter from Hanuman Agro Industries Ltd. (Ref. HAIL/RPR/06-07 dated 18-03-2005) towards invitation of comments from the local stakeholder regarding the project activity.
/16/ 'No Objection Letter' (NOC) received from the village representatives dated 25.5.05
/17/ Local Stakeholder Consultation meeting minutes
/18/ Consent to Establish issued by Chhattishgarh Environment Conservation Board. (Ref. No. 4374/TS/CECB/2005, dated 15/09/2005).
/19/ NOC from Chhattisgarh Renewable Energy Development Authority (CREDA) ref. no. 2924/CREDA/BM/RSB/2006 dated 28.09.06
/20/ Consent to Operate under Water Act and Air Act issued by Chhattishgarh Environment Conservation Board, Govt. of Chhattisgarh (Ref. no. 1918/TS/CECB/2006, dated 17/04/2006 and Ref. no. 1920/TS/CECB/2006, dated 17/04/2006).
/21/ Certification from the equipment supplier regarding training imparted to the project personnel towards the operation of Programmable Logic Controller (PLC) system (Ref. EV/INS/C/HAIL/01)
/22/ Commercial Operation commencement Certificate from General Manager, District Trade & Industries Centre, Raipur, Chhattisgarh (Ref. E.No. /DTCR/T.A/88/2007/2841 dated 26-03-07
/23/ Crop production statistics from Department of Agriculture, Government of Chhattisgarh (available at http://agridept.cg.gov.in/agriculture/kharif.htm,http://agridept.cg.gov.in/agriculture/Rabi_Cereal.htm#SPaddy and http://chhattisgarh.nic.in/download/agri.pdf last accessed on 5th Dec 2007)
/24/ Letter from CREDA (Ref. No. CREDA/CO-GEN/2007/ dated 20-06-2007) stating non existence of no other biomass based co-generation plant exists within the range of 15 Kms from project locality.
/25/ Environment Impact Assessment Notification S.O.60(E), dated 27/01/1994 along with amendment up to 7th July 2004 (available at http://www.envfor.nic.in/legis/eia/so-60(e).html, last accessed on 5th Dec 07)
/26/ Pre-feasibility study report of 2.5 MW Biomass based Co-generation Plant, October 2004.
/27/ CREDA letter (Ref. No. 5214/CREDA/RG/08, dated 11.02.2008 and Ref. No. CREDA/CO-GEN/2007/3148, dated 18.10.2007) towards CDM consideration for the project activity.
/28/ Certified true copy of Board resolution note of Hanuman Agro Industries Limited dated 18th Nov 2004, 16th March 2005

/29/ Hail Coal Delivery Order_8th June 2005
/30/ Rice husk purchase invoices
/31/ CSERC Order dated 11th Nov 2005
/32/ Tariff Booklet of CSEB - Year 2005-06
/33/ Baseline 12 TPH coal fired FBC boiler efficiency calculation
/34/ Yearly baseline coal consumption data from yearly audited Director's report for the period 2001 - 2006
/35/ Undertaking from the project proponent for non-replacement of he implemented technology during the entire span of crediting period.
/36/ Undertaking from the project proponent regarding non involvement of ODA in project financing.
/37/ Undertaking from the project proponent regarding scrapping of old 12 TPH boiler
/38/ AMS.I.C. version 10, EB 31
/39/ Revised General Guidance on Leakage in Biomass Project Activities' as attachment C to Appendix B – para 18, EB 28_Annex 35

## A.1 Annex 1: Local Assessment

**Table 12 Additional information to be verified by local assessors / site visit**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1. The project funding and relevant financial papers to be checked to verify, whether the project activity has utilised any ODA. | PDD | DR/I | The project has been developed as unilateral one. The project capital investment has organised thrugh term loan procured from State Bank of India (SBI) of INR 8 million and equity investment by project partcipants. The basis of the project investment has been cross checked with loan sanction letter from SBI and beside that the project proponent has submitted one self declaration letter regarding non involvement of ODA during project investment. | OK | OK |
| 2. Status of the HCA process to be checked with supproting documentation. | PDD | DR/I | HCA has been received from the Indian DNA and a copy of the same has been obtained. | OK | OK |
| 3. Documentory evidence towards project start date, to be checked. | PDD | DR/I | The project start date has been configured on the basis of the date of the invoce sent by the project equipment (boiler) supplier. | OK | OK |
| 4. Whether the project activity has the positive contribution towards direct and indirect socio-economic and environmental well being. | PDD | DR/I | During site visit, the interview of the employees and local stakeholders has reavealed that the project activity has generated direct or indirect employement opportunity for the local community and down stream bussiness opportunities for the local businessmen and the project activity does no have any negetive impact towards the surrounding environment. | OK | OK |
| 5. Whether Local Stakeholder Consultation meeting was designed in proper way to create awareness about the project activity and the comments received to be checked. | PDD | DR/I | The communication on behalf of Hanuman Agro Industries Ltd. (Ref. HAIL/RPR/06-07 dated 18-03-2005) to the locally elected representatives of the local village 'Paragaon' towards invitation of local stakeholder comments for the project activity has been checked and and Letter of No | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | Objection and appreciation provided by the local village community towards NOC on project activity have been obtained to verify the transparency in the local stakeholder consultation process. | | |
| 6. It is required to be checked that the Small scale project activity is not a debundled component of a larger project. | PDD | I | It has been checked during site visit, that the project activity is not a debundled component of a larger project. | OK | OK |
| 7. The spatial extent of the project boundary has to be checked and verified. | PDD | DR/I | The extent of the project boundary has been cross checked physically during site visit and verified with the site layout diagram, which was found in line with the project boundary description provided in the PDD. | OK | OK |
| 8. The technology implemented by project activity and project design engineering has to be checked. | PDD | DR/I | A copy of detailed offer made by the equipment supplier is obtained and verified with the original copy. | OK | OK |
| 9. The regulatory approval (NOC and consent to operate) from the State Pollution Control Board, other applicable approval and licenses are required to verify that local/legal requirements have been met. | PDD | DR | The copies of consent to establish and consent to operate letter from State Pollution Control Board has been obtained and checked with original consent. It was found to be satisfying. | OK | OK |
| 10. The possibility of anykind of leakage to be checked. | PDD | DR | The project activity does not involve transfer of project equipment(s) from another activity and detailed equipment supply and service agreement document from the equipment supplier has been procured and found satisfactory.<br>The biomass assessment report submitted by the project activity shows the availability of surplus biomass in the region and more than 25% greater that the requirement of the project activity, which was accepted. | OK | OK |
| 11. Whether CDM modalities has been considered during the planning stage of the project actvity, to be verified on the basis of the documentary evidence. | PDD | DR/I | Project proponent submitted the MOM of board resolution dated 18th Nov 2004, which were also verified by seeing the original copy and also interviewing the Plant Manager. | OK | OK |
| 12. The source of electricity during | | DR/I | There is provision for procurement | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| maintanance or emergency period, to checked and verified. | | | of power from state grid system in case of exigencies, the fact has been verified with reference to the contract agreement for maximum 700 KV signed with Chattishgarh State Electricity Board dated 29.11.06. | | |
| 13. Calculation spreadsheet for detailed emission reductions during project crediting period, to be verified. | PDD | DR/I | Project proponent has submitted the detail emission reduction calculation worksheet with all traceable references, which was cross checked and found satisfactory in terms of methodology AMS-I-C. | OK | OK |
| 14. It is required to be checked whether the project technology used is likely to be substituted by other or more efficient technologies within the project period. | PDD | DR/I | Project proponent submitted an undertaking that the project activity will not be substituted by other or more efficient technologies within the entire project crediting period. | OK | OK |
| 15. It is required to be checked that the small scale project activity is not a debundled component of a larger project. | PDD | DR/I | It has been checked during site visit, that the project activity is not a debundled component of a large project. | OK | OK |
| 16. The roles and responsibility for day-to-day monitoring, recording, reporting and weekly review procedure as required under monitoring plan of the project activity are required to be checked. | PDD | DR/I | The roles and responsibility in accordance with the monitoring plan is incorporated in the revised version of the PDD. | OK | OK |
| 17. The biomass consumption figures to be checked. | PDD | DR/I | The Biomass quantity is continuously measured at fuel receiving station & storage station through weighbridges. The supply of fuel to the boiler is monitored on daily basis. Data is recorded in logbooks towards Goods received at site (GRN), Store records for receipt & issue.<br>The weighbridge are duly calibrated by authorised third party at annual interval. | OK | OK |
| 18. The monitoring of electricity generation data to be cross checked. | PDD | DR/I | The electricity generation data monitored through duly calibrated energy meters and online PLC system at the plant site. The energy meters are are duly calibrated by authorised third party at annual interval. | OK | OK |
| 19. The monitoring of steam data to be | PDD | DR/I | The steam data being monitored | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| cross checked. | | | through steam flow meter, steam totaliser and continously through online PLC system, which are duly calibrated by authorised third party at annual interval. | | |
| 20. Fuel mix ratio to the boiler, i.e. rice husk and other fuel ratio for the boiler require to be checked. | PDD | DR/I | The project activity has been designed for 85:15 fuel mix (biomass : coal) ratio, currently the project activity is running on 100% rice husk as fuel no coal is being used, this has been verified physically during site visit.<br>There are provision in the monitoring plan, that any use of coal will be monitored and recorded for ex-post emissions reduction calculation. | OK | OK |

## 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 | Ref | MoV | Comment | Draft finding | Final Concl |
|---|---|---|---|---|---|
| 1.1. 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. | PDD | DR | The project activity does not have any kind of involvement of Annex I party at the stage of registration. Project can proceed as unilateral project.<br>Project can proceed as unilateral project. | Y | Y |
| 1.2. 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. | PDD | DR | The project activity is likely to contribute towards Sustainable Development issues.<br>CAR 01: Letter of approval from Host Country (India) Designated National Authority (DNA) to be submitted by the project proponent.<br>The LOA from Indian DNA (4/02/2007-CCC dated: 02-April-2007) has been submitted by the project proponent; the copy of the same has been obtained and verified. Thus CAR 01 was closed out. | CAR 01 | Y |
| 1.3. All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects. | PDD/UNFCCC Web-site | DR/ UNFCCC Web-site | Project is unilateral and India has ratified the protocol on 26th August 2002 and is allowed to participate. The web link is<br>http://unfccc.int/parties_and_observers/parties/items/2109.php | Y | Y |
| 1.4. The project results in reductions of GHG emissions or increases in sequestration | PDD | DR/I | The purpose of the project activity is to installation of rice husk based cogeneration facility, the steam | Y | Y |

| REQUIREMENT | Ref | MoV | Comment | Draft finding | Final Concl |
|---|---|---|---|---|---|
| when compared to the baseline; and the project can be reasonably shown to be different from the baseline scenario. | | | generated from the project activity through high pressure 22 TPH boiler replacing coal fired low pressure 12 TPH boiler from the baseline scenario and electricity generated through 2.5 MW condensing cum extraction turbine will be replacing electricity which would have procured from the fossil fuel intensive State Grid system in absence of the project activity, thus the project activity reduces the fossil fuel dependence of thermal & electrical requirement of industrial facility, thus significantly contributing towards the mitigation of GHG emission from the baseline scenario. | | |
| 1.5. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days (45 days for AR projects), and the project design document and comments have been made publicly available. | PDD | DR/UNFCCC Web-site | The PDD has been web-hosted in the UNFCCC website for invitation of comments on the project activity as the global stakeholder consultation process: website: http://cdm.unfccc.int/Projects/Validation/DB/0N96JQ4WGNMTW7LI7OSSCZ3MLILAW9/view.html<br>Starting date: 23 May 07<br>Closing date: 21 Jun 07<br>Number of comments received: 1 | Pending | Y |
| 1.6. The project has correctly completed a Project Design Document, using the current version and exactly following the guidance. | PDD | DR | The PDD has been framed in accordance to the current version (version 03) PDD template for Small Scale CDM project activity as applicable and following the guidelines (version 04) provided for completing the simplified SSC-PDD. | Y | Y |
| 1.7. The project shall not make use of Official Development Assistance (ODA), nor result in the diversion of such ODA. | PDD | DR | No ODA has been identified in the PDD.<br>Project investment records to be checked during site visit.<br>The project has been developed as unilateral one. The project capital investment has organised through term | Pending<br>Site Visit | Y |

| REQUIREMENT | Ref | MoV | Comment | Draft finding | Final Concl |
|---|---|---|---|---|---|
| | | | loan procured from State Bank of India (SBI) of INR 8 million and equity investment by project participants.<br>The basis of the project investment has been cross checked with loan sanction letter from SBI and beside that the project proponent has submitted one self declaration letter regarding non involvement of ODA during project investment. Thus it can be concluded that the financing of the project activity does not involve any ODA. | | |
| 1.8. 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? | PDD | DR | Not relevant as the project is not an AR project. | Not Applicable | Y |
| 1.9. Does the project meet the additional requirements detailed in:<br><br>Table 9 for SSC projects<br>Table 10 for AR projects<br>Table 11 for AR SSC projects | PDD | DR | This is a small scale CDM project activity which comes under category AMS. I.C, hence table 9 is applicable. | Y | Y |
| 1.10. Is the current version of the PDD complete and does it clearly reflect all the information presented during the validation assessment? | PDD | DR | The current version of PDD used by project proponent present all the information, except pending closure of some CARs/ NIRs. | Pending closure of CARs/ NIRs | Y |
| 1.11. Does the PDD use accurate and reliable | PDD | DR | The PDD uses reliable information and that can be | Site visit | Y |

| REQUIREMENT | Ref | MoV | Comment | Draft finding | Final Concl |
|---|---|---|---|---|---|
| information that can be verified in an objective manner? | | | validated in an objective manner. Parameters, default values used for calculation and sources of specific data used need to be checked. All the pending CAR/NIR need to be closed. | All pending CAR/NIR need to be closed. | |

**Table 2 Baseline methodology/ies (Ref: PDD Section B and E and Annex 3 and AM) Normal CDM projects only**

**Table 3 Additionality (Ref: PDD Section B3 and AM) Normal CDM projects only**

**Table 4 Monitoring methodology (PDD Section D and AM) Normal CDM Projects only**

**Table 5 Monitoring plan (PDD Annex 4) Normal CDM Project activities only**

**Table 6 Environmental Impacts (Ref PDD Section F and relevant local legislation) Normal CDM Project Activities only**

**Table 7 Comments by local stakeholders (Ref PDD Section G)**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 7.1 Have relevant stakeholders been consulted? | PDD | DR | The local stakeholders been consulted, mentioned in the PDD is satisfying. | Y | Y |
| 7.2 Have appropriate media been used to invite comments by local stakeholders? | PDD | DR | NIR 2: There is no information about the media used to invite local stakeholder consultation meeting and the process of compilation of the comments during local stakeholder consultation process is not clear.<br>Public Notice and Invitation Letter towards Local Stakeholder Consultation Meeting has to be provided by the Project Proponent. | NIR 02 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | The communication on behalf of Hanuman Agro Industries Ltd. (Ref. HAIL/RPR/06-07 dated 18-03-2005) to the locally elected representatives of the local village 'Paragaon' towards invitation of local stakeholder comments for the project activity has been checked and found satisfactory. A copy of the same has been obtained from the project proponent. Hence, NIR 02 was closed out. | | |
| 7.3 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? | PDD | DR | Stakeholder consultation process is not required as per regulation/laws in host country. However the project participant has consulted the local stakeholders as a significant requirement for CDM project activity.<br>NIR 03: The relevant documentation regarding Local Stakeholder Consultation meeting has to be provided by the Project Proponent.<br>The detail minutes of the local stakeholder consultation meeting in the presences of all locally elected representatives of the local village 'Paragaon' held on 23-05-2005 has been checked and found satisfactory. The 'No Objection Letter' (NOC) received from the village representatives dated 25.5.054 towards the project activity as the proceedings of the LSC meeting and procedure also has been submitted by the project proponent which has been reviewed and cross checked during discussions with the local stakeholders. Along with that the NOC from Chhattisgarh Renewable Energy Development Authority (CREDA) ref. no. 2924/CREDA/BM/RSB/2006 dated 28.09.06 and Consent to Operate from Chhattisgarh Environment Conservation Board ref. no. 1206/TS/CECB dated 01-11-2006 has been cross checked and found the | NIR 03 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | local stakeholder consultation towards the project activity has been carried out in complete and transparent manner. The copies of all the documents have been obtained from the project proponent.<br>Thus NIR 03 was closed out. | | |
| 7.4 Is a summary of the stakeholder comments received provided? | PDD | DR | The appraisal comments made by the identified local stakeholders, mentioned in the PDD is satisfying. | Y | Y |
| 7.5 Has due account been taken of any stakeholder comments received? | PDD | DR | No adverse comment identified in the PDD.<br>Same has to be cross checked during site visit. | Pending site visit | Y |

**Table 8 Other Requirements**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **8.1 Project Design Document** | | | | | |
| 8.1.1 Editorial issues: does the project correctly apply the PDD template and has the document been completed without modifying/adding headings or logo, format or font. | PDD | DR | There are no such editorial issues have been observed, the SSC-PDD (version 3) has been applied appropriately for the project activity. | Y | Y |
| 8.1.2 Substantive issues: does the PDD address all the specific requirements under each header. If requirements are not applicable / not relevant, this must be stated and justified. | PDD | DR | No such substantive issues have been observed in the version 01 of the PDD. | Y | Y |
| **8.2 Technology to be Employed** | | | | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 8.2.1 Does the project design engineering reflect current good practices? | PDD | DR | The project documentation reflects current good practice for project design engineering for clean renewable energy generation.<br>The same needs to be checked during site visit.<br>During on-site validation, the project installations and project design has been checked physically and compared with the technical specifications of the project equipments as mentioned under equipment purchase orders and the project planning towards operation and monitoring procedure have been discussed with project personnel and also the same was cross checked with the CDM monitoring & quality control manual. The project installations and operational procedure were found satisfactory. | Pending Site visit | Y |
| 8.2.2 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? | PDD | DR | According to the version 01 of the PDD, the project uses the technology that would result in | Pending Site visit | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | cleaner performance.<br>The same needs to be cross checked with the detail specification of the project equipments during site visit.<br>During on-site validation, the project installations and project design has been checked physically and compared with the technical specifications of the project equipments as mentioned under equipment purchase orders and the same was found satisfactory towards significantly better performance. | | |
| 8.2.3 Is the project technology likely to be substituted by other or more efficient technologies within the project period? | PDD | DR | According to current version of the PDD, the technology implemented by the project activity is quite updated and to be sustained for a life span of 25 years, but there is no clear indication regarding the assurance that the project technology will not be substituted by other or more efficient technologies during the project period.<br>NIR 4: Proper documentation | NIR 04 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | for the technology will not be changed during the project period needs to be submitted by the project proponent.<br><br>A self declaration regarding the project technology will not be changed or replaced by any further improved technology with in the project period has been submitted by the project proponent. Thus NIR 04 was closed out. | | |
| 8.2.4 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? | PDD | DR | The project activity is implementing biomass residue based cogeneration facility and does not involve any complicated nature of operation, thus extensive initial training and maintenance efforts are not required for this project activity.<br><br>NIR 5: However, the details about training modules imparted towards the project personnel for functional operation of new project equipments has to be provided by the project proponent. | NIR 05 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | The initial training imparted to the project personnel to ensure proper operation of the project activity by the equipment suppliers has been checked with reference to the Purchase Orders for the project equipments i.e. Boiler, Turbine, PLC system (Ref. No. HAIL/KOL/1033/FEB./2004-2005 dated 8th Feb 05 and Ref. No. HAIL/KOL/1035/FEB./2004-2005 dated 8th Feb 05) and the certification from the equipment supplier regarding training imparted to the project personnel towards the operation of Programmable Logic Controller (PLC) system Ref. EV/INS/C/HAIL/01. The same fact also has been cross checked through interviewing project personnel during the validation site visit and found satisfactory.<br>Thus NIR 05 was closed out. | | |
| **8.3 Duration of the Project/ Crediting Period** | | | | | |
| 8.3.1 Are the project's starting date and operational lifetime clearly defined and reasonable? | PDD | DR | The project's starting date and operational lifetime clearly | NIR 06 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | defined under PDD version 01, but the basis of the selection of the project start date is not clear.<br><br>NIR 6: The explanation towards the basis of selection of project start date and documentary evidence for the same are required to be provided by the project proponent.<br><br>The Commercial Operation commencement Certificate from General Manager, District Trade & Industries Centre, Raipur, Chhattisgarh (Ref. E.No. /DTCR/T.A/88/2007/2841 dated 26-03-07) has been obtained from the project proponent and checked and the statement made found satisfactory. Beside that, the approach towards consideration of the project start date is also in line with the definition of "Starting date of a CDM project activity" as provided under "CDM Glossary of terms used in the Project Design Document (CDM-PDD) - Version 02". Thus the project start date as 31-08-2006 has been accepted. Hence NIR 06 | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | was closed out. | | |
| 8.3.2 Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)? | PDD | DR | A renewable crediting period of initial seven years has been selected for the project activity. | Y | Y |
| 8.3.3 Does the project's operational lifetime exceed the crediting period. | PDD | DR | The project's operational life time is expected to be 20 years which exceeds the chosen crediting period of 7 years. | Y | Y |

**Table 9 Additional requirements for SSC project activities only**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 9.1 Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM? | PDD | DR | According to the version 01 of the PDD, the project activity is a biomass (rice husk) based cogeneration facility to meet the thermal and electrical requirement of the industrial facility, through implementation of a 22 TPH high pressure boiler and a 2.5 MW condensing cum extraction turbine, the project activity thus intends to reduce direct and indirect $CO_2$ emissions due to fossil fuel consumption from the baseline scenario, the installed capacity of the power plant is 2.5 MW.<br>Thus, it qualifies as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 as the project activity has the installed capacity of the power plant less than 15 MW, the limit set for the small scale projects. | Y | Y |
| 9.2 The project conforms to one of the categories listed in Appendix B to Annex II to Decision 21/CP8. | PDD | DR | The project activity has applied the category Type I - Renewable energy projects: I.C. Thermal energy for the user, as listed in Appendix B to Annex II to Decision 21/CP8, but the calculation worksheet for thermal energy production capacity of the project activity was not available to crosscheck whether the thermal energy generation capacity less than 45 $MW_{th.}$<br><br>NIR 7: The project proponent should provide the calculation worksheet for thermal energy production capacity of the project activity.<br><br>The calculation regarding thermal energy production capacity of the project activity has been provided by the project proponent, the calculation has been reviewed and the value $20MW_{thermal}$ found satisfactory in line with the threshold limit provided by AMS-I.C. Thus NIR 07 was closed out. | NIR 07 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | | | |
| 9.3 The small scale project activity is not a debundled component of a larger project activity? | PDD | DR | According to the version 01 of the PDD, the Small Scale CDM project activity is not seems to be a de-bundled component of a larger project. | Y | Y |
| 9.4 PDD has been prepared in accordance with appendix A of Annex II to Decision 21/CP8 | PDD | DR | The CDM - SSC - PDD (version 03) template has been followed appropriately. | Y | Y |
| 9.5 The project uses a simplified baseline and monitoring methodology specified in Appendix B. If not, they may propose changes to the meths or a new SSC project category | PDD | DR | The project activity is using AMS- I.C. version 10, EB 31.<br>NIR 08: The expected fate of the biomass residues utilised by the project activity at the baseline scenario is not clear.<br><br>The explanation towards expected fate of the biomass residues utilised by the project activity at the baseline scenario as provided by the project proponent has been cross checked along with the facts towards availability of ample amount of biomass residues in the project region with reference to the crop production statistics from Department of Agriculture, Government of Chhattisgarh (available at http://agridept.cg.gov.in/agriculture/kharif.htm, http://agridept.cg.gov.in/agriculture/Rabi_Cereal.htm#SPaddy and http://chhattisgarh.nic.in/download/agri.pdf last accessed on 5th Dec 2007) and found justified. In contrast to the availability of ample biomass residues in the project region, use and consumption of the biomass residues has been cross checked with the biomass consumption statistics provided under third party “Biomass Assessment Study” report prepared by SR Corporate Consultants Pvt. Ltd., Raipur, Chhattisgarh and the letter from CREDA (Ref. No. CREDA/CO-GEN/2007/ dated 20-06-2007) stating non | NIR 08 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | existence of no other biomass based co-generation plant exists within the range of 15 Kms from project locality i.e. village Paragaon, Dist. Raipur. All the documents found satisfactory, thus the fact towards natural degradation of the biomass residues in the baseline scenario in absence of the project activity has been accepted.<br>Hence, NIR 08 was closed out. | | |
| 9.6 Are the emission reductions determined in accordance with the methodology described? | PDD | DR | According to the version 01 of the PDD, there is noticeable inconsistency regarding calculation of baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system. There are also inconsistencies regarding application of default value for emission co-factor for coal.<br>CAR 09: Detailed emission reduction calculations excel worksheet with all relevant justifications has to be provided by the project proponent.<br><br>The detail emission reductions calculation excel worksheet named “HAIL_Baseline_3.0_20 Nov 07” as provided by the project proponent has been checked and found satisfactory in terms of calculation of baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system with traceable references, default values and assumptions used for calculation in accordance with AMS-I.C. version 10.<br>The methodological choice and calculation modalities have been properly represented under PDD version 03. Thus NIR 09 was closed out. | CAR 09 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 9.7 Is there any bundling of SSC activities into one PDD? If so, does the monitoring plan consider sampling of activities? Refer to para 19 of Annex II. Also, note bundling provisions in SSC Briefing Note and SSC meths I C / I D and III D and Para 22e of Appendix B. | PDD | DR | According to the version 01 of the PDD, there are no bundling issues of SSC activities into one PDD. | Y | Y |
| 9.8 Is EIA required by host party? If not, none is required irrespective of SHC. If yes, has one been performed consistent with local requirements? | PDD | DR | The current version of the PDD is claiming that, according to the Host Country legislation no EIA study is required for the proposed project activity.<br>NIR 10: The proper reference of the relevant host country legislation to be provided by the project proponent.<br><br>The requirement of mandatory EIA study for the project activity has been cross checked with reference to the Environment Impact Assessment Notification S.O.60(E), dated 27/01/1994 along with amendment up to 7th July 2004 (available at http://www.envfor.nic.in/legis/eia/so-60(e).html, last accessed on 5th Dec 07) and found that the project activity does not require to undertake any compulsory EIA study under applicable Host Country legal requirement and the fact has been properly provided under PDD version 02. Thus NIR 10 was closed out. | NIR 10 | Y |
| 9.9 The project results in emission reductions that are additional in accordance with the following requirements:<br>• (Para 26) The project is additional if emissions are reduced below those in the absence of the project. | PDD | DR | CAR 11: The version 01 of the PDD has addressed the Additionality issues through Barrier Analysis and has applied Barrier analysis due to Technology, Investment and Prevailing Practice. But the Additionality of the project activity is not clear-<br>• The various assumptions and data used for comparative steam generation cost analysis for coal fired and | CAR 11 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| • (Para 27) Simplified baseline can be used; if not, baseline proposed shall cover all gases, sectors and sources listed in Annex A to the KP<br><br>• (Para 28) One or more barriers as detailed in attachment A to Appendix B to Annex II will be used to demonstrate that the project would not proceed without the CDM | | | biomass fired boiler are not clear.<br>• The Investment Barrier analysis described is not providing any details regarding project investment and is not also providing any clarity regarding investment risk analysis and barriers faced during financing/ investing into the project activity.<br>• The description towards technological barrier due to the risk associated to the rice husk supply for operation of the plant does not provide clarity on the issue.<br>• The statement towards addressing the issue of barrier due to prevailing practice is not transparent.<br><br>The assumptions and data used for comparative steam generation cost analysis for coal fired and biomass fired boiler provided under baseline emissions calculation worksheet "HAIL_Baseline_4.0_Jan 08" has been checked and found satisfactory and all the facts have been properly represented under PDD version 03.<br><br>The description towards establishment of project additionality through investment barrier analysis in terms of Investment Comparison Analysis considering two investment options viz. coal based co-generation plant and biomass based cogeneration plant has been assessed with reference to the IRR calculations of investment options as provided under calculation worksheets named "Investment Analysis_biomass" and "Investment Analysis_coal", the modalities of the IRR calculation has been found justified and the IRR calculations during the project period has been thoroughly validated with cross checking the assumptions and data used during calculation and found justified. | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | The description towards non attractiveness of the biomass based cogeneration project activity with the extent of less pay back (IRR 10.59% for the project life time 20 years) for the biomass based cogeneration project option along with high investment (INR 121.84 million) involvement in comparison to the comparatively higher pay back (IRR 14.07% for the project life time 20 years) for the coal based cogeneration project option along with less investment (INR 108 million) involvement and escalation of IRR (24.70%) of the project activity while considering CDM revenue has been found justified.<br><br>The project financing of INR 121.84 million for the biomass based cogeneration project activity as provided under PDD version 03, has been cross checked with the term loan sanction letter from State Bank of India (dated 16.03.05) for INR 8 million at effective interest rate of 11.50% per annum for the coal based cogeneration captive power plant at the facility of Hanuman Agro Industries Ltd., additional term loan request letter to State bank of India (SBI) from Hanuman Agro Industries Ltd. dated 02-02-2005, letter from SBI dated 04.02.2005, minutes of Hanuman Agro Industries Ltd. Board meeting dated 16th March 2005 and found satisfactory regarding the involvement of investment risk towards the financing of the project activity along with the higher capital investment of additional INR 13.84 million & less payback in comparison to the coal based cogeneration project alternative and burden of repayment of term loan of INR 8 million with the interest rate of 11.50% per annum.<br><br>The statement provided under PDD version 03 operational barrier or risk towards the project activity regarding the non- | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | availability of the biomass due to unforeseen disruption in crop cycle due to imbalance of natural conditions and alteration in governance policy regarding paddy crop in comparison to the steady supply chain of coal as the baseline fuel is justified.<br><br>The consideration of CDM modalities towards the project activity has been cross checked with the CREDA letter (Ref. No. 5214/CREDA/RG/08, dated 11.02.2008 and Ref. No. CREDA/CO-GEN/2007/3148, dated 18.10.2007), certified true copy of the Board resolution of Hanuman Agro Industries Ltd. dated 18th Nov 2004, 16th March 2005 and term loan sanction letter from State Bank of India (dated 16.03.05) for INR 8 million. The documents were found justified towards the acceptance of the fact that the CDM modalities have been considered for the project activity prior to the financial closure of the project activity.<br><br>Thus CAR 11 was closed out. | | |
| 9.10 Leakage is calculated according to the provisions of the SSC methodologies in Appendix B. | PDD | DR | According to the version 01 of the PDD, the explanation provided towards non-consideration of leakage calculation for the project activity due to availability of more than 25% than the quantity of biomass required for project operation.<br><br>But the proper description regarding third party biomass assessment report providing details regarding type, source, availability, supply chain etc. of biomass residues in the surrounding region of the project activity are not transparent.<br><br>The proper evidence towards availability of more than 25% than the quantity of biomass required for project operation for nullifying the requirement of leakage calculation has to be provided by the project proponent. | CAR 12 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | per the requirement under Revised General Guidance on Leakage in Biomass Project Activities' as attachment C to Appendix B – para 18, EB 28_Annex 35, the surplus availability of the biomass in the project region has been cross checked with reference to the third party "Biomass Assessment Study" report prepared by SR Corporate Consultants Pvt. Ltd., Raipur, Chhattisgarh along with the sample field survey questionnaires and forms used during the assessment study. The basis and extent of the third party Biomass Assessment Report has been found satisfactory and thus the surplus availability of the main biomass residue i.e. rice husk in the project region and non requirement of leakage calculations due to "Competing uses for the biomass" for the project activity has been accepted. Thus CAR 12 was closed out. | | |
| 9.11 The project boundary shall be constructed in accordance with the requirements of the SSC meths in Appendix B. | PDD | DR | The description and schematic representation of the project boundary provided in the version 01 of the PDD is satisfying.<br>The spatial extent of the project boundary should be checked during site visit.<br><br>The extent of the project boundary and the components as mentioned in the PDD has been cross checked physically during site visit and verified with the site layout diagram, which was found in line with the project boundary description provided in the PDD. | Pending | Y |
| 9.12 The Monitoring plan shall be consistent with the requirements of the SSC methodology in | PDD | DR | The Monitoring plan is inconsistent with the requirements of the applied SSC methodology, as the proper description | CAR 13 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| Appendix B and shall provide for the collection and archiving of data needed to determine project emissions, baseline emissions and leakage. | | | (monitoring/ measurement methods, source & value of data, collection & archiving procedure etc.) of all the parameters required to be monitored for determination of baseline emissions and project emissions, for the project activity is not clear.<br>CAR 13: Clear description of all the data/parameters to be monitored for determining baseline emissions and project emissions, for the project activity to be provided by the project proponent.<br>The description towards monitoring/ measurement methods, source & value of data, collection & archiving procedure of all the data/parameters to be monitored for determining baseline emissions and project emissions, for the project activity as provided under Section B.7.1 of the PDD version 03 has been checked and found complete up to the satisfactory level and appropriate to the circumstances of the project activity. Thus CAR 13 was closed out. | | |
| 9.13 The monitoring plan shall present good monitoring practice appropriate to the circumstances of the project activity. | PDD | DR | NIR 14: The monitoring plan is not clear and complete, as<br>• The proper description towards equipments or procedures for monitoring of parameters as required under monitoring plan.<br>• Roles and responsibility for day-to-day monitoring, recording, reporting and regular review procedure is not described clearly.<br>• Value of data applied for the purpose of calculating expected emission reductions, has not been provided in the version 01 of the PDD.<br>• No clear indication about data collection/ recording, | NIR 14 | Y |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | archiving procedure and maintenance of monitoring equipments.<br>• More details about the QA/QC procedures have to be provided.<br>• Description of emergency preparedness for avoiding unintended project activity emission is not clear.<br><br>The detail description towards the project monitoring plan provided under Section B.7.2, Annex 4 of the PDD version 02 and "HAIL CDM Monitoring Manual" has been checked and found monitoring plan towards the project activity reflects the approach towards the good monitoring practice and appropriate to the circumstances of the project activity. The description of the same has been properly incorporated under Version 03 of the PDD. Hence, NIR 14 was closed out. | | |
| 9.14 If project activities are bundled, separate monitoring plan shall be prepared for each of the activities or an overall plan reflecting good monitoring practice will be prepared, consistent with the above requirements. | PDD | DR | The SSC project is not seemed to be a bundled project activity. | Y | Y |

**Table 10 Additional requirements for AR projects – Not applicable**

**Table 11 Additional requirements for SSC AR projects – Not applicable**

**Table 12 Additional information to be verified by local assessors / Site visit – Annex 3**

## A.3 Annex 3: Overview of Findings

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.

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 01 | CAR | Provide Host Country Approval from Indian DNA. | 1.2 |
| Date: 28/11/2007<br>[Response from project developer]<br>Copy of Host Country Approval is provided to DOE during site visit; however scanned copy of original document is attached herewith. | | | |
| Date: [05-Dec-07] [Comments from Local Assessor]<br><br>The LOA from Indian DNA (F.No. 4/02/2007-CCC dated: 02-April-2007) has been submitted by the project proponent; the copy of the same has been obtained and verified. Thus CAR 01 can be closed out.<br><br>Date:23-12-2007 [Pankaj Mohan]<br>[Acceptance and close out] CAR 01 closed | | | |

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 02 | NIR | Provide public notice and invitation letter published for LSC Meeting to invite local stakeholder comments. | 7.2 |
| Date: 28/11/2007<br>[Response from project developer]<br><br>Local stakeholders for the project activity are residents of Paragaon village. The company has written a letter vide its letter no HAIL/RPR/2005-06 dated 18/03/05 to the Gram Panchayat requesting the No Objection Certificate for the proposed project. Copy of the letter is provided to DOE during the site visit; however scanned copy of original document is attached herewith. | | | |
| Date: [05-Dec-07] [Comments from Local Assessor]<br><br>The communication on behalf of Hanuman Agro Industries Ltd. (Ref. HAIL/RPR/06-07 dated 18-03-2005) to the locally elected representatives of the local village 'Paragaon' towards invitation of local stakeholder comments for the project activity has been checked and found satisfactory. A copy of the same has been obtained from the project proponent. Thus NIR 02 can be closed out.<br><br>Date: 23-12-2007 [Pankaj Mohan] | | | |

| |
|---|
| [Acceptance and close out] NIR 02 closed |

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 03 | NIR | Provide documents regarding Local Stakeholder Consultation Meeting. | 7.3 |

Date: 28/11/2007
[Response from project developer]
Minutes of the Local Stakeholder Consultation Meeting is attached herewith.

Date: [05-Dec-07] [Comments from Local Assessor]

The detail minutes of the local stakeholder consultation meeting in the presences of all locally elected representatives of the local village 'Paragaon' held on 23-05-2005 has been checked and found satisfactory. The 'No Objection Letter' (NOC) received from the village representatives dated 25.5.054 towards the project activity as the proceedings of the LSC meeting and procedure also has been submitted by the project proponent which has been reviewed and cross checked during discussions with the local stakeholders. Along with that the NOC from Chhattisgarh Renewable Energy Development Authority (CREDA) ref. no. 2924/CREDA/BM/RSB/2006 dated 28.09.06 and Consent to Operate from Chhattisgarh Environment Conservation Board ref. no. 1206/TS/CECB dated 01-11-2006 has been cross checked and found the local stakeholder consultation towards the project activity has been carried out in complete and transparent manner. The copies of all the documents have been obtained from the project proponent. Thus NIR 03 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 03 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 04 | NIR | Provide supporting documentation for the technology will not be substituted by other or more efficient technologies during the project period. | 8.2.3 |

Date: 28/11/2007
[Response from project developer]
An undertaking of the promoters in this regard is enclosed herewith.

Date: [05-Dec-07] [Comments from Local Assessor]

A self declaration regarding the project technology will not be changed or replaced by any further improved technology with in the project period has been submitted by the project proponent. Thus NIR 04 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 04 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 05 | NIR | Provide the details about training modules imparted towards the project personnel for functional operation of new project equipments to ensure proper operation of the project activity. | 8.2.4 |

Date: 28/11/2007
[Response from project developer]
No extensive initial training is required for this capacity of plant. However, due training had been imparted by the equipment suppliers at the time of commissioning the plant. The project evidence in this regard is enclosed.

Date: [05-Dec-07] [Comments from Local Assessor]

The project activity is implementing biomass residue based cogeneration facility and does not involve any complicated nature of operation, thus extensive initial training and maintenance efforts are not required for

this project activity.

The initial training imparted to the project personnel to ensure proper operation of the project activity by the equipment suppliers has been checked with reference to the Purchase Orders for the project equipments i.e. Boiler, Turbine, PLC system (Ref. No. HAIL/KOL/1033/FEB./2004-2005 dated 8th Feb 05 and Ref. No. HAIL/KOL/1035/FEB./2004-2005 dated 8th Feb 05) and the certification from the equipment supplier regarding training imparted to the project personnel towards the operation of Programmable Logic Controller (PLC) system Ref. EV/INS/C/HAIL/01. The same fact also has been cross checked through interviewing project personnel during the validation site visit and found satisfactory. Thus NIR 05 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 05 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 06 | NIR | Provide explanation towards the basis of selection of project start date and documentary evidence for the same. | 8.3.1 |

Date: 17/07/2008
[Response from project developer]
Project start date has been considered as the date of purchase order placement for 22 TPH boiler and 2.5 MW turbine for the project activity. The copy of the same is enclosed.

Date: [05-Dec-07] [Comments from Local Assessor]

The purchase order for the major project equipments i.e. boiler and steam turbine has been placed by the project proponent on 08/02/2005, the purchase orders placed for 22 TPH boiler to Cheema Boilers Ltd (Ref. HAIL/KOL/1033/FEB./2004-2005 dated 8 Feb 2005) and 2.5 MW Steam Turbine to Pentagon Turbines (P) Ltd. (Ref. HAIL/KOL/1035/FEB./2004-2005 dated 8 Feb 2005) has been checked and found appropriate. Beside that the commercial production start date of the project activity as 31/08/2006 has been also cross checked with the Commercial Operation commencement Certificate from General Manager, District Trade & Industries Centre, Government of Chhattishgarh (Ref. E.No. /DTCR/T.A/88/2007/2841 dated 26-03-07).

In accordance with Glossary of CDM terms (Version 03) “The starting date of a CDM programme activity is the earliest date at which either the implementation or construction or real action of a programme activity begins.” Thus for the start date for the project activity under consideration configured on the basis of date of Placement of Purchase Order for 22TPH boiler and 2.5 MW steam turbine i.e. 8th February 2005 is the earliest date at which either the implementation or construction or real action of the project activity began, thus the project start date is validated as 08/02/2005. Hence NIR 06 can be closed out.

Date: 22-07-2008 [Pankaj Mohan]
[Acceptance and close out] NIR 06 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 07 | NIR | Provide the calculation worksheet for thermal energy production capacity of the project activity. | 9.2 |

Date: 28/11/2007
[Response from project developer]
The calculation worksheet for thermal energy production capacity is enclosed.

Date: [05-Dec-07] [Comments from Local Assessor]

The calculation regarding thermal energy production capacity of the project activity has been provided by the project proponent, the calculation has been reviewed and the value $20MW_{thermal}$ found satisfactory in line with the threshold limit provided by AMS-I.C. Thus NIR 07 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 07 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 08 | NIR | Provide clear explanation towards expected fate of the biomass residues utilised by the project activity at the baseline scenario. | 9.5 |

Date: 28/11/2007
[Response from project developer]
The project activity is located in the Chhattisgarh State which is known for its paddy cultivation in the country & called as "The Rice bowl of country". Hence, generation of paddy/rice husk is ample. The average area under paddy cultivation is 3508.85 thousand hectares with an average production of 5170.2125 thousand MT of Paddy as reflected from the table given below. The biomass scenario in the state was that the biomass was left as it is in the field or burnt till the project has taken shape. We have conducted extensive survey for accessing the available potential of biomass in the study area. We have developed the rice husk procurement mechanism & are confident of getting the required quantity from the nearby rice mills.

| | Area (000 Ha) | | | | Production (000 MT) | | | |
|---|---|---|---|---|---|---|---|---|
| **Year** | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2001-02 | 2002-03 | 2003-04 | 2004-05 |
| Kharif | 3585.05 | 3469.1 | 3477.52 | 3356 | 5901.9 | 2886.29 | 5750.72 | 5872.98 |
| Rabi | 44.4 | 14.58 | 23 | 65.75 | 20 | 115.96 | 63.07 | 69.93 |
| Total | 3629.45 | 3483.68 | 3500.52 | 3421.75 | 5921.9 | 3002.25 | 5813.79 | 5942.91 |

| | |
|---|---|
| Average Area | 3508.85 thousand hectares |
| Average Production | 5170.2125 thousand MT |

http://agridept.cg.gov.in/agriculture/kharif.htm
http://agridept.cg.gov.in/agriculture/Rabi_Cereal.htm#SPaddy
http://chhattisgarh.nic.in/download/agri.pdf

Date: [05-Dec-07] [Comments from Local Assessor]

The explanation towards expected fate of the biomass residues utilised by the project activity at the baseline scenario as provided by the project proponent has been cross checked along with the facts towards availability of ample amount of biomass residues in the project region with reference to the crop production statistics from Department of Agriculture, Government of Chhattisgarh (available at http://agridept.cg.gov.in/agriculture/kharif.htm, http://agridept.cg.gov.in/agriculture/Rabi_Cereal.htm#SPaddy and http://chhattisgarh.nic.in/download/agri.pdf last accessed on 5th Dec 2007) and found justified. In contrast to the availability of ample biomass residues in the project region, use and consumption of the biomass residues has been cross checked with the biomass consumption statistics provided under third party "Biomass Assessment Study" report prepared by SR Corporate Consultants Pvt. Ltd., Raipur, Chhattisgarh and the letter from CREDA (Ref. No. CREDA/CO-GEN/2007/ dated 20-06-2007) stating non existence of no other biomass based co-generation plant exists within the range of 15 Kms from project locality i.e. village Paragaon, Dist. Raipur. All the documents found satisfactory, thus the fact towards natural degradation of the biomass residues in the baseline scenario in absence of the project activity has been accepted.
Hence, NIR 08 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 08 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 09 | NIR | Provide detail emission reductions calculation excel worksheet, with all relevant justifications towards calculation of baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system and traceable references, default values and assumptions used for calculation. | 9.6 |

Date: 28/11/2007
[Response from project developer]
Detail emission reductions calculation excel worksheet with all relevant justifications regarding calculation of baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system and traceable references, default values and assumptions used for calculation is enclosed.

Date: [05-Dec-07] [Comments from Local Assessor]

The detail emission reductions calculation excel worksheet named "HAIL_Baseline_3.0_20 Nov 07" as provided by the project proponent has been checked and found satisfactory in terms of calculation of baseline emission reductions for steam/heat produced using fossil fuel and displacement of electricity from grid system with traceable references, default values and assumptions used for calculation in accordance with AMS-I.C. version 10.
The methodological choice and calculation modalities have been properly represented under PDD version 03. Thus NIR 09 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 09 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 10 | NIR | Provide detail reference of the Host Country legislation, under which EIA study is not required for the project activity. | 9.8 |

Date: 28/11/2007
[Response from project developer]
Since Host Country's legislation does not require any documentation on the analysis of environmental impacts of the project activity[1] as the capital cost of the project is less Rs 50 Crores and the project is not covered under the specified list of industries which requires the EIA, no such EIA has been documented. The copy of the notification no S.O. 632 (E) dated 03/06/02 is attached herewith and link to the site is provided hereunder

The link is provided herewith:
[1]http://www.envfor/division/iass/notif/eiaamend.html

Date: [05-Dec-07] [Comments from Local Assessor]

The requirement of mandatory EIA study for the project activity has been cross checked with reference to the Environment Impact Assessment Notification S.O.60(E), dated 27/01/1994 along with amendment up to 7th July 2004 (available at http://www.envfor.nic.in/legis/eia/so-60(e).html, last accessed on 5th Dec 07) and found that the project activity does not require to undertake any compulsory EIA study under applicable Host Country legal requirement and the fact has been properly provided under PDD version 02. Thus NIR 10 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 10 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 11 | CAR | • Provide details of various assumptions and data used for comparative steam generation cost analysis for coal fired and biomass fired boiler.<br>• Provide investment details for the project activity clarity regarding investment risk analysis and barriers faced during financing/ investing into the project activity.<br>• Provide detail IRR calculation worksheet containing all the assumptions used for the calculation.<br>• Provide clarity towards technological barrier due to the risk associated to the rice husk supply for operation of the plant.<br>• Provide the proper documentary evidence towards establishment of barrier due to prevailing practice.<br>• Provide proper documentary evidence towards consideration of CDM revenue for the project activity during the financial closure. | 9.9 |

Date: 28/11/2007
[Response from project developer]

1. All assumptions and data used for comparative steam generation cost analysis for coal fired and biomass fired boiler have been provided under updated baseline emissions calculation worksheet.
2. The additionality for this project activity is demonstrated using the Investment Comparison analysis considering two investment options viz. coal based co-generation plant and biomass based cogeneration plant. The rephrased PDD incorporating the same is attached herewith. IRR calculation worksheet containing all the assumptions along with supporting CA certificate for the options is also enclosed.
3. Major risk to the operation of the plant is the supply of rice husk which is an inherent risk that a user has to consider due to its dependency on nature. Though the rice husk availability in the vicinity of the HAIL's project location is surplus but at the same time its seasonal and nature dependent. Any adverse climatic change may impact the supply of rice husk to the project activity. For mitigating this risk, the promoters had decided to use other biomasses available in the region in case there is a crop failure or less productivity.
4. HAIL's Biomass based co-generation plant is the only plant in the selected study area i.e. within a range of 15 kms from the plant location. A certificate in this regard from the state nodal agency CREDA is attached herewith, however the barrier analysis for the project activity due to prevailing practice is not directly applicable towards the project scenario, thus the same has been withdrawn from the updated PDD version 02.
5. The certified true copy of board resolution dated 18th Nov 2004 and 16th March 2005 wherein the CDM revenue for the project activity during the financial closure was considered is enclosed.

Date: [18-Feb-08] [Comments from Local Assessor]

- The assumptions and data used for comparative steam generation cost analysis for coal fired and biomass fired boiler provided under baseline emissions calculation worksheet "HAIL_Baseline_4.0_Jan 08" has been checked and found satisfactory and all the facts have been properly represented under PDD version 03.

- The description towards establishment of project additionality through investment barrier analysis in terms of Investment Comparison Analysis considering two investment options viz. coal based co-generation plant and biomass based cogeneration plant has been assessed with reference to the IRR

calculations of investment options as provided under calculation worksheets named "Investment Analysis_biomass" and "Investment Analysis_coal", the modalities of the IRR calculation has been found justified and the IRR calculations during the project period has been thoroughly validated with cross checking the assumptions and data used during calculation and found justified.

The description towards non attractiveness of the biomass based cogeneration project activity with the extent of less pay back (IRR 10.59% for the project life time 20 years) for the biomass based cogeneration project option along with high investment (INR 121.84 million) involvement in comparison to the comparatively higher pay back (IRR 14.07% for the project life time 20 years) for the coal based cogeneration project option along with less investment (INR 108 million) involvement and escalation of IRR (24.67%) of the project activity while considering CDM revenue has been found justified. justified.

The project financing of INR 121.84 million for the biomass based cogeneration project activity as provided under PDD version 02, has been cross checked with the term loan sanction letter from State Bank of India (dated 16.03.05) for INR 8 million at effective interest rate of 11.50% per annum for the coal based cogeneration captive power plant at the facility of Hanuman Agro Industries Ltd., additional term loan request letter to State bank of India (SBI) from Hanuman Agro Industries Ltd. dated 02-02-2005, letter from SBI dated 04.02.2005, minutes of Hanuman Agro Industries Ltd. Board meeting dated 16th March 2005 and found satisfactory regarding the involvement of investment risk towards the financing of the project activity along with the higher capital investment of additional INR 13.84 million & less payback in comparison to the coal based cogeneration project alternative and burden of repayment of term loan of INR 8 million with the interest rate of 11.50% per annum.

- The statement provided under PDD version 02 operational barrier or risk towards the project activity regarding the non-availability of the biomass due to unforeseen disruption in crop cycle due to imbalance of natural conditions and alteration in governance policy regarding paddy crop in comparison to the steady supply chain of coal as the baseline fuel is justified.

- Initially the concept towards installation of 2.5 MW coal based cogeneration plant has been conceived by Hanuman Agro Industries Ltd. to meet the internal heat & electricity requirements of the facility but afterwards receiving the appraisal towards utilisation of renewable biomass residue as boiler fuel and Carbon Credit revenue from Chattishgarh Renewable Energy Generation Authority (CREDA), Department Of Energy, Government of Chattishgarh, the project proponent has taken the decision towards implementation of biomass (rice husk) fired 2.5 MW cogeneration plant. The consideration of CDM modalities towards the project activity has been cross checked with the CREDA letter (Ref. No. 5214/CREDA/RG/08, dated 11.02.2008 and Ref. No. CREDA/CO-GEN/2007/3148, dated 18.10.2007), certified true copy of the Board resolution of Hanuman Agro Industries Ltd. dated 18th Nov 2004 & 16th March 2005 and term loan sanction letter from State Bank of India (dated 16.03.05) for INR 8 million. The documents were found justified towards the acceptance of the fact that the CDM modalities have been considered for the project activity prior to the financial closure of the project activity.

Thus CAR 11 can be closed out.

Date: 20-2-2008 [Pankaj Mohan]
[Acceptance and close out] CAR 11 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 12 | CAR | • Provide proper description regarding third party biomass assessment report providing details regarding type, source, availability, supply chain etc. of biomass residues in the surrounding region of the project activity.<br>• Provide proper evidence towards availability of more than 25% than the quantity of biomass required for project operation for nullifying the requirement of leakage calculation. | 9.10 |
| Date: 28/11/2007 | | | |

[Response from project developer]
The biomass assessment report is provided to DOE during site visit which clearly demonstrate the availability of more 25% required for the project operation.

The survey forms including Form for field survey, form for industry survey, form for Adminstrator survey and the List of rice mills etc. have also been provided to DOE during field survey.

Date: [05-Dec-07] [Comments from Local Assessor]

As per the requirement under Revised General Guidance on Leakage in Biomass Project Activities' as attachment C to Appendix B – para 18, EB 28_Annex 35, the surplus availability of the biomass in the project region has been cross checked with reference to the third party "Biomass Assessment Study" report prepared by SR Corporate Consultants Pvt. Ltd., Raipur, Chhattisgarh along with the sample field survey questionnaires and forms used during the assessment study. The basis and extent of the third party Biomass Assessment Report has been found satisfactory and thus the surplus availability of the main biomass residue i.e. rice husk in the project region and non requirement of leakage calculations due to "Competing uses for the biomass" for the project activity has been accepted. Thus CAR 12 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] CAR 12 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 13 | CAR | Provide clear description (monitoring/ measurement methods, source & value of data, collection & archiving procedure etc.) of all the data/parameters to be monitored for determining baseline emissions and project emissions, for the project activity. | 9.12 |

Date: 28/11/2007
[Response from project developer]

The description towards the data/parameters to be monitored under project activity as per the methodology has been updated in the revised PDD, with detail description of all data sources, values, collection mechanism, archiving procedures etc. The specific parameters to be monitored as per the methodology are briefly given hereunder:

- Electricity Generation (EGgross)
- Net electricity supply (EGy)
- Fuel Consumption (Qfc_biomass – Quantity of Biomass)
- Fuel Consumption (Qfc – Quantity of Coal)
- Steam Generation (Qsteam)
- Surplus Biomass Assessment (Surplus biomass available)

Date: [05-Dec-07] [Comments from Local Assessor]

The description towards monitoring/ measurement methods, source & value of data, collection & archiving procedure of all the data/parameters to be monitored for determining baseline emissions and project emissions, for the project activity as provided under Section B.7.1 of the PDD version 02 has been checked and found complete up to the satisfactory level and appropriate to the circumstances of the project activity. Thus, CAR 13 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] CAR 13 closed

Date: 22nd June 2007 Raised by: Pankaj Mohan

| No. | Type | Issue | Ref |
|---|---|---|---|
| 14 | NIR | Monitoring plan is not clear -<br>• Provide proper description towards equipments or procedures for monitoring of parameters as required under monitoring plan.<br>• Provide proper description regarding roles and responsibility for day-to-day monitoring, recording, reporting and regular review procedure<br>• Provide proper description towards data collection/ recording, archiving procedure and maintenance of monitoring equipments.<br>• Provide more details about the QA/QC procedures under monitoring plan.<br>• Provide description of emergency preparedness for avoiding unintended project activity. | 9.13 |

Date: 28/11/2007
[Response from project developer]
The detail description towards equipments or procedures for monitoring of parameters as required under monitoring plan, detail roles and responsibility for project management, description towards data collection/ recording & archiving procedure, maintenance of equipments, QA-QC procedure, training of project personnel, internal audit and corrective actions has been incorporated under monitoring plan of the revised PDD.
Along with the monitoring plan described under PDD version 02, further detail regarding operational and management procedures towards the project monitoring plan have been clearly narrated under a "CDM Manual". For more details "HAIL CDM Monitoring Manual" enclosed herewith.

Date: [05-Dec-07] [Comments from Local Assessor]

The detail description towards the project monitoring plan provided under Section B.7.2, Annex 4 of the PDD version 02 and "HAIL CDM Monitoring Manual" has been checked and found monitoring plan towards the project activity reflects the approach towards the good monitoring practice and appropriate to the circumstances of the project activity. Thus NIR 14 can be closed out.

Date: 23-12-2007 [Pankaj Mohan]
[Acceptance and close out] NIR 14 closed

## A.4 Annex 4: Statements of Competency

# Statement of Competence

Name: Pankaj Mohan SGS Affiliate: SGS India Pvt. Ltd.

Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☒

| | Validation | Verification |
|---|---|---|
| - Local Assessor | ☒ | ☒ |
| - Lead Assessor | ☒ | ☒ |
| - Assessor / Trainee Lead Assessor | ☒ | ☒ |

Scopes of Expertise

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

Approved Member of Staff by: Marco van der Linden Date: 03-04-07

# Statement of Competence

Name: Ajoy Gupta SGS Affiliate: India

Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☐

| | Validation | Verification |
|---|---|---|
| - Local Assessor | ☒ | ☒ |
| - Lead Assessor | ☐ | ☐ |
| - Assessor / Trainee Lead Assessor | ☐ | ☐ |

Scopes of Expertise

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

Approved Member of Staff by: Siddharth Yadav Date: 11/07/2007