

VALIDATION REPORT

Him Urja Private Limited

**Vanala Small Scale Hydropower
project**

SGS Climate Change Programme

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| Commenting Period: | | 13/01/2009 to 11/02/2009 | |
| First PDD Version and Date: | | Version 01 dated 30/11/2008 | |
| Final PDD Version and Date: | | Version 05 dated 29/06/2010 | |
| Summary: | | | |
| <p>Him Urja Private Limited has commissioned SGS to perform the validation of the project: Vanala Small Scale Hydropower Project.</p> <p>Methodology Used: AMS ID (Scope 1 Energy Industries: TA 1.2 Energy generation from renewable energy sources)</p> <p>Version and Date: version 16 valid from 11/06/2010 onwards</p> <p>The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and applicable CDM requirements.</p> <p>The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable simplified methodology and underlying formulae and calculations.</p> <p>The report and the annexed validation describes a total of 16 findings which include:</p> <ul style="list-style-type: none"> • 07 Corrective Action Requests (CARs); • 09 Clarification Requests (CLs); • 00 Forward Action Requests (FARs); and <p>All findings have been closed satisfactorily and the project will be recommended to the CDM Executive Board with a request for registration</p> | | | |
| Subject: | | Document Distribution | |
| CDM Validation | | | |
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Abbreviations

| | |
|--------|---|
| CAR | Corrective action request |
| CDM | Clean development mechanism |
| CDM | EB CDM Executive Board |
| CER | Certified emission reduction |
| CL | Clarification request |
| DOE | Designated operational entity |
| DNA | Designated national authority |
| FAR | Forward action request |
| GHG | Greenhouse gas(es) |
| IPCC | Intergovernmental Panel on Climate Change |
| PDD | Project Design Document |
| UNFCCC | United Nations Framework Convention on Climate Change |

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1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Him Urja Private Limited to perform a validation of the project: Vanala Small Scale Hydropower Project in India.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Validation and Verification Manual version 1.2 and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

By implementing 15 MW run of the river type small hydroelectricity generation plant, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The project involves installation of two horizontal Francis turbines generating sets of 7.5 MW each for hydroelectricity generation and generation of electricity by converting kinetic energy of the water current into electrical energy through installation of a turbine generator system.

In our opinion, the project meets all relevant UNFCCC, CDM criteria and all relevant host country criteria. The project correctly applies methodology AMS ID version 16 valid from 11/06/2010 onwards. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be **455150** t of CO₂e over a 10 year crediting period, averaging **45515** t of CO₂e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

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

Signed on Behalf of the Validation Body by Authorized Signatory

Signature: 

Name: Gaelle Quessada

Date: 16th March 2011

2. Introduction

2.1 Objective

Him Urja Private Limited has commissioned SGS to perform the validation of the project: “Vanala Small Scale Hydropower Project” with regard to the relevant requirements for Clean Development Mechanism (CDM) project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

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

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

2.3 GHG Project Description

By implementing 15 MW run of the river type small hydroelectricity generation plant, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The project involves installation of two horizontal Francis turbines generating sets of 7.5 MW each for hydroelectricity generation and generation of electricity by converting kinetic energy of the water current into electrical energy through installation of a turbine generator.

2.4 The Names and Roles of the Validation Team Members

Validation Team

| Name | Role |
|------------------|---------------------------------|
| Kunal Sharma | Lead Assessor/Local Assessor |
| Abhishek Mahawar | Assessor |
| Sanjay Banerjee | Sector scope 1.2 Expert (Hydro) |
| Abhishek Mahawar | Financial Expert |

Technical Review Team

| Name | Role |
|--------------|--|
| Sathis Kumar | Technical Reviewer & Sector scope 1.2 Expert (Hydro) |

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project document version 01 dated 30/11/2008 (webhosted) and the subsequent versions dated 02, 03, 04 and 05 dated 29/06/2010 (final version)^{1,2/}. The assessment is performed by trained assessors using a validation protocol attached as Annex 2 Table 2.

The site visit was performed on 20/02/2009 by members of the assessment team and the observations and results are summarized in subsequent section of this document.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is designed in accordance with the Validation and Verification Manual, Version 1.2 dated 30th July 2010. 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 (reporting).

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

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

3.3 Findings

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

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met

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

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The CDM requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.

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

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

Corrective Action Requests and Clarification Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team. Findings can be raised at this stage and client must address them within agreed timeline.

4. Validation Findings

4.1 Approval

DNA of India (Host Country) is involved in the proposed project activity as per section A.3 of the PDD. The project proponent has submitted the Host Country Approval Letter from the Indian DNA, document no. 4/13/2008-CCC dated 29/09/2008^{/7/}. In line with Para 45 VVM version 1.2, this has been validated that the letter confirms:

- The host Party has ratified the Kyoto Protocol;
- Participation is voluntary;
- In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country;
- It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.

The title of the project has been validated as “Vanala Small Scale Hydropower Project” and has been found consistent with the PDD webhosted for public comments.

Authenticity of the Host Country Letter of Approval has been cross verified online from the website of National CDM Authority, Ministry of Environment & Forests, Government of India (http://cdmindia.in/reports_list_details.php?id=21&reporttype=1&page=22). The project ID given to the project by the National CDM Authority has been verified on the website as 1018-08.

It was also verified that the Modalities of Communication (MoC) document^{/6/} was duly filled in accordance with the CDM guidelines.

CAR#01 was raised requesting the PP to submit the Letter of approval issued by the Designated National Authority (DNA) of the Host Country (India). In response, the letter of approval (ref no. 4/13/2008-CCC dated 29/09/2008) issued by the DNA of India was made available to the assessment team during the validation site visit on 20th February 2009. Hence, **CAR#01** was closed out.

4.2 Participation Requirements

The project participants listed in tabular form in section A.3 of the PDD and information with the contact details provided in annex 1 of the PDD have been found consistent. The Host party (India) has ratified the Kyoto Protocol on 26th August 2002 and is allowed to participate in the CDM project activity. This has been validated from the web link <http://maindb.unfccc.int/public/country.pl?country=IN>. The Host Party confirmed in the Letter of Approval^{/7/} that the proposed CDM project activity contributes to sustainable development and the project will assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment. The project participant, as described in the PDD, is “Him Urja Private Limited”. The voluntary participation of the project proponent has been approved and authorized by the host country DNA in the same letter of approval^{/7/}.

4.3 Project Design Document including Project Description

The project title used in the PDD clearly identifies CDM project activity in terms of uniqueness and distinguishes the project activity. The project activity satisfies the criterion for CDM projects and the PDD version 05 complies with guidelines for completing CDM-SSC-PDD. The physical location of the project activity is Village- Vanala, District- Chamoli, Uttarakhand (India). The physical co ordinates of the project activity have been validated as per section A.4.1.4 of the PDD from Google Earth as:

| | WEIR SITE | POWER HOUSE |
|--------------|-----------|-------------|
| LATITUDE (N) | 30° 16' | 30° 17' |

| | | |
|------------------|---------|---------|
| LONGITUDE (E) | 79° 25' | 79° 23' |
| ELEVATION (masl) | 1202.5 | 1056.0 |

The proposed project activity involves the installation of the 15 MW run of the river type small hydroelectric power plant with the below mentioned equipments. The project consist of two horizontal Francis turbines generating sets of 7.5 MW each for hydroelectricity generation and two generators of 3 phase Synchronous type, vertical shaft, brushless/ fully excitation type. The name plate capacity of the generators was validated during the site visit by the assessment team.

The table mentioned under section A.4.3 of the PDD for the projection of emission reductions has been correctly applied. The annual emission reduction is estimated to be 45515 tCO₂e for the first crediting period.

It is found that the project description provided in section A.2 of the PDD gives clear understanding of the nature of the project activity and its technical aspects as it sufficiently covers all relevant elements of the project activity. Also the description of the project activity is found to be accurate and complete and is consistent with the observations made during the site visit. This is found in line with paragraphs 58, 59 and 64 of VVM version 1.2. The final PDD is provided using the PDD template version 3 and it is found in accordance with the "Guidance for completion of Project Design Document (CDM-SSC-PDD)" version 5; thus is acceptable. This is checked and found to be appropriate as per para 55, 56 and 57 of VVM (version 1.2).

No Public funding from an Annex-1 country has been validated by receiving an undertaking from the project proponent stating that the project activity has no public funding involved from an Annex-1 country.

CL#02 was raised requesting the current status and the implementation schedule of the project activity. In response, the PP has provided the list of activities and the present situation of the project activity along with evidence^{/9/} which were found acceptable. Hence, **CL#02** was closed out.

CL#03 was raised to provide evidence for the technical details and design capacity of the horizontal Francis turbines installed at the site from the technology supplier. In response, the PP has submitted the required supportive for the technical details and design capacity of the horizontal Francis turbines and other equipment installed at the validation site visit. This has been validated and found acceptable. Hence, **CL#03** was closed out.

CL#04 was raised to provide supportive evidence for the below mentioned points:

1. Proper documentation for the operational life time of the project technology.
2. The implemented technology will not be changed during the project period and needs to be provided by the PP.

In response, the PP has provided clarification along with evidence:

1. The PP has submitted the UERC guidelines for the operational lifetime of the hydro-electric equipments as well as an undertaking form the project proponent which states that the lifetime of the major equipments is at least 25 years.
2. Undertaking submitted by the PP for no change of technology during the current crediting period. This was acceptable.

Hence, the **CL#04** was closed out

4.4 Eligibility as a Small Scale Project

The proposed project activity involves the installation of the 15 MW run of the river type small hydroelectric power plant. The capacity of the power plant was verified from the commissioning certificate dated 6th December 2009^{/9/} to be 2 x 7500 KW.

As the project applies the methodology “AMS-I.D version 16”, the project qualifies under Type-1 as per the definitions provided in paragraph 28 of decision -/CMP.2.

- Type I: Renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent)

It was also confirmed through a discussion with the project participant and the technical consultant that there is no alteration to the project site expected during the crediting period.

The project is eligible as Small Scale Project since it meets the requirement of Type-1, for each year during the crediting period, as defined in the simplified modalities and procedures.

The project activity is not a debundled component of a large scale project activity as per the debundling principle for small scale project activity and is eligible to use the simplified modalities and procedures for small-scale CDM project activities.

4.5 Applicability of selected methodology to the project activity

The selected methodology to the project activity was AMS ID Version 13 in the web hosted PDD, however during the validation the methodology expired and the PP has revised the PDD as per the latest available version of applicable methodology, i.e. AMS ID Version 16.

As per AMS ID version 16, the following criteria have been analyzed to validate the appropriateness of the applicability of the methodology:

| Applicability conditions in Version 16 of AMS ID | Characteristics of the project activity | Applicability criterion met? | DOE's Opinion |
|---|--|------------------------------|---|
| <i>This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to a national or a regional grid. Project activities that displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit shall apply AMS-I.F.</i> | The project activity is a renewable energy generation unit (a hydro electric power project) that supplies electricity to the northern regional electricity distribution system that is primarily being supplied by fossil fuel based power plants. | Yes | The project activity is to install two turbines of 7.5 MW capacities each in the hydro power plant. This has been verified during site visit as well as from the contract for supply of equipment and technical services. ^{/8/} |
| <i>This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition¹; (c) involve a retrofit² of (an) existing plant(s); or (d) involve a replacement³ of (an) existing plant(s).</i> | The proposed project activity is a new power plant at the site and there has been no other power plant prior to it. Thus, the proposed project activity is a Greenfield plant. | Yes | The project activity is to install two turbines of 7.5 MW capacities each in a new hydro power plant and it has been validated from the forest land lease deed ^{/18/} and the NOC from the state pollution control board ^{/19/} that there was no renewable energy power plant operating prior to the implementation of the project activity. |
| <i>Hydro power plants with reservoirs that satisfy at least one of the following conditions</i> | The project activity is a run-off river project and it does not lead to a creation | Yes | This has been validated during site visit as well as from the third party feasibility study |

| | | | |
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| are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m ² ; • The project activity results in new reservoirs and the power density of the power plant, as Per definitions given in the Project Emissions section, is greater than 4 W/m ² . | of a reservoir. Hence, this condition is not applicable for the project activity | | conducted by IIT Roorkee. |
| In the case of biomass power plants, no other biomass types than renewable biomass ⁴ are to be used in the project plant. | The proposed project activity is not a biomass power plant, so this condition is not applicable for the project activity. | Yes | The project activity has been validated as a hydro power plant; hence, this applicability criterion does not apply to this project. |
| If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW. | The project activity is a run-off the river type small hydro electric project with a capacity of 15.0 MW and does not include any non renewable components. Further, being a hydro power project it does not involve any co-firing of fossil fuel. | Yes | The project activity involves the installation of two turbines of 7.5 MW capacities each in the hydro power plant. This has been validated during site visit as well as from the contract for supply of equipment and technical services. Hence, the project activity meets the eligibility limit of 15 MW for a small-scale CDM project activity. |
| Combined heat and power (co-generation) systems are not eligible under this category. | The project activity is not a combined heat and power (co – generation) system | Yes | The project activity involves the installation of two turbines of 7.5 MW capacities each in the hydro power plant. Hence, this criteria does not apply to the project activity. |
| In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the | The project activity is a Greenfield hydro power generation facility and does not involve addition of any hydro power generation unit at an existing hydro power generation facility. | Yes | The project activity is to install two turbines of 7.5 MW capacities each in a new hydro power plant. This has been validated from the third party feasibility study conducted by the PP and the NOC from the state pollution control board that no capacity addition is |

| | | | |
|--|---|-----|--|
| <i>existing units.</i> | | | involved in the project activity. |
| <i>In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.</i> | The project activity is a Greenfield hydro power generation facility and does not seek to modify / retrofit an existing renewable energy generation facility. | Yes | The project activity is to install two turbines of 7.5 MW capacities each in a new hydro power plant. This has been validated from the third party feasibility study conducted by the PP and the NOC from the state pollution control board that no capacity addition is involved in the project activity. |

Thus, all the applicability criteria of AMS ID, version 16 have been duly addressed in the PDD and justified. Hence, from the above discussion, it has been confirmed that the applicability of the selected methodology AMS ID, version 16 to the proposed project activity was found to be reasonable and acceptable.

It is established from the review of the final PDD and assessment from the validation site visit that there are no left out greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected emission reduction. All the emissions regarding the project activity occurring within the boundary have been duly included in the monitoring plan.

4.6 Project Boundary

AMS ID Version 16 states “the physical, geographical site of the renewable generation source delineates the project boundary”

B.3 section of PDD clearly defined the spatial extent of the project boundary which includes the Vanala hydro power plant and the regional electricity grid (NEWNE grid) to which the proposed project is connected.

The project proponent has considered CO₂ as the main green house gas from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. It was verified during the site visit that there is no other emission source from the project activity.

The validation team is of the opinion that the PDD has correctly described the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating the project and baseline emissions for the proposed CDM project activity as per para 77 of VVM, version 1.2 and meets the requirements of the selected baseline methodology. Validation team also confirms that identified boundary and the selected sources and gases are justified for the project activity.

4.7 Baseline Selection and Additionality

The project activity has chosen the baseline as per the approved methodology AMS ID version 16, “Grid connected renewable electricity generation”. The PDD describes the baseline for this project as the emissions from the fossil fuel based electricity generating power plants in the NEWNE Grid of India.

The baseline scenario of the proposed project is the delivery of equivalent amount of annual power output from the NEWNE grid of India to which the proposed project is also connected. In the absence of the project activity, the clean energy generated by this proposed project would have been generated through fossil fuel based Power Plants connected to the NEWNE grid, emitting greater quantities of green house gases.

The combined margin CO₂ emission factor has been calculated based on the database provided by the Central Electricity Authority, CEA using the “Tool to calculate the emission factor for an electricity system” Version 01. CEA is Central Electricity Authority of India which specially published the “CO₂ Baseline Database “and Grid Emission Factor for India”^{/10/}. It is also confirmed that baseline grid emission factor will not be affected if latest version 02 of “Tool to calculate the emission factor for an electricity system” (EB 50 Annex 14) would be used for determination of baseline scenario. The web link for this is <http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>.

Validation team assessed the baseline identification using the provisions of the applicable methodology and according to the Appendix B to simplified modalities and procedures for small scale CDM project activities – “Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories”, project participants has provided justification to show that the project activity would not have occurred anyway by using the Investment barrier, this is discussed in section 4.7.4 of this report. The Validation team confirms that there is no law in India that mandates installation of a renewable energy based power plant. Project participant has referenced the relevant policies of the Indian government in section B.5 of the PDD and also the selected baseline scenario reasonably represents what would have happened in the absence of the project activity based on Sectoral scope knowledge as per Para 83 of VVM (version 1.2); thus accepted. Project proponent has included all sources and references used for baseline determination for the project activity in PDD version 05 dated 29/06/2010 and project identified baseline is justified appropriately by the project proponent inline with 87 of VVM (version 1.2). The additionality of the Project has been assessed according to the Attachment A to Appendix B of simplified modalities and procedures for small scale CDM project activities.

CL#05 was raised because the information regarding the identification of the relevant grid is not given in the PDD version 01 in accordance with the EB guidelines and the underlying methodology. In response, the relevant information regarding the identification of the grid choice (NEW NE grid) as per the latest available CEA database has been updated in Annex 3 and the relevant sections of the PDD version 2.0. Hence, **CL#05** was closed out.

CAR#06 was raised because the selection of baseline power scenario as power supply from the grid system was not properly justified. In response, the proponent has clearly mentioned various plausible alternative scenarios and followed the monitoring methodology for selected small-scale CDM project activity correctly. Hence, **CAR#06** was closed out.

4.7.1 Additionality

The project participant has adopted to establish the additionality of the project activity by performing an investment analysis according to the Attachment A to Appendix B of simplified modalities and procedures for small scale CDM project activities.

As per the Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities and the latest guidance of EB35 Annex 34 “Non-binding best practice examples to demonstrate additionality for SSC project activities”, the project proponent has demonstrated that the project activity would not have occurred due to the Investment Barrier. The Investment Barrier is found as a strong barrier due to which the project would not have occurred anyway.

CAR#08 was raised to clarify as the additionality description of the project activity has not been described based on a comparison with realistic and credible alternative(s). In response, the project participant has demonstrated via Barrier analysis that the project activity would otherwise not be implemented anyways (Without CDM) due to the existence of one or more barrier(s) as listed in attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities. Hence, **CAR#08** was closed out.

The step wise approach has been discussed further under section 4.7.4

4.7.2 Prior Consideration of the Clean Development Mechanism

As per EB 49 Annex 22, the project activity falls under section C (Existing project activity), since; the project activity's start date is 12/06/2006 (the date on which the project developer has entered into agreement for the execution of civil work)^{11/} which is before 2nd August 2008 and the Project Document Design of the proposed project activity was web-hosted on the UNFCCC website from 13/01/2009 to 11/02/2009 for global stakeholder consultation. The start date of the project activity has been validated from the contract for the execution of civil work and this was confirmed that civil work order date is the earliest date at which either the implementation or real action of a project activity begins. This was found acceptable and is in line with the CDM glossary version 05 and guidance EB 41 Para 67 on start date.

In line with the Para 102 (a) VVM version 1.2, the proponent has submitted the document “Approach to Initial Tariff for New Hydro Generating Stations with capacity above 1 MW and up to 25 MW” issued by

UERC on 8th September 2005 clearly discusses benefits from carbon trading and CDM and lists Mr. Arun Gupta M.D. of Him Urja Pvt. Ltd. as one of the respondents to the paper. This clearly substantiates the PP's awareness of CDM prior to the board meeting (06/12/2005). The CDM was seriously considered in the Board meeting of the company. This has been validated from the minutes of meeting of Board resolution carried out on 06/12/2005. This was also found inline with the guidance EB 49 Annex 22 Para 6 (a).

Further, the PP has submitted the following documentary evidence with regards to prove the continuing and real actions were taken to secure the CDM status for the project in parallel with its implementation:

| S. no. | Steps Taken to secure CDM status | Means of validation |
|--------|---|--|
| 1. | Extracts of minutes of meeting of board of directors dated 06/12/2005 | Extracts of the minutes of meeting of board of directors submitted by the project proponent. |
| 2. | Stakeholder meeting dated 28/03/2006 | Letter of invitation sent to local stakeholders & the district magistrate and the minutes of meeting of the stakeholders meeting submitted by the project proponent. |
| 3. | Contract for the execution of civil work other than excavation dated 12/06/2006 | Civil work agreement submitted by the project proponent. |
| 4. | Engagement Letter with Ernst & Young signed dated 14/03/2008 | Agreement between Him Urja Pvt. Ltd (project proponent) and Ernst & Young (consultants) submitted by the project proponent. |
| 5. | HCA Meeting & Presentation dated 17/07/2008 | Letter issued by the MOEF (DNA, India) inviting for meeting and presentation for the application of Host country letter of Approval |
| 6. | Host Country Approval from MoEF dated 29/09/2008 | Host country letter of Approval issued by the DNA, India |
| 7. | Appointment of Validator dated 15/10/2008 | Agreement between Him Urja Pvt. Ltd and SGS UK Ltd. |

The above mentioned activities have been validated in line with Para 102 (b) VVM version 1.2 and found to be the real actions taken to secure CDM status of the project in parallel with its implementation. These evidences keep consistency with the description in the PDD. It is also evident from the above description that gap between the two documented evidence is less than 2 years which is inline with "Guidelines on the demonstration and assessment of prior consideration of the CDM", version 03 (Para 6 (b) and 8 (a) EB 49 Annex 22). It has been concluded that the PP seriously considered the incentive from the CDM for the decision to proceed with the project activity.

CAR#07 was raised to justify the serious CDM consideration as per EB 49 annex 22 by providing objective evidence. In response, the PP has submitted all evidence related to the awareness of CDM and the real action taken to secure the CDM status in parallel with the implementation of the project activity in line with EB 49 Annex 22 guidelines. Hence, **CAR#07** was closed out.

CAR#15 was raised to submit the supporting documentary evidence of the start date of the project activity as per EB 41 Para 67. In response, the PP has clarified that the start date of the project activity has been taken up as the contract for the execution of civil work dated 12/06/2006 which is the date when the implementation or construction or real action of a project activity begins. Hence, the **CAR#15** was closed out.

4.7.3 Identification of alternatives (if applicable)

Since the project is a small scale project based on AMS.I.D version 16, there is no requirement to determine the alternatives to the project activity.

4.7.4 Investment analysis (if applicable)

In accordance with paragraph 28 of the simplified modalities and procedures for small scale CDM projects, a simplified baseline and monitoring methodology listed in Appendix B may be used if the project participant can demonstrate that project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in the Attachment A to Appendix B.

In the PDD of the proposed CDM project activity, the Project Proponent has used investment barrier to demonstrate the additionality. The Investment Analysis has been carried out with the *“Guidance on assessment of Investment Analysis”*; this guidance is applicable for this small scale project as applied *“Non-binding best practices example to demonstrate additionality for SSC project activities”* as per Annex 58 of EB 51 Guidance Para 1 & 2.

According to VVM 1.2 Para 108, a financial investment analysis is carried out in the PDD to demonstrate the project investment barrier as per the requirement of EB 35 Annex 34. The investment analysis was done using benchmark analysis. The proposed project activity generates financial and economic benefits other than CER revenues, so the simple cost analysis (Option I) is not applicable. Out of the two remaining options, as there are no other credible and realistic baseline scenario alternatives other than electricity supply from the grid, Option II is also not applicable. Thus, the benchmark analysis (Option III) is chosen to prove additionality. This is inline with Para 16 EB 51 Annex 58.

The project proponent has evaluated project IRR (i.e. 10.41%) as a financial indicator and compared with the benchmark - WACC which is 12.90%.

The depreciation has been added back to the cash flow as per Annex 58 of EB 51 Guidance Para 5. All Input values used in the Investment Analysis were checked with supportive evidence. The project proponent has submitted all the versions of spread sheet for Investment analysis; same were checked by financial expert with their assumptions, links and formula used in the IRR spread sheet and found readable and all relevant cells are viewable and unprotected. It was ensured by validation team that calculation of IRR was transparent to such extent that the reader can reproduce the result as per Annex 58 of EB 51 Guidance Para 8. The project proponent has taken project IRR in the investment analysis calculation which complies with the Guidance of EB 51 Annex 58 Para 09. The Capital Asset Pricing Model (CAPM) has been used for calculating benchmark to compare it with project IRR which is in line with Para 12 EB 51 Annex 58. The benchmark has been based on publically available data which has been verified by validation team as per Annex 58 of EB 51 Guidance Para 12 & 13.

Following CAPM, the required return on equity investment is the return of a risk-free security plus beta times the difference between the market return and the risk-free return. The weighted average yield of Government Securities^{12/} had been taken to represent the risk free return. Stock index was used to represent the market return. With a view to eliminating the unsystematic risks associated with the projects totally, index of companies listed at S&P CNX Nifty had been taken to represent the market return. The market return was arrived at based on the average annual return of the several listed securities forming part of S&P CNX Nifty index over a three period prior to the investment decision. This leaves the systematic risk to be accounted for, which in the CAPM model is refers to as market beta (β).

Project cost:

The total project cost estimated for the project is INR 7665.5 lacs. The investment cost incurred in the project activity has been validated from the technical feasibility study report issued dated December 2004 by Department of water resources development and management, Indian Institute of Technology, Roorkee, Uttaranchal, India^{13/}. This has been validated from the feasibility study that the cost estimates have been based on prices and rates prevailing in June 2004.

Further, this has been validated that the total project cost is Rs. 7665.50 lakhs including escalation and interest during construction on the loan amount to Rs.5366 lacs with 70:30 debt to equity ratio. The gap between the project start date (12/06/2006) and the review letter by IIT Roorkee (December 2004) is around one and half years. However, to check the appropriateness of the project cost taken in the financial analysis, a letter from IIT Roorkee dated 01/12/2005 stating the validity of input values was taken during the time of project decision has been submitted by the PP.

In line with Para 111 (b) of VVM version 1.2, per MW cost of the hydro power plant in the state has been cross validated as 6.00 Crore from the tariff order dated 04/06/2007. It is mentioned in the tariff order that “the normative capital cost (Rs. Cr./MW), including cost of transmission line and bays at receiver’s end, have been taken in the new Regulations as Rs. 5.50 Crore/MW for stations commissioned after 01.01.2002 but before 01.04.2007 and Rs. 6.00 Crore / MW for stations commissioned on or after 01.04.2007” ^{/18/}. Therefore, it can be concluded that the project cost considered by the PP is even conservative and found acceptable.

Tariff rate:

The cost based approach for tariff determination used in the Rajwakti Project and suggested by UERC order dated 10/11/05 has been used to determine the tariff for the project activity. The determined tariff has been used for the financial analysis as Rs.2.35/Kwh.

This has been validated that at the time of investment decision, the newly found state of Uttaranchal did not have a fixed tariff structure and individual tariffs were decided on the basis of the guidelines mentioned in the UERC tariff order dated 10/11/05. The tariff rate approved for the Rajwakti Hydro Project, which is another Hydro project by Himurja Pvt. Ltd. in the same region, was Rs. 2.28/kWh which was validated and found to be correct. It was also validated from the same PPA that the approved tariff rate is levelized for the whole contract period of the PPA and there is no provision of annual escalation for the tariff rate. The assessment team also observed that the general guideline for tariff is to provide levelized tariff rate for the whole tenure of the PPA signed with no annual escalation.

The levelized tariff rate calculated for the project activity based on the guidelines underlined in the UERC tariff order ^{/14/} translated to Rs 2.15/kWh. However, to adopt a conservative approach, the tariff rate of Rs. 2.35 /kWh as mentioned in the Detailed Project Report (feasibility study) was adopted for the financial analysis, which is higher than the tariff as per UERC guidelines and the tariff approved for Rajwakti hydro project by the same project proponent.

Debt and equity ratio:

The amount of debt and equity investment has been validated from the feasibility study as Rs. 5366 lacs and Rs.2300 lacs and the same has been cross checked with the actual debt and equity involved in the project from the loan documents as submitted by the PP. This is found inline with the paragraph 6 of “Guidelines on assessment of investment analysis” version 03 (EB 51 Annex 58).

Subsidy from IREDA:

Subsidy to the project will be provided by IREDA of Rs.788 lacs which have been validated from the feasibility study and the IREDA’s website ^{/15/} (i.e. 45% of the project Cost limited to Rs 2.25 Crores + Rs. 37.50 Lakhs per MW). The project proponent has considered the above mentioned subsidy in the IRR calculations and has been found appropriate. This has been found inline with the paragraph 6 of “Guidelines on assessment of investment analysis” version 03 (EB 51 Annex 58). It was validated that subsidy is only provided after 1 year of successful operation after commissioning of the project. Accordingly the subsidy has been incorporated in the IRR calculations in the 2nd year and this was found appropriate.

PLF (Plant Load Factor):

A Plant load factor of 46.50% has been used in the financial calculations. The proponent has submitted the feasibility study carried out by a third party engineering consultants - Department of water resources development and management, Indian Institute of Technology, Roorkee, Uttaranchal, India ^{/16/}. This has been validated to be inline with the guidance on PLF, EB 48 annex 11 Para 3 (b). The PLF has been calculated on the basis of the energy to be produced in a 90% dependable year has been estimated to be 58.109 million Kwh units with 5% towards forced outage and 2.5% towards losses (auxiliary consumption 0.5%, transformation losses 1%, transmission losses 1%), the net energy available for sale to Uttaranchal Power Corporation Ltds. (UPCLs) busbars is 56.657 GWh. The gross generation, plant availability, auxiliary consumption, transmission losses and transformation losses are validated from the feasibility study prepared by Department of Water Resources Development and Management, IIT Roorkee. The assessment team cross-validated the estimated PLF from the actual net PLF of the registered project UN 2965 (as specified in the PDD) which is the only project registered in the state of Uttarakhand. As per the registered PDD, the actual net PLF for the project activity UN 2965 is 43.28%. The net generation for this project activity is validated as 56.66 GWh which translates into 43.11 % net PLF. Hence, the net PLF is found to be reliable

reliable for the project activity and accepted by the assessment team.

It shall be noted that sales proceed in IRR calculation is reduced by 18% after 2024 due to water royalty after 15 years of operation. This was validated from the website of IREDA (<http://www.ireda.gov.in/Compendium/Data/Uttarakhand/RE-03.pdf>).

O&M cost:

Operation and maintenance cost of the hydro power plant has been considered as 3% of the total project cost with an escalation of 5% per annum which has been validated from the feasibility study carried out by a third party engineering consultants - Department of water resources development and management, Indian Institute of Technology, Roorkee, Uttaranchal, India^{14,16/}. Moreover UERC order on “tariff determination of hydro projects” dated 10/11/05 Para 11, suggests a rate 3% of the capital cost as the O&M cost which further strengthens the fact that the cost assumed during financial analysis was valid. Hence, the O&M cost taken by the PP is found to be acceptable.

Also, the O&M cost has been cross validated from the UERC order^{18/} where the base operation and maintenance expense has been fixed as %age of the normative capital cost, as given below, of Rs. 6 Crore/MW, in 2007-08 and has been subject to an annual escalation of 5% per annum for the subsequent years.

Upto 5 MW: 5.00%

5 to 10 MW: 4.75%

20 to 25 MW: 4.00%

Therefore, the O&M cost considered in the proposed project activity has been found appropriate.

Tax Rate:

Assumptions used for company tax rate is taken as per the Income Tax Act as 35 % (<http://www.sethassociates.com/taxation-system-in-india.html>) and still applicable at the time of decision making. Domestic corporations are subject to tax at a basic rate of 35% and a 2.5% surcharge and the same have been applied in the financial analysis. In addition, an education cess at the rate of 2% on the tax payable is also considered. Value has been validated through source web site. Being an official data eliminates any ambiguity.

Minimum Alternative Tax Rate (MAT):

Assumptions used for MAT is taken as per the Income Tax Act as 11.33% (<http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=51177>) and still applicable at the time of decision making. Value has been verified through the source web site. Being an official data eliminates any ambiguity.

Depreciation rate:

Depreciation rate 5.28 is considered as per the Companies Act, 1956, SCHEDULE XIV, it is verified through the Companies Act, 1956, Schedule XIV.

Loan Interest and Tenure:

Loan interest rate has been considered as the PLR rate 13.00% in the financial calculations which was applicable at the time of investment decisions and quoted in the feasibility study carried out by a third party engineering consultants - Department of water resources development and management, Indian Institute of Technology, Roorkee, Uttaranchal, India. Also, this has been cross checked with the loan documents as well. The interest rate was also cross-checked from the receipts for loan repayment to IREDA by the project proponent.

The loan amount has been validated to be completely paid back in the 10th year of the project with 3 years moratorium.

Benchmark Analysis:

Project participant has chosen project IRR as the financial indicator, Weighted Average Cost of Capital (WACC) is the suitable benchmark. This is inline with Guidelines on the Assessment of Investment Analysis, Version 03 (EB 51 Annex 58).

The following parameters have been validated in benchmark calculation for their suitability/reliability inline with para 6 of Guidance of Investment Analysis (EB 51 Annex 58 para 112 (b & c) as follows:

| Cost of equity (Re) | Cost of equity has been estimated based on Capital Asset Pricing Model (CAPM). As per the model, the required return on equity investment is the return of risk free security plus beta times the difference between market return and risk free return. $Re = R_f + \text{Beta} \times (\text{Market Return} - \text{Risk Free Return})$ | | | | | | | | | | | | | | |
|---------------------------------|---|---------|------|------------|--------|-----------|--------|----------|--------|------|-------|-----------------|-------|----------------|--------|
| Risk Free Return | Risk free return has been taken as per the information's provided by Reserve Bank of India (RBI) on Weighted Average Yield on Market Loans, which is in fact risk free return. The value 7.89% for the year 2006-07 was available at the time of decision. (Ref: http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/72295.pdf , pp 181) | | | | | | | | | | | | | | |
| Market Return and risk premium: | In order to avoid the haphazard risk associated with the project thoroughly, market return has been represented taking the S&P CNX Nifty index. To eliminate the impact of short term volatility 15 years period (1990 to 2005) has been considered. Based on this, market return is estimated at 16.198%. The data was cross-checked from the website - http://www.nseindia.com/ . | | | | | | | | | | | | | | |
| Beta: | <p>The PP has calculated beta for project type by taking average of the equity beta values for all the major power generation companies listed in S&P CNX Nifty Index.</p> <p>The following beta of the companies used in the analysis has been validated from the screen shots of Capitaline Beta values:</p> <table> <thead> <tr> <th>Company</th><th>Beta</th></tr> </thead> <tbody> <tr> <td>Tata Power</td><td>1.2458</td></tr> <tr> <td>NTPC Ltd.</td><td>0.7586</td></tr> <tr> <td>jp hydro</td><td>0.7717</td></tr> <tr> <td>CESC</td><td>0.958</td></tr> <tr> <td>Neyveli lignite</td><td>1.247</td></tr> <tr> <td>Reliance infra</td><td>0.9448</td></tr> </tbody> </table> <p>In the initial PDD published for global stakeholders' consultation, BF utilities was also included for calculation of beta. BF utilities is mainly involved in infrastructure projects such as highways. Subsequently it was found that the company has a small energy portfolio of only 18 MW wind energy compared to other major power producing companies, beta values of which have been used for the analysis. Due to its small portfolio of renewable energy, it was not considered significant to account BF utilities for calculating beta value for renewable project type. Hence it was not included in the final PDD.</p> | Company | Beta | Tata Power | 1.2458 | NTPC Ltd. | 0.7586 | jp hydro | 0.7717 | CESC | 0.958 | Neyveli lignite | 1.247 | Reliance infra | 0.9448 |
| Company | Beta | | | | | | | | | | | | | | |
| Tata Power | 1.2458 | | | | | | | | | | | | | | |
| NTPC Ltd. | 0.7586 | | | | | | | | | | | | | | |
| jp hydro | 0.7717 | | | | | | | | | | | | | | |
| CESC | 0.958 | | | | | | | | | | | | | | |
| Neyveli lignite | 1.247 | | | | | | | | | | | | | | |
| Reliance infra | 0.9448 | | | | | | | | | | | | | | |

Project participant has considered the average of above data arrived as 0.988 which is found appropriate, Expected Rate of Return (Cost of Equity) is calculated on the basis of this beta, Risk free return (Government bond rate) and market risk premium which (from market return value from July 1990 to Nov 2005), the value arrived as 16.198%. In view of debt rate 13.00% and 70:30 debt: equity structure WACC for

for this project activity is turn up 12.90%. The benchmark has been determined by means of publically available sources hence this is inline with the guidance stipulated as per paragraph 12 & 13 of EB 51 Annex 58.

The financial expert and the validation team confirm that the project participant has applied all the statutory levies and taxes as per the available rules and regulations prevalent at the time of decision making. Project participant has also applied incentives like accelerated depreciation and provisions of section 80IA (deferred tax benefit) as per Indian Income Tax Act. The validation team therefore confirms that the project IRR for the project activity without CDM is 10.41% and is less than the applicable benchmark of 12.90%. In this context, it can be considered that the project is not viable without CDM benefits. All above steps taken and sources of information used to cross-check information contained in the PDD is found inline with para 96 of VVM (version 1.2).

In line with the latest version of VVM, the accuracy of financial calculation carried out for the investment analysis has been validated. All Input values used in the Investment Analysis were checked with supportive evidence as discussed above. Since DPR (Detailed Project Report) was the primary document available before the investment decision, it was duly validated that the investment decision was taken on the basis of information available in DPR. It was also validated that all the input values mentioned in DPR are fully consistent with the values mentioned in the PDD and IRR spreadsheet. The project proponent has submitted all the version of spread sheet for Investment analysis. This was checked by the financial expert for accuracy of the assumptions. The links and formula used in the IRR spread sheet were found readable and all relevant cells are viewable and unprotected. It was verified by the validation team that calculation of IRR was transparent to such extent that the reader can reproduce the result as per EB 51 Annex 58 Guidance.

Hence, by considering the investment barrier demonstrated by the project proponent, this can be concluded the project activity is unlikely to be the most financially/economically attractive.

The following parameters were found to be significant and were included in the sensitivity analysis.

- 1) Plant Load Factor
- 2) Tariff rate
- 3) O & M Annual escalation rate
- 4) Project Capital Cost

The actual values were checked to verify the range of possible variation of the parameters wherever it was possible.

Table 1: Results sensitivity analysis

| No | Parameter | Variation | FIRR |
|----|-----------------------|-----------|--------|
| 1 | Plant Load Factor | +10% | 12.20% |
| | | -10% | 8.48% |
| 2 | Tariff Rate | +10% | 12.20% |
| | | -10% | 8.48% |
| 3 | Project Capital Cost | +10% | 8.53% |
| | | -10% | 12.56% |
| 4 | O&M Annual Escalation | +10% | 9.72% |
| | | -10% | 11.02% |

The sensitivity analysis was validated in accordance with paragraph 17 and 18 of EB 51 Annex 58. It was confirmed by the assessment team that all the input parameters which may have significant impact on the investment analysis are included in the sensitivity analysis. The justification for possible variation in the input parameters which are included in the sensitivity analysis is as follows:

- 1) Plant Load Factor – As explained above, the reliability of the net PLF value was cross-checked with the other registered CDM project in the same region (Uttarakhand) and found to be in very close range. Apart from that, it is highly unlikely to achieve positive variation for all the seasons during the lifetime of the project. Hence, a positive variation of 10% for the whole assessment period is highly unlikely and is a very conservative assumption. Even on 10% positive variation, the IRR is not crossing the benchmark.
- 2) Tariff Rate – The levelized tariff rate calculated for the project activity based on the guidelines underlined in the UERC tariff order^{/14/} translated to Rs 2.15/kWh. However, to adopt a conservative approach, the tariff rate of Rs. 2.35 /kWh as mentioned in the Detailed Project Report (feasibility study) was adopted for the financial analysis, which is higher than the tariff as per UERC guidelines and the tariff approved for Rajwakti hydro project by the same project proponent. Hence a positive variation in tariff rate is highly unlikely for the project activity..
- 3) Project Cost – The project cost taken in IRR calculation was cross-checked with the actual expenses incurred on the project. Additional loan of Rs. 1225 Lakhs was sanctioned by IREDA to finance the increased project cost and was duly validated by the assessment team. Hence, it is validated that the actual expenses were higher than the project cost taken in the IRR calculations. Hence, the project cost is already conservative and a positive variation is a highly unlikely scenario. Therefore, 10% variation in sensitivity analysis is very conservative.
- 4) O&M Escalation - Also, the O&M cost has been cross validated from the UERC order^{/18/} where the base operation and maintenance expense has been fixed as %age of the normative capital cost, as given below, of Rs. 6 Crore/MW, in 2007-08 and has been subject to an annual escalation of 5% per annum for the subsequent years.
Upto 5 MW: 5.00%
5 to 10 MW: 4.75%
20 to 25 MW: 4.00%

Considering the above discussion, the project IRR is very conservatively calculated and it is highly unlikely that the IRR may cross the benchmark due to a possible variation in the input parameters. Hence, it was concluded by the assessment team that the project is financially unattractive and hence, Additional.

CAR#09 was raised as the PP has not demonstrated additionality for Hydro Power based SSC project activity as per the points mentioned below:

- 1) Investment Analysis:
 - a) Please provide the IRR calculation sheet with and without the CDM revenues.
 - b) Also, please provide the WACC calculation sheet for carrying out benchmark analysis.
 - c) Please provide the objective evidence for all the assumptions and justifications made for the investment analysis given in the section B.5 of the PDD.
 - d) Supportive for Beta value used in the calculation of WACC.
 - e) Term loan documents as a supportive for means of finance.
 - f) Calculation sheet for Sensitivity analysis on the project IRR for PLF.
- 2) Please provide objective evidence for the barriers due to prevailing practice.
- 3) Also, please provide supportive for all the justifications given in other barriers i.e. geological barriers, flash floods, landslides etc.

In response, the PP has submitted and justified all the above mentioned points as described below:

- 1) Investment analysis:
 - a) IRR calculation sheet has been submitted.
 - b) WACC calculation sheet for the benchmark analysis has been submitted along with objective evidences for all the assumptions used.
 - c) Objective evidences for all the assumptions used in the IRR analysis.
 - d) Supportive documents for the Beta values used in the calculation of WACC have been submitted.
 - e) Term loan documents have been submitted by the PP.
 - f) Sensitivity analysis has been included in the IRR sheet for the parameters PLF, tariff rate, O&M cost and project cost.

- 2) The PP has removed the barrier due to prevailing practice as the PP could not support the barrier with objective evidences.
- 3) The PP has also removed other barriers i.e. geological barriers, flash floods, landslides etc. as they could not demonstrate the same with objective evidences.

Hence, **CAR#09** was closed out.

4.7.5 Barrier analysis (if applicable)

Project participant has justified the additionality based on the investment barrier. Among all the barriers provided to us the investment barrier was considered the most important and significant barrier based on which it was concluded that the project is additional.

4.7.6 Common practice analysis

Not Applicable

4.8 Application of Baseline Methodology and Calculation of Emission Factors

The project has applied the approved small scale methodology AMS I.D, version 16 for the project activity. As per methodology, the baseline emission sources considered are CO₂ emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" version 02 (EB 50 Annex14).

Corresponding calculations were carried out based on excel spreadsheets. The parameters and equations presented in section B.6.1 of PDD and further documentation have been compared with the information and requirements presented in the methodology and respective tools. The equation comparison has been made explicitly following all the formulae presented in the calculation records submitted by the project participant. The calculation of the baseline emissions followed the procedures described in the methodology AMS I.D Version 16. The Northern Region Grid of India is considered to be the project boundary. The operating margin emission factor (EF_{OM}) was determined based on the simple OM method. The ex-ante option was chosen for this calculation. Project participant has used the official published data on operating and build margin emission factors. The version of the data used is as available at the time of submission of PDD to the DOE for validation. This data is published by central electricity authority, CEA who is the sole authority for the publication of such data in India. Project participant has applied weight factors for the OM and BM (50% & 50% respectively) as specified in the tool to arrive at the emission factor for the combined margin. Accordingly, the combined margin emission factor is 0.8034 tCO₂/MWh. The CM is taken ex-ante and will remain fixed throughout the crediting period. The selection of baseline scenario and assumptions used for the emission reduction calculations have been checked as per para 81 to 93 of VVM version 1.2.

CAR#10 was raised because the source of the grid emission factor (OM, BM & CM) for baseline emissions calculation was not correctly mentioned in the PDD and the data is not the recent one available as given in section B.6.2 & Annex 3. In response, the PP has identified NEW NE grid for the proposed project activity and has calculate the emission factor (OM,BM & CM) from the data available with CEA database, version 4.0. PP has also provided references for the data taken for this. Hence, **CAR#10** was closed out.

CL#11 was raised requesting the PP to submit the spreadsheet for calculation of emission reductions along with evidence for the assumptions used. In response, the required excel sheet of emission reductions along with necessary supportive documents for the assumptions is submitted by the PP. Hence, **CL#11** was closed out.

4.9 Application of Monitoring Methodology and Monitoring Plan

As per the methodology, monitoring shall consist of "Quantity of net electricity supplied to the grid in year y". In line with this, the monitoring plan does include monitoring of the Net power exported to grid and it will be measured using calibrated meters. The net power exported to the grid which will be measured using two meters i.e. main meter and check meter as per PPA. This can be cross checked with sales bills/receipts.

Validation team considers the monitoring plan to be complying with the requirements of the methodology. The reasons are as follows –

- 1) Net saleable electricity delivered to the grid at the interconnection point, **Net saleable electricity to the grid**: This parameter has been mentioned in section B.7.1 of PDD. Energy meters will be installed at site which measures the export as well as the import from the grid at the project site. The electricity generated shall be calculated by subtracting import from the export values measured. The procedures for metering will be as per the provisions of the Energy Purchase Agreement (EPA). Meter readings shall be taken periodically by the authorised officer of distribution licensee and generator.
- 2) Total electrical energy exported by the project activity, **EG_{export}**: The total electricity exported to the grid would be measured continuously by the energy meters installed at the interconnection point. The joint meter readings of the meters will be recorded at the end of every month by the representatives of the plant and the grid. The joint meter reading will be the basis on which the invoicing to the grid will be done and the emission reduction calculation will be performed. The meters would be of accuracy class 0.5. Apart from the joint meter reading taken at the end of every month, the monitoring data would also be recorded in the plant log books by the supervisor (energy). The recorded data would be signed and compiled by the shift in-charge at the end of each shift. In order to ensure the highest levels of accuracy in the monitoring procedures, the main meter and the check meter used for the monitoring are checked for accuracy 15 days before synchronisation and every six months thereafter.
- 3) Total electricity energy imported by the project activity, **EG_{import}**: The total electricity imported to the grid would be measured continuously by the energy meters installed at the interconnection point. The joint meter readings of the meters will be recorded at the end of every month by the representatives of the plant and the grid. The joint meter reading will be the basis on which the invoicing to the grid will be done and the emission reduction calculation will be performed. The meters would be of accuracy class 0.5. Apart from the joint meter reading taken at the end of every month, the monitoring data would be recorded in the plant log books by the supervisor (energy). The recorded data would be signed and compiled by the shift in-charge at the end of each shift.. Spare duly tested and calibrated meters of same accuracy would be kept as back up for use as and when required. In order to ensure the optimum accuracy levels the monitoring equipments used for measuring the parameter will be calibrated once in a year as per the EPA.

The validation team physically verified the metering system installed at the substation of the project activity. Project participant has described the metering system in details in revised section B.7.2 of the PDD. Monitoring plan presented by the project proponent has been assessed by applying two-step process as per Para 122 of VVM (Version 1.2). Monitoring plan mentioned in section B.7.1 of the final PDD version 05 dated 29/06/2010 is fully in compliance with the applied methodology AMS ID version 16. Also after discussion with consultant and project proponent and actual site inspection, it has been concluded that the project proponent has got sufficient ability to implement monitoring plan described in section B.7.1 of the PDD. This is inline with Para 123 of VVM (version 1.2).

The overall responsibility of project management and authority for project registration in CDM modalities has been cross checked with reference to the Modalities of Communication and description of project management modalities such as responsibility of members of the monitoring team, routine reminders for site staff, QA/QC procedures, service forms for data reporting, corrective action plans, maintenance plans and monitoring schedules as described in Section B.7.2.

CL#12 was raised because the description of monitoring plan is not clear as per section B.7.2 of the PDD version 01. The PP has given a parameter “Auxiliary consumption” in the table under section B.6.3 and the PP was requested to clarify that this is being monitored (measured) or not. In response, the PP clarified that the auxiliary electricity consumption was considered while calculating the ex-ante emission reduction. However, this shall not be a monitored parameter. Auxiliary consumption shall be considered in the ex-post calculations while reporting electricity exports. The electricity exported to grid is already net of auxiliary consumption. Hence the auxiliary consumption need not be measured separately. Hence, **CL#12** was closed out.

CL#13 was raised because the PP has not explained anything on the training procedure for project monitoring personnel. In response, the PP explained that HUPL would ensure the efficient working of the Small hydro power project by conducting training programmes for its employees. The training shall be on the various activities involved in the Project operation like maintenance, monitoring of parameters, precautions, safety instructions etc. These trainings would be meant to address the following key requirements related to the project activity:

1. On the job training to be carried out for the maintenance required too ensure the uninterrupted operation of the project plant.
2. To take care of the other monitoring requirements of the CDM project activity.
3. Specific in house, need base training for the employees.

The details of these points above have been included in the Annex 4 of the PDD version 2.0 and has been validated and found appropriate. Hence, **CL#13** was closed out.

CL#14 was raised because the procedures are not identified for internal audits of GHG project compliance with operational requirements where applicable.

In response, the PP clarified that an internal audit team would be constituted for annual audit of data reported in excel reports and in plant log books. Procedures for reviewing, archiving of information in a suitable manner with specific roles to the constituted CDM team has also been cited in the monitoring plan. Hence, **CL#14** was closed out.

4.10 Environmental Impacts

As per the Ministry of Environment and Forests (MoEF), India Environment Impact Notification^{17/} S.O. 1533 (<http://envfor.nic.in/legis/eia/so1533.pdf>) dated 14 September 2006. Small Hydro power projects (which are less than 25 MW) are not covered under any schedule and thus Environmental Impact Assessment is not required for the project activity. However, the project activity has received No objection certificate^{19/} from the State Environment Pollution and Conservation Board to establish and operate the project activity. Any significant environmental impacts due to the project activity are envisaged due to the project activity. Validation team is of the opinion that the project complies with environmental regulations in India and the local stakeholder consultation carried out adequately. Thus the adequacy of analysis carried out by project proponent for impact of the implementation of the project activity on environment has been validated as per para 130, 131 and 132 of VVM (version 1.2).

4.11 Local Stakeholder Comments

The project proponent, with a view to apprise the stakeholders about the project activity and also to address their concerns / issues (if any) regarding the project activity, convened a stakeholders' consultation meeting on 28/03/06. The stakeholders were invited through formal invitation letters. The identified stakeholders for the meeting were:

1. Representatives (Sarpanch) of Gram Panchayat
2. Local villagers and community
3. Local transporters, traders, constructors etc.
4. State Environmental Conservation and Pollution Control Board
5. Uttarakhand State Electricity Board, etc.

The representatives of Him Urja Pvt Ltd. presented the salient features of their project activity including the environmental and social impacts of the project activity, sustainable benefits to come from the project activity, apprised them of the green houses gases, the global warming and the role of CDM to curb the GHG emissions from the environment. This was followed by a brief question and answer session in which the local

local villagers raised their queries regarding the project activity.

The records related to the stakeholder consultation viz. list of participants and MoMs are maintained by the project participants. Project participant has provided sufficient and transparent information on the process of local stakeholder consultation in the PDD. The information indicates that the project participant provided sufficient time to stakeholders for providing comments. Validation team is of the opinion that the local stakeholder consultation carried out satisfactorily (VVM paragraph 126).

CL#16 was raised because the section E.1 of the PDD does not provide clear information regarding the local stakeholder's consultation. Also, the PP was requested to provide information about the stakeholder's been consulted. In response, the PP has submitted the letter of invitation sent to the stakeholder for the stakeholder's meeting on 28/02/2006 and the meeting note/comments received for the proposed project activity. Hence, **CL#16** was closed out.

5. Comments by Parties, Stakeholders and NGOs

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

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

The Project Design Document for this project was made available on the UNFCCC website (<http://cdm.unfccc.int/Projects/Validation/DB/H7AZH0CYJF1GD8M45SDKLFZ3WV22LZ/view.html>) and was open for comments from 13/01/2009 until 11/02/2009. Comments were invited through the UNFCCC CDM homepage

5.2 Compilation of all Comments Received

| Comment Number | Date Received | Submitter | Comment |
|----------------|---------------|-----------|---------|
| NIL | NIL | NIL | NIL |

5.3 Explanation of How Comments Have Been Taken into Account

N/A

6. List of Persons Interviewed

| Date | Name | Position | Short Description of Subject Discussed |
|------------|------------------|-----------------------------|---|
| 20/02/2009 | Arun Gupta | CDM, Him Urja (p) Ltd. | Motivation for project as CDM |
| | Siddhartha Gupta | Director, Him Urja (p) Ltd. | |
| | Rahul Garg | Senior Consultant, E&Y | Prior knowledge of CDM, parallel actions taken to secure CDM revenue for project activity |
| | Sitanshu Singh | Consultant, E&Y | Baseline selection, Applicability of methodology, Additionality and monitoring procedure |
| | Kushal Sinha | Associate Consultant, E&Y | |

7. Document References

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

- /1/ PDD version 01, dated 30/11/2008 (Published for International Stakeholder Consultation)
- /1.1/ PDD version 02 dated 16/04/2009
- /1.2/ PDD version 03 dated 21/07/2009
- /1.3/ PDD version 04 dated 15/10/2009
- /2/ PDD version 05 29/06/2010 (Final version)
- /3/ Emission reduction calculations spread sheet
- /4/ IRR calculation excel spread sheet
- /5/ Benchmark Analysis Excel Spreadsheet (WACC)
- /6/ MOC, dated 07/03/2011
- /7/ HCA (ref: No. 4/13/2008-CCC) dated 29/09/2008

Main changes and reason for Revision to the final version of the PDD from webhosted PDD (non-exhaustive)

- Section A.4.2: Technical specification of the turbine has been corrected.
- Section 4.3: Emission reduction table has been corrected.
- Section B.1: Latest version of the methodology was applied i.e. version 16.
- Section B.2: Applicability criteria were revised in accordance with AMS ID version 16. All paragraphs were explained in a transparent manner.
- Section B.3: The project boundary was revised to include DG set and made inline with the requirement of AMS ID version 16.
- Section B.4: Description of baseline and its development was made in line with AMS ID version 16.
- Section B.5:
 - a) All assumptions used in the financial analysis and their sources had been tabulated.
 - b) Chronology of events for serious CDM consideration has been revised.
 - c) Other barriers have been removed from the PDD due to improper justification on the same.
- Section B.6.1: Baseline emissions, project emissions and leakage emissions were revised in accordance with AMS ID version 16.
- Section B.6.2: Parameter $EF_{grid,y}$ was revised in line with AMS ID version 16 and emission factor tool version 02.
- Baseline emission, project emission and leakage emissions calculation was updated in accordance with AMS ID version 16.
- Section A.6.4: Annual emission reduction was revised.
- Section B.7.1:
 - a) Parameter EGy (Net electricity delivered to the grid at the interconnection point), EGexport (Total electrical energy exported by the project activity), EGimport (Quantity Total electricity energy imported by the project activity) have been revised to add additional information.
 - b) EGgross, Gross electricity energy generated by the project activity has been added as a parameter in the monitoring plan.
- Section B.7.2: Description of monitoring plan was revised in accordance with the requirements of AMS ID version 16 and best industry practice.
- Section C.2.2.1: Starting of the crediting period was revised.

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

| | |
|-----|--|
| /8/ | Validation and Verification Manual version 1.2 |
| /9/ | Commissioning certificate dated 06 th December 2009 |

| | |
|------|--|
| /10/ | CEA database version 04. |
| /11/ | Contract for the execution of civil work other than excavation dated 12/06/2006 |
| /12/ | Annual Report, Reserve Bank of India, 2006 |
| /13/ | Technical feasibility study report issued dated December 2004 by Department of water resources development and management, Indian Institute of Technology, Roorkee, Uttaranchal, India. |
| /14/ | Tariff Order Issued by Uttaranchal Electricity Regulatory Commission dated 10/11/2005 |
| /15/ | http://www.ireda.gov.in/ |
| /16/ | Letter from Third Party Technical Expert - IIT Roorkee dated 01/12/2005 |
| /17/ | http://envfor.nic.in/legis/eia/so1533.pdf |
| /18/ | Tariff order UTTARAKHAND ELECTRICITY REGULATORY COMMISSION, date of Order: 19.05.2009 http://www.uerc.in/ordersPetitions/orders/Tariff/Tariff%20Order/2009-10/Order%20on%20Determination%20of%20Final%20Tariff%20for%20UJVNL%20SHP%20of%20capacity%20above%201%20MW%20&%20upto%2025%20MW.pdf |
| /19/ | "Consent to Establish" issued by State Pollution Control Board of Uttarakhand dated 20/02/2008 |
| /20/ | VVM version 1.2 EB 55, Annex 1 30 July 2010 |
| /21/ | AMS ID version 16, EB 54, Annex 7 28 May 2010 |
| /22/ | Tool to calculate the Emission Factor for an electricity system, version 02 |

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for Vanala Small Scale Hydropower Project.

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

| Issue | Findings | Source/Mean of Verification | Further Action / Clarification / Information Required? |
|--|--|---|--|
| The location and actual situation of the project activity needs to be physically verified during site visit. This has to be in compliance with information mentioned in the PDD. | Location and the actual situation of the project were physically verified during site visit and all the information given in the PDD is in compliance as per actual situation. | Site visit | Y |
| The feasibility study along with technical specifications of the installed equipments (turbines) needs to be checked during site visit. | Technical specifications have been validated from the feasibility study submitted by the PP | Technical feasibility study report issued dated December 2004 by Department of water resources development and management, Indian Institute of Technology, Roorkee, Uttaranchal, India. | Y |
| The project's spatial boundaries (geographical) and the project's system boundaries (components and facilities used to mitigate GHGs) needs to be verified during site visit. | The project's spatial boundaries (geographical) and the project's system boundaries have been verified and found in line with the requirements. | Site Visit | Y |

| | | | |
|---|---|------------|---|
| <p>The procedure carried out for the Local Stakeholder Consultation Process will be verified during site visit.</p> <p>Identified local stakeholders will be interviewed and their feedbacks regarding the project activity need to be cross checked during the site visit.</p> | <p>The project proponent, with a view to apprise the stakeholders about the project activity and also to address their concerns / issues (if any) regarding the project activity, convened a stakeholders' consultation meeting on 28/03/06. The stakeholders were invited through formal invitation letters. The identified stakeholders for the meeting were:</p> <ol style="list-style-type: none"> 1. Representatives (Sarpanch) of Gram Panchayat 2. Local villagers and community 3. Local transporters, traders, constructors etc. 4. State Environmental Conservation and Pollution Control Board 5. Uttarakhand State Electricity Board, etc. | Site visit | Y |
| <p>The criteria's for the bundling & de-bundling of the project activity needs to be cross checked during site visit.</p> | <p>This has been checked during site visit that the project is not a part of a large scale project activity. There is no project exist within 1 km.</p> | Site visit | Y |
| <p>All the supporting documentary evidences to verify the start date of the project activity needs to be checked during site visit.</p> | <p>Civil work order placed by Him Urja Pvt. Ltd. to Ramose constructions and Engineers dated 12/06/2006</p> | Site visit | Y |
| <p>Please check the respective positioning of the monitoring equipments installed at site.</p> | <p>The respective positioning of the monitoring equipments installed at site have been checked and found inline with the requirement</p> | Site visit | Y |

| | | | |
|--|--|---|---|
| Procedures for internal audits of GHG project compliance with operational requirements where applicable. | Procedures will be carried for internal audits during project verification and monitoring phases every one year | Explanation provided by the project proponent and PDD version 05. | Y |
| Is there any possibility for monitoring data adjustments and missing allowing redundant reconstruction of data in case of monitoring problems? This will be checked during site visit. | The daily generation data is maintained by the personnel employed at the plant. Data for power generation, grid availability, machine availability is logged in by the plant personnel. The data is sent to the project proponent on a daily basis. The personnel are also responsible for the preparing the monthly performance report and joint meter reading sheet. | Site visit | Y |
| Please provide the MoM for the stake holder consultation. | MoM for the stake holder consultation dated 28/03/06 has been obtained during the site visit. During the site visit some stakeholders were also interviewed. | Site visit | Y |

A.2 Annex 2: Validation Checklist

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

| Requirement | Reference | Comments | Conclusion |
|--|--|--|-------------------------|
| 1. All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects | Marrakech Accords, CDM Modalities §30 | Yes, India has ratified the protocol on 26 the August 2002 and is allowed to participate. The web link is http://maindb.unfccc.int/public/country.pl?country=IN | Y |
| 2. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily. | Marrakech Accords, CDM Modalities §29 and §30 | No annex I Party is involved in the proposed CDM project activity at the stage of Registration. The Project will assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment. | Y |
| 3. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily | Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a | The project activity is likely to contribute to sustainable development of the non-Annex I Party, India. Letter of approval issued by Designated National Authority (DNA) of the Host Country (India) to be submitted by the project proponent. | CAR01 Closed out |

| Requirement | Reference | Comments | Conclusion |
|---|--|---|--------------------|
| 4. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available | Marrakech Accords, CDM Modalities, §40 | The PDD has been web-hosted in the UNFCCC website for invitation of comments on the project activity as the global stakeholder consultation process: http://cdm.unfccc.int/Projects/Validation/DB/H7AZH0CYJF1GD8M45SDKLFZ3WV22LZ/view.html Start date: 13 Jan 09 Close date: 11 Feb 09 Number of comments received: Nil (till date) | Y |
| 5. The project design document shall be in conformance with the UNFCCC SSC PDD format | | The project has used version 3 of CDM-SSC-PDD format correctly. | Y |
| 6. The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration | EB-09 F_CDM_REG form | The Modalities of Communication for the project activity would have to be submitted by the Project participant before submitting a request for registration. | Pending site visit |
| 7. For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD? | | Not Applicable | Not Applicable |

Table 2 PDD

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|--|---------|------|---|-------------|-------------|
| A. General Description of Project Activity | | | | | |
| A.1. Project Title | | | | | |
| A.1.1. Does the used project title clearly enable to identify the unique CDM activity? | PDD | DR | The project title used in the PDD version 01 is clearly enabling to identify the unique CDM project activity. | Y | Y |
| A.1.2. Are there an indication of a revision number and the date of the revision? | PDD | DR | The current PDD indicates the version number and date of the version under section A.1. | Y | Y |
| A.1.3. Is this in consistency with the time line of the project's history? | PDD | DR | The date of PDD version 01 is 30/11/2008, whereas the starting date of the project activity mentioned in the PDD as 08/02/2007. Therefore the time line is consistent with the project's history. Please provide supportive documentary evidence for the time line of the project history. | CL02 | Closed out |
| A.2. Description of the Project Activity | | | | | |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|--|--------------------|-------------|
| A.2.1. Is the description delivering a transparent overview of the project activities? | PDD | DR | The project activity involves the installation of two horizontal francis turbines generating sets of 7.5 MW each. The hydroelectricity generation project located on river Nandakini in Chamoli district of state Uttranchal. The project is also consisting of diversion weir to flush out the river bed loan near intake, desilting tank having a single basin with two chambers each half the required settling capacity and dividing wall in between and the powerhouse located at about 800 m away from turbines. | Y | Y |
| A.2.2. Is all information provided in compliance with actual situation or planning? | PDD | DR | The actual situation of the project activity needs to be checked during site visit. | Pending site visit | Closed out |
| A.2.3. Is all information provided consistent with details provided in further chapters of the PDD? | PDD | DR | All information towards description of project activity, provided consistent with details provided in further chapters of the current version of the PDD. Pending for closure of CAR's & CL's. | Pending | Closed out |
| A.3. Project Participants | | | | | |
| A.3.1. Is the table required for the indication of project participants correctly applied? | PDD | DR | The table under section A.3 of the PDD version 01 required for the indication of project participants has been applied correctly. India is the host party for the proposed project activity. | Y | Y |
| A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)? | PDD | DR | All the information regarding project participants is consistent with details provided by further chapters of the PDD (in particular annex 1: contact information on participants in the project activity). | Y | Y |
| A.4. Technical Description of the Project Activity | | | | | |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|--|---------|-------|--|--------------------|-------------|
| A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? | PDD | DR, S | The information provided regarding the location of the project activity is clear. The project activity is located in Village- Vanala, District- Chamoli, Uttaranchal., India India. The geographical co-ordinates of the project activity are: LATITUDE (N): 30016' 30017' LONGITUDE (E) 790 25' 790 23' The location of the proposed project activity site has needs to be further validated during validation site visit. | Pending site visit | Closed out |
| A.4.2. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites? | PDD | DR | The applicable ownership documents or licenses which allow the project participant to implement the project at that mentioned site needs to be checked during site visit. | Pending site visit | Closed out |
| A.4.3. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance and is the explanation how the project will reduce greenhouse gas emission transparent and suitable? | PDD | DR | Project technology description is transparently provided in the sections A.2 and A.4.2 of PDD. The explanation regarding projects contribution regarding reduction of GHG emissions through hydropower based electricity generation is found transparent and suitable. | Y | Y |
| A.4.4. Does the project design engineering reflect current good practices? | PDD | DR | Please provide supportive for the below mentioned points: <ul style="list-style-type: none">Technical details and design capacity of the horizontal francis turbines installed at site from the technology supplier. | CL 03 | Closed out |
| A.4.5. Is all information provided in compliance with actual situation or planning as available by the project participants? | PDD | DR | The compliance of the mentioned information with actual situation or planning needs to be checked during the site visit. | Pending site visit | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|--|--------------------|-------------|
| A.4.6. 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 | The project uses the technology that would result in cleaner and significantly better performance than any commonly used technologies in the host country. | Y | Y |
| A.4.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period? | PDD | DR | <p>According to the version 01 of the PDD the expected operational life time of the project activity is at least 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.</p> <p>Proper documentation for the operational life time of the project technology and the implemented technology will not be changed during the project period needs to be provided by the PP. The same will also be checked during site visit.</p> | CL04 | Closed out |
| A.4.8. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? | PDD | DR | <p>The version 01 of the PDD does not provide any indication towards requirement of initial extensive training to the relevant technical project personnel.</p> <p>Clarification regarding the same needs to be checked during site visit.</p> | Pending site visit | Closed out |
| A.4.9. Does the project make provisions for meeting training and maintenance needs? | PDD | DR | Please refer A.4.8 above. | Pending | Closed out |
| A.4.10. Is a schedule available on the implementation of the project and are there any risks for delays? | PDD | DR | Schedule on the implementation of the project activity has not made available to the DOE. However, this will be discussed during site visit. | Pending | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|-------|--|--------------------|-------------|
| A.4.11. Is the table required for the indication of projected emission reductions correctly applied? | PDD | DR | The table under Section A.4.3 of the PDD required for indication of the projected emission reductions has been correctly applied. Annual average emission reduction would be 45914 t CO2e from the crediting period 2009-2019. | Y | Y |
| A.5. Public Funding | | | | | |
| A.5.1. Does the information on public funding provided conform with the actual situation or planning as presented by the project participants? | PDD | DR | According to the PDD, no Official Development Assistance (ODA) or public funding from Annex I countries has been identified; however the detail project financial information needs to be checked during site visit. | Pending site visit | Closed out |
| A.5.2. Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)? | PDD | DR | All information regarding Public Funding provided under PDD is consistent with details provided by further chapters of the PDD. | Y | Y |
| A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance | PDD | DR | As per PDD no public funding from Annex I party has been identified for the project activity. Please refer section A.5.1 above. | Y | Y |
| A.6. Debundling | | | | | |
| A.6.1. Is the small-scale project activity a debundled component of a large scale project activity | PDD | DR, S | The small scale hydro power project is not a debundled component of the large scale project activity. But the Debundling issue will be further cross check and discussed with the PP during site visit. | Pending Site visit | Closed out |
| A.6.2. If the project is a debundled component of a larger project, does the larger project fall within the limits for small-scale CDM project activities | PDD | DR | This is pending due to the section A.6.1 above. This has also to be verified during the validation site visit. | Pending Site visit | Closed out |
| B. Baseline and Monitoring Methodology | | | | | |
| B.1. Choice and Applicability | | | | | |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|--|---------|------|--|---------------------|-------------|
| B.1.1. Is the project using an approved simplified methodology? | PDD | DR | The PDD under the section B.1 refers to the Approved small scale methodology AMS I-D, version 13. | Y | Y |
| B.1.2. Does the project activity qualify as small scale project? | PDD | DR | As per the information provided in the PDD, the project activity involves installation of 2 horizontal francis turbine generating sets of 7.5 MW each and will reduce an estimated annual average quantity of 45914 t CO ₂ e. Therefore the project activity's annual emission reductions are well below the type I small scale CDM project activity i.e. 60,000 t CO ₂ e. Therefore the project activity qualifies as small scale project and correctly applies AMS I.D. | Y | Y |
| B.1.3. Is the category(ies) of the project activity correctly identified in accordance with Appendix B to the simplified modalities and procedures for small-scale CDM project activities? | PDD | DR | The project correctly applies the category of the project activity as Scope 1 (Energy industries (renewable - / non-renewable sources)) But, the description and justification of the choice of the project category is not clearly elaborated with proper reference to the Type and category of the project activity. Please provide the purchase order for all the WECs installed will be checked during site visit. | Pending site visit. | Closed out |
| B.1.4. Is the project activity a bundle of several small scale activities and if so does it contain any sub-bundles | PDD | DR | As per the PDD, version 01 dated 30/11/2008, the project activity is a Hydro power generation type project activity; this is not a bundle of several small scale project activities. However, pending due to the section A.6.1 as mentioned above. | Pending | Closed out |
| B.1.5. If the project activity is a bundle of several small scale activities, does the sum of the total bundle (including any subbundles) fall within the limits for small scale projects | PDD | DR | Please refer B.1.4 above. | Pending | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|-------|--|--------------------|-------------|
| B.1.6. If the project activity is a bundle of several small scale activities, has the form with information related to the bundle been submitted and is it correctly used | PDD | DR | Please refer B.1.4 above. | Pending | Closed out |
| B.2. Project Boundary | | | | | |
| B.2.1. Has the project boundary of the project activity been based on the guidance of the applicable project category? | PDD | DR | As per the PDD version 01, the project boundary description is clear and in accordance to the project category mentioned under applied methodology AMS-I.D ver. 13. | Y | Y |
| B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology? | PDD | DR | Information regarding the identification of the relevant grid is not given in the PDD version 01 in accordance with the EB guidelines and the underlying methodology. | CL05 | Closed out |
| B.2.3. Are the project's spatial boundaries (geographical) and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined? | PDD | DR, S | The PDD version 01 does not state about the project's spatial boundaries (geographical) and the project's system boundaries (components and facilities used to mitigate GHGs) which will facilitate the proposed GHG emission reduction activity. The same needs to be verified during the site visit. | Pending site visit | Closed out |
| B.3. Identification of the Baseline | | | | | |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|--|---------|------|---|-------------|-------------|
| B.3.1. Does the PDD discuss the identification of the most likely baseline? | PDD | DR | The most likely baseline has been identified by the PP as per Para 09 of the methodology AMS I-D, version 13. The baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO ₂ e/kWh) calculated in a transparent and Conservative manner by combined margin or weighted average emission. However, selection of baseline power scenario as power procurement from the grid system is not properly justified. | CAR06 | Closed out |
| B.3.2. Is the discussion and determination of the chosen baseline transparent and supported by the available data? | PDD | DR | The discussion and determination of the chosen baseline is transparent and supported by the available data. The emission coefficient for the system is calculated as per the "Tool to calculate the emission factor for an electricity system". But the same id pending due to section B.3.3. | Pending | Closed out |
| B.3.3. Is conservativeness addressed in the way of identifying the baseline? | PDD | DR | Please refer B.3.1 above. | Pending | Closed out |
| B.4. Additionality | | | | | |
| B.4.1. Is the discussion on additionality and the evidence provided consistent with the starting date of the project | PDD | DR | The start date of the project activity as per PDD version 01 is 08/02/2007. Please provide the documentary evidence for serious CDM consideration as per EB 41 annex 46. | CAR07 | Closed out |
| B.4.2. Is the discussion on additionality based on a comparison with realistic and credible alternatives? | PDD | DR | The additionality description of the project activity has not been described based on a comparison with realistic and credible alternative(s). Please clarify. | CAR08 | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|--|-----------------------|-------------|
| B.4.3. Does the discussion on additionality take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?? | PDD | DR | PP has been asked about the relevant regulations/policies for the particular project activity. Please refer section B.3.2 above. But, the additionality needs to be discussed as per section B.4.4 below | Pending closure CAR09 | Closed out |
| B.4.4. Has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives? | PDD | DR | PP needs to demonstrate additionality for Hydro Power based SSC project activity as per the points mentioned below: 4) Investment Analysis: a) Please provide the IRR calculation sheet with and without the CDM revenues. b) Also, please provide the WACC calculation sheet for carrying out benchmark analysis. c) Please provide the objective evidence for all the assumptions and justifications made for the investment analysis given in the section B.5 of the PDD. d) Supportive for Beta value used in the calculation of WACC. e) Term loan documents as a supportive for means of finance. f) Calculation sheet for Sensitivity analysis on the project IRR for PLF. 5) Please provide objective evidence for the barriers due to prevailing practice. 6) Also, please provide supportive for all the justifications given in other barriers i.e. geological barriers, flash floods, landslides etc. | CAR09 | Closed out |
| B.4.5. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario | PDD | DR | Please refer B.4.4, pending closure of CAR 09. | Pending | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|---|--------------------|-------------|
| B.5. Application of the Simplified Methodology | | | | | |
| B.5.1. Has the simplified methodology been applied correctly for determining baseline emissions ? | PDD | DR | The requirement of the methodology AMS-I-D version 13 has been applied correctly for determination of baseline emissions. But the same is pending due to the closure of CAR 06. | Pending | Closed out |
| B.5.2. Has the simplified methodology been applied correctly for determining project emissions ? | PDD | DR | The approach to determine the project emissions has been applied correctly as per the methodology AMS I-D version 13. | Y | Y |
| B.5.3. Has the simplified methodology been applied correctly for determining leakage ? | PDD | DR | As per the PDD, version 01, there is no energy generating equipment which is transferred from another activity or no existing equipment transferred to another activity, hence there is no leakage. Purchase order will be checked during site visit. | Pending site visit | Closed out |
| B.5.4. Have all the methodological choices been explained, have they been properly justified and are they correct | PDD | DR | The PDD explains all the methodological choices clearly. The steps and formulas mentioned in methodology are used correctly in the PDD. | Y | Y |
| B.5.5. Are uncertainties in the GHG emissions estimates properly addressed in the documentation? | PDD | DR | The uncertainties in the GHG emissions estimates are properly addressed in the documentation in accordance with applied simplified methodology AMS-I-D ver. 13. However pending closure of CAR06. | Pending | Closed out |
| B.6. Ex-ante Data and Parameters Used | | | | | |
| B.6.1. Are the data provided in compliance with the simplified methodology? | PDD | DR | The ex-ante data and parameters used are in compliance with the simplified methodology. | Y | Y |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|---|----------------------|-------------|
| B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted? | PDD | DR | The source of the grid emission factor (OM, BM & CM) for baseline emissions calculation is not correctly mentioned in the PDD and the data is not the recent one available as given in B.6.2 & Annex 3. Please clarify | CAR10 | Closed out |
| B.6.3. Is the vintage of the baseline data correct? | PDD | DR | Please refer B.6.1 above. | Pending | Closed out |
| B.7. Calculation of Emissions Reductions | | | | | |
| B.7.1. Has the approved methodology been applied correctly for determining emission reductions ? | PDD | DR | The PDD have applied the approved methodology correctly for determining the emission reductions. However pending closure of CAR 06. The excel sheet for calculation of emission reductions is required to be submitted along with evidences for the assumptions used. | Pending CL 11 | Closed out |
| B.7.2. Are the emission reduction calculations documented in a complete and transparent manner? | PDD | DR | The emission reduction calculations documented in complete manner. Pending closure of CAR 06 and CL11. | Pending | Closed out |
| B.7.3. Have conservative assumptions been used to calculate emission reductions? | PDD | DR | Pending closure of CL 11 | Pending | Closed out |
| B.7.4. Is the projection based on provable input parameter? | PDD | DR | Pending closure of CL 11 | Pending | Closed out |
| B.7.5. Is the projection based on same procedures as used for later monitoring or acceptable alternative models? | PDD | DR | The ex-ante projection is based on same procedures as used for ex-post monitoring, following AMS-I.C. version 13. | Y | Y |
| B.7.6. Is the calculation of the emission reduction correct? | PDD | DR | Pending closure of CL 11 | Pending | Closed out |
| B.8. Emission Reductions | | | | | |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|--|-------------|-------------|
| B.8.1. Will the project result in fewer GHG emissions than the baseline scenario? | PDD | DR | The project is expected to result in fewer GHG emissions than the baseline scenario. Pending closure of CAR 06 and CL11. | Pending | Closed out |
| B.8.2. Is the form/table required for the indication of projected emission reductions correctly applied? | PDD | DR | The table at section B.6.4 required for the indication of projected emission reductions has been applied correctly in accordance with the Guidelines for completing CDM-SSC-PDD, version 05. | Y | Y |
| B.8.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period? | PDD | DR | According to the Section B.6.4 of the PDD version 01, the start of 10 years fixed crediting period would be from 2009. | Y | Y |
| B.9. Monitoring Methodology | | | | | |
| B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameter to be monitored and further information provided by the PDD? | PDD | DR | The description of monitoring plan is not clear as per section B.7.2 of the PDD version 01. PP has given a parameter "Auxiliary consumption" in the table under section B.6.3. Please clarify that the same is being monitored (measured) or not. | CL12 | Closed out |
| B.9.2. Does the monitoring methodology consistently apply the choice of the option selected for monitoring both of project and baseline emissions? | PDD | DR | Pending closure of CL 12 as discussed above. | Pending | Closed out |
| B.10. Data and Parameters Monitored | | | | | |
| B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period? | PDD | DR | The description towards the data/ parameters monitored has been described under section B.7.1 of the PDD. Pending closure of CL12 as discussed above. | Pending | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|---|-------------|-------------|
| B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the simplified methodology applied? | PDD | DR | Please refer B.9.1 above. | Pending | Closed out |
| B.10.3. Will it be possible to determine the specified project GHG indicators? | PDD | DR | According to the description towards the monitoring plan provided under PDD, the GHG indicators will be possible to determine. However the project specific description towards the monitoring plan for the project activity is not fully transparent. Pending closure of CL12 as discussed above. | Pending | Closed out |
| B.10.4. Will the indicators enable comparison of project data and performance over time? | PDD | DR | The description towards the data/ parameters monitored has been described under section B.7.1 of the PDD. Pending closure of CL12 as discussed above. | Pending | Closed out |
| B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan? | PDD | DR | Please refer B.10.4 | Pending | Closed out |
| B.10.6. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records? | PDD | DR | Pending closure of CL12 as discussed above. | Pending | Closed out |
| B.10.7. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy? | PDD | DR | The monitoring approach is in line with current good practice. However, Pending closure of CL12 as discussed above. | Pending | Closed out |
| B.10.8. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology. | PDD | DR | The project emission calculation in the PDD has been done as per the guideline provided in the methodology AMS-I D, version 13. | Y | Y |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|--|---------|------|--|-------------|-------------|
| B.11. Quality Control (QC) and Quality Assurance (QA) Procedures | | | | | |
| B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete? | PDD | DR | The selection of data is complete as per the QA/QC requirements. | Y | Y |
| B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner? | PDD | DR | The uncertainty levels for each monitoring parameters have not been determined in a correct and reliable manner. However pending closure of CL12. | Pending | Closed out |
| B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data? | PDD | DR | The quality control and quality analysis procedures have been properly incorporated in the project monitoring plan. | Y | Y |
| B.11.4. Is it ensured that data will be bound to national or internal reference standards? | PDD | DR | The monitoring data will be clearly reproducible and comparable and will not be dependent on site-specific adjustments. | Y | Y |
| B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions? | PDD | DR | Please refer B.11.3 above. | Y | Y |
| B.12. Operational and Management Structure | | | | | |
| B.12.1. Is the authority and responsibility of project management clearly described? | PDD | DR | The PDD version 1 clearly signifies categorically the authority and responsibility of the project management towards the CDM project activity. In the section B.7.2 of the PDD the structure of job responsibility is furnished. | Y | Y |
| B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described? | PDD | DR | In the section B.7.2 of the PDD the hierarchy of job responsibility for registration, monitoring, measurement and reporting is provided clearly. | Y | Y |
| B.12.3. Are procedures identified for training of monitoring personnel? | PDD | DR | Training procedure for project monitoring personnel needs is missing in the PDD. | CL13 | Closed out |
| B.13. Monitoring Plan (Annex 4) | | | | | |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|-------|---|-------------|-------------|
| B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity? | PDD | DR, S | The monitoring plan has been developed in a project specific manner. | Y | Y |
| B.13.2. Does the monitoring plan completely describes all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality? | PDD | DR, S | Pending closure of CL12. | Pending | Closed out |
| B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation? | PDD | DR, S | The monitoring plan in the PDD provides specific information regarding the monitoring equipments and their respective positioning. | Y | Y |
| B.13.4. Are procedures identified for calibration of monitoring equipment? | PDD | DR, S | The monitoring plan in the PDD provides specific information regarding the calibration of monitoring equipments. | Y | Y |
| B.13.5. Are procedures identified for maintenance of monitoring equipment and installations? | PDD | DR, S | The monitoring plan is clearly identified the procedures for maintenance of monitoring equipments and installations. A spare duly tested and calibrated meters of same accuracy check would be kept as back up for use as and when required. | Y | Y |
| B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) | PDD | DR | The procedure identified for day to day records handling and the related performance documentation has been elaborated in the annex 4 of the PDD. | Y | Y |
| B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems?? | PDD | DR | Procedures towards dealing with possible monitoring data adjustments, data uncertainty and missing data allowing redundant reconstruction of data in case of monitoring problems has been described under monitoring plan of the PDD, Version 01. | Y | Y |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|--|---------|------|--|-------------|-------------|
| B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable? | PDD | DR | Procedures are not identified for internal audits of GHG project compliance with operational requirements where applicable. Please clarify | CL14 | Closed out |
| B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally? | PDD | DR | The PDD does identify for project performance reviews prior to submission of data for verification. Pending closure of CL 13 & 14 | Pending | Closed out |
| B.14. Baseline Details | | | | | |
| B.14.1. Is there any indication of a date when determine the baseline? | PDD | DR | The date of completion of the application of the baseline study as 05/05/2008 has been provided under Section B.8 of the PDD. | Y | Y |
| B.14.2. Is this in consistency with the time line of the PDD history? | PDD | DR | Start date of the project activity is 08/02/2007. Baseline has been determined on 05/05/2008. Pending due to CL 02 & CAR 07 raised above | Pending | Closed out |
| B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD? | PDD | DR | All data required provided is in a complete manner by annex 3 of the PDD. | Y | Y |
| C. Duration of the Project / Crediting Period | | | | | |
| C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable? | PDD | DR | The expected operational life time of the project activity is state in the PDD as 25 years 0 months, the basis for the same needs to be checked during site visit The start date of the project activity as mentioned in the PDD is not transparent, Please provide the supporting documentary evidence of the start date of the project activity as per EB 41 Para 67. | CAR15 | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|-------|--|--------------------|-------------|
| C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)? | PDD | DR | According to the current version of the PDD, the ER calculation is being done for the crediting period of 10 years. | Y | Y |
| C.1.3. Does the project's operational lifetime exceed the crediting period | PDD | DR | According to the PDD version 01, the operational lifetime is exceeding the crediting period. | Y | Y |
| D. Environmental Impacts | | | | | |
| D.1.1. Does the project comply with environmental legislation in the host country? | PDD | DR | NOC and Consent related to applicable environmental legislations issued by the concerned organization needs to be checked during site visit. | Pending site visit | Closed out |
| D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? | PDD | DR | According to the PDD version 01, The project activity does not fall under the purview of the Environmental Impact Assessment (EIA) 21 notification dated 14th September, 2006 (S.O 1533) of the Ministry of Environment and Forest, Government of India. | Y | Y |
| E. Stakeholder Comments | | | | | |
| E.1.1. Have relevant stakeholders been consulted? | PDD | DR, I | The section E.1 of the PDD does not provide clear information regarding the local stakeholder's consultation. Please provide information about the stakeholder's been consulted. The local stakeholders as identified for the project activity, mentioned in the PDD will be checked during site visit. | CL16 | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|-------|--|--------------------|-------------|
| E.1.2. Have appropriate media been used to invite comments by local stakeholders? | PDD | DR, I | <p>According to the PDD version 01 the invitation towards local stakeholder consultation meeting was given through formal invitation letters. The meeting was held on 28/03/2006.</p> <p>The invitation letter sent to invite local stakeholder and key officials as mentioned below:</p> <ol style="list-style-type: none"> 1. Representatives of Gram Panchayat 2. Local villagers and community 3. Local transporters, traders, constructors etc. 4. State Environmental Conservation and Pollution Control Board 5. Uttaranchal State Electricity Board, etc. <p>Comments and supporting documentation needs to be cross checked during site visit.</p> | Pending site visit | Closed out |
| E.1.3. 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, I | <p>The requirement of stakeholder consultation process by regulations/laws in the host country is not clearly indicated in the version 01 of the PDD, which needs to be checked during the site visit.</p> <p>Documentary evidence (e.g. MoM, attendance list) of the LSC process carried out under CDM modalities has to be obtained from the PP during site visit.</p> | Pending site visit | Closed out |
| E.1.4. Is the undertaken stakeholder process described in a complete and transparent manner? | PDD | DR | <p>As per the PDD version 01, local stakeholder consultation procedure has been carried out by the project proponent.</p> <p>The transparency of the local stakeholder consultation procedure needs to be checked during site visit.</p> | Pending site visit | Closed out |

| Checklist Question | Ref. ID | MoV* | Comments | Draft Concl | Final Concl |
|---|---------|------|--|--------------------|-------------|
| E.1.5. Is a summary of the stakeholder comments received provided? | PDD | DR | Stakeholders raised some concerns regarding employment and land submergence as described in the section E.2 of version 01 of the PDD. The same to be cross checked during site visit. | Pending site visit | Closed out |
| E.1.6. Has due account been taken of any stakeholder comments received? | PDD | DR | No adverse comment identified in the PDD. Same has to be cross checked during site visit. | Pending Site visit | Closed out |

References

| S.No | Title / Description | Reference No | Comments |
|------|--|------------------------------|---|
| 1. | PDD version 01 (PDD webhosted) dated 30/11/2008 and 06 (final) dated 29/06/2010 | Table 2 sections A,B,C.,D,E. | The PDD has been checked to complete the desk top review of the project description and further details for CDM project activity configuration. |
| 2. | AMS-I.D version 16 | Table 2 section B. | This has been referred to validate the applicability of the project activity, project boundary, baseline and monitoring methodological choices. |
| 3. | UNFCCC website (http://cdm.unfccc.int/index.html) | Table 1 section B | UNFCCC website has been referred to check the international stakeholder consultation procedure. |
| 4 | Guidelines for completing CDM-SSC-PDD, version 05 | Table 1.5 | This has been referred to validate the completeness of the PDD |

A.3 Annex 3: Overview of Findings

Findings Overview Summary

| | CARs | CLs | FARs |
|---------------------|------|-----|------|
| Total Number raised | 07 | 09 | |

| | | | | | |
|--|------------|------------|---------------|-------------------------|----------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ | | |
| Type: | CAR | Number: | 01 | Reference: | Table1-3 |
| Lead Assessor Comment: | | | | | |
| Letter of approval issued by Designated National Authority (DNA) of the Host Country (India) to be submitted by the project proponent. | | | | | |
| Project Participant Response: | | | | Date: DD/MM/YYYY | |
| The letter of approval issued by Designated National Authority (DNA) of the Host Country (India) has been made available to the DOE during the validation visit on 20 th February 2009. | | | | | |
| Documentation Provided by Project Participant: | | | | | |
| Host Country Approval for Vanala Small Scale Hydropower Project issued by Ministry of Environment & Forest dated 29 th September 2008. | | | | | |
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | | | | | |
| Information Verified by Lead Assessor: | | | | | |
| PP has submitted the HCA no. 4/13/2008-CCC dated 29/09/2008 | | | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | | | Date: 25/05/2009 | |
| PP has submitted the Host country approval letter from Indian DNA having certificate no. 4/13/2008-CCC dated 29/09/2008. Closed out | | | | | |
| Acceptance and Close out by Lead Assessor: | | | | Date: 25/05/09 | |

| | | | | | |
|--|------------|------------|---------------|-------------------------|-------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ | | |
| Type: | CL | Number: | 02 | Reference: | A.1.3 |
| Lead Assessor Comment: | | | | | |
| Please provide supportive documentary evidence for the time line of the project history. | | | | | |
| Project Participant Response: | | | | Date: DD/MM/YYYY | |
| The documentary evidence for the time line as mentioned in the PDD shall be submitted to the DOE as Annexures, details of which are given below. | | | | | |

| | |
|--|-------------------------|
| Documentation Provided by Project Participant: | |
| Annexure 1: Extracts of minutes of meeting of board directors | |
| Annexure 2: Email correspondence with a consultant for CDM services | |
| Annexure 3: Contract for the execution of civil work other than excavation | |
| Annexure 4: Application filed to get NOC from Environment Conservation and Pollution Control Board, Dehradun (15 MW) | |
| Annexure 5: Stakeholder meeting | |
| Annexure 6: Loan Agreement signed with IREDA | |
| Annexure 7: Forest Land Lease Deed executed | |
| Annexure 8: Mortgage of Private land of the project to IREDA | |
| Annexure 9: LC Opened in favour of E&M Equipment supplier | |
| Annexure 10: Email correspondence between Himurja Private Limited and Ernst & Young | |
| Annexure 11: NOC given by Environment Conservation and Pollution Control Board, Dehradun | |
| Annexure 12: Engagement Letter with Ernst & Young signed | |
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | |
| Information Verified by Lead Assessor: | |
| Documents submitted by the PP as mentioned above | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 26/05/09 |
| PP has provided the chronology of the project to show the parallel CDM status along with the implementation of the project activity but PP needs to provide the tentative date of commissioning or the start date for the commercial operations to justify the crediting period start date as mentioned in the PDD version 02 i.e. 2009-2010. Open | |
| Project Participant Response: | Date: 01/06/2009 |
| The Vanala small hydro project was proposed to be commissioned by April 2009. However, the tentative date of commissioning has been postponed to the end July 2009 due to recent flash floods at the plant site. Accordingly, the start date of the crediting period has been revised to August 2009 in the PDD version 03. | |
| Documentation Provided by Project Participant: | |
| PDD version 03. | |
| Undertaking – tentative date August | |
| Information Verified by Lead Assessor: | |
| Documents submitted by the PP as mentioned above | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 26/05/09 |
| Undertaking for the tentative date of commissioning is not attached. Open | |
| Project Participant Response: | Date: DD/MM/YYYY |
| Undertaking for the tentative date of commissioning would be submitted to the DoE. | |
| Documentation Provided by Project Participant: | |
| Attachment 1- Undertaking: pending at clients end | |
| Information Verified by Lead Assessor: | |
| N/A | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 03/01/2010 |
| The required document is pending at client's end. Open | |
| Project Participant Response: | Date: 15/04/2010 |
| Actual Commissioning certificate dated 06 th December 2009 is submitted as Annex 1 | |
| Documentation Provided by Project Participant: | |

| | |
|---|-------------------------|
| Commissioning certificate dated 06 th December 2009 | |
| Information Verified by Lead Assessor: | |
| Commissioning certificate dated 06 th December 2009 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 25/05/2010 |
| The proponent has submitted the commissioning certificate of the Hydro power project. Closed | |
| Acceptance and Close out by Lead Assessor: | Date: 25/05/2010 |

| | | | | | | |
|---|------------|---------|------------|---------------|-------------------------|-------|
| Date: | 17/02/2009 | | Raised by: | Kunal Sharma/ | | |
| Type: | CL | Number: | 03 | | Reference: | A.4.4 |
| Lead Assessor Comment: | | | | | | |
| Please provide supportive for the technical details and design capacity of the horizontal Francis turbines installed at site from the technology supplier. | | | | | | |
| Project Participant Response: | | | | | Date: DD/MM/YYYY | |
| The required supportive for the technical details and design capacity of the horizontal Francis turbines and other equipments installed at site has been provided to the DOE. | | | | | | |
| Documentation Provided by Project Participant: | | | | | | |
| Purchase Agreement between Him Urja Pvt. Ltd. And Jyoti Limited (technology supplier) dated 30/12/2005 | | | | | | |
| Information Verified by Lead Assessor: | | | | | | |
| Technical details have been submitted by the PP | | | | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | | | | Date: 25/05/09 | |
| PP has submitted the purchase agreement as a supportive for the technical details and design capacity of the horizontal Francis turbines. Closed out | | | | | | |

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|---|------------|---------|------------|-------------------------|------------|-------|
| Date: | 17/02/2009 | | Raised by: | Kunal Sharma/ | | |
| Type: | CL | Number: | 04 | | Reference: | A.4.7 |
| Lead Assessor Comment: | | | | | | |
| Please provide supportive for the below mentioned points: | | | | | | |
| 3. Proper documentation for the operational life time of the project technology. | | | | | | |
| 4. The implemented technology will not be changed during the project period needs to be provided by the PP. | | | | | | |
| Project Participant Response: | | | | Date: DD/MM/YYYY | | |
| 1. The UERC guidelines for the operational lifetime of the project activity shall be made available to the DOE as Annexure 13 | | | | | | |
| 2. An undertaking from the Project proponent stating no change of technology during the project period has been submitted to the DOE. | | | | | | |
| Documentation Provided by Project Participant: | | | | | | |
| 1. Annexure 13: Supporting for technical lifetime of the project. | | | | | | |
| 2. Undertaking by PP stating no change of technology during the project period. | | | | | | |
| Information Verified by Lead Assessor: | | | | | | |
| UERC guidelines | | | | | | |
| Undertaking for no change of technology during the project period | | | | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | | | Date: 25/05/09 | | |

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|---|-------------------------|
| 1. PP has submitted the UERC guidelines for the operational lifetime of the hydro-electric equipments but please clarify that how the guidelines provided for the depreciation schedule can be referred to the technology deployed. Open | |
| 2. Undertaking submitted by the PP for no change of technology during the current crediting period. This is acceptable. Closed out | |
| Project Participant Response: | Date: 04/08/2009 |
| 1. The undertaking for the lifetime of the project activity has been attached as Annexe A. | |
| Documentation Provided by Project Participant: | |
| Annexe A- Undertaking for the lifetime of the project activity. | |
| Information Verified by Lead Assessor: | |
| undertaking form the project proponent | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 01/09/2009 |
| The proponent has provided an undertaking form the project proponent which states that the lifetime of the major equipments is at least 25 years. Closed out | |

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|---|------------|---------|------------|--------------------------------|------------|-------|
| Date: | 17/02/2009 | | Raised by: | Kunal Sharma/ | | |
| Type: | CL | Number: | 05 | | Reference: | B.2.2 |
| Lead Assessor Comment: | | | | | | |
| Information regarding the identification of the relevant grid is not given in the PDD version 01 in accordance with the EB guidelines and the underlying methodology. | | | | | | |
| Project Participant Response: | | | | Date: <i>DD/MM/YYYY</i> | | |
| The relevant information regarding the identification of the grid choice as per the latest available CEA database has been updated in Annex 3 and the relevant sections of the PDD version 2.0. | | | | | | |
| Documentation Provided by Project Participant: | | | | | | |
| 1. PDD version 2.0 | | | | | | |
| Information Verified by Lead Assessor: | | | | | | |
| Identification of NEW NE grid which has been mentioned in the PDD version 02 | | | | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | | | Date: 25/05/09 | | |
| PP has clearly elaborated about the selection of the NEW NE grid for the proposed project activity in the PDD version 02. Closed out. | | | | | | |
| Acceptance and Close out by Lead Assessor: | | | | Date: 25/05/09 | | |

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|--|------------|------------|---------------|------------|--------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ | | |
| Type: | CAR | Number: | 06 | Reference: | B.3.1. |
| Lead Assessor Comment: | | | | | |
| The selection of baseline power scenario as power supply from the grid system is not properly justified. Please clarify. | | | | | |

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| Project Participant Response: | Date: DD/MM/YYYY |
| <p>Various plausible baseline scenarios has been mentioned in the PDD under section B.4 in accordance with the guidelines for completing "Simplified Project Design document (CDM-SSC-PDD) and the form for proposed new Small Scale Methodologies (CDM-SSC-NM)¹ "as well as the applicable small scale methodology AMS I.D. / Version 13 for the project.</p> <p>According to section B.4 of the guidelines for completing "Simplified Project Design document (CDM-SSC-PDD) one needs to "Specify the baseline for the proposed project activity with reference to the chosen project category. Explain and justify the key assumptions and rationale. Illustrate in a transparent manner all data used to determine the baseline emissions (variables, parameters, data sources etc.) preferably in a tabular form."</p> <p>The following paragraphs of the small scale methodology AMS I.D. / Version 13 are referred to determine the baseline.</p> <ol style="list-style-type: none"> 1) Paragraph 7 of AMS I.D. covers project activities including landfill gas, waste gas, wastewater treatment or agro-industries project with methane recovered to be used for heat or electricity generation 2) Paragraph 8 of AMS I.D. covers project activities where all generators use exclusively fuel oil and/or diesel fuel 3) Paragraph 10 of AMS I.D. covers project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility 4) Paragraph 11 of AMS I.D. covers project activities that seek to retrofit or modify an existing facility for renewable energy generation <p>The project activity in this case is a hydro power project, which is not covered under any of the above mentioned categories. Hence the baseline of the project activity is established using paragraph 9 which states that for all other systems not covered in paragraph 7 & 8, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient calculated in a transparent and conservative manner.</p> <p>Further a detailed explanation of all the assumptions made for the calculation of the baseline emission coefficient is given in Annex 3: Baseline Information in version 2 of the PDD.</p> | |
| Documentation Provided by Project Participant: | |
| 1. PDD version 2.0 | |
| Information Verified by Lead Assessor: | |
| Alternative baseline scenarios mentioned in the PDD version 02 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 25/05/09 |
| <p>PP has demonstrated various plausible alternative scenarios for the proposed project activity as per "Tool for the demonstration and assessment of additionality, version 5.2" but PP has not followed the step wise approach correctly. If PP wishes to follow the tool then it needs to follow it completely.</p> <p>Open</p> | |
| Project Participant Response: | Date: 04/08/09 |
| <p>The step wise approach as per the "Combined tool to identify the baseline scenario and demonstrate additionality" has been followed correctly in the revised PDD version 3.0</p> | |
| Documentation Provided by Project Participant: | |
| 1. PDD version 03. | |
| Information Verified by Lead Assessor: | |
| PDD version 3.0 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 01/09/09 |
| <p>The proponent has used additionality tool version 5.2 to demonstrate additionality of the project activity. However, the proponent has mentioned combined tool in the response. Please clarify Also, the "Tool for the demonstration and assessment of additionality, version 5.2" has not been</p> | |

¹ http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid02_v05.pdf

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| followed correctly. Open | |
| Project Participant Response: | Date: DD/MM/YYYY |
| The details of baseline applicable for the project activity are discussed as per the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories" Type I.D, version 13, EB. The plausible baseline alternatives have also been discussed as required by the DoE. | |
| Documentation Provided by Project Participant: | |
| PDD Version 4.0 | |
| Information Verified by Lead Assessor: | |
| PDD version 4.0 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 12/01/2010 |
| It is not mentioned in the PDD which tool is referred for demonstrating additionality. Open | |
| Project Participant Response: | Date: 15/04/2010 |
| The tool used i.e. Attachment A to Appendix B of "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories" has been included in the PDD version 4 | |
| Documentation Provided by Project Participant: | |
| Revised PDD | |
| Information Verified by Lead Assessor: | |
| Revised PDD | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 12/01/2010 |
| The proponent has mentioned that the Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories has been used for the demonstration of additionality. Closed | |
| Acceptance and Close out by Lead Assessor: | Date: 25/05/10 |

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|--|-------------------------|------------|---------------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ |
| Type: | CAR | Number: | 07 |
| Reference: | B.4.1. | | |
| Lead Assessor Comment: | | | |
| The start date of the project activity as per PDD version 01 is 08/02/2007. Please provide the documentary evidence for serious CDM consideration as per EB 41 annex 46. | | | |
| Project Participant Response: | Date: DD/MM/YYYY | | |
| The start date of the project activity as per the PDD version 01 is 2 nd August 2007. In accordance to EB 41 guidelines the date corresponds to LC opening in favour of E&M Equipment supplier. As per EB 41 Annex 46 guidelines the PP has included the minutes of meeting of Board of directors as evidence of seriously considering CDM benefits for the project activity. The initial correspondences with the consultants for CDM project has also been included in the Chronology mentioned in the revised PDD. | | | |
| Documentation Provided by Project Participant: | | | |

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| <p>Annexure 1: Extracts of minutes of meeting of board directors Annexure 2: Email correspondence with a consultant for CDM services Annexure 3: Contract for the execution of civil work other than excavation Annexure 4: Application filed to get NOC from Environment Conservation and Pollution Control Board, Dehradun (15 MW) Annexure 5: Stakeholder meeting Annexure 6: Loan Agreement signed with IREDA Annexure 7: Forest Land Lease Deed executed Annexure 8: Mortgage of Private land of the project to IREDA Annexure 9: LC Opened in favour of E&M Equipment supplier Annexure 10: Email correspondence between Himurja Private Limited and Ernst & Young Annexure 11: NOC given by Environment Conservation and Pollution Control Board, Dehradun Annexure 12: Engagement Letter with Ernst & Young signed</p> | |
| Information Verified by Lead Assessor: | |
| Chronology provided by the PP along with the supportive as mentioned above | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 26/05/09 |
| <p>Kindly clarify the following points as per the response provided:</p> <ol style="list-style-type: none"> 1. PP must indicate awareness of the CDM prior to the project activity start date as Para 5 a (EB 41 annex 46) 2. PP has demonstrated some events to secure the CDM status for the project in parallel with its implementation but how the below mentioned events can be considered to secure CDM status. <ol style="list-style-type: none"> a) Contract for the execution of civil work other than excavation b) Annexure 4: Application filed to get NOC from Environment Conservation and Pollution Control Board, Dehradun (15 MW) c) Loan Agreement signed with IREDA d) Annexure 7: Forest Land Lease Deed executed e) Mortgage of Private land of the project to IREDA f) NOC given by Environment Conservation and Pollution Control Board, Dehradun <p>Open</p> | |
| Project Participant Response: | Date: 04/08/2009 |

1. According to Para 5a (EB 41 annex 46) *"The project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a CDM project activity."* The extract of minutes of meeting of board of directors dated 6th December 2005, was submitted to the DOE. The minutes of meeting clearly mentions and discusses the benefits that are accrued from the CERs that the project is eligible under the CDM mechanism. In addition to this an email correspondence dated 25 April 2006 between the project participant and a cdm consultant clearly mentions the hydro project by Himurja thus indicating CDM awareness prior to the project activity start date (Annex B). The start date of the project activity is 2nd August 2007.
2. The documents mentioned below were provided to demonstrate the timeline of the project activity. The dates corresponding to these documents simply indicate the events that were in correspondence to the activities undertaken for CDM consideration for the project activity. The documents below do not provide direct evidence of CDM consideration and were listed to demonstrate the series of events.
 - a. Contract for the execution of civil work other than excavation
 - b. Annexure 4: Application filed to get NOC from Environment Conservation and Pollution Control Board, Dehradun (15 MW)
 - c. Loan Agreement signed with IREDA
 - d. Annexure 7: Forest Land Lease Deed executed
 - e. Mortgage of Private land of the project to IREDA
 - f. NOC given by Environment Conservation and Pollution Control Board, Dehradun

Documentation Provided by Project Participant:

1. Annex B- Email correspondence between Himurja and CDM consultants.

Information Verified by Lead Assessor:

PDD version 3.0

Reasoning for not Acceptance or Acceptance and Close Out:

Date: 01/09/2009

1. The proponent needs to provide supportive for awareness prior to the board note of the project activity which direct the proponent to consider the CDM benefits in the board meeting. **Open**
2. The list of events elaborated in the PDD to secure CDM status does not provide complete set of events till date or expected date of commissioning. Please clarify **Open**

Project Participant Response:

Date: DD/MM/YYYY

1. The "Approach to Initial Tariff for New Hydro Generating Stations with capacity above 1 MW and upto 25 MW" paper submitted to DOE as Attach 1 issued by UERC on 8th September 2005 clearly discusses benefits from carbon trading and CDM and lists Mr. Arun Gupta M.D. of Him Urja Pvt. Ltd. as one of the respondents to the paper. This clearly substantiates PP's awareness of CDM prior to the board meeting (December 2005).
2. The chronology has been updated as required by the DoE by including the complete set of events till date.

Documentation Provided by Project Participant:

Attachment 2 – Order on Approach to initial Tariff

Information Verified by Lead Assessor:

Attachment 2 checked.

Reasoning for not Acceptance or Acceptance and Close Out:

Date: 12/01/2010

The proponent has submitted an order where the MD of Him Urja Pvt Ltd has been involved in the discussion of tariff determination with the UERC and benefits arising due to CDM were also discussed. Hence

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| Hence awareness prior to CDM consideration (board note) is justified. Closed Out. In additionality section, B.5, the local stakeholder consultation is not shown in chronological order with other events. Please present all events in chronological order. Please provide evidence i.e. newspaper cuttings of the public invitation for local stakeholder meeting. Open | |
| Project Participant Response: | Date: 15/04/2010 |
| The local stakeholder consultation has been included in the chronological order of events. Evidence of the invitation of local stakeholder consultation is being attached as Annex 9 | |
| Documentation Provided by Project Participant: | |
| Information Verified by Lead Assessor: | |
| Invitation letter for the stakeholder meeting | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 25/05/2010 |
| The proponent has submitted the invitation letter for the stakeholder meeting and also incorporated the activity in the chronology of CDM consideration in the PDD. Closed. | |
| Acceptance and Close out by Lead Assessor: | Date: 25/05/10 |

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|--|------------|-------------------------|---------------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ |
| Type: | CAR | Number: | 08 |
| Reference: | B.4.2 | | |
| Lead Assessor Comment: | | | |
| The additionality description of the project activity has not been described based on a comparison with realistic and credible alternative(s). Please clarify. | | | |
| Project Participant Response: | | Date: DD/MM/YYYY | |
| A comparison analysis of realistic and credible alternatives as per Tool for demonstration and assessment of additionality has been done and included in the PDD version 2.0. | | | |
| Documentation Provided by Project Participant: | | | |
| 1. PDD version 2.0 | | | |
| Information Verified by Lead Assessor: | | | |
| Additionality description based on realistic and credible alternatives | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | Date: DD/MM/YYYY | |
| PP has considered "Tool for the demonstration and assessment of additionality" to demonstrate the additionality for the proposed project activity but if PP wants to use the tool then why it is not completely followed (step wise approach). Open | | | |
| Project Participant Response: | | Date: 04/08/2009 | |
| The step wise approach as per the "Combined tool to identify the baseline scenario and demonstrate additionality" has been followed correctly in the revised PDD version 3.0 | | | |
| Documentation Provided by Project Participant: | | | |
| PDD version 03. | | | |
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | | | |
| Information Verified by Lead Assessor: | | | |
| PDD version 3.0 | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | Date: 01/09/2009 | |

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| Please refer CAR 06 | |
| Project Participant Response: | Date: DD/MM/YYYY |
| The project participant has demonstrated via Barrier analysis that that the project activity would otherwise not be implemented anyways (Without CDM) due to the existence of one or more barrier(s) as listed in attachment A to Appendix B General Guidance to SSC CDM Methodologies. | |
| Documentation Provided by Project Participant: | |
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date he re- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | |
| Information Verified by Lead Assessor: | |
| N/A | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 12/01/2010 |
| Please refer CAR 06 | |

| | | | | | |
|---|------------|------------|-------------------------|------------|-------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ | | |
| Type: | CAR | Number: | 09 | Reference: | B.4.4 |
| Lead Assessor Comment: | | | | | |
| PP needs to demonstrate additionality for Hydro Power based SSC project activity as per the points mentioned below: | | | | | |
| 7) Investment Analysis: <ul style="list-style-type: none"> a) Please provide the IRR calculation sheet with and without the CDM revenues. b) Also, please provide the WACC calculation sheet for carrying out benchmark analysis. c) Please provide the objective evidence for all the assumptions and justifications made for the investment analysis given in the section B.5 of the PDD. d) Supportive for Beta value used in the calculation of WACC. e) Term loan documents as a supportive for means of finance. f) Calculation sheet for Sensitivity analysis on the project IRR for PLF. 8) Please provide objective evidence for the barriers due to prevailing practice. 9) Also, please provide supportive for all the justifications given in other barriers i.e. geological barriers, flash floods, landslides etc. | | | | | |
| Project Participant Response: | | | Date: DD/MM/YYYY | | |

1. Investment Analysis

- a) The IRR calculation sheet shall be provided to the DOE as Annexure 14.
 - b) The WACC calculation sheet shall be provided to the DOE as Annexure 15.
 - c) The source of assumptions shall be submitted to the DOE as part of Annexure 14.
 - d) Screenshots of Capitaline Beta values shall be shared with the DOE as Annexure 16.
 - e) Term loan documents shall also be submitted to the DOE as Annexure 17.
 - f) Calculation sheet for sensitivity analysis on IRR for PLF etc shall be shared with the DOE as part of Annexure 14.
2. All the documents in support of the objective evidence including the referenced papers/journals used for prevailing practice barrier is being to the DOE as Annexure 18.
 3. The supportive for other barriers ex. Geological Barriers, flash floods and landslides etc. shall be made available to the DOE as Annexure 17.

Documentation Provided by Project Participant:

1. Annexure 14: IRR calculation sheet and evidences of assumptions
2. Annexure 15: WACC calculation sheet.
3. Annexure 14: Calculation sheet for Sensitivity Analysis.
4. Annexure 16: Screenshots of Capitaline Beta Values.
5. Annexure 17: Term loan documents.
6. Annexure 18: Prevailing Practice Barrier supporting.
7. Annexure 19: Supporting for other barriers like geological barriers, flash floods etc.

Information Verified by Lead Assessor:

IRR calculation sheet
WACC calculation sheet
Supportive documents for the assumption used in the calculations

**Reasoning for not Acceptance or
Acceptance and Close Out:**

Date: 26/05/2009

1. PP has submitted the IRR and WACC calculation sheet along with the supportive for the assumptions used but please clarify the following points:
- Benchmark: Market return is wrongly calculated. Please justify the time period taken in the formula.
 - Benchmark: Cost of debt should be calculated post tax. Please justify the formula used for WACC.
 - Corporate Tax Rate: Please justify the corporate tax rate taken in the calculations.
 - Royalty: Please clarify whether the royalty is 18% or 12%.
 - Tax Calculation: Please prepare a separate tax calculation as per the IT act. Take depreciation and other values according to the IT Act.
 - MAT: Please justify why MAT should be included in the tax calculations.
 - Loan Amortization: Please explain why loan amortization has not been deducted from the revenues.
 - O&M Cost and interest rate: Please provide reference for the O&M cost and interest rate assumption.
 - PP has not provided supportive for the total investment incurred in the project activity.
 - Debt amount doesn't match with the loan sanctioned by IREDA. Also, please clarify that why IREDA has sanctioned loan in two phases i.e. Rs.5775 lacks dated 05/06/2006 and Rs.1225 lacks dated 21/12/2008.
 - Please provide the DPR for the basis of calculating net power generation and considering assumptions like auxiliary and transmission losses.
 - Please provide power purchase agreement for the tariff rate taken in the calculations.
2. Please justify your stand point while comparing the small hydro projects with the total power generation installed capacity in India for prevailing practice which is prominently dominated by fossil fuel based power plants. If the hydro power contributes about 25% to the total power generation in India then how does the analysis satisfy the prevailing practice barriers as per EB 35 annex 34 "Non-binding best practice examples to demonstrate additionality for SSC project activities. Also, in case of Uttaranchal, 75.6 MW capacity of project have already been installed and 61 MW are under implementation as per MNES then how they have overcome these barriers which are being faced by the project proponent.
3. The project activity is already insured to the natural calamity if occurred in future, so, how these seismic activities could be barrier to the implementation of the project activity. Also, how the other barriers were considered prohibitive towards the project (proposed CDM project activity) implementation is not justified. **Open**

| Project Participant Response: | Date: 04/08/2009 |
|---|------------------|
| <p>1. PP has submitted the IRR and WACC calculation sheet</p> <ol style="list-style-type: none"> Benchmark: The time period taken in the formula has been adjusted according to the number of years undertaken in the analysis. The necessary changes have been made onto the revised WACC calculation sheet. WACC calculation sheet Corporate Tax Rate: The tax rate prevalent during financial year 2005- 2006 was 35%. However, there was an additional surcharge and education cess of 2.5% and 2% respectively which amounts to 36.59%. The same figure of 36.59% has been used in the revised IRR calculation sheet. Royalty in the calculation is 18% and the same has been incorporated in the revised IRR calculation sheet. The supportive for the royalty is in the DPR section 0.1.3 "Legal Status & Government Policies". Tax Calculation: A separate tax calculation has been prepared in the revised IRR sheet as requested. In case of hydro power projects there is no provision for incentives under the IT Act with regards to depreciation. The accelerated depreciation is applicable only to the wind, solar devices, biogas plant thus excluding equipment for hydro projects. However, according to Section 80 (I) A of the Income Tax Act, the hydro projects are entitled to a 100% tax holiday for 10 years out of 15 years of commencement of operations. The same has been incorporated in the calculations. MAT: The project proponent's activities and business is solely in the infrastructure sector. They do not have any other main/key business activity apart from infrastructure. Hence, the project proponent shall have to pay for the minimum tax in the form of MAT. Therefore, MAT has been included in the financial analysis. Loan Amortization: The amount of interest to be paid has been incorporated onto the IRR sheet. However, amount for principal had been excluded from the revenue flows. The outflow of principal amount is representative of fixed assets procured. However, with regards to accounting the expenditure on fixed assets is governed by depreciation of assets in accordance with the Companies Act. In the | |

Act. In the analysis the amount of depreciation as per Companies Act had been excluded from the revenue flows, which was later adjusted accordingly to arrive at the Project IRR.

- b) O&M Cost and interest rate: Section 0.2 of the DPR submitted to the DOE states the interest rate figure of 10% taken in the analysis. The O&M cost is also extracted from the DPR and submitted as Annex C
- b) The total investment in the company is Rs. 7665.5 Lakhs. This amount is indicated in the DPR under section 0.3 "Project Salient Features", point number 12.
- b) The debt amount in the financial calculations was based on the debt equity ratio assumed in the DPR. Section 0.2 of the DPR provides a debt equity ratio of 70:30. Hence, the debt component for a total project cost of Rs. 7665.5 Lakhs is around Rs. 5363 Lakhs. However, after the commencement of the construction of the project, there a project cost overrun due to which further loan was to be obtained. Therefore the project proponent had to apply for an additional loan from IREDA for the project in December 2008. The debt and equity component in the financial calculations has been taken up from DPR.
- b) Please refer to Annex C for reference to the DPR as the basis of calculating net power generation and auxiliary and transmission losses.
- b) The tariff rate has been assumed to be Rs. 2.35 per unit as indicated in section 0.1.4 "Economic Analysis" of the project DPR. At the time of the preparation of the IRR, there was not any indicative value for the tariff rate in the state of Uttarakhand as the Uttarakhand Electricity Regulatory Commission (UERC) issued tariff orders specific to each hydro project. However, Patikari hydro project in the state of Uttarakhand had a tariff rate of Rs. 2.50 and the tariff rate in the neighboring state of Himachal Pradesh was Rs. 2.10. Therefore, an average value of the two prevalent tariff rates was taken.
2. The prevalent practice barrier has been revised in the PPD version3
3. Although the project activity is insured against the natural calamity the project also suffers from unexpected delays due to the damage done by flash floods, landslides etc. as elaborated in the PDD. Also during the repair phase in the post damage period the project would also loose out on power generation which may not be covered by the insurance policy. Thus the seismic activities and other barriers provided in PDD poses serious prohibitive barriers towards the project as can be assessed clearly from the fact that the commissioning of the plant has been delayed due to recent flash floods in the area.

Documentation Provided by Project Participant:

1. Revised WACC calculation sheet- Version 2
2. Revised IRR calculation sheet- Version 2
3. Detailed Project Report (DPR) extracts:

Annex C- Financial Analysis for O&M and net calculation of power.

Information Verified by Lead Assessor:

WACC sheet
IRR sheet

Reasoning for not Acceptance or Acceptance and Close Out:

Date: 01/09/2009

1. IRR and WACC calculation sheet
 - a) The Market return is still wrongly calculated. Please clarify the time period taken in the formula. **Open**
 - b) Benchmark: Cost of debt should be calculated post tax. Please justify the formula used for WACC. **Open**
 - c) The corporate tax rate has been corrected. **Closed out**
 - d) The proponent has submitted DPR where the royalty has been given as 18%. **Closed out**
 - e) The proponent has incorporated separate tax sheet. Hydro power projects have no provision for incentives under the IT Act. The same has been acceptable. **Closed**
 - f) The project proponent's activities and business is solely in the infrastructure sector. Hence, the proponent has to pay tax in the from of MAT. **Closed out**

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| <p>g) Loan Amortization: The amount for principal had been excluded from the revenue flows. This is acceptable. Closed out</p> <p>h) The O&M cost has been checked to be 3% with an escalation of 5% per annum from the DPR submitted by the PP. Interest rate is given as 10% in the document. However, please provide the date when the DPR has been released. Open</p> <p>i) The proponent has submitted DPR as a supportive document to justify the total capital cost for the proposed project activity i.e. 7665 lacs. However, please clarify that whether the DPR fulfils the requirement of EB 41 annex 45 Para 6 "Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant." Open</p> <p>j) The proponent has used 70:30 debt equity ratio and apportioned the total project cost accordingly. Closed out.</p> <p>k) The proponent has referred to the DPR for net power generation and transmission losses. However, please justify the PLF of the SHP as per EB 48 annex 11. Open</p> <p>l) The tariff order for the financial year 2003-04 is available on the UERC website. Please clarify. Open</p> <p>2. The data for small hydro power projects for the year 2006-07 has been used to demonstrate prevailing practice. Please clarify the appropriateness of the analysis as per CDM EB guidelines EB 35 annex 34. Open</p> <p>3. Please justify how other barriers were considered prohibitive towards implementation of the project activity during conceptualization phase. Open</p> <p>4. The IRR and benchmark mentioned in the PDD is not consistent with the IRR and WACC calculation sheet as submitted by the PP. Open</p> <p>5. Please clarify whether the subsidy provided by MNES for small hydro power project has been accounted in the financial calculations. Open</p> | |
| Project Participant Response: | Date: DD/MM/YYYY |
| <p>b) The cost of debt has been calculated post tax and the required changes have been made in the revised WACC calculation sheet version 3.</p> <p>h) The Date of DPR issuance is July 2004. A technical study on the DPR of the project activity is submitted dated December 2004 as a supporting for the required information as Attachment 3</p> <p>i) The basis documents of project investments is submitted as Attachment 3</p> <p>k) A third party technical study on the DPR of the project activity is submitted as supporting for PLF and other information required as Attachment 3</p> <p>l) Tariff has been revised to 2.5 Rs/KWh as per the Tariff order of UERC for the financial year 2003-04.</p> <p>2. The prevalent practice barrier has been revised in the PDD version 4.</p> <p>3. The other barriers considered in PDD mainly includes the site location falling at high seismic zone out of which natural damages in the form of Land slides and flash floods detriments the to project activity. Him Urja as per its past experience of running a hydro project in the area considers the impact of such damages as can be easily assessed in the escalation of cost of project activity from 7665 Lakhs earlier to 10077 lakhs currently.</p> <p>4. The IRR and WACC has been consistently stated to be 10.88% and 13.77% through out the entire PDD version 4.</p> <p>5. Subsidy has been accounted for in the cash flows used in IRR computation in the revised IRR version 3.0</p> | |
| Documentation Provided by Project Participant: | |
| <p>1. Revised WACC calculation sheet- Version 3.0</p> <p>2. Revised IRR calculation sheet- Version 3.0</p> <p>3. PDD Version 4.0</p> <p>4. Attachment 3- Study Report on DPR</p> | |
| Information Verified by Lead Assessor: | |
| IRR sheet | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 12/01/2010 |

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| <p>6. IRR and WACC calculation sheet</p> <ul style="list-style-type: none"> a) The cost of equity derived through CAPM shall directly be used for calculating benchmark. Please remove additional DDT and statutory transfer to reserves. Open b) Benchmark: In WACC version 3, debt has been taken post tax. Closed Out. c) The corporate tax rate has been corrected. The evidence for corporate tax rate valid at the time of start date is awaited. Open. d) The proponent has submitted DPR where the royalty has been given as 18%. Closed out e) The proponent has incorporated separate tax sheet. Hydro power projects have no provision for incentives under the IT Act. The same has been acceptable. Closed f) The project proponent's activities and business is solely in the infrastructure sector. Hence, the proponent has to pay tax in the form of MAT. Closed out g) Loan Amortization: The amount for principal had been excluded from the revenue flows. This is acceptable. Closed out h) Please provide supporting evidences for cross validation of O&M cost and escalation rate. Open i) The DPR was released in July 2004 and the technical review of DPR was released in December 2004. There is a long gap between the DP&R and project start date. Therefore, please justify that the input values from DPR are valid and applicable at the time of the investment decision (start date) taken by the project participant. Open j) The proponent has used 70:30 debt equity ratio and apportioned the total project cost accordingly. Closed out. k) Please justify the PLF of the SHP as per EB 48 annex 11. The proponent has submitted the technical report issued by IIT Roorkee. However, please clarify whether the concerned person was contracted by the proponent or not. Open l) Please provide evidence for tariff rate valid at the time of project start date (July 2006). Open m) The beta value has been changed from the value used in the initial IRR calculations. No change shall be made to the IRR sheet unless requested by the DOE. Please use the initial value i.e. 0.988. Open <p>7. Please consider the barrier guidelines as per EB 50 Annex 13 Guideline 4 and 5 to demonstrate other barriers (Barriers due to flash flood and earthquake). Open</p> <p>8. The IRR and benchmark mentioned in the PDD is now consistent with the IRR and WACC calculation sheet as submitted by the PP. closed out</p> <p>9. Please clarify how the subsidy is calculated. It is not clear why it is taken in the 10th year. Please provide evidence. Open</p> <p>10. Evidence regarding interest rate shall be provided as per EB 51 Annex 58. Open</p> | <p>Project Participant Response:</p> <p>Date: DD/MM/YYYY</p> |
| <p>6.</p> <ul style="list-style-type: none"> a) The cost of equity through CAPM has been directly used to calculate Benchmark in IRR sheet version 4. c) The corporate tax rate has been corrected. The evidence for corporate tax rate valid at the time of decision can be sourced from the trend at: http://www.moneycontrol.com/budget2007/taxrates.php and is also attached as Annex 2. h) The evidence for both the O&M cost and escalation rate has been previously submitted as the DPR which is cross validated by IIT Roorkee as an independent technical authority. Moreover UERC order on "tariff determination of hydro projects" dated 10/11/05 Para 11, suggests a rate 3% of the capital cost as the O & M cost which further strengthens the fact that the cost assumed during financial analysis was valid. i) The review undertaken by IIT Roorkee was specifically carried out in order to validate the values of the DPR which was taken out on July 2004. IIT Roorkee was independently authorised to review the DPR of the Project and submit their findings in the form of a consolidated document. The same was submitted to the project proponent and the findings were consistent with the data and input values given in the DPR. The same document has been submitted to the DoE. Moreover the input values suggested in the UERC order dated 10/11/05 are similar to the input values in the DPR and the review report. k) The technical review report by IIT Roorkee was made as Him Urja contracted IIT Roorkee with regard to the same. The letter dated 26 August & 01 October 2004 are evidence of the same submitted as Annex3. Hence, The PLF considered is in compliance with EB 48 annex 11, II (b). | |

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| <p>l) As while conceiving the DPR the newly carved out state of Uttarakhand did not have “adequacy of data for small hydro generating stations (up to 25 MW) which continues to come in the way of framing of separate regulations for this” as per the Tariff Order on Small hydro generating station upto 25 MW released on 31-12-2004 (attached as Annex 4). Thus a tariff of Rs 2.28 /Kwh has been taken up by the PP as the reflective tariff at the time investment decision making which in turn was the Tariff approved for Rajwakti Small Hydro Power which belongs to the same PP in the same state and location and was operational during 2005-06. The tariff is set as per the Tariff Order issued by UERC on 17th November 2005 (also attached as Annex5). Moreover similar value of tariff is achieved using the guidelines of the UERC order dated 10/11/05.</p> <p>m) The current Beta Value considered is in compliance with the pure play method of beta evaluation of a project, the beta values were updated using Hamada formula to separate (unlever) the financial risk of the levered firm considered originating due to its capital structure. And then re-levering it as per the projects internal capital structure (debt/Equity) to arrive at the project beta to be used in the WACC calculation. The same process has been extensively accepted & covered in various financial publication, as a supporting a paper “Ascertaining the divisional Beta for project evaluation – the Pure Play Method – a discussion” by N R Parasuraman published by Institute of Chartered Accountants of India (ICAI) has been attached as Annex6).</p> <p>7. The project proponent on the basis of its past experience of establishing and running India's first small hydro power project Rajwakti in the same area have realized the extensive risk the flash floods and earthquake poses to the project activity. Extensive damages have been caused to the Rajwakti project site due to natural hazards on numerous occasions both during construction stage as well as post commissioning stage the evidence of which has already been submitted to the DOE. Thus similar risk had been envisaged for the Vanala project. These barriers are in compliance with the EB 50 Annex 13 guideline 4 as the barrier cannot be mitigated by neither additional financial means, nor can it be quantified and represented as cost in the investment analysis and therefore can be considered as a barrier. Guideline 5 is for barrier related to increased risk of damage that can be quantified by calculation of loss expenses. However, sufficient data is not available to quantify the risks and represent them as costs, therefore considering it as a barrier is in compliance with guideline 5.</p> <p>9. Subsidy has been calculated as per the subsidy scheme for SHP projects from MNES for FY 2003-04. The evidence has been attached as Annex7. The subsidy has been taken in the 2nd year as the subsidy would be released after 1 year of successful operation, also taking into account the time lag of quality check for 100 days mandatory for non Gov. Projects and related approval for the same.</p> <p>10. As per EB 51 Annex 58 Guidance on investment analysis, the interest rate supporting is submitted as Annex 8 which contains the cost of debt acquired by the project developer prior to the investment decision date. The rate used in analysis is conservative even to rates substantiated.</p> | |
| Information Verified by Lead Assessor: | |
| Reasoning for not Acceptance or Acceptance and Close Out: | |
| | Date: 26/05/2009 |

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| <p>6. a) The cost of equity is now appropriately calculated. The additional DDT and statutory transfer to reserves have been removed. Closed out</p> <p>c) The evidence for corporate tax rate has been check and found appropriate. Closed Out</p> <p>d) Please provide the UERC order as it is not traceable on UERC website. Open</p> <p>i) The review document prepared by IIT Roorkee has been checked. The gap between the review letter issue date and the start date of the project activity is more than 2 years. Hence it is not demonstrated that the input values confirmed in the review letter are valid at the time of start date. Open</p> <p>k) The document submitted were checked and found appropriate. Open due to point (i)</p> <p>l) The evidence provided for tariff order verification has been check. The tariff rate for Rajwakti has been determined on the basis of 45% PLF and 3.96 crores AFC. However, the PLF for project activity is 43% and AFC will also be different. Hence the same tariff rate for project activity is not justified. However, if no other evidence is available, then the same cost based approach for tariff determination may be used for project activity as well. Open</p> <p>m) In the webhosted PDD, it is observed that only 4 power generation companies are considered for determination of beta. Please clarify why other listed power generation companies were not considered. Open</p> | |
| <p>7. The barrier has to be demonstrated as per EB 50 Annex 13 guidelines. It is not clear how the barrier cannot be prevented by additional funding and why it cannot be quantified in terms of monetary losses. Please justify how the sufficient information is not available to calculate the probability and damage estimate. Please also explain how the risk is not covered by the insurance policy. Open</p> | |
| <p>8. The evidence provided has been checked and found appropriate. The amount and time of subsidy realization is acceptable. Closed Out.</p> | |
| <p>9. The evidence has been checked and found appropriate. The actual interest rate paid on previous term loans by the PP is consistently more than the interest rate used in the IRR calculations. Closed Out</p> | |
| Project Participant Response: | Date: 19/07/2010 |
| <p>h) The UERC order dated 10/11/05 is being submitted as annexure 1.</p> <p>i) The gap between the project start date (12/06/2006) and the review letter by IIT Roorkee (December 2004) is not more than two years. However, a letter from IIT Roorkee stating the validity of input values taken during the time of project decision is being submitted as annexure 2.</p> <p>k) Letter from IIT Roorkee stating the validity of input values taken during the time of project decision is being submitted as annexure 2.</p> <p>l) The cost based approach for tariff determination used in the Rajwakti Project and suggested by UERC order dated 10/11/05 has been used to determine the tariff for the project activity. The determine tariff has been used for the financial analysis. The revised IRR sheet (version 5) along with the sheet for tariff determination is being submitted.</p> <p>m) For the purpose of determination of Beta values and benchmark return for the project activity, beta values of other major power generation companies have also been included. The revised WACC and IRR sheet is being submitted as Annexure 4 and Annexure 5 respectively.</p> <p>7. Other barriers pertaining to landslide and earthquakes are being removed from the PDD.</p> | |
| Documentation Provided by Project Participant: | |
| Information Verified by Lead Assessor: | |
| Clarification provided by the proponent as above. | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 19/07/2010 |

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| <p>h) As there was no PPA signed at the time of decision making, please provide a documentary evidence for determination of tariff rate at the time of decision making. It is also observed that the PP has another hydro project in the same region which is operational since 2000. Please provide details regarding the tariff rate applicable for the operational project. Open</p> <p>i) A letter from IIT Roorkee stating the validity of input values taken during the time of project decision is being submitted. The same has been validated and found correct. Hence, Closed out</p> <p>l) Pending closure of point h as raised above. Closed</p> <p>m) The beta value is now appropriately determined. Hence CL is closed.</p> <p>8. No information related to interest has been provided. Please provide documentary evidence for the interest rate applicable for the project activity. The document shall be valid at the time of decision making. Open</p> | |
| Project Participant Response: | Date: 10/08/2010 |
| <p>h) At the time of investment decision, the newly found state of Uttaranchal did not have a fixed tariff structure and individual tariffs were decided on the basis of the guidelines mentioned in the UERC tariff order dated 10/11/05. (Annexure 2). The tariff rate approved for the Rajwakti Hydro Project (attached as annexure 3), which is another Hydro project by Himurja Pvt. Ltd. in the same region, was Rs. 2.28/kWh. The tariff rate calculated for the project activity based on the guidelines underlined in the UERC tariff order translated to Rs 2.15/kWh. However, to adopt a conservative approach, the tariff rate of Rs. 2.35 /kWh as mentioned in the Detailed Project Report (submitted earlier) was adopted for the financial analysis, which is higher than the tariff as per UERC guidelines and the tariff approved for Rajwakti hydro project by the same project proponent.</p> <p>8. Himurja Pvt. Ltd. had been granted loans by IREDA for similar renewable energy projects prior to this project activity and the interest rates on loan for these projects were in the range of 13.5% to 17%. The loan for the project activity too was to be sanctioned by IREDA. Therefore at the time of investment decision interest rate values from the loans approved for earlier projects (attached as Annexure 1) were referred for investment analysis of the project activity and an interest rate value of 13% was adopted for the IRR analysis. Also, the interest rates by IREDA of the approved loans for the project where later cross checked and were found to be around the same rate.</p> | |
| Documentation Provided by Project Participant: | |
| <p>Annex 2: UERC Tariff order dated 10/11/05</p> <p>Annex 3: Approved tariff order for Rajwakti Hydro Project.</p> <p>Annex 1: Loan sanction Letter for projects prior to the project activity by Himurja Pvt. Ltd</p> | |
| Information Verified by Lead Assessor: | |
| <p>Annex 2: UERC Tariff order dated 10/11/05</p> <p>Annex 3: Approved tariff order for Rajwakti Hydro Project.</p> <p>Both the documents were checked and tariff rate was found to be Rs. 2.15/KWh and Rs. 2.28/KWh respectively. It was also checked through secondary research that there was no information available for tariff rate in Uttarakhand at the time of investment decision.</p> <p>Annex 1: Loan sanction Letter for projects prior to the project activity by Himurja Pvt. Ltd.</p> <p>The document has been checked and it was found that the interest rate for different loans provided by IREDA to the PP varied from 13% to 17% during the period prior to start date of the project activity.</p> | |
| Reasoning for not Acceptance or Acceptance and Close Out: | |
| <p>h) In absence of fixed tariff structure in the newly formed state of Uttarakhand, the most accurate information available to PP was through the guidelines of UERC and its previous experience with Rajwakti Hydro Power Plant. Hence, the tariff rate of Rs. 2.35/KWh considered for the project activity is reasonable and conservative. Hence is closed.</p> <p>8. As per the evidence provided by the PP, the interest rate applicable to the PP will be in the range of 17%. Hence 13% interest rate is found to be appropriate for the calculation of IRR. Closed</p> <p>Hence, CAR09 is closed out.</p> | |
| Acceptance and Close out by Lead Assessor: | Date: 26/08/2010 |

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| Date: | 17/02/2009 | | Raised by: | Kunal Sharma/ | |
| Type: | CAR | Number: | 10 | Reference: | B.6.2 |
| Lead Assessor Comment: | | | | | |

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| The source of the grid emission factor (OM, BM & CM) for baseline emissions calculation is not correctly mentioned in the PDD and the data is not the recent one available as given in section B.6.2 & Annex 3. Please clarify | |
| Project Participant Response: | Date: DD/MM/YYYY |
| The source of grid emission factor (OM, BM & CM) for baseline emissions calculation have been clearly mentioned as per the CEA's Baseline Carbon Dioxide Database Version 4.0 in sections B.6.2 and Annex3 of the revised edition of PDD version 2.0 | |
| Documentation Provided by Project Participant: | |
| 1. PDD version 2.0 | |
| Information Verified by Lead Assessor: | |
| Emission factor calculation and description of grid identified for the proposed project activity. | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 26/05/2009 |
| PP has identified NEW NE grid for the proposed project activity and has calculate the emission factor from the data available with CEA database, version 4.0. PP has also provided references for the data taken for the same. Hence, closed out . | |
| Acceptance and Close out by Lead Assessor: | Date: 26/05/09 |

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| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ |
| Type: | CL | Number: | 11 |
| Reference: | B.7.1 | | |
| Lead Assessor Comment: | | | |
| The excel sheet for calculation of emission reductions is required to be submitted along with evidences for the assumptions used. | | | |
| Project Participant Response: | | Date: DD/MM/YYYY | |
| The required excel sheet of emission reductions along with necessary supportive documents for the assumptions is submitted to the DOE as Annexure 20. | | | |
| Documentation Provided by Project Participant: | | | |
| 1. Annexure 20: Assumptions for ex-ante CER calculations | | | |
| Information Verified by Lead Assessor: | | | |
| CER calculation sheet | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | Date: 26/05/09 | |
| Please provide the DPR as a supportive to justify the electricity generation for a 90% dependable year, auxiliary, transformation & transmission losses. Open | | | |
| Project Participant Response: | | Date: 04/08/2009 | |
| The DPR extract is attached as Annex C for justification for 90% dependable year electricity generation and auxiliary, transformation & transmission losses | | | |
| Documentation Provided by Project Participant: | | | |
| 1. Annex C- Detailed Project Report Financial analysis | | | |
| 2. Annex D- Incremental Energy Calculation in 90% Dependable Year | | | |
| Information Verified by Lead Assessor: | | | |
| DPR PDD version 03 | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | Date: 01/09/2009 | |
| The proponent has submitted DPR for 90% dependable year, auxiliary consumption, transformation & transmission losses. However, Please provide any supportive for PLF as per EB 48 annex 11. Open | | | |
| Project Participant Response: | | Date: DD/MM/YYYY | |
| As per the guidance of EB 48 annex 11 a third party technical study on the DPR of the project activity is | | | |

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| submitted as supporting for PLF and other information required as Attachment 3 | |
| Documentation Provided by Project Participant: | |
| Attachment 3- Study Report on DPR | |
| Information Verified by Lead Assessor: | |
| Attachment 3- Study Report on DPR checked. | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 12/01/2010 |
| Pending CAR 09 (Closure of PLF). Open | |
| Project Participant Response: | Date: 10/08/2010 |
| Response has been provided above | |
| Documentation Provided by Project Participant: | |
| Information Verified by Lead Assessor: | |
| The clarification provided by the PP above has been accepted. | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 26/08/2010 |
| CL11 was closed out. | |
| Acceptance and Close out by Lead Assessor: | Date: 26/08/2010 |

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| Date: | 17/02/2009 | | Raised by: | Kunal Sharma/ | |
| Type: | CL | Number: | 12 | Reference: | B.9.1. |
| Lead Assessor Comment: | | | | | |
| The description of monitoring plan is not clear as per section B.7.2 of the PDD version 01. | | | | | |
| PP has given a parameter “Auxiliary consumption” in the table under section B.6.3. Please clarify that the same is being monitored (measured) or not. | | | | | |
| Project Participant Response: | | | Date: DD/MM/YYYY | | |
| As discussed earlier with the DOE the parameter “Auxiliary Consumption” in the table under section B.6.3 is only for ex-ante estimation of emission reductions and is not a monitored parameter. The monitoring parameters are as given in section B.7.1 and discussed in B.7.2. of the revised PDD Version 2.0 | | | | | |
| Documentation Provided by Project Participant: | | | | | |
| 1. PDD version 2.0 | | | | | |
| Information Verified by Lead Assessor: | | | | | |
| Clarification provided by the PP as mentioned above | | | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | | Date: 26/05/09 | | |
| PP is mentioning that there will be some auxiliary electricity consumption in the plant and has been considered while calculating ex- ante emission reduction but pleas clarify that how the same will be accounted (monitored or calculated/) ex-post. Also, please clarify whether the auxiliary electricity consumption is already taken care in electricity import. Open | | | | | |
| Project Participant Response: | | | Date: 04/08/2009 | | |
| Auxiliary electricity consumption was considered while calculating the ex-ante emission reduction. However, the same shall not be a monitored parameter. Auxiliary consumption shall be considered in the ex-post calculations through electricity import. Hence, the electricity import shall indicate and manage the auxiliary consumption of the project. | | | | | |
| Documentation Provided by Project Participant: | | | | | |
| [Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency] | | | | | |
| Information Verified by Lead Assessor: | | | | | |

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| PDD version 03 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 01/09/2009 |
| The proponent will not monitor the auxiliary consumption since the CER will be calculated on the basis of net saleable electricity and the import of electricity will be accounted as project emissions in the ER calculations. Closed out | |

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| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ | | |
| Type: | CL | Number: | 13 | Reference: | B.12.3 |
| Lead Assessor Comment: | | | | | |
| Training procedure for project monitoring personnel needs is missing in the PDD. | | | | | |
| Project Participant Response: | | | | Date: DD/MM/YYYY | |
| HUPL would ensure the efficient working of the Small hydro power project by conducting training programmes for its employees. The training shall be on the various activities involved in the Project operation like maintenance, monitoring of parameters, precautions, safety instructions etc. These trainings would be meant to address the following key requirements related to the project activity: | | | | | |
| 4. On the job training to be carried out for the maintenance required too ensure the uninterrupted operation of the project plant. | | | | | |
| 5. To take care of the other monitoring requirements of the CDM project activity. | | | | | |
| 6. Specific in house, need base training for the employees. | | | | | |
| The details of same have been included in the Annex 4 of the PDD version 2.0. | | | | | |
| Documentation Provided by Project Participant: | | | | | |
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | | | | | |
| Information Verified by Lead Assessor: | | | | | |
| Information regarding training needs for the employees working in the project activity | | | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | | | Date: 26/05/09 | |
| PP has provided information regarding the training needs of the employees in the project activity and ensures the efficient working of the small hydro power project by conducting training programmes for them. Closed out | | | | | |
| Acceptance and Close out by Lead Assessor: | | | | Date: 26/05/09 | |

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| Date: | 17/02/2009 | | Raised by: | Kunal Sharma/ | | |
| Type: | CL | Number: | 14 | Reference: | B.13.8 | |
| Lead Assessor Comment: | | | | | | |
| Procedures are not identified for internal audits of GHG project compliance with operational requirements where applicable. Please clarify | | | | | | |
| Project Participant Response: | | | | Date: DD/MM/YYYY | | |
| An internal audit team would be constituted for annual audit of data reported in excel reports and in plant log books. Procedures for reviewing, archiving of information in a suitable manner with specific roles to the constituted CDM team has also been cited in the monitoring plan. | | | | | | |
| Documentation Provided by Project Participant: | | | | | | |

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| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | |
| Information Verified by Lead Assessor: | |
| Clarification provided by the PP as mentioned above | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 26/05/09 |
| PP has mentioned that an internal audit team would be constituted for annual audit of the data recorded and archived. This is acceptable. Closed out | |
| Acceptance and Close out by Lead Assessor: | Date: 26/05/09 |

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| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ |
| Type: | CAR | Number: | 15 |
| Reference: | C.1.1. | | |
| Lead Assessor Comment: | | | |
| The start date of the project activity as mentioned in the PDD is not transparent, Please provide the supporting documentary evidence of the start date of the project activity as per EB 41 Para 67. | | | |
| Project Participant Response: | | Date: DD/MM/YYYY | |
| The start date of the project activity as per the PDD version 01 is 2 nd August 2007. In accordance to EB 41 para 67 guidelines the date corresponds to LC opening in favour of E&M Equipment supplier which is in line with guidelines which states the start date to be the date on which project participant has committed to major expenditures related to the implementation or related to the construction of the project activity. Documentary evidence of the start date has been attached as Annexure 9. | | | |
| Documentation Provided by Project Participant: | | | |
| Annexure 9: LC Opened in favor of E&M Equipment supplier | | | |
| Information Verified by Lead Assessor: | | | |
| LC opening in favour of E&M equipment supplier dated 02/08/2007 | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | Date: 26/05/09 | |
| This has been validated that the purchase agreement dated 30/12/2005 for E&M is prior to the letter of credit issued by technology supplier dated 02/08/2007. As per EB 41 Para 67, the start date should be the "earliest date at which either the implementation or construction or real action of a project activity begins". Kindly clarify. Open | | | |
| Project Participant Response: | | Date: 04/08/09 | |
| According to point 67 of EB 41 meeting report, the Board clarified that <i>"the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project"</i> . | | | |
| In the case of the project activity, the actual financial commitment towards expenditures occurred on 2 nd August 2007 when the LC was opened in favour of the equipment supplier. The purchase agreement signed between the project proponent and the equipment supplier only reflects that the project proponent shall procure certain machinery and equipment from the supplier without specific commitment towards expenditures for the project activity. However, the LC in favour of the equipment supplier by Indian Bank (on behalf of Himurja Pvt. Ltd.) clearly indicates the commitment towards the payment of the goods and services to be purchased. | | | |
| Documentation Provided by Project Participant: | | | |

| | |
|--|-------------------------|
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | |
| Information Verified by Lead Assessor: | |
| PDD version 03 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 01/09/2009 |
| Contract for the execution of civil work other than excavation has been signed on 12/06/2006 which is a real action towards the implementation of the project activity and the earliest date at which the construction of a project activity begins as per EB 41 Para 67. Please justify the start date taken as the LC in favour of the equipment supplier which is way after the construction agreement date. Please clarify. Open | |
| Project Participant Response: | Date: DD/MM/YYYY |
| The start date of the project activity has been taken up as the contract for the execution of civil work dated 12/06/2006 which is the date when the implementation or construction or real action of a project activity begins. | |
| Documentation Provided by Project Participant: | |
| <i>[Note to PP: Please provide evidence to the Response above, clearly reference the documentation and indicate documentation name/version and date here- for soft copies, exact names of electronic files and if applicable, active links to the web page; reference to the section(s) and text within the documentation including page number(s) should be provided for easy reference and transparency]</i> | |
| Information Verified by Lead Assessor: | |
| PDD version 04 | |
| Reasoning for not Acceptance or Acceptance and Close Out: | Date: 12/01/2009 |
| The start date has been corrected in the revised PDD version 04. Closed out. | |

| | | | |
|--|------------|-------------------------|---------------|
| Date: | 17/02/2009 | Raised by: | Kunal Sharma/ |
| Type: | CL | Number: | 16 |
| | | Reference: | E.1.1. |
| Lead Assessor Comment: | | | |
| The section E.1 of the PDD does not provide clear information regarding the local stakeholder's consultation. Please provide information about the stakeholder's been consulted. | | | |
| Project Participant Response: | | Date: DD/MM/YYYY | |
| The detailed information regarding the stakeholder's consulted and their comments received has been included in section E.1 and E.2 of the revised PDD version 2.0 | | | |
| Documentation Provided by Project Participant: | | | |
| 1. PDD version 2.0 | | | |
| 2. Stakeholder invitations and minutes of meeting Annexure 5 | | | |
| Information Verified by Lead Assessor: | | | |
| Invitation letter sent to stakeholder's and meeting note/comments | | | |
| Reasoning for not Acceptance or Acceptance and Close Out: | | Date: 26/05/09 | |
| PP has submitted the letter of invitation sent to the stakeholder for the stakeholder's meeting on 28/02/2006 and the meeting note/comments received for the proposed project activity. Closed out. | | | |
| Acceptance and Close out by Lead Assessor: | | Date: 26/05/09 | |

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Kunal
Sharma

Status

| | | | |
|------------------|-------|----------------------|---|
| - Lead Assessor | x | - Expert | x |
| - Assessor | x | - Financial Expert | |
| - Local Assessor | India | - Technical Reviewer | x |

Scopes of Expertise

| | |
|---|------------------|
| 1. Energy Industries (renewable / non-renewable) | |
| <i>Sub scope(s):</i> | |
| 2. Energy Distribution | |
| <i>Sub scope(s):</i> | |
| 3. Energy Demand | |
| <i>Sub scope(s):</i> | |
| 4. Manufacturing | x |
| <i>Sub scope(s):</i> Lime Production and Use | |
| 5. Chemical Industry | |
| <i>Sub scope(s):</i> | |
| 6. Construction | |
| <i>Sub scope(s):</i> | |
| 7. Transport | |
| <i>Sub scope(s):</i> | |
| 8. Mining/Mineral Production | |
| <i>Sub scope(s):</i> | |
| 9. Metal Production | |
| <i>Sub scope(s):</i> | |
| 10. Fugitive Emissions from Fuels (solid, oil and gas) | |
| <i>Sub scope(s):</i> | |
| 11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride | |
| <i>Sub scope(s):</i> | |
| 12. Solvent Use | |
| <i>Sub scope(s):</i> | |
| 13. Waste Handling and Disposal | x |
| <i>Sub scope(s):</i> Wastewater and sludge treatment | |
| 14. Afforestation and Reforestation | |
| <i>Sub scope(s):</i> | |
| 15. Agriculture | |
| <i>Sub scope(s):</i> | |
| Approved Member of Staff by: Siddharth Yadav | Date: 07/06/2010 |

Statement of Competence

Name: Sanjay Banerjee

Status

| | | | |
|------------------|-------|----------------------|---|
| - Lead Assessor | x | - Expert | x |
| - Assessor | x | - Financial Expert | |
| - Local Assessor | India | - Technical Reviewer | |

Scopes of Expertise

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

Approved Member of Staff by:

Siddharth Yadav

Date:

30/06/2010

Statement of Competence

Name: **Abhishek Mahawar**

Status

| | | | |
|------------------|--------------|----------------------|----------|
| - Lead Assessor | x | - Expert | |
| - Assessor | x | - Financial Expert | x |
| - Local Assessor | India | - Technical Reviewer | |

Scopes of Expertise

5. Energy Industries (renewable / non-renewable)

Sub scope(s):

6. Energy Distribution

Sub scope(s):

7. Energy Demand

Sub scope(s):

8. Manufacturing

Sub scope(s):

16. Chemical Industry

Sub scope(s):

17. Construction

Sub scope(s):

18. Transport

Sub scope(s):

19. Mining/Mineral Production

Sub scope(s):

20. Metal Production

Sub scope(s):

21. Fugitive Emissions from Fuels (solid, oil and gas)

Sub scope(s):

22. Fugitive Emissions from Production and

Consumption of Halocarbons and Sulphur Hexafluoride

Sub scope(s):

23. Solvent Use

Sub scope(s):

24. Waste Handling and Disposal

Sub scope(s):

25. Afforestation and Reforestation

Sub scope(s):

26. Agriculture

Sub scope(s):

Approved Member of Staff by: **Siddharth Yadav** Date: **07/06/2010**

Statement of Competence

Name: Sathis
Kumar

Status

| | | | |
|------------------|-------|----------------------|---|
| - Lead Assessor | x | - Expert | x |
| - Assessor | x | - Financial Expert | |
| - Local Assessor | India | - Technical Reviewer | x |

Scopes of Expertise

| | |
|---|------------------|
| 9. Energy Industries (renewable / non-renewable) | x |
| <i>Sub scope(s):</i> TA 1.2 Energy generation from renewable energy sources | |
| 10. Energy Distribution | x |
| <i>Sub scope(s):</i> TA 2.1 Electricity distribution TA 2.2 Heat distribution | |
| 11. Energy Demand | x |
| <i>Sub scope(s):</i> TA 3.1 Energy Demand | |
| 12. Manufacturing | |
| <i>Sub scope(s):</i> | |
| 27. Chemical Industry | |
| <i>Sub scope(s):</i> | |
| 28. Construction | |
| <i>Sub scope(s):</i> | |
| 29. Transport | |
| <i>Sub scope(s):</i> | |
| 30. Mining/Mineral Production | |
| <i>Sub scope(s):</i> | |
| 31. Metal Production | |
| <i>Sub scope(s):</i> | |
| 32. Fugitive Emissions from Fuels (solid, oil and gas) | |
| <i>Sub scope(s):</i> | |
| 33. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride | |
| <i>Sub scope(s):</i> | |
| 34. Solvent Use | |
| <i>Sub scope(s):</i> | |
| 35. Waste Handling and Disposal | |
| <i>Sub scope(s):</i> | |
| 36. Afforestation and Reforestation | |
| <i>Sub scope(s):</i> | |
| 37. Agriculture | |
| <i>Sub scope(s):</i> | |
| Approved Member of Staff by: Siddharth Yadav | Date: 11/01/2011 |