

# VALIDATION REPORT

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**Sri Sai Krishna Hydro Energies  
(P) Limited**

**10 MW Bundled Luni–III & Luni–II  
Hydroelectric Projects for a Grid  
System at Sri Sai Krishna Hydro  
Energies Private Limited in Kangra  
District, Himachal Pradesh**

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**SGS Climate Change Programme**

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<b>Date of Issue:</b>	<b>Project Number:</b>
05-01-2010	CDM.VAL0857
<b>Project Title:</b>	
10 MW bundled Luni-III & Luni-II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh.	
<b>Organisation:</b>	<b>Client:</b>
SGS United Kingdom Limited	Sri Sai Krishna Hydro Energies (P) Limited
<b>Publication of PDD for Stakeholders Consultation</b>	
<b>Commenting Period:</b>	12 <sup>th</sup> December 2006 to 10 <sup>th</sup> January 2007 (1 <sup>st</sup> Web Hosting)
	30 <sup>th</sup> July 2008 to 28 <sup>th</sup> August 2008 (2 <sup>nd</sup> Webhosting)
First PDD Version and Date:	Version Nil dated Nil (1 <sup>st</sup> Web Hosting)
	01, 22/07/2008 (2 <sup>nd</sup> Web Hosting)
Final PDD Version and Date:	06, 28/12/2009
<b>Summary:</b>	
<p>Sri Sai Krishna Hydro Energies (P) Limited has commissioned SGS to perform the validation of the project: 10 MW bundled Luni-III &amp; Luni-II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh.</p> <p>Methodology Used: AMS ID</p> <p>Version and Date: 13, EB36</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 13 findings which include:</p> <ul style="list-style-type: none"> <li>• 13 Corrective Action Requests (CARs);</li> <li>• 0 Clarification Requests (CLs);</li> </ul> <p>All findings have been closed satisfactorily. The project:</p> <p><input checked="" type="checkbox"/> Will be recommended to the CDM Executive Board with a request for registration</p>	
<b>Subject:</b>	<b>Document Distribution</b>
CDM Validation	
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## Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CERC	Central Electricity Regulatory Commission
CO <sub>2</sub>	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DPR	Detailed Project Report
DR	Document Review
EF	Emission Factor
GHG	Greenhouse Gas(es)
HCA	Host Country Approval
HPSEB	Himachal Pradesh State Electricity Board
IPCC	Intergovernmental Panel on Climate Change
ISHC	International Stakeholder Consultation
KP	Kyoto Protocol
MP	Monitoring Plan
NEWNE	Integrated Northern, Eastern, Western and North Eastern Grid
NIR	New Information Requests
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emissions
PP	Project Proponent
SGS	SGS United Kingdom Ltd
SHP	Small Hydro Power Plants
TERI	The Energy and Research Institute
UNFCCC	United Nations Framework Convention on Climate Change

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## 1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Sri Sai Krishna Hydro Energies (P) Limited to perform a validation of the project: 10 MW bundled Luni-III & Luni-II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh in India.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Validation and Verification Manual version 1 and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity is a bundled project which involves bundling of two projects Luni III & Luni II with a capacity of 5MW each which generates clean electricity using hydro power with a total installed capacity of 10MW. The project is a run of the river schemes across Luni Khad, a tributary of river Binwa in Baijnath Tehsil, Kangra District of Himachal Pradesh, India.

The two SHPs ( Luni II & Luni III) of 5 MWs each belong to same Project Proponent (PP) i.e Sai Krishna Hydro Energies Pvt. Ltd. The two projects are located in different sites and all the licenses/approvals are obtained for each project separately. One is in Upstream (Luni – III) and the other is in down stream (Luni – II). The weir site of Luni III is at EL.± 2224.00 and that of Luni II is at EL.± 1766.00 (checked from DPRs). The aerial distance of project locations is around 1.5 kms, and the distance by road is around 6 kms. Hence both the projects have been bundled.

The generated electricity will be exported to HPSEB grid which falls under Northern grid of India as per Version 03 of CEA data “CO<sub>2</sub> Baseline Database for the Indian Power Sector” which was the latest data available at the time of webhosting of PDD for Global Stake Holder Consultation published by CEA of India. The generated electricity will replace an equivalent amount of electricity that would have been generated by the existing power plants connected to the grid or by the installation of new grid connected power plants which use predominantly fossil fuels for its electricity generation thereby reducing the GHG emissions.

By generation of this clean electricity 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.

Initially this project was web hosted for ISHC from 12<sup>th</sup> December 2006 to 10<sup>th</sup> January 2007 using the approved methodology AMS ID version 09. But during the process of validation the version 09 of the AMS ID methodology expired. Then the project was re web hosted from 30 July 2008 to 28 August 2008 with approved methodology AMS ID version 13.

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 13. 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 326580 tCO<sub>2</sub>e over a 10 year crediting period during 1<sup>st</sup> June 2009 to 31st May 2019 averaging **32658 tCO<sub>2</sub>e** annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

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

**Signed on Behalf of the Validation Body by Authorized Signatory**

Signature:



Name: Siddharth Yadav

Date: 12<sup>th</sup> February 2010

## 2. Introduction

### 2.1 Objective

Sri Sai Krishna Hydro Energies (P) Limited has commissioned SGS to perform the validation of the project: 10 MW bundled Luni-III & Luni-II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh 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

The project activity is a bundled project which involves bundling of two projects Luni III & Luni II with a capacity of 5 MW each which generates clean electricity using hydro power with a total installed capacity of 10 MW. The project is a run of the river schemes across Luni Khad, a tributary of river Binwa in Baijnath Tehsil, Kangra District of Himachal Pradesh, India.

The two SHPs ( Luni II & Luni III) of 5 MWs each belongs to the same PP i.e. Sai Krishna Hydro Energies Pvt. Ltd. The two projects are located in different sites and all the licenses/approvals are obtained for each project separately. One is in Upstream (Luni – III) and the other is in down stream (Luni – II). The weir site of Luni III is at EL.± 2224.00 and that of Luni II is at EL.± 1766.00 (checked from DPRs). The aerial distance of project locations is around 1.5 kms, and the distance by road is around 6 kms. Hence both the projects have been bundled.

The generated electricity will be exported to HPSEB grid which falls under Northern grid of India as per Version 03 of CEA data "CO<sub>2</sub> Baseline Database for the Indian Power Sector" which was the latest data available at the time of webhosting of PDD for Global Stake Holder Consultation published by CEA of India. The generated electricity will replace an equivalent amount of electricity that would have been generated by the existing power plants connected to the grid or by the installation of new grid connected power plants which use predominantly fossil fuels for its electricity generation. By replacing fossil fuel based grid electricity with clean electricity generated using hydro power the project will result in reduction of GHG emissions.

### 2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Sathis Kumar	Lead Assessor	SGS India
Senthil Kumar	Local Assessor (from 22 <sup>nd</sup> September 2008)	SGS India
Jimmy Sah	Local Assessor (up to 13 <sup>th</sup> August 2008)	SGS India

Abhishek Mahawar	Financial Expert	SGS India
Sanjay Banerjee	Sectoral Scope Expert	SGS India

### 3. Methodology

#### 3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as documents review of the publicly available project document version nil dated nil and version 01 dated 22/07/2008 and the subsequent versions dated 24/09/2008, 27/02/2009, 13/04/2009, 22/09/2009 and 28/12/2009. The assessment was performed by trained assessors using a validation protocol attached as Annex 2, table 2.

Initially this project was web hosted for ISHC from 12<sup>th</sup> December 2006 to 10<sup>th</sup> January 2007 using the approved methodology AMS ID version 09. But during the process of validation the version 09 of the AMS ID methodology got expired. Then the project was re web hosted from 30<sup>th</sup> July 2008 to 28<sup>th</sup> August 2008 with approved methodology AMS ID version 13. The site visit was performed by the local assessor on 10<sup>th</sup> May 2007 and findings are attached in Annex 1 with 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 dated 28<sup>th</sup> November 2008. 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:



- I. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- II. The CDM requirements have not been met;
- III. 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

The Host country for this project is India. The Letter of Approval (LoA) from the DNA of India was not attached so **CAR #1 was raised**. The LoA <sup>/4/</sup> from DNA of India (Ministry of Environment & Forest, Government of India) dated 24/11/2006 with F.No.4/18/06-CCC was provided by the PP. The DNA of India, DNA Address and Contact Person was referred to from <http://cdm.unfccc.int/DNA/index.html#1> and found consistent with the LoA. The copy of the LoA provided to the validation team was found to be consistent with the original LoA. Hence the LoA provided was found authentic. The DNA has confirmed that (1) India has ratified the Kyoto Protocol in August 2002. (2) That participation is Voluntary. (3) The project contributes to Sustainable Development in India. The name of the PP and the title of the project are consistent both in the PDD and the LoA. The LoA provided does not mention any validity period for the approval. Hence the LoA provided was found in compliance with the CDM guidelines and found acceptable by the validation team. **CAR #1 was closed out.**

### 4.2 Participation Requirements

The host Party for this project is India. India has ratified the Kyoto Protocol on 26<sup>th</sup> August 2002 and is allowed to participate in CDM projects (Web link: <http://maindb.unfccc.int/public/country.pl?country=IN>). Sri Sai Krishna Hydro Energies (P) Limited has been approved by the Indian DNA to participate in this project. The same was verified from the LoA from the DNA of India (Ministry of Environment & Forest, Government of India) dated 24/11/2006 with F.No.4/18/06-CCC.

No Annex I Party has been identified in the PDD and therefore no further LoA was available. It is observed that the CDM EB has agreed that the registration of a CDM project activity can take place without an Annex I Party being involved at the stage of registration although it should be noted that before CER can be transferred to an Annex I Party, a LoA will need to be submitted.

### 4.3 Project Design Document including Project Description

The project activity is a bundled project which involves bundling of two projects Luni III & Luni II with a capacity of 5MW each as run of river schemes across Luni Khad, a tributary of river Binwa in Baijnath Tehsil, Kangra District of Himachal Pradesh, India. The two SHPs (Luni II & Luni III) of 5 MWs each belongs to same the same PP i.e Sai Krishna Hydro Energies Pvt.Ltd. The two projects are located in different sites and all the licenses/approvals are obtained for each project separately. One is in Upstream (Luni – III) and the other is in down stream (Luni – II). The weir site of Luni III is at EL.± 2224.00 and that of Luni II is at EL.± 1766.00 (checked from DPRs). The aerial distance of project locations is around 1.5 kms, and the distance by road is around 6 kms. Hence both the projects have been bundled. The project is expected to generate about 43800 MWh/annum of electricity in which 40296 MWh will be exported to the Himachal Pradesh grid.

**CAR #3 was raised** to confirm that the project technology will not be substituted by other technologies within the crediting period. The declaration letter dated 23<sup>rd</sup> September 2008 <sup>/16/</sup> was given by the PP stating that project technology will not be changed during the crediting period. **CAR #3 was then closed.**

**CAR #4 was raised** as the PDD version 01 hasn't discussed anything about the initial training needed for the project. The PP clarified that training of the plant personnel on the operation and maintenance of the electro-mechanical equipment will be initially imparted by the supplier of the equipment M/s. Shanghai Leichun Indian Trading Co. Pvt. Ltd. The letter dated 12/01/2007 with ref. no: SLIT/HTG/SSKHEPL/07-08 given by M/s. Shanghai Leichun Indian Trading Co. Pvt. Ltd was checked by the validation team and the training details were given in the letter. **CAR #4 was then closed.**

Regarding the implementation status, the project was under construction at the time of site visit. As per the schedule of implementation discussed during site visit the project is expected to be commissioned by April 2009. As per the PDD there has been no public funding used in the project activity. The PP was asked to provide documentary evidence that public funding was not used in the project activity. **CAR #5 was raised.** The letter <sup>/14/</sup> dated 23<sup>rd</sup> September 2008 given by A. M. Reddy & Co. Chartered Accountants was provided. The source of finance for the project was mentioned in the letter and it does not include any public funding.

The evidence provided by the PP was checked and verified by the assessment team and was found to be acceptable. Hence **CAR #5 was closed out.**

#### **4.4 Eligibility as a Small Scale Project**

The project applies the small scale methodology AMS I.D version 13 which falls into the small scale project categories as per Appendix B of the simplified modalities and procedures for small scale CDM project activities. Under category I of small scale project activities the project activity involves the installation of a bundle hydro project with a total capacity of 10 MW which is less than the 15 MW capacity allowed under this category, therefore making the project activity applicable as the project activity correctly fits into the categories of small scale project activities.

The project activity is not a de-bundled component of a large scale project activity as there is no registered small scale CDM project or a request for registration by the same project participant in the same project category and technology/measure or registered within the previous two years; and whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point as checked from UNFCCC website (Project Search Interface) and as per the discussion during the site visit..

#### **4.5 Applicability of selected methodology to the project activity**

This is a small scale project which uses the approved methodology AMS ID, Version 13, EB36: Grid connected renewable electricity generation. The project activity belongs to Type-I (Renewable Energy Projects) as it is generating electricity from hydro energy and falls under category D (Grid connected renewable electricity generation) as it supplies electricity to the grid. As per the methodology applicability condition "This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit." The project activity generates renewable electricity generation using hydro power that supplies electricity to the grid. The project activity qualifies as small scale project as the total installed capacity is only 10 MW which is less than 15 MW applicable for these projects. Hence the project fulfils all the applicability conditions of the methodology AMS ID version 13. The project activity is a bundled project and it involves bundling of two hydro projects with an installed capacity of 5 MW each. The summation of the bundle is only 10 MW which is less than 15 MW limit applicable for these project category. The capacity of the hydro power plant was checked from techno economic clearance for the project given by Himachal Pradesh State Electricity Board (Ref: HPSEB Office Order No. HPSEB/CE(P)/CC-Luni-III/2004-/1496-1505 dated 17/8/2005 for Luni III and HPSEB Office Order No. HPSEB/CE(P)/CC-Luni-II/2004-/1476-85 dated 17/8/2005 for Luni II).

**CAR #6 was raised** in order to submit the bundle form for the project activity. In response to CAR #6 the PP provided the CDM SSC Bundle form. The bundle form was checked and verified by the validation team and was found to be acceptable. **CAR #6 was closed out.**

As the project involves generation of clean electricity using hydro power the project is not expected to generate any other GHG emissions within the project boundary and expected to contribute more than 1% of the overall average emission reductions and which is not covered in the applicable methodology.

#### **4.6 Project Boundary**

As per the methodology the project boundary encompasses the physical, geographical site of the renewable generation source. Accordingly the project boundary has been defined in the PDD which includes the physical and geographical site of the renewable energy source. The project boundary has been correctly identified as per the applicable project category. The Northern grid of India has been correctly identified for calculation of electricity emission factor as the project displaces an equivalent amount of electrical energy from the Himachal Pradesh grid which comes under the Northern Grid as per latest CEA Data available at the time of webhosting of PDD for ISHC. (Version 03) (Ref:

<http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>).

#### 4.7 Baseline Selection and Additionality

According to the approved methodology AMS-I.D. version 13, paragraph 09, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO<sub>2</sub>e/kWh) and it has been correctly identified.

For the electricity displaced, the emission coefficient has been calculated in accordance with provisions under category I.D. The grid emission factor has been calculated using the combined margin (CM) approach, consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system'. **CAR #7 was raised** as the calculation of grid emission factor was not consistent with CEA data "Baseline CO<sub>2</sub> Emission Database (Version 03)". The corrected grid emission factor was provided in the revised PDD and the same was found consistent with CEA data. The combined margin has been fixed ex-ante as 0.810465 tCO<sub>2</sub>/MWh and will be used throughout the crediting period. **CAR #7 was then closed.**

##### 4.7.1 Additionality

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 PP has demonstrated that the project activity would not have occurred due to (1) Investment Barrier (2) Technological Barrier (3) Other barriers. Among the three types of barrier presented the Investment Barrier is found as a strong barrier due to which the project would not have occurred. The barriers presented and the evidences checked are discussed in detail below.

##### 4.7.2 Prior Consideration of the Clean Development Mechanism

Initially this project was web hosted for ISHC from 12<sup>th</sup> December 2006 to 10<sup>th</sup> January 2007 using the approved methodology AMS ID version 09. But during the process of validation the version of the methodology got expired. Then the project was re web hosted from 30<sup>th</sup> July 2008 to 28 Aug 2008 with approved methodology AMS ID version 13.

As per section C.1.1 of the PDD the project start date was 01/03/2006 and the PDD version 01 was dated 22/07/2008. **CAR #11 was raised** to provide proof of the start date and for the operational lifetime which is 20 years. The letter dated. 1<sup>st</sup> March 2006 <sup>/8/</sup> for the award of contract for the electro mechanical works for the project was provided by the PP. The start date in the PDD was found to be consistent with the letter. For the substantiation of the expected operational life time of the project activity, a TERI report <sup>/15/</sup> to CERC on pricing of power from Non Conventional Energy Sources was provided. In the report for the estimation of depreciation, the life of the hydro plant can be assumed as 20 years (page 44) was mentioned. Hence the chosen life time of 20 years for this project was found to be reasonable. The same was accepted by the validation team and **CAR #11 was closed.**

**CAR #2 was raised** and the PP was asked to justify with documentary evidence the timeline of the project history and also serious CDM consideration for the project activity as per EB41 annex 46 guidelines. In response to CAR #2 the PP provided the chronology of events along with documentary evidence. As per the discussion the local assessor had during site visit the PP was very much aware of the CDM benefits because the same promoter has one more CDM project "5 MW Dehar Grid-connected SHP in Himachal Pradesh, India" (Ref.No.UN0035). The Dehar project was web hosted for public comments in November 2004 and was ultimately registered as CDM project with CDM EB.

CDM has been seriously considered before the start of the project (01/03/2006) which was evident from Minutes of the Meeting of Board of Directors held on 14/01/2005 <sup>/7/</sup>. In addition to this in order to justify that continuing and real action were taken to secure CDM status for the project in parallel with the project activity implementation further evidences were provided.

Immediately after the Board Resolution a consultant has been appointed for CDM services on 18/4/2005 <sup>/11/</sup> (ref: Agreement dated 18/4/2005 between Zenith Corporate Services and PP for CDM services) which is before the start date of the project.

Though the PP has appointed the CDM consultant as early as April 2005, they could not take further steps due to the delay in signing the PPA. As PPA is of paramount importance for a grid connected power plant, the PP was taking the necessary steps for signing the PPA. The PPA was signed only on 7<sup>th</sup> December 2006 as checked from the PPA agreement.

During this time the PP has approached various DOEs for validation services right from December 2005 which was checked from the email correspondence dated 19/12/2005 between the consultant and DOE (DNV, TUV, and SGS). Apart from this the PP has approached the Indian DNA in August 2006 for initiating the HCA process.

After negotiations the DOE has been appointed on the 1<sup>st</sup> December 2006 which was checked from agreement for Validation Services i.e. almost two years before the proposed commissioning of the project and also before the signing of PPA.

As per EB41 annex 46 guidance continuing and real actions have to be taken to secure CDM status for the project in parallel with project implementation. The project is not yet commissioned and the PP has been taking necessary steps for the successful implementation of the project like obtaining statutory clearances for the project, arranging finance, order of equipments, etc. The PP has considered CDM before the start date of the project and has also entered into an agreement with consultants for CDM services before the start date of project activity. Also before the signing of the PPA, the PP had also approached several DOEs for Validation services and also the Indian DNA for obtaining HCA for the project. Moreover the project is not yet commissioned and the work is going on and is expected to be commissioned by April 2009 as per the discussion with the PP during the site visit and as checked from the project implementation schedule. Hence before the project is commissioned the DOE has been contracted and the validation has started more than two years before the proposed commissioning of the project. In view of this it is concluded that CDM has been seriously considered by the PP for this project. **CAR #2 was closed.**

#### 4.7.3 Identification of alternatives

The project activity applies the approved methodology AMS ID version 13 and as per the methodology in the absence of the project activity electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources and no further analysis is required to identify the alternatives.

#### 4.7.4 Investment analysis

The excel spreadsheet for the investment analysis and sensitivity analysis calculation along with documentary evidence all the input values/assumptions used in the investment analysis were not available during the desktop review of version 01 of the PDD, thus **CAR #8 was raised** to get further clarification.

In response to CAR #8 the PP provided the DPR prepared for the project and it was clarified that the input values used in the financial analysis are based on the DPR. The power generation during 75% dependable year has been worked out as 43.8 million units which gives a plant load factor of 50% which is reasonable for a small scale hydro plant. 1% has been allowed for auxiliaries, 5% towards outages and 2% for transmission losses i.e. a total of 8% has been deducted from the total generation and the remaining 92% of total generation will be available for selling to the grid. DPR for both the project Luni II & Luni III prepared by NHP Consultancy Private Limited, November 2004 was provided. The DPR and IRR excel spreadsheet of PDD version 01 was cross checked. Some inconsistencies were observed between the DPR and IRR excel spread sheet of PDD version 01. The project revenue was found consistent with DPR whereas expenses were higher in PDD compared to DPR. Hence the profit after tax in PDD was lesser whereas it was higher in DPR.

In the DPR, IRR analysis was provided for a period of ten years. As per DPR, the IRR for Luni II was around 13% and for Luni III was 12% for ten years. But in the excel spreadsheet calculation where IRR has been calculated for 20 years it was around 10.97% and when the same was calculated for 10 years it was not matching with DPR. The PP clarified that the difference in the financial analysis between DPR and PDD are due to the following reasons.

1. Service Tax is provided on O & M expenditure while working out IRR in the PDD
2. Interest on working capital is considered as cash outflow in the IRR analysis of PDD
3. Salvage value in the case of DPR is prepared at the end of 10<sup>th</sup> year where as in the case of IRR worked out in the PDD, the same is taken at the end of 20<sup>th</sup> year.
4. Provision for income tax is made based on rates available in 2005-06 instead of 2004-05.
5. Phasing of expenditure in cash flow of PDD is different from DPR



All the above issues were corrected in the revised IRR analysis in PDD and this increased the IRR from 10.97% to 11.26% in the PDD. As per EB41 annex45 guidance para 9, the cost of financing expenditures (i.e. loan repayments and interest) should not be included in the calculation of project IRR. The PP clarified that interest is not included as expense but treated as cash inflow in the calculation of project IRR. To the profit after tax, interest on term loan and depreciation are added back to arrive at the cash inflow for the purpose of estimation of project IRR. The revised IRR calculation was found consistent with the DPR.

As per EB38 para 54 guidance, it was confirmed that DPR has been the basis of the decision to proceed with the investment in the project which was confirmed from the minutes of the meeting of the Board of Directors of Sri Sai Krishna Hydro Energies Pvt. Ltd held on 15/12/2004<sup>/9/</sup> wherein the DPR of the project was approved. The DPR was prepared in the month of November 2004 and the Board approved the project based on the DPR in December 2004. Since the period of time between the finalization of the DPR and the investment decision is sufficiently short it can be confirmed that it is unlikely in the context of the underlying project activity that the input values would have materially changed. As explained above the values in the PDD and the DPR are consistent and wherever inconsistencies were observed these were corrected and the revised IRR calculation is consistent with the DPR. Also the project has received the techno economic clearance from the H.P. State Electricity Board (Ref: HPSEB Office Order No.HPSEB/CE(P)/CC-Luni-III/2004-/1496-1505 dated 17/8/2005 for Luni III and HPSEB Office Order No.HPSEB/CE(P)/CC-Luni-II/2004-/1476-85 dated 17/8/2005 for Luni II). Since the time gap between the preparation of DPR and the decision to invest in the project by the Board is minimal. Thus it can be concluded that the input values in the DPR are valid and applicable at the time of investment decision taken by the PP.

SGS has validated the investment analysis in line with VVM paragraph 109 and EB 41, Annex 45, paragraph 6, taking into account that the DPR was conducted in November 2004 and the project start date is March 2006 we would like to clarify that even though the start date of the project is March 2006, the decision to invest in the project was taken in January 2005 with due consideration of CDM benefits. The same was confirmed from the extract of the Minutes of Meeting of Board of Directors held in January 2005. After the decision to invest in the project was taken the PP has initiated necessary steps for the successful implementation of the project like getting statutory approvals / clearances from relevant authorities and the project got officially started in March 2006 with the issue of purchase order for Electro Mechanical equipments.

But to reconfirm that there are no major changes in the key input values / assumptions from the investment decision date to the start date in March 2006 which will impact the additionality of the project, the following details are presented below.

1. Project Cost: The project has achieved financial closure from State Bank of India and State Bank of Hyderabad. The sanctioned and documented cost for Luni II is Rs. 291.2 million and Luni III is Rs. 291.5 million. This checked against the independent Chartered Accountant Certificate<sup>/18/</sup> dated 23<sup>rd</sup> September 2008. The project cost as per DPR estimates are Rs. 271.2 million and Rs.285 million for Luni II and Luni III respectively. Hence the project cost values used in the PDD are conservative and also consistent with the investment decision date.
2. Source of Finance: In the PDD the term loan has been assumed as 75% and share capital as 25% for both Luni II and Luni III whereas the actual equity contribution for both the project is approximately 26% as checked from the Chartered Accountant Certificate<sup>/18/</sup> dated 23<sup>rd</sup> September 2008.
3. Capital subsidy: The value considered is appropriate as per Ministry of New and Renewable Energy Guidelines. (Ref: See clause 4.39 in [http://www.hperc.org/orders/shpp.doc?bcsi\\_scan\\_4A6748D7767CF8E8=1](http://www.hperc.org/orders/shpp.doc?bcsi_scan_4A6748D7767CF8E8=1)).
4. Plant Load Factor (PLF): PLF of 50% has been considered for both Luni II & Luni III based on DPR. The project is located in Himachal Pradesh. Even the Himachal Pradesh Electricity Regulatory Commission suggests a normative PLF of 45% only for small hydro projects. (See clause 4.55 in [http://www.hperc.org/orders/shpp.doc?bcsi\\_scan\\_4A6748D7767CF8E8=1](http://www.hperc.org/orders/shpp.doc?bcsi_scan_4A6748D7767CF8E8=1) ). Hence the chosen PLF of 50% is reasonable and conservative. The total provision under auxiliary consumption, outage, transmission loss, etc., has been considered as 8% as per the DPR at the time of decision making of the project activity and the same is considered by the PP for IRR analysis. This provision is also supported by the power purchase agreement<sup>/19/ & /20/</sup> at clauses 2.2.6, 2.2.72 and 2.2.73 for a total value of 5.5%. In respect of outages a provision of 2.5% is made by the DPR to take care of non availability of grid due unforeseen events such as landslides etc. Even this was evidenced through a

report in respect of quality of T&D network in the state of Himachal Pradesh submitted to Power Ministry (See page No.15 last paragraph in <http://powermin.nic.in/reports/pdf/himachal%20pradesh.pdf> ). They have indicated that the availability of the grid is up to 90% of the time. Therefore considering 2.5% towards outages was found conservative.

The DPR has been prepared specifically for the project activity i.e. Luni II & Luni III based on the site specific conditions. NHP consultants have done a detailed technical study at both the project sites and have estimated the PLF of 50% based on technical parameters like topographical survey, rainfall data, discharge data, availability data and others the details of which are provided in the PP response submitted along with the DOE response during review stage. A copy of the DPR prepared for both Luni II & Luni III has been submitted to the DOE. DPR is a detailed technical study undertaken based on site specific data. Extracts of the DPR prepared by NHP consultants was submitted along with the PP response during review stage. Hence the PLF chosen for financial analysis is site specific and also project specific. But in order to cross check whether the PLF considered is reasonable the DOE has cross checked the Himachal Pradesh Electricity Regulatory Commission (HPERC) order. In India each State has an Electricity Regulatory Commission and the main function of these commissions is to regulate the electricity market in their respective states. Each regulatory commission has done a detailed study in their respective state and fixes the tariff and other parameters related to the electricity market in order to promote the investments in the power sector in their respective states. Hence PLF suggested by regulatory commissions can be considered reasonable. Here in the case of the project which is located in the state of Himachal Pradesh the HPERC has suggested a normative PLF of about 45% only. Hence the chosen PLF of 50% for the project is reasonable and conservative. Further CDM EB in its 48th meeting has come out with a guidance regarding "GUIDELINES FOR THE REPORTING AND VALIDATION OF PLANT LOAD FACTORS" which is available in annex 11 of the EB48 report. As per that guidance

The plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options as per the EB 48 Annex 11 guideline:

- (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;
- (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company);

As per the option (b), The PLF determined by a third party contracted by the PP can be accepted. In the case of the project activity the PLF of 50% has been determined by a third party contracted by the PP. First one is the NHP consultants the details of whom have already been provided in our Validation Report dated 27-04-2009. But in order to re-confirm that the assumed PLF is appropriate for the project activity based on technical parameters specific to the project activity the PP has engaged one more engineering company namely Sai Engineering Foundation on 21<sup>st</sup> May 2009 (<http://www.saiengineeringfoundation.com/desc.html>) who has long expertise in the detailed study of hydro power projects to estimate the power potential of both Luni II & Luni III projects. Sai Engineering Foundation has done a detailed technical study and has also estimated more or less the same PLF as estimated by NHP consultants. Sai Engineering Foundation has estimated a PLF <sup>/27/</sup> of 49.85% for Luni II and 49.32% for Luni III. Hence the chosen PLF of 50% is reasonable for the project activity as confirmed from three different resources namely NHP Consultants, Sai Engineering Foundation and HPERC.

5. Power Tariff: In the PDD Rs.2.50/kWh has been considered as per the DPR. But even the clause 6.2 of Power Purchase Agreement dated 12/07/2006 <sup>/19/ & /20/</sup> also specifies the tariff as Rs. 2.50/kWh only. The tariff rate is firm and fixed without any indexation or escalation. Hence the tariff assumption is satisfactory.
6. O & M cost: In the PDD the O & M cost has been assumed as 2% based on DPR. The same PP has one more registered CDM project (UN 0035) of 5 MW capacity. The actual O & M cost <sup>/21/</sup> including administrative cost incurred for that project calculated based on audited balance sheet was provided and was found more than 2%. Hence the 2% value used in the analysis is reasonable.

Since the CDM EB in its 51<sup>st</sup> meeting closed the issue on escalation in O&M costs as the IRR does not cross the benchmark, even if there was no escalation applied in the O & M cost, the same is not discussed in the revised validation report.

7. Interest on Term Loan: It has been taken as 11% as per DPR. Even the Benchmark Prime Lending rate (BPLR) of Public Sector banks during January 2005 and March 2006 was in the range of 10.25% to 11.25% (Ref: See page 67 under table 1.56 of RBI Annual Report 2004-05 in <http://rbidocs.rbi.org.in/rdocs/annualreport/pdfs/65516.pdf> and also refer page 79 under Table 1.58 of Reserve Bank of India Annual Report 2005-06 <http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/72286.pdf> ). Hence the value of 11% used as per DPR is found reasonable. If an average value of 10.75% as per BPLR is used as interest on term loan instead of the assumed 11% in PDD, the IRR of the project will come down by few basis points because of higher expenditure for income tax and hence the used value of 11% for interest on term loan is satisfactory.
8. Income Tax (Regular) <sup>/22/</sup>, Income Tax (Minimum Alternate Tax-MAT) <sup>/23/</sup> and Depreciation <sup>/24/</sup> for Civil Works and Plant and Machinery considered in PDD as per DPR are appropriate as per Indian Income Tax laws same has been checked and found consistent.

Hence from the above discussion it is clear that the values used in the DPR are reasonable as cross checked with independent references and the values are consistent at the time of investment decision and has not changed much at the time of project start date in order to affect the additionality of the project.

The benchmark value for this project has been determined as per the guidance available in the tool for demonstration and assessment of additionality (version.5.2) Clause (a) of sub-step 2b – option III which states that “Government Bond Rates, increased by a suitable Risk premium to reflect private investment and / or the project type, as substantiated by an independent (financial) expert or documented by officially publicly available financial data”.

The PP has taken the Government of India Bond Rate from Reserve Bank of India Bulletin as 7.6159%. (Ref: <http://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/60257.pdf> ). The input values used in the financial analysis in PDD has been taken from DPR which has been prepared in the month of November 2004 whereas the reference for benchmark given in the PDD version 01 was taken in later years. As per CDM guidelines “Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant”. Hence the PP was asked to revise the benchmark consistent with the time when the investment decision was taken. The PP then provided the revised benchmark calculated using the RBI bond rate applicable in November 2004 <sup>/10/</sup>. **CAR #8 was then closed.**

The risk premium has been taken from publicly available data. The following sources have been referred to arrive at the risk premium.

1. The Equity Premium in India by Rajnish Mehra, University of California, Santa Barbara and National Bureau of Economic Research (Ref: <http://www.academicwebpages.com/preview/mehra/pdf/Equity%20Premium%20in%20India.pdf> )
2. A First Cut Estimate of the Equity Risk Premium in India by Prof. Jayant R. Verma and Samir K. Barua, Indian Institute of Management, Ahmedabad (ref: <http://www.iimahd.ernet.in/~jrvarma/papers/WP2006-06-04.pdf> )
3. Cost of Capital for Central Sector Utilities by Crisil Advisory Services (ref: <http://cercind.gov.in/rep1304.pdf>. (2.2 a; page 29) )

All these independent experts have estimated the risk premiums for India using different models and the same is publicly available in the reference sources provided above. The risk premium figures quoted in the PDD were found in line with the risk premiums arrived at by these experts as checked from the reference provided above. Among the various risk premium figures available, the PP has chosen the most conservative figure of 7.5% as suggested in Crisil report. The benchmark for this project has thus been arrived at as 15.12% (7.6159 % + 7.5 %).

The excel spreadsheet with IRR analysis was provided and the calculations were checked by the validation team and found to be acceptable. The project IRR has been arrived at 11.26% which is below the benchmark return of 15.12%.



Further sensitivity analysis has been carried out with +10% and -10% variation for those parameters which have more than 20% impact. The parameters are project cost, O & M cost and revenue. However even after varying these two key parameters by  $\pm 10\%$  the project is not able to cross the benchmark return.

Annex 45 of EB 41 states, "Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude)".

Instead of subjecting each component of the project cost (which accounts for more than 20% of the cost), the entire project cost has been subjected to 10% variation (as stipulated by Annex 45 of EB 41). This is more conservative than subjecting each component (accounting for 20% of the cost) to sensitivity analysis. The projections consist of only revenue; O&M cost, interest on term loan and working capital and depreciation. Of them, interest on term loan and working capital are dependent on the project cost and are not independent. Hence, sensitivity analysis conducted by subjecting the project cost to variation takes care of both interest on term loan and depreciation. Interest on working capital constitutes less than even 0.5% of project revenue. O&M cost accounts for only 11% of project revenue. O&M cost has been included in the sensitivity analysis. As evident from the sensitivity analysis, the project IRR is not at all sensitive to O&M cost variation. That leaves only project revenue, which has been subjected to 10% variation on either side. Since project revenue is a product of generation and tariff, it takes into account both PLF and tariff. Thus, the sensitivity analysis, conforms to the guidance given vide Annex 45 of EB 41. Hence the same was accepted.

Based on the request for review raised by CDM EB, the investment analysis including the sensitivity analysis is now presented for each site in separate sheets<sup>/25/ & /26/</sup> and the same has been submitted during request for review stage considering O&M escalation. The same basic assumptions/input values as used in the combined IRR analysis submitted along with Request for Registration has been used to make separate analysis for each site. As per the separate analysis the IRR for Luni II is 11.70% and for Luni III is 10.83% and the combined IRR for both the sites is 11.26%. Both the separate IRRs and also the combined IRR is below the benchmark return of 15.12%. Further sensitivity analysis has been carried out for the same parameters i.e. project cost, O & M cost and revenue as presented with the combined IRR analysis submitted along with Request for Registration. Even after subjecting these key parameters with  $\pm 10\%$  variation the IRR is not reaching the benchmark.

But CDM EB in its review requested the DOE to further validate a revised investment analysis, which considers no escalation in O&M costs in combination with an appropriate PLF, if it is different from the 50% previously assumed. As explained above the PLF of 50% assumed is appropriate and hence there is no change in the PLF. As suggested by CDM EB a revised IRR sheet<sup>/28/ & /29/</sup> was submitted with the response to review with no escalation in the O & M cost. The other input factors are not altered and remains the same. The revised IRR for Luni II is 12.36% and Luni III is 11.53% and are still below the benchmark value of 15.12%. Further sensitivity analysis has been carried out for the all the three parameters namely Project Cost, Revenue and O&M cost as submitted with the original investment analysis. Even after varying these key parameters with reasonable variation of  $\pm 10\%$  the project is not crossing the benchmark.

Hence it can be concluded that the project is not financially attractive without CDM. This is the most important barrier among the various barriers presented.

#### 4.7.5 Barrier analysis

The project is located in the state of Himachal Pradesh. CAR #8 was raised as the technological barrier given in PDD version 01 like earthquake, flash floods and land slides are common to other similar project activities in the region which are already under operation. The PP was asked to justify why these need to be considered as barriers and also some of the discussion on additionality has been done after the start date of the project in version 01 of PDD. In response the PP provided a copy of the report prepared by the Planning Commission<sup>/12/</sup>, Government of India (ref: [http://www.planningcommission.gov.in/plans/stateplan/sdr\\_hp/sdr\\_hpch3.pdf](http://www.planningcommission.gov.in/plans/stateplan/sdr_hp/sdr_hpch3.pdf)) in the Himachal Pradesh Development Report, where in the huge loss caused to the state because of these landslides, earthquakes and flashfloods have been discussed. Frequent natural disasters have occurred in the state and are hampering the development of the state. In view of this most of the small scale projects developed in this

region are applying for CDM in order to compensate for the risk taken. (ref:UN0035, UN0098, UN0330, UN0244, UN1253).

But the barriers were not found credible which would have prevented the implementation of the project activity. Also the same barriers will be applicable for other projects in the region also. The PP removed the technological barriers from the PDD.

Other than this the project also faces other barriers such as the lack of hydrological data, the lack of infrastructure and power evacuation problems as per PDD version 01. The same is discussed in the DPR and also mentioned in minutes of the meeting of the Board of Directors held on 15/12/2004. Again like the technological barriers the other barriers were also not found credible which would have prevented the implementation of the project activity. Also the same barriers will be applicable for other projects in the region also. The PP then removed the other barriers also from PDD.

It was accepted because as per the CDM guidelines for small scale projects it is sufficient if the PP can identify at least one barrier because of which the project would not have occurred. **CAR #8 was closed.**

Finally the PP 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**

Being a small scale project the additionality has been demonstrated as per the Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities and further guidance given in EB35 Annex 34 "Non-binding best practice examples to demonstrate additionality for SSC project activities" and hence common practice analysis has not been performed.

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

As per the approved methodology the baseline emissions due to the project have been correctly calculated as the product of the net electricity supplied to the grid and the grid emission factor as per the combined margin approach. The project exports electricity to the Himachal Pradesh grid which falls under the Northern grid of India as per Version 03 of CEA data "CO<sub>2</sub> Baseline Database for the Indian Power Sector" which was the latest data available at the time of webhosting of PDD for Global Stake Holder Consultation published by CEA of India. The grid emission factor was found consistent with the CEA data. The CO<sub>2</sub> emission factor of Diesel has been taken from IPCC 2006.

**CAR #9 was raised** to get the basis for 40.3 GWh of net electricity supplied to grid which has been used in the baseline emission estimation. The PP clarified that for ex-ante estimation of the baseline emissions the net electricity supplied to the grid has been taken from the estimated figure in DPR and measured value will be used during ex-post monitoring. **CAR #9 was then closed.**

**CAR #10 was raised** to provide the excel spreadsheet for the ER calculation. The PP provided the excel spreadsheet for the ER calculation. The Spreadsheet was checked and verified by the validation team and was found to be correct. **CAR10 was closed.**

As per the methodology there are no project emissions associated with these kinds of projects. However to be on the conservative side the PP has considered project emissions on account of DG sets which are provided to meet the emergency requirements in the power house. For ex-ante estimation project emissions have not been considered but fossil fuel consumption will be monitored and accounted in project emissions during ex-post if fossil fuel has been used. There are no leakages associated with this project as no energy generating equipment has been transferred from another activity or the existing equipment has not been transferred to another activity as it is a new installation and the same was verified from the purchase order of main equipments.

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

As per the methodology "Monitoring shall consist of metering the electricity generated by the renewable technology." In line with this the monitoring plan does include monitoring of the total electricity generated by the project, the net electricity supplied to the grid by the project, Grid electricity import to the project activity and all these three parameters will be measured using calibrated meters. Among these parameters the main

parameter is the net electricity supplied to the grid which will be measured using two meters i.e. main meter and check meter as per PPA. The same can be cross checked with monthly invoices and payment receipts.

**CAR #13 was raised** since in section B.7.1 of PDD version 01 for the parameter auxiliary consumption it was not clear whether it will be measured using meters or if it will be calculated. Also for fossil fuel consumption i.e. diesel for DG set it was mentioned in QA/QC that the weigh bridge will be calibrated as per standards. The descriptions for the parameters were then corrected in the revised PDD. **CAR #13 was then closed.**

The monitoring plan also includes the auxiliary consumption of the project which will be calculated using total electricity generated and net electricity supplied to the grid. The operating hours and fossil fuel consumption of the DG set are also being monitored. Hence the monitoring plan in the PDD was found in compliance with the monitoring methodology of AMS ID version 13.

Based on the request for review comments raised by the CDM EB the monitoring plan in section B.7.1 is amended in the revised PDD <sup>/3.1/</sup> submitted along with the response to request for review to include monitoring of each parameter separately for each site i.e. Luni II and Luni III. The revised monitoring plan is in accordance with the approved methodology AMS ID version 13 used in the project. As per the methodology "Monitoring shall consist of metering the electricity generated by the renewable technology."

In line with this the monitoring plan, does include monitoring of the following parameters for each site i.e. Luni II and Luni III separately.

1. Gross electricity generated by the project ( $EG_{gross,y}$ )
2. Auxiliary consumption by the project ( $EG_{Auxiliary,y}$ )
3. Electricity Supplied to the Grid by the project i.e. exported to the grid ( $EG_{export,y}$ )
4. Electricity imported from the grid ( $EG_{import,y}$ )
5. Net electricity supplied to grid ( $EG_y$ )

The emission reductions from the project will be calculated based on the Net electricity supplied to grid ( $EG_y$ ) which is calculated as the difference of ( $EG_{export,y}$ ) and ( $EG_{import,y}$ ). Both ( $EG_{export,y}$ ) and ( $EG_{import,y}$ ) will be metered using calibrated meters and also can be cross checked with receipts/sales issued by the electric utility.

In order to be conservative the monitoring plan also includes monitoring of any fossil fuels consumed by the project activity at each site and the same will be accounted as project emissions if any fossil fuel has been used during ex-post verification.

#### 4.10 Environmental Impacts

As per the Host Country requirement there is no need to conduct EIA study for this project. **CAR #12 was raised** since the PDD stated that as per MOEF requirements, EIA study need not be carried out for the projects less than USD 21.74 million and the total cost for this project is only USD 13.90 million. The PP was asked to provide documentary evidence for the same. MoEF notification dated 13.06.2002 was provided which indicated that for the new hydel project having investment less than INR 100 crores (cr) an EIA study is not required. CAR #12 was closed as EIA study is not required for this project as the total investment in this project is less than 100 cr.

The PP has already obtained the necessary clearances from the relevant statutory authorities for the project. The project has been given the consent to operate by H. P. State Environment Protection & Pollution Control Board. The same was checked from Consent No. EPPCB/Luni-III – SHEP-Kangra/2006-3454-59 dated 24.2.2006 given by H. P. State Environment Protection & Pollution Control Board and Consent No. EPPCB/Luni-II – SHEP-Kangra/2005-3460-65 dated 24.2.06 given by H. P. State Environment Protection & Pollution Control Board.

#### 4.11 Local Stakeholder Comments

As per the regulations of the Government of Himachal Pradesh it is mandatory for the project to conduct the public consultation before the start of the project. They also have to publish it in the in National and Local newspaper and invite comments from the stakeholders for a period of sixty days. HIMURJA (H.P Government Energy Development Agency) has given a notification in pursuance of the Electricity Act, 2003 to

invite comments from the stake holders (ref: Notification No. MPP-F(2)51/2004 (NES) dated 7/2/2005 for Luni III and Notification No. MPP-F(2)55/2004 (NES) dated 7/2/2005 for Luni II). All the relevant stake holders have given their consent for the setting up of the project and hence due care has been taken by the PP to consult the local stake holders in the process.

## 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

Initially this project was web hosted for ISHC from 12 December 2006 to 10 January 2007 using the approved methodology AMS ID version 09. But during the process of validation the version 09 of the AMS ID methodology got expired. Then the project was re web hosted from 30 July 2008 to 28 August 2008 with approved methodology AMS ID version 13.

The Project Design Document for this project was made available on the UNFCCC website <http://cdm.unfccc.int/Projects/Validation/DB/P7D623PHR092AJD8OAT9VKUSGOMVLN/view.html> and was open for comments from 12 December 2006 to 10 January 2007.

The Project Design Document for this project was made available again on the UNFCCC website <http://cdm.unfccc.int/Projects/Validation/DB/L9MI4B3F8U84EEU6D9KIPXABO5MKPZ/view.html> and was open for comments from 30 Jul 08 to 28 Aug 08. Comments were invited through the UNFCCC CDM homepage. No comments were received during both the web hosting period in the ISHC

### 5.2 Compilation of all Comments Received

Comment Number	Date Received	Submitter	Comment
1	N/A	N/A	N/A

### 5.3 Explanation of How Comments Have Been Taken into Account

No comments were received during both web hosting period.

## 6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
10/05/2007	Mr. Balagurunathan / Mr.Viswanatha Reddy	Consultant	CDM Consideration, Baseline, Additionality, Environmental Impacts, Emission reduction Calculations, Stakeholder Consultation, Monitoring Plan

## 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):

- 0 PDD version Nil dated Nil (used for ISHC in the first web hosting period)
- /1/ PDD version 01 dated 22/07/2008 (used for ISHC in the second web hosting period)
- /2/ PDD version 02, 03 (Intermediate version)
- /3/ PDD version 04 dated 13/04/2009 (Submitted with RfR)
- /3.1/ PDD version 05 dated 22/09/2009 (Submitted during request for review stage)
- /3.2/ PDD version 06 dated 28/12/2009 (Submitted after Corrections Requested for the project in EB51 para 60 (n) )
- /4/ HCA letter dated 24/11/2006 with ref.no:4/18/06-CCC given by Ministry of Environment & Forests the Indian DNA
- /5/ Modalities of Communication
- /6/ Emission Reduction Calculation Sheet
- /7/ CDM Consideration: Minutes of the Meeting of Board of Directors held on 14/01/2005
- /7.1/ Investment Analysis Excel sheet
- /7.2/ CDM SSC Bundle form

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/ Order for Electro Mechanical equipment placed on 01-03-2006
- /9/ Minutes of Meeting of Board of Directors dated 15/12/2004
- /10/ RBI Benchmark January 2005 Bulletin (<http://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/60257.pdf>)
- /11/ Agreement dated 18/4/2005 between Zenith Corporate Services and PP for CDM services
- /12/ Himachal Pradesh Development Report (Planning Commission)
- /13/ Geographical Analysis of Himachal Pradesh by Dr.D.D.Sharma
- /14/ CA Certificate for source of finance
- /15/ TERI Report for life time of project
- /16/ Declaration letter for no change in technology
- /17/ DPR for both project Luni II & Luni III. Prepared by NHP Consultants, November 2004.
- /18/ A.M.Reddy & Co., Chartered Accountants certificate dated 23<sup>rd</sup> September 2008
- /19/ Power Purchase Agreement Dated 12/07/2006 for Luni II
- /20/ Power Purchase Agreement Dated 12/07/2006 for Luni III
- /21/ Actual O & M cost calculation for Dehar 5 MW Hydro project in Himachal Pradesh
- /22/ Income Tax Rate (Regular)
- /23/ Income Tax Rate (MAT)
- /24/ Depreciation IT
- /25/ Financials -Luni II- 220909 (Submitted during Request for Review)
- /26/ Financials -Luni III- 220909 (Submitted during Request for Review)
- /27/ Report on determination of PLF for Luni-II & III by Sai Engineering Foundation dated 17<sup>th</sup> September 2009
- /28/ Luni II Without O&M escalation (Submitted during Review)
- /29/ Luni III Without O&M escalation (Submitted during Review)



## 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 “10 MW bundled Luni–III & Luni–II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh”.

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

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
Check the LOA from Indian DNA.	HCA has been provided for the project by Indian DNA and the HCA letter was found in conformance with CDM guidelines	HCA letter dated 24/11/2006 with ref.no:4/18/06-CCC given by Ministry of Environment & Forests the Indian DNA	Y
Check the MoC	MoC has been provided by PP and is as per guidelines	MoC dated 25.2.2009	Y
Check the installed capacity for power generation and whether the actual situation is consistent with the description given in PDD	The capacity of the hydro power plant was checked from techno economic clearance for the project given by H.P. State Electricity Board. The total capacity is 10 MW.	HPSEB Office Order No.HPSEB/CE(P)/CC-Luni-III/2004-/1496-1505 dated 17/8/2005 for Luni III  HPSEB Office Order No.HPSEB/CE(P)/CC-Luni-II/2004-/1476-85 dated 17/8/2005 for Luni II	Y
Check whether project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites	Sri Sai Krishna Hydro Energies (P) Limited is the owner for the project and they possess the necessary licenses to operate the plant from relevant authorities.	Consent No. EPPCB/Luni-III – SHEP-Kangra/2006-3454-59 dated 24.2.06 given by H.P.State Environment Protection & Pollution Control Board.  Consent No. EPPCB/Luni-II – SHEP-Kangra/2005-3460-65 dated 24.2.06 given by	Y



Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
		<p>H.P.State Environment Protection &amp; Pollution Control Board.</p> <p>HPSEB Office Order No.HPSEB/CE(P)/CC-Luni-III/2004-/1496-1505 dated 17/8/2005 for Luni III</p> <p>HPSEB Office Order No.HPSEB/CE(P)/CC-Luni-II/2004-/1476-85 dated 17/8/2005 for Luni II</p>	
Check the statutory clearances and consent to operate obtained for the project activity	The project has been given the consent to operate by H.P.State Environment Protection & Pollution Control Board	<p>Consent No. EPPCB/Luni-III – SHEP-Kangra/2006-3454-59 dated 24.2.06 given by H.P.State Environment Protection &amp; Pollution Control Board.</p> <p>Consent No. EPPCB/Luni-II – SHEP-Kangra/2005-3460-65 dated 24.2.06 given by H.P.State Environment Protection &amp; Pollution Control Board.</p>	Y
Check the schedule for the implementation of the project	The project was under construction at the time of site visit. As per the schedule the project is expected to be commissioned by April 2009.	Site Visit Interview	Y
Check documentary evidence to substantiate the investment analysis.	<p>Gross Annual generation (GWh) = 43.80</p> <p>Aux,Outage, Tran.Loss Etc., (GWh) = 8%</p> <p>Net gen. Available for Sale (GWh) = 40.3</p>	<p>DPR section 13.11</p> <p>DPR section 13.11</p> <p>DPR section 13.11</p>	<p>CAR08</p> <p>CAR08 closed</p>

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
	Tariff Rs / Kwh = Rs.2.5 / unit O &M Expenses (on Project Cost) = 2.20% as per excel whereas as per DPR it is 2% Yearly Escalation in O & M = 5% Interest on Term Loan = 11% Loan repayment Period/Years = 9 years Moritorium/ years ( From COD) = 1 year Interest on Working Capital = 11.00%	DPR section 13.10 DPR section 13.1  DPR section 13.1 DPR section 13.1 DPR section 13.1 DPR section 13.1 DPR section 13.1	
Check the local stakeholder consultation process documents.	HIMURJA (H.P Government Energy Development Agency) has given a notification in pursuance of the Electricity Act, 2003 to invite comments from the stake holders.	Notification No. MPP-F(2)51/2004 (NES) dated 7/2/2005. for Luni III.  Notification No. MPP-F(2)55/2004 (NES) dated 7/2/2005. for Luni II.	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/CARs/CLs
<p>1. All Parties involved have approved the project activity</p> <p>1.1. Has the DNA of each Party involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval which confirms</p> <p>1.1.1. The country is a Party to the Kyoto Protocol</p> <p>1.1.2. Participation is Voluntary</p> <p>1.1.3. The Host Party confirming that the proposed CDM project activity contributes to sustainable development of the country Non-Annex 1 Party shall submit a letter of approval</p> <p>1.1.4. It refers to the precise proposed CDM project activity title in the PDD being submitted for registration</p>	<p>Annex 3, Clean Development Mechanism, Validation and Verification Manual, Version 01 (from this point forwarded referenced as VVM) - 49a-d /54a-b/125</p> <p>Paragraph 37 CDM Modalities and procedures</p>	<p>As per section A.3 of PDD the party listed is India. India has ratified the Kyoto protocol on 26th August 2002 and is allowed to participate. The web link is <a href="http://unfccc.int/parties_and_observers/parties/items/2109.php">http://unfccc.int/parties_and_observers/parties/items/2109.php</a> .</p> <p>The project activity is likely to contribute to sustainable development in India. The letter of approval from the DNA of the host country needs to be submitted.</p>	<p>CAR01</p> <p>LOA submitted and is as per guidelines.</p> <p>CAR01 closed out</p>
<p>o The letter/s of approval are unconditional with respect to 1.1.1 to 1.1.4 above</p>	<p>VVM Para. 49/54</p>	<p>Pending CAR 01</p> <p>The letter of Approval is unconditional.</p>	<p>Pending CAR 01</p> <p>LoA submitted.</p> <p>CAR 01 closed out</p>

Requirement	Reference	Comments	Conclusion/C ARs/ CLs
2. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30 days, and the project design document and comments have been made publicly available	VVM Para. 128  Marrakech Accords, CDM Modalities, §40	Initially this project was web hosted for ISHC from 12 December 2006 to 10 January 2007 using the approved methodology AMS ID version 09. But during the process of validation the version 09 of the AMS ID methodology got expired. Then the project was re web hosted from 30 July 2008 to 28 August 2008 with approved methodology AMS ID version 13.  The Project Design Document for this project was made available on the UNFCCC website <a href="http://cdm.unfccc.int/Projects/Validation/DB/P7D623PHR092AJD8OAT9VKUSGOMVLN/view.html">http://cdm.unfccc.int/Projects/Validation/DB/P7D623PHR092AJD8OAT9VKUSGOMVLN/view.html</a> and was open for comments from 12 December 2006 to 10 January 2007.  The Project Design Document for this project was made available again on the UNFCCC website <a href="http://cdm.unfccc.int/Projects/Validation/DB/L9MI4B3F8U84EEU6D9KIPXABO5MKPZ/view.html">http://cdm.unfccc.int/Projects/Validation/DB/L9MI4B3F8U84EEU6D9KIPXABO5MKPZ/view.html</a> and was open for comments from 30 Jul 08 to 28 Aug 08. Comments were invited through the UNFCCC CDM homepage. No comments were received during both the web hosting period in the ISHC	Y
3. The project design document is in accordance with the applicable CDM requirements for completing PDDs.	VVM Para. 57  Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	The latest version (Version 03) of SSC PDD has been correctly used and the template of the PDD has not been altered.	Y
4. 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	MoC needs to be submitted.	Pending Y

Table 2PDD

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>A. General Description of Project Activity</b>				
<b>A.1. Project Title</b>				
A.1.1. Does the used project title clearly enable the reader to identify the unique CDM activity?	VVM Para.56 Guidelines for completing a CDM-PDD (PDD) section A.1	DR	The title of the project activity is "10 MW bundled Luni-III & Luni-II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh". The title is able to identify the unique project activity.	Y
A.1.2. Is there an indication of a revision number and the date of the revision?	VVM Para.56 PDD section A.1	DR	The PDD web hosted for ISHC in the first web hosting period does not indicate any version number or date of the version.  The PDD web hosted for ISHC in the second web hosting period is Version 01 dated 22/07/2008	Y
<b>A.2. Description of the Project Activity</b>				
A.2.1. Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements accurately?	VVM Para.59 PDD section A.2 see also A.4, A.4.3 and B.3	DR	The project activity involves setting up of a 10 MW bundled hydro project as run of river scheme. The project is expected to generate about 43800 MWh of electricity in which 40296 MWh will be exported to the Himachal Pradesh grid and the remaining will be used as auxiliary consumption.	Y
A.2.2. Does the information provide the reader with a clear understanding of the proposed CDM activity?	VVM Para.60 PDD section A.2 see also A.4, A.4.3 and B.3	DR	Yes the PDD describes the project activity clearly	Y
A.2.3. Is all information provided consistent and	VVM Para.64 PDD section A.2	DR / SV / I	At the time of site visit the project activity was under construction. As per the discussion the project is expected to be commissioned by April 2009.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
in compliance with the actual situation or planning?	see also A.4, A.4.2 and B.3			
A.2.4. Is all information provided consistent with details provided in further chapters of the PDD?	VVM Para.64 PDD section A.2	DR	Yes the information provided is consistent with the further chapters of PDD.	Y
<b>A.3. Project Participants</b>				
A.3.1. Is the table required for the indication of project participants correctly applied?	VVM Para. 51 PDD section A.3	DR	The table under section A.3 of PDD indicating the project participant is correctly applied.	Y
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	VVM Para. 51 PDD section A.3	DR	Yes the information given in section A.3 of PDD and Annex 1 of PDD are consistent.	Y
<b>A.4. Technical Description of the Project Activity</b>				
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude of the site indicated (decimal points)	VVM Para.64 PDD section A.4	DR	Yes the information provided allows for a clear identification of the site. The project is located in Baijnath tehsil, Kangra District in the state of Himachal Pradesh, India. Geographical co-ordinates of Luni III are 76°45' to 76°47' East (Longitude) and 32°11' to 32°12' North (latitude) and Luni II are 76°41' to 77°47' East (Longitude) and 32°5' to 32°10' North (latitude).	

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.2. Does the proposed CDM project activity involve the alteration of existing installations or process?	VVM Para.64 PDD section A.4	DR/I	The project activity is a new installation and does not involve any alterations to the existing system.  Provide documentary proof that the project technology will not be substituted by other or more efficient technologies within the project period.	CAR03  CAR03 closed out
A.4.3. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	VVM Para.64 PDD section A.4	DR	To be checked during site visit.	LAC  Y
A.4.4. Is the category(ies) of the project activity correctly identified?	VVM Para.64 PDD section A.4	DR	The project activity belongs to Type-I (Renewable Energy Projects) as it is generating electricity from hydro energy and comes under category D (Grid connected renewable electricity generation) as it supplies electricity to the grid.	Y
A.4.5. Is all information provided in compliance with actual situation or planning as available by the project participants?	VVM Para.64 PDD section A.4	DR	To be checked during site visit.	LAC Y
A.4.6. Is the table required for the indication of projected emission reductions correctly applied?	VVM Para.64 PDD section A.4	DR	Yes the table indicating the projected emission reductions is correctly applied.	Y
<b>A.5. Debundling</b>				
A.5.1. Is the small-scale project activity a debundled component of a large scale project	VVM Para. 134c	DR	The project activity is not a debundled component of large scale project activity as the project activity does not fulfill the conditions to be considered for debundling.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
activity				
A.5.2. 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	VVM Para. 134c	DR	N/A	Y
<b>A.6. Public Funding</b>				
A.6.1. Does the information on public funding provided conform to the actual situation or planning as presented by the project participants?	PDD section A.4.4	DR	As per PDD there is no public funding used in the project. PP has to justify with documentary evidence that public funding is not used in the project activity.	CAR 05  CAR 05 Closed out
A.6.2. Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)?	PDD section A.4.4	DR	Yes the information is consistent in Annex 2 of PDD	Y
A.6.3. 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 section A.4.4	DR	N/A	Y



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>B. Baseline and Monitoring Methodology</b>				
<b>B.1. Choice and Applicability</b>				
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	VVM Para.68 PDD section B.1	DR	Yes the project uses approved methodology AMS 1D version 13.	Y
B.1.2. Has the methodology (incl. the tools) been altered from the original version as referenced in the PDD?	VVM Para.69 PDD section B (B.1-B.2)	DR	The approved methodology AMS 1D version 13 has been used without any alteration.	Y
B.1.3. Does the project activity qualify as small scale project?	VVM Para. 134a	DR	The project activity qualifies as small scale project as the total installed capacity is 10 MW which is less than 15 MW applicable for these projects.	Y
B.1.4. 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?		DR	The project activity belongs to Type-I (Renewable Energy Projects) as it is generating electricity from hydro energy and comes under category D (Grid connected renewable electricity generation) as it supplies electricity to the grid.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.1.5. Is the selected simplified methodology applicable to the project activity in the PDD?	VVM Para.75/66a/68/73 PDD section B (B.1-B.2)	DR	As per the methodology AMS ID "This category comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit."  Since the project generates renewable electricity using hydro power that will supply the electricity to the Grid. Also the total installed capacity is only 10 MW. Hence the selected methodology AMS ID is applicable for the project.	Y
B.1.6. Does the project activity conform to one of the approved small-scale categories?	VVM Para. 134b	DR	Yes the project activity confirms to Type-I, Category-D(Grid connected renewable electricity generation) as the project supplies the generated electricity to Grid.	Y
B.1.7. Is the project activity a bundle of several small scale activities and if so does it contain any sub-bundles?		DR	Yes the project activity is a bundle of two small scale projects namely Luni II and Luni III of 5 MW each.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.1.8. 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		DR	Yes the total capacity of the bundle is only 10 MW which is within the 15 MW threshold applicable for the Type – I projects	Y
B.1.9. 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		DR	The form F-CDM-BUNDLE has to be submitted	CAR06  CAR06 closed out
B.1.10. Is the discussion in the PDD in conformance with all applicability criteria of the applied methodology?	VVM Para.75/66b/68 PDD section B (B.1-B.2)	DR	Yes the PDD has discussed the applicability criterion of the approved methodology and it confirms to it	Y
<b>B.2. Project Boundary</b>				
B.2.1. Are all emission sources and gases related to the baseline scenario, project scenario and leakage clearly identified and described in a complete and transparent manner? Is there	VVM Para.79/76 /67a PDD section B.3	DR	Yes all the emission sources and gases are identified in PDD as per the methodology.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
information on GHG emissions in 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 average annual emissions reductions, which are not addressed by the applied methodology.				
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with the tool to calculate emission factor of electricity system (wherever applicable) and the underlying methodology?	VVM Para.79 PDD section B.3	DR	Yes, the relevant grid is correctly identified in accordance with EB guidance and the underlying methodology. The latest tool to calculate emission factor of electricity system has been used for the project activity.	Y
B.2.3. Does the project boundary include the physical delineation of the proposed CDM project activity?	VVM Para.78/79 PDD section B.3 also see section A.4.2	DR	Yes the physical boundary of the project is clearly defined in PDD as per methodology	Y
B.2.4. Are the project's geographical	VVM Para.76/79	DR	The project boundary has been clearly defined as per the applicable methodology.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	PDD section B.3 also see section A.4.2			
<b>B.3. Identification of the Baseline Scenario</b>				
B.3.1. Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the chosen baseline transparent?	VVM Para.67b.80/82/86 PDD Section B.4/B.5	DR	According to the approved methodology the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2e/kWh) and it has been correctly identified.	Y
B.3.2. Are all tools/procedures in the methodology correctly applied to identify the most reasonable baseline scenario? This includes all potential realistic and credible baseline scenarios in the discussion taking into	VVM Para.81/82/86a- d/83/84 PDD Section B.4/B.5	DR	The most likely baseline scenario will be continuation of current scenario .i.e. the additional power is supplied by current generating stations and/ or new stations coming up in the grid.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
account relevant national and/or sectoral policies, macro-economic trends and political aspirations?				
B.3.3. Is the choice of the baseline compatible with the available data?	VVM Para.86b-c/95 PDD Section B.4/B.5	DR	Combined margin(CM) has been considered for the baseline emission factor and it has been calculated as 810.46 TCO <sub>2</sub> /GWh. All the values has been taken from CEA, which is authentic. But the value used is not conservative. The combined margin CEA data for northern region is 0.81 tCO <sub>2</sub> /MWh and hence 810 tCO <sub>2</sub> /Gwh should be used.  Now the CEA data version04 has been released. The project falls under NEWNE grid as per version04 of CEA data. The combined margin has been calculated using the version04 of CEA data. The value applied is 0.803355 tCO <sub>2</sub> /MWh.	CAR07  CAR07 closed out
B.3.4. Is conservativeness addressed in the way of identifying the baseline?	VVM Para.90 PDD Section B.4/B.5	DR	Pending CAR07	Pending Y
B.3.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	VVM Para.90/91 PDD Section B.4/B.5	DR	Yes the selected baseline represent the most likely baseline scenario	Y
B.3.6. Is there a verifiable description of the baseline scenario? Does this include a description of the technology that would be employed and/or the activities that would take place in the	VVM Para.86e/85 PDD Section B.4/B.5	DR	The baseline grid emission factor has been calculated using Central Electricity Authority (CEA) of India data. The data used is authentic and verifiable.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
absence of the proposed CDM project activity?				
<b>B.4. Additionality</b>				
B.4.1. Does the PDD clearly demonstrate the additionality using the approach as specified in the methodology and by following all the required steps?	VVM Para.67d/95 PDD Section B.1/B.4/B.5	DR	It is a SSC project and additionality has been demonstrated as per Attachment A to Appendix B of simplified modalities and procedures for SSC projects	Y
B.4.2. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	PDD Section B.1/B.4/B.5	DR	It is a SSC project and additionality has been demonstrated as per Attachment A to Appendix B of simplified modalities and procedures for SSC projects	Y
B.4.3. Has all information been backed up with references, sources and certification? Is the data presented credible and reliable with complete transparency to all available data and documentation?	VVM Para.93/91 PDD Section B	DR	The supporting documents for investment barrier, technological barrier and other barriers have been provided.  SGS has validated the investment analysis in line with VVM paragraph 109 and EB 41, Annex 45, paragraph 6, taking into account that the DPR was conducted in November 2004 and the project start date is March 2006 we would like to clarify that even though the start date of the project is March 2006, the decision to invest in the project was taken in January 2005 with due consideration of CDM benefits. The same was confirmed from the extract of the Minutes of Meeting of Board of Directors held in	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>January 2005. After the decision to invest in the project was taken the PP has initiated necessary steps for the successful implementation of the project like getting statutory approvals / clearances from relevant authorities and the project got officially started in March 2006 with the issue of purchase order for Electro Mechanical equipments.</p> <p>But to reconfirm that there are no major changes in the key input values / assumptions from the investment decision date to the start date in March 2006 which will impact the additionality of the project, the following details are presented below.</p> <ol style="list-style-type: none"> <li>1. Project Cost: The project has achieved financial closure from State Bank of India and State Bank of Hyderabad. The sanctioned and documented cost for Luni II is Rs. 291.2 million and Luni III is Rs. 291.5 million. This checked against the independent Chartered Accountant Certificate <sup>/18/</sup> dated 23<sup>rd</sup> September 2008. The project cost as per DPR estimates are Rs. 271.2 million and Rs.285 million for Luni II and Luni III respectively. Hence the project cost values used in the PDD are conservative and also consistent with the investment decision date.</li> <li>2. Source of Finance: In the PDD the term loan has been assumed as 75% and share capital as 25% for both Luni II and Luni III whereas the actual equity contribution for both the project is approximately 26% as checked from the Chartered Accountant Certificate <sup>/18/</sup> dated 23<sup>rd</sup> September 2008.</li> <li>3. Capital subsidy: The value considered is appropriate as per Ministry of New and Renewable Energy Guidelines. (Ref: See clause 4.39 in <a href="http://www.hperc.org/orders/shpp.doc?bcsi_scan_4A6748D7767CF8E8=1">http://www.hperc.org/orders/shpp.doc?bcsi_scan_4A6748D7767CF8E8=1</a>).</li> <li>4. Plant Load Factor (PLF): PLF of 50% has been considered for both Luni II &amp; Luni III based on DPR. The project is located in Himachal Pradesh. Even the Himachal Pradesh Electricity Regulatory Commission suggests a normative PLF of 45% only for small hydro projects. (See clause 4.55 in <a href="http://www.hperc.org/orders/shpp.doc?bcsi_scan_4A6748D7767CF8E8=1">http://www.hperc.org/orders/shpp.doc?bcsi_scan_4A6748D7767CF8E8=1</a> ). Hence the chosen PLF of 50% is reasonable and conservative. The total provision under auxiliary consumption, outage, transmission loss, etc., has been considered as 8% as per the DPR at the time of decision making of the project activity and the same is considered by the PP for IRR analysis. This</li> </ol>	



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>provision is also supported by the power purchase agreement<sup>19/ &amp; 20/</sup> at clauses 2.2.6, 2.2.72 and 2.2.73 for a total value of 5.5%. In respect of outages a provision of 2.5% is made by the DPR to take care of non availability of grid due unforeseen events such as landslides etc. Even this was evidenced through a report in respect of quality of T&amp;D network in the state of Himachal Pradesh submitted to Power Ministry (See page No.15 last paragraph in <a href="http://powermin.nic.in/reports/pdf/himachal%20pradesh.pdf">http://powermin.nic.in/reports/pdf/himachal%20pradesh.pdf</a> ). They have indicated that the availability of the grid is up to 90% of the time. Therefore considering 2.5% towards outages was found conservative.</p> <p>The DPR has been prepared specifically for the project activity i.e. Luni II &amp; Luni III based on the site specific conditions. NHP consultants have done a detailed technical study at both the project sites and have estimated the PLF of 50% based on technical parameters like topographical survey, rainfall data, discharge data, availability data and others the details of which are provided in the PP response submitted along with the DOE response during review stage. A copy of the DPR prepared for both Luni II &amp; Luni III has been submitted to the DOE. DPR is a detailed technical study undertaken based on site specific data. Extracts of the DPR prepared by NHP consultants was submitted along with the PP response during review stage. Hence the PLF chosen for financial analysis is site specific and also project specific. But in order to cross check whether the PLF considered is reasonable the DOE has cross checked the Himachal Pradesh Electricity Regulatory Commission (HPERC) order. In India each State has an Electricity Regulatory Commission and the main function of these commissions is to regulate the electricity market in their respective states. Each regulatory commission has done a detailed study in their respective state and fixes the tariff and other parameters related to the electricity market in order to promote the investments in the power sector in their respective states. Hence PLF suggested by regulatory commissions can be considered reasonable. Here in the case of the project which is located in the state of Himachal Pradesh the HPERC has suggested a normative PLF of about 45% only. Hence the chosen PLF of 50% for the project is reasonable and conservative. Further CDM EB in its 48th meeting has come out with a guidance regarding "GUIDELINES FOR THE REPORTING AND VALIDATION OF PLANT LOAD FACTORS" which is</p>	

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>available in annex 11 of the EB48 report. As per that guidance</p> <p>The plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options as per the EB 48 Annex 11 guideline:</p> <ul style="list-style-type: none"> <li>(a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;</li> <li>(b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company);</li> </ul> <p>As per the option (b), The PLF determined by a third party contracted by the PP can be accepted. In the case of the project activity the PLF of 50% has been determined by a third party contracted by the PP. First one is the NHP consultants the details of whom have already been provided in our Validation Report dated 27-04-2009. But in order to re-confirm that the assumed PLF is appropriate for the project activity based on technical parameters specific to the project activity the PP has engaged one more engineering company namely Sai Engineering Foundation on 21<sup>st</sup> May 2009 (<a href="http://www.saiengineeringfoundation.com/desc.html">http://www.saiengineeringfoundation.com/desc.html</a>) who has long expertise in the detailed study of hydro power projects to estimate the power potential of both Luni II &amp; Luni III projects. Sai Engineering Foundation has done a detailed technical study and has also estimated more or less the same PLF as estimated by NHP consultants. Sai Engineering Foundation has estimated a PLF <sup>/27/</sup> of 49.85% for Luni II and 49.32% for Luni III. Hence the chosen PLF of 50% is reasonable for the project activity as confirmed from three different resources namely NHP Consultants, Sai Engineering Foundation and HPERC.</p> <p>5. Power Tariff: In the PDD Rs.2.50/kWh has been considered as per the DPR. But even the clause 6.2 of Power Purchase Agreement dated 12/07/2006 <sup>/19/</sup> &amp; <sup>/20/</sup> also specifies the tariff as Rs. 2.50/kWh only. The tariff rate is firm and fixed without any indexation or escalation. Hence the tariff assumption is satisfactory.</p> <p>6. O &amp; M cost: In the PDD the O &amp; M cost has been assumed as 2% based on DPR. The same PP has one more registered CDM project (UN 0035) of 5 MW</p>	

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>capacity. The actual O &amp; M cost <sup>/21/</sup> including administrative cost incurred for that project calculated based on audited balance sheet was provided and was found more than 2%. Hence the 2% value used in the analysis is reasonable.</p> <p>Since the CDM EB in its 51<sup>st</sup> meeting closed the issue on escalation in O&amp;M costs as the IRR does not cross the benchmark, even if no escalation in the O &amp; M cost is applied, the same is not discussed in the revised validation report.</p> <p>7. Interest on Term Loan: It has been taken as 11% as per DPR. Even the Benchmark Prime Lending rate (BPLR) of Public Sector banks during January 2005 and March 2006 was in the range of 10.25% to 11.25% (Ref: See page 67 under table 1.56 of RBI Annual Report 2004-05 in <a href="http://rbidocs.rbi.org.in/rdocs/annualreport/pdfs/65516.pdf">http://rbidocs.rbi.org.in/rdocs/annualreport/pdfs/65516.pdf</a> and also refer page 79 under Table 1.58 of Reserve Bank of India Annual Report 2005-06 <a href="http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/72286.pdf">http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/72286.pdf</a> ). Hence the value of 11% used as per DPR is found reasonable. If an average value of 10.75% as per BPLR is used as interest on term loan instead of the assumed 11% in PDD, the IRR of the project will come down by few basis points because of higher expenditure for income tax and hence the used value of 11% for interest on term loan is satisfactory.</p> <p>8. Income Tax (Regular) <sup>/22/</sup>, Income Tax (Minimum Alternate Tax-MAT) <sup>/23/</sup> and Depreciation <sup>/24/</sup> for Civil Works and Plant and Machinery considered in PDD as per DPR are appropriate as per Indian Income Tax laws same has been checked and found consistent.</p> <p>Based on the request for review raised by CDM EB, the investment analysis including the sensitivity analysis is now presented for each site in separate sheets <sup>/25/ &amp; /26/</sup> and the same has been submitted during request for review stage considering O&amp;M escalation. The same basic assumptions/input values as used in the combined IRR analysis submitted along with Request for Registration has been used to make separate analysis for each site. As per the separate analysis the IRR for Luni II is 11.70% and for Luni III is 10.83% and the combined IRR for both the sites is 11.26%. Both the separate IRRs and also the combined IRR is below the benchmark return of 15.12%. Further sensitivity</p>	

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>analysis has been carried out for the same parameters i.e. project cost, O &amp; M cost and revenue as presented with the combined IRR analysis submitted along with Request for Registration. Even after subjecting these key parameters with <math>\pm 10\%</math> variation the IRR is not reaching the benchmark.</p> <p>But CDM EB in its review requested the DOE to further validate a revised investment analysis, which considers no escalation in O&amp;M costs in combination with an appropriate PLF, if it is different from the 50% previously assumed. As explained above the PLF of 50% assumed is appropriate and hence there is no change in the PLF. As suggested by CDM EB a revised IRR sheet<sup>1/28/ &amp; 1/29/</sup> was submitted with the response to review with no escalation in the O &amp; M cost. The other input factors are not altered and remains the same. The revised IRR for Luni II is 12.36% and Luni III is 11.53% and are still below the benchmark value of 15.12%. Further sensitivity analysis has been carried out for the all the three parameters namely Project Cost, Revenue and O&amp;M cost as submitted with the original investment analysis. Even after varying these key parameters with reasonable variation of <math>\pm 10\%</math> the project is not crossing the benchmark.</p>	
<p>B.4.4. Is the discussion on additionality and the evidence provided consistent with the starting date of the project?</p> <p>If the project activity start date is prior to the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity</p>	VVM Para.102b PDD Section B.5	DR	As per section C.1.1 of PDD the project start date is 03/03/2006 and the PDD version 01 is dated 22/07/2008. Justify with documentary evidence the timeline of the project history and also serious CDM consideration for the project activity.	<p>CAR02</p> <p>CAR02 close out</p>

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.4.5. If an investment analysis has been used, has it been shown that the proposed project activity is economically or financially less attractive than at least one other alternative without the revenue from the sale of CERs?	VVM Para. 106, 107, 109 112a-c PDD Section B.5	DR	The project IRR has been used. The project IRR is less than the benchmark return	Y
B.4.6. If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the tool /methodology and it represents standard returns in the market (not linked to the subjective profitability expectation or risk profile of a particular project developer).	VVM Para. 110 PDD Section B.5	DR	Benchmark has been calculated using "Government Bond Rates, increased by a suitable Risk premium to reflect private investment and / or the project type, as substantiated by an independent (financial) expert or documented by officially publicly available financial data". All the data used are publicly available. Govt Bond rate has been taken from Reserve Bank of India data and equity risk premium has been taken from the most conservative estimate made by three independent research reports.	Y
B.4.7. If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed	VVM Para. 114 115a-b/116 PDD Section B.5	DR	For the investment barrier the excel sheet for investment analysis and sensitivity analysis needs to be provided. PP has to justify with documentary evidence all the input factors/assumptions used in the investment analysis. The technological barrier given in PDD like earthquake, flash floods and land slides are common to other similar project activities in the region which are already under operation. PP has to justify why these needs to be considered as barrier.  As referred in the PDD, the technological barriers to the project activity namely	CAR08  CAR 08 closed out

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
project activity but would not have prevented the implementation of at least one of the alternatives?			<p>Earthquake, flash flood, landslides are present in Himachal Pradesh as verified from various references like</p> <ol style="list-style-type: none"> <li>1. Report prepared by Planning Commission, Government of India in "Himachal Pradesh Development Report"</li> <li>2. A Geographical Analysis Dr. D. D.Sharma, Himachal Pradesh University, Shimla</li> <li>3. <a href="http://www.tribuneindia.com/2007/20070301/himachal.htm#1">http://www.tribuneindia.com/2007/20070301/himachal.htm#1</a></li> </ol> <p>About the analysis of prevailing practice, it was confirmed that small hydro is not a major contributor in the Indian Power Sector. The same has been confirmed from annual report of Central Electricity Authority (CEA) from its website <a href="http://www.cea.nic.in">www.cea.nic.in</a> , <a href="http://www.hpseb.com/hydro_potential.htm">www.hpseb.com/hydro_potential.htm</a></p>	
B.4.8. Is the discussion on additionality consistent with the identification of all plausible and credible baseline scenarios?	VVM Para. 105 PDD Section B.5	DR	Yes the discussion on additionality is consistent with all plausible and credible baseline scenarios	Y
B.4.9. Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity. Do they also abide by the same applicable laws and legislations?	VVM Para. 105 PDD Section A.4.2/B.5	DR	Yes in the absence of the project activity the equivalent amount of electricity would have been generated by the grid connected power plants and they comply with same laws and regulations applicable to the project activity	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.4.10. Has it been shown that the project is not common practice?	VVM Para. 119a/b PDD Section B.5	DR	Common practice analysis is not required as per guidelines since it is a SSC project	Y
B.4.11. What are the key distinctions between the project activity and any similar projects that are widely used as common practice?	VVM Para. 118, 119c/d PDD Section B.5	DR	Common practice analysis is not required as per guidelines since it is a SSC project	Y
<b>B.5. Application of the Simplified Methodology</b>				
B.5.1. Has the simplified methodology been applied correctly for determining <b>baseline emissions</b> ?	VVM Para. 91d PDD Section B (B.6.1 -B.71)	DR	The methodology is correctly applied. The baseline is the kWh generated by the renewable unit multiplied by the emission factor of the NEWNE grid of India. The emission factor of the NEWNE grid has been calculated using the combined margin approach using the data from Central Electricity Authority of India.	Y
B.5.2. Has the simplified methodology been applied correctly for determining <b>project emissions</b> ?	VVM Para. 90/91d PDD Section B (B.6.2-B.71)	DR	As per the methodology there are no project emissions associated with the project. But as per PDD DG set of 62.5 kVA will be used in case of emergency situation. The same has been included in the project emission.	Y
B.5.3. Has the simplified methodology been applied correctly for determining <b>leakage</b> ?	VVM Para. 91d PDD Section B (B.6.2 -B.71)	DR	As per PDD there are no leakages associated with the project activity.	Y



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.5.4. Where applicable, has the simplified methodology been applied correctly for the <b>direct calculation of emission reductions</b> ?	VVM Para 88/91d PDD Section B (B.6.2 -B.71)	DR	Emission reduction will be the difference between baseline and project emissions.	Y
B.5.5. Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVM Para.89/90/91 PDD Section B (B.6.2 -B.71)	DR	Combined margin approach has been used for the calculation of grid emission factor	Y
B.5.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	PDD Sections B.5-C	DR	GHG emission reduction has been estimated based on potential net generation and export of 40.3 GWh of electricity per annum. The basis for this assumption needs to be justified.	CAR09 CAR09 closed out
<b>B.6. Ex-ante Data and Parameters Used</b>				
B.6.1. Are the data provided in compliance with the methodology?	VVM Para. 91/67c	DR	The ex-ante data provided is in compliance with the methodology. The grid emission factor for the NEWNE grid of India from CEA data and CO2 emission factor for diesel taken from IPCC 2006 has been used.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
	PDD Section B.6.3/B.6.4			
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	VVM Para. 91a/b PDD Section B.6.3/B.6.4	DR	Both the ex-ante data has been taken from official and reliable sources. The grid emission factor for the NEWNE grid of India from CEA data and CO2 emission factor for diesel taken from IPCC 2006 has been used.	Y
B.6.3. Is the vintage of the baseline data correct?	PDD Section B.6.3/B.6.4	DR	Yes the most recent data has been used.	Y
B.6.4. Is all the data appropriate and correctly applied to the CDM project activity?	VVM Para. 91c PDD Section B.6.3/B.6.4	DR	Yes the data are appropriate and correctly applied	Y
B.6.5. Are data and parameters that are not being monitored and remained fixed throughout the crediting period appropriately assessed, correct, and will they result in conservative estimates?	VVM Para. 90 PDD Section B.6.3/B.6.4	DR	The grid emission factor calculated ex-ante will be fixed through out the crediting period and the same has been calculated from CEA data which is authentic and publicly available	Y
<b>B.7. Calculation of Emissions Reductions</b>				
B.7.1. Has the simplified methodology been applied correctly for determining <b>emission reductions</b> ?	VVM Para. 91d PDD Section A.4.3/B.6	DR	Yes the approved methodology has been correctly applied for determining the emission reduction.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	VVM Para. 91e PDD Section B.6	DR	Yes the emission reduction calculation is documented in a complete and transparent manner in PDD	Y
B.7.3. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	PDD Section B.6	DR	For projection the potential electricity that can be generated in the project has been estimated whereas in verification stage actual electricity generated will be measured and used for emission reduction calculation.	Y
B.7.4. Is the calculation of the emission reduction correct?	VVM Para. 91e PDD Section B.6	DR	The excel sheet for ER calculation needs to be provided.	CAR10 CAR10 closed out
<b>B.8. Emission Reductions</b>				
B.8.1. Is the form/table required for the indication of projected emission reductions correctly applied?	PDD Section A.4.3/ Section B.6	DR	Yes the table indicating the projected emission reduction is correctly applied.	Y
B.8.2. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	PDD Section A.4.3/ Section B.6	DR	The schedule of implementation is not available in PDD. Need to check during site visit.	pending y
<b>B.9. Monitoring Methodology</b>				
B.9.1. Does the monitoring	VVM Para.	DR	Yes the monitoring methodology provides a consistent approach in the context of all	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<p>methodology provide a consistent approach in the context of all parameters to be monitored and further information provided by the PDD?</p> <p>Are all parameters and data that are available at validation consistent with the simplified methodology. Has this data been interpreted and applied correctly?</p>	<p>67e PDD Section B.7- B.8 see also Annex 4</p>		parameter to be monitored and further information provided by the PDD.	
<p>B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?</p>	<p>PDD Sections B and C</p>	<p>DR</p>	<p>Yes the monitoring methodology is consistent with the choice of option for monitoring both baseline and project emissions. Combined margin approach has been used for the calculation of grid emission factor.</p>	<p>Y</p>
<b>B.10. Data and Parameters Monitored</b>				
<p>B.10.1. Does the monitoring plan in the PDD comply with the simplified methodology? Provide for the collection and archiving of all relevant data necessary for</p>	<p>VVM Para. 91a/91d/121/79 PDD Section B.7- B.7.2</p>	<p>DR</p>	<p>Yes the monitoring plan in PDD is consistent with the monitoring prescribed in the approved methodology.</p> <p>Based on the request for review comments raised by the CDM EB the monitoring plan in section B.7.1 is amended in the revised PDD submitted along with the response to request for review to include monitoring of each parameter separately for each site i.e. Luni II and Luni III. The revised monitoring plan is in accordance with the approved</p>	<p>Y</p>

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
estimation or measuring the emission reductions within the project boundary during the crediting period?			<p>methodology AMS ID version 13 used in the project. As per the methodology "Monitoring shall consist of metering the electricity generated by the renewable technology."</p> <p>In line with this the monitoring plan, does include monitoring of the following parameters for each site i.e. Luni II and Luni III separately.</p> <ol style="list-style-type: none"> <li>1. Gross electricity generated by the project (<math>EG_{gross,y}</math>)</li> <li>2. Auxiliary consumption by the project (<math>EG_{Auxiliary,y}</math>)</li> <li>3. Electricity Supplied to the Grid by the project i.e. exported to the grid (<math>EG_{export,y}</math>)</li> <li>4. Electricity imported from the grid (<math>EG_{import,y}</math>)</li> <li>5. Net electricity supplied to grid (<math>EG_y</math>)</li> </ol>	
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the simplified methodology applied?	PDD Section B.7-B.7.2/B.6.2	DR	Yes the gross electricity generation, auxiliary consumption, electricity imported from grid, net electricity exported to grid, fuel consumed by DG set is being monitored. These parameters are sufficient to calculate the emission reduction due to the project activity.	Y
B.10.3. Will it be possible to determine the specified project GHG indicators?	PDD Section B.6.2-B.8	DR	The parameters are being measured with calibrated meters and hence possible to verify the monitored data	Y
B.10.4. 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 Section B.6.2-B.7.1	DR	<p>Yes the information given for each monitoring variable in the section B.7.1 of PDD is sufficient for proper verification of the monitoring plan.</p> <p>In section B.7.1 of PDD for the parameter auxiliary consumption whether it will be measured using meter or calculated is not clear from PDD. Also for fossil fuel consumption i.e. diesel for DG set it is mentioned as weigh bridge will be calibrated as per standards which is not clear.</p>	CAR13 CAR13 closed out

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.10.5. 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 Section B.6.2-B.7.1	DR	Since all the parameters are directly measured using standard calibrated meters the data will be of high quality with less chance for errors.	Y
B.10.6. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	PDD Section B.5-B.7.2	DR	Yes the monitoring approach is in line with current good practices.	Y
B.10.7. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	PDD Section B.6.2-B.7.1	DR	As per methodology there are no project emissions associated with the project activity. But a DG set is being used for emergency purposes. The fuel consumption by the DG set is being monitored and is included in the monitoring plan. If it is used in later stages the same will be included as project emissions. The formulae is correctly applied to calculate the project emissions.	Y
<b>B.11. Quality Control (QC) and Quality Assurance (QA) Procedures</b>				
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	VVM Para. 121 Refer to all data within the PDD Inc. B.6.2-B.7.1	DR	As per PDD all the energy meters will be calibrated as per industry standards by which the quality of data being monitored is ensured.	Y
B.11.2. Is the belonging	Refer to all data	DR	There will be no uncertainty as all the parameters are directly measured using standard	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	within the PDD Inc. B.4/B.7.2/Annex 4		calibrated meters.	
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	VVM Para 121	DR	Yes QA/QC procedures are clearly described and is available in section B.7.2 of PDD.	Y
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	VVM Para. 86d	DR	Yes the data will be bound to national standards as it is monitored using standard calibrated meters	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?	VVM Para. 19	DR	There is less chance for over estimation as the net electricity exported to the grid can be cross checked with the receipt of sales given by HPSEB.	Y
<b>B.12. Operational and Management Structure</b>				
B.12.1. Is the authority and responsibility of project management clearly described?	PDD Section B.8/Annex 1	DR	As per PDD the ultimate responsibility for the project activity is the Board of Directors.	Y
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and	PDD Section B.8/Annex 1	DR	As per PDD the Board of Directors will nominate a competent person who will be responsible for monitoring, measurement and reporting of data.	Y



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
reporting clearly described?				
B.12.3. Are procedures identified for training of monitoring personnel?	PDD Section B.8/Annex 1	DR	The PDD hasn't discussed anything about the initial training and other maintenance efforts needed for the project. Provisions for meeting the training and maintenance needs of the project are not given in PDD	CAR04 CAR04 closed out
<b>B.13. Monitoring Plan (Annex 4)</b>				
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	VVM Para. 122a	DR	Yes monitoring plan developed specifically for the project is available in B.7.1 of PDD.	Y
B.13.2. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	VVM Para. 122b	DR	Yes the monitoring plan available in section B.7 of PDD completely describes the measures to be implemented for monitoring the parameters required and measures to ensure data quality.	Y
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVM Para. 122b	DR	Yes the monitoring plan provides information about the monitoring equipments.	Y
B.13.4. Are procedures identified for calibration of monitoring	VVM Para. 122a-c	DR	As per PDD the monitoring equipments will be calibrated as per industry standards.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
equipment?				
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	VVM Para. 122a-c	DR	To be checked during site visit	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)	VVM Para. 122a-c	DR	Yes procedures are identified and the same is described in B.7.2 of PDD.	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?	VVM Para. 122a-c	DR	To be checked during site visit	Y
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	VVM Para.122a-c	DR	As per PDD the Board of Directors will appoint a competent person for monitoring and preparation of necessary reports for review by the top management.	Y
B.13.9. Are procedures identified for project	VVM Para. 122a-c	DR	To be checked during site visit	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
performance reviews before data is submitted for verification, internally or externally?				
B.13.10. Describe the ability of the project participants to implement the monitoring plan.	VVM Para. 122c	DR	As the project is the supply of electricity to the grid, the most important parameter for the calculation of emission reduction is the net electricity supplied to grid. As per regulatory requirement this is mandatory to monitor this parameter.	Y
<b>B.14. Baseline Details</b>				
B.14.1. Is there any indication of a date when determining the baseline?	PDD Section B.8/Annex 3	DR	As per PDD the date of determination of baseline is 19/06/2008.	Y
B.14.2. Is this consistent with the time line of the PDD history?	Also see revision history of the PDD	DR	Yes it is consistent with the timeline of PDD history.	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	PDD Annex 3	DR	The baseline grid emission factor has been calculated using the data published by Central Electricity Authority of India.	DR
<b>C. Duration of the Project / Crediting Period</b>				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	VVM Para. 102a-c PDD Section C.1.1/C.1.2	DR	As per PDD the start date of the project activity is 3/3/2006 and the operational lifetime is 20 years. Documentary proof for start date and operational life time needs to be produced.	CAR11 Closed out
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting	VVM Para. 102a PDD Section	DR	The project has chosen the fixed crediting period of 10 years.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	C.2/C.2.1/C.2.2			
C.1.3. Does the project's operational lifetime exceed the crediting period	VVM Para. 102a PDD Section C.1.2/C.2.1.1/C.2.1.2	DR	Yes the project operational life time is more than the crediting period.	Y
C.1.4. Does the start date indicate whether this is a new project activity or a pre-existing project activity?	VVM Para. 102a/ 98 PDD Section C.1.1/C.2.1.1	DR	It is a pre-existing project activity as the start date is before 2nd August 2008	Y
<b>D. Environmental Impacts</b>				
D.1.1. Does the project comply with environmental legislation in the host country?	VVM Para. 131/134d PDD section D	DR	As per PDD, the project complies with the environmental legislation in the host country. To be checked during site visit.	Y
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently described?	VVM Para. 131 PDD section D	DR	There are no major environmental impacts because of the project activity and all necessary approvals has been obtained from statutory authorities for the project.	Y
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment	VVM Para. 131 PDD section D	DR	PDD states that as per MOEF requirements, EIA study need not be carried out for the projects less than US \$ 21.74 million and the total cost for the project is only US \$ 13.90 million. Hence EIA study has not been done. Documentary proof is to be submitted to substantiate this.	CAR12 CAR12 closed out

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
(EIA), and if yes, is an EIA approved?				
D.1.4. Will the project create any adverse environmental effects?	VVM Para. 131 PDD section D	DR	The project will not create adverse environmental impacts as it is a small scale hydro project.	Y
D.1.5. Are trans-boundary environmental impacts considered in the analysis?	VVM Para. 131 PDD section D	DR	The project does not lead to any transboundary environmental impacts	Y
D.1.6. Have identified environmental impacts been addressed in the project design?	VVM Para. 131 PDD section D	DR	As there is no major environmental impacts associated with the project, the same is not assessed in PDD	Y
<b>E. Stakeholder Comments</b>				
E.1.1. Have relevant stakeholders been consulted?	VVM Para. 128a PDD Section E.1	DR	Yes the relevant stakeholders were consulted and is available in E.1 of PDD	Y
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	VVM Para. 128a PDD Section E.1	DR	As per PDD the project has been publicized in national and vernacular dailies to invite stakeholder comments.	Y
E.1.3. Is the undertaken stakeholder process described in a complete and transparent manner?	VVM Para. 128b PDD Section E.1	DR	Yes stakeholder consultation is described transparently in PDD	Y
E.1.4. Is a summary of the	VVM Para.	DR	As per PDD all stakeholders have given their approval and no comments were	Y



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
stakeholder comments received provided?	128b PDD Section E.2		received.	
E.1.5. Has due account been taken of any stakeholder comments received?	VVM Para. 128b PDD Section E.3	DR	As per PDD no negative comments were received.	Y

## References

Reference ID	Title / Description	Comments
0	PDD version nil dated nil	used for ISHC in first web hosting period
1	PDD version 01 dated 22/07/2008	used for ISHC in second web hosting period
2	PDD version 02 dated 24/09/2008	Intermediate version
3	PDD version03 dated 27/02/2009	Submitted with RfR
4	HCA letter dated 24/11/2006 with ref.no:4/18/06-CCC given by Ministry of Environment & Forests the Indian DNA	Host Country Approval
5	Modalities of Communication	
6	Emission Reduction Calculation Sheet	
7	Minutes of the Meeting of Board of Directors held on 14/01/2005	CDM Consideration:
8	Award of Contract for Civil Works	Start Date
9	Minutes of Meeting of Board of Directors dated 15/12/2004	Approval for DPR
10	RBI Benchmark January 2005 Bulletin	Benchmark for Risk Free return
11	Consultant Agreement for CDM Services	CDM Consideration
12	Himachal Pradesh Development Report (Planning Commission)	Technology Barrier Proof
13	Geographical Analysis of Himachal Pradesh by Dr.D.D.Sharma	Other Barrier Proof
14	CA Certificate for source of finance	No Public funding
15	TERI Report for life time of project	Lifetime of the project proof



### A.3 Annex 3: Overview of Findings

#### Findings Overview

Findings from validation of “10 MW bundled Luni–III & Luni–II hydroelectric projects for a grid system at Sri Sai Krishna Hydro Energies Private Limited in Kangra District, Himachal Pradesh”.

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified and irrespective of the nature of the findings, for eg.: CAR #1, CAR #2, CL #3, FAR #4 etc.

Description of Table:

Type	Findings are either Corrective Action Requests (CARs), Clarification Requests (CLs), and Forward Action Request (FARs). A corrective action request (CAR) is raised if one of the following occurs: I. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions; II. The CDM requirements have not been met; III. There is a risk that emission reductions cannot be monitored or calculated.  A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met 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.
Lead Assessor	Details the content of the finding
Comments	
Ref	Refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

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

Responses to each Finding and relevant associated documentation should be recorded in this form by the Client and send back to the Lead Assessor in one submission to SGS (exception of finding linked to Letter of Approval, which can be submitted separately).

SGS reserves the right to review the associated fees and timeline if:

- more than one response submission is received from the Client
- a finding (CL/CAR), raised by the Lead Assessor prior to Technical Review stage, is not closed within 30 days of notification to the Client by SGS.

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

#### Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	13	0	0

**Deadline for submission of Response by Client<sup>1</sup>:** 15 days from Issue of Findings by SGS

Date:	08/08/2008		Raised by:	Sathis Kumar	
Type:	CAR	Number:	1.	Reference:	Table 1
Lead Assessor Comment:					

<sup>1</sup> Response to all findings with relevant associated documentation to be sent to SGS in one submission.

Provide					
1. Letter of Approval from the DNA of the Host Country					
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008	
The scanned copies of Letter of Approval received from Indian DNA and also Letter for the Modalities of Communication will be sent by mail.					
<b>Documentation Provided by Project Participant:</b>					
HCA letter dated 24/11/2006 with ref.no:4/18/06-CCC given by Ministry of Environment & Forests the Indian DNA					
<b>Information Verified by Lead Assessor:</b>					
HCA was checked and found ok.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008	
CAR is closed as HCA provided were found in compliance with the CDM guidelines.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008	

  

Date:	08/08/2008		Raised by:	Sathis Kumar	
Type:	CAR	Number:	2.	Reference:	B.4.4

<b>Lead Assessor Comment:</b>					
As per section C.1.1 of PDD the project start date is 03/03/2006 and the PDD version 01 is dated 22/07/2008. Justify with documentary evidence the timeline of the project history and also serious CDM consideration for the project activity.					
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008	
Chronology of events of the project is furnished in the PDD under Sec.B.5.					
<b>Documentation Provided by Project Participant:</b>					
PDD version 02 dated 24/09/2008 Minutes of the Meeting of Board of Directors held on 14/01/2005 Agreement dated 18/4/2005 between Zenith Corporate Services and PP for CDM services Term loan sanction letter dated 20.8.2005 with ref.no: RM-I/CPC-742 given by State Bank of India					
<b>Information Verified by Lead Assessor:</b>					
The chronology of events was checked. CDM has been considered before the start date of the project and immediately after that a consultant has been appointed for CDM services. Also in the loan sanction letter given by State Bank of India under Special Covenants it is mentioned "Carbon credits receivable must be routed through the account maintained with the bank and the disbursement of credit to be decided by the PP in consultation with the Bank".					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 19/12/2008	
CAR 02 is open as the timeline mentioned in PDD is not indicating the seriousness of CDM consideration as per EB41 Annex 46 guidelines. Please clarify how PP came to know about CDM before the start of project activity, reason for delay in availing CDM status as consultant has been appointed on 18/4/2005 and the start date of the project is 3/3/2006 and DOE was appointed on 1/12/2006. Please justify the reason for delay. In PDD the timeline should include, where applicable, the date when the investment decision was made, the date when construction works started, the date when commissioning started and the date of start-up (e.g. the date when commercial production started). In addition to this implementation timeline project participants shall provide a timeline of events and actions which have been taken to achieve CDM registration, with description of the evidence used to support these actions. These timelines will allow the DOE to assess the serious consideration of the CDM in the project decision making process and project implementation					
<b>Project Participant Response:</b>				<b>Date:</b> 30/12/2008	

PP was aware of the CDM benefits (gathered from newspaper reports, information from other developers who have got their projects registered with CDM EB from same region such as 5MW Dehar and 4.5MW Mauji SHPs) and the CDM benefits were the reason as to why PP ventured into this project activity. As regards delay, it is submitted that 3 months period cannot be construed as delay because normally companies take that much time to call quotations, discuss with the consultants and take third party opinion before appointing them. As regards the delay in appointment of DOE, it is submitted that after the appointment of CDM consultant, PP faced some problems in signing PPA. Since PPA is imperative for the project's very existence, efforts were concentrated in getting the issue sorted out. Once PP came to know that PPA would be signed, immediate action was taken to appoint the DOE. As you would kindly observe, DOE was appointed on December 1, 2006, while PPA was signed on December 7, 2006. As suggested, serious consideration portion of PDD has been suitably modified to include the date of investment decision, date on which construction work was awarded, orders for electro mechanical equipment was placed, PPA was signed, financial closure was achieved etc. among others. The project has not yet commenced operation. It is expected to commence generation only by April 2009. Necessary documentary evidence, like appointment of CDM consultant, Purchase order / work order for equipment, civil works, loan sanction letter, DOE appointment letter are submitted.

<b>Documentation Provided by Project Participant:</b>	
Revised PDD Minutes of the Meeting of Board of Directors held on 14/01/2005 Agreement dated 18/4/2005 between Zenith Corporate Services and PP for CDM services Term loan sanction letter dated 20.8.2005 with ref.no: RM-I/CPC-742 given by State Bank of India Letter No.SSKHEPL/C/III/111 dated 3.3.2006 for construction of Civil Works for the Project.	
<b>Information Verified by Lead Assessor:</b>	
The project start date is 3/3/2006 which corresponds to the placement of order for civil works for the project. Before the start date of the project PP has decided to avail CDM for the project which was checked from the Board Resolution dated 14/1/2005. Immediately after the Board decided to avail CDM for this project, a consultant has been appointed for CDM services on 18.4.2005. hence consultant has been appointed before the start date of the project. In parallel PP has taken steps for the implementation of the project like techno economic clearance for the project from HPSEB dated 17/8/2005. Once the CDM consultant was appointed DOE has been appointed on 1/12/2006. Then PPA has been signed on 7/12/2006. The project is not yet completed and the work is going on. The proposed commissioning of the project is April 2009.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 05/01/2009
CAR is closed as explained above PP has considered CDM before the start date of the project and has also appointed consultant for CDM services before the start date of project activity. Moreover the project is not yet commissioned and the work is going on and is expected to be commissioned by April 2009. Hence before the project is commissioned the DOE has been contracted and the validation has started more than two years before the proposed commissioning of the project. As per EB41 Annex 46 guidance PP has to demonstrate real and continuous action in parallel with its implementation. In view of this it is concluded that CDM has been seriously considered by PP for this project.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 05/01/2009

Date:	08/08/2008	Raised by:	Sathis Kumar
Type:	CAR	Number:	3.
		Reference:	A.4.2
<b>Lead Assessor Comment:</b>			
Provide documentary proof that the project technology will not be substituted by other or more efficient technologies within the project period.			
<b>Project Participant Response:</b>		<b>Date:</b> 02/10/2008	
Confirmation from the project proponent that the technology employed for the project activity will not be substituted by other or more efficient technologies within the project period is enclosed.			
<b>Documentation Provided by Project Participant:</b>			
Letter dated 23/9/08 given by PP for not changing the project technology.			
<b>Information Verified by Lead Assessor:</b>			
The letter was checked.			

<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 20/10/2008
CAR03 is closed as the PP has given a declaration that the project technology will not be changed during the crediting period.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 20/10/2008

Date:	08/08/2008		Raised by:	Sathis Kumar		
Type:	CAR	Number:	4.		Reference:	B.12.3
<b>Lead Assessor Comment:</b>						
The PDD hasn't discussed anything about the initial training and other maintenance efforts needed for the project. Provisions for meeting the training and maintenance needs of the project are not given in PDD						
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008		
The PP would employ qualified and certified personnel for operation and maintenance of the plant. Training of the plant personnel on operation and maintenance of electro-mechanical equipment will be initially imparted by the supplier of the equipments M/s.Shanghai Leichaun Indian Trading Co. Pvt. Ltd. Copy of the letter confirming the same by the E&M equipment supplier is furnished for verification. Necessary corrections are made in the PDD.						
<b>Documentation Provided by Project Participant:</b>						
Letter dated 12/01/2007 with ref.no: SLIT/HTG/SSKHEPL/07-08 given by M/s.Shanghai Leichun Indian Trading Co. Pvt. Ltd PDD version 02 dated 24/09/08						
<b>Information Verified by Lead Assessor:</b>						
The letter was checked and the training details are given in the letter						
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008		
CAR is closed as the necessary training details provided has been submitted.						
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008		

Date:	08/08/2008		Raised by:	Sathis Kumar		
Type:	CAR	Number:	5.		Reference:	A.6.1
<b>Lead Assessor Comment:</b>						
Provide documentary evidence that public funding is not used in the project activity.						
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008		
A CA certified means of finance for the project activity is provided to demonstrate that public funding is not used in the project activity. The project is funded by term loan from commercial bank and equity from the promoters.						
<b>Documentation Provided by Project Participant:</b>						
Letter dated 23/9/08 given by A.M.Reddy & Co. Chartered Accountants for no public funding						
<b>Information Verified by Lead Assessor:</b>						
The letter was checked and the source of finance for the project activity has been provided						
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008		
CAR 05 is closed as source of finance for the project activity has been provided and it does not include any public funding.						
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008		

Date:	08/08/2008		Raised by:	Sathis Kumar	
Type:	CAR	Number:	6.	Reference:	B.1.9
Lead Assessor Comment:					
Submit the form for Bundle project.					
Project Participant Response:				Date: 02/10/2008	
Form of the Bundle project is enclosed.					

<b>Documentation Provided by Project Participant:</b>	
CDM SSC Bundle form	
<b>Information Verified by Lead Assessor:</b>	
CDM SSC Bundle form was checked and found acceptable.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 20/10/2008
CAR 06 is closed as the bundle form has been submitted and is as per the guidelines.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 20/10/2008

Date:	08/08/2008	Raised by:	Sathis Kumar		
Type:	CAR	Number:	7.	Reference:	B.3.3
<b>Lead Assessor Comment:</b>					
Combined margin(CM) has been considered for the baseline emission factor The value has been taken from CEA. But the value used is not consistent in PDD.					
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008	
We have changed the baseline emission factor to 810 tCO2.Gwh					
<b>Documentation Provided by Project Participant:</b>					
Revised ER calculation spread sheet					
<b>Information Verified by Lead Assessor:</b>					
The excel sheet was checked and the emission factor has been considered as 0.81 tCO2/MWh and is consistent with the CEA data					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008	
CAR 07 is closed as the emission factor has been considered as 0.81 tCO2/MWh and is consistent with the CEA data					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008	

Date:	08/08/2008	Raised by:	Sathis Kumar		
Type:	CAR	Number:	8.	Reference:	B.4.7
<b>Lead Assessor Comment:</b>					
For the investment barrier the excel sheet for investment analysis and sensitivity analysis needs to be provided. PP has to justify with documentary evidence all the input factors/assumptions used in the investment analysis.					
The technological barrier given in PDD like earthquake, flash floods and land slides are common to other similar project activities in the region which are already under operation. PP has to justify why these needs to be considered as barrier.					

<b>Project Participant Response:</b>	<b>Date:</b> 02/10/2008																																				
<p>Excel sheet for investment analysis and also the sensitivity analysis are provided for verification. The technology barrier is considered as relevant to the project activity as the occurrence of flash floods, earth quakes / land slides etc., would have an impact on project implementation as well as the power generation from the project activity and ultimate financial viability. These barriers may be common to other projects in the region and it is this reason that most the projects being implemented in Himachal Pradesh are pursuing CDM revenue. Statistics on the status of implementation of small hydro project as on the date of the CDM project activity are provided below.</p> <table border="1"> <thead> <tr> <th>S. No</th> <th>Name of the Project</th> <th>Capacity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Raskat</td> <td>0.8 MW</td> </tr> <tr> <td>2</td> <td>Titang</td> <td>0.9 MW</td> </tr> <tr> <td>3</td> <td>Dehar* <sup>2</sup></td> <td>5 MW</td> </tr> <tr> <td>4</td> <td>Maujhi* <sup>3</sup></td> <td>4.5 MW</td> </tr> <tr> <td>5</td> <td>Ching</td> <td>1 MW</td> </tr> <tr> <td>6</td> <td>Manal* <sup>4</sup></td> <td>3 MW</td> </tr> <tr> <td>7</td> <td>Aleo* <sup>5</sup></td> <td>3 MW</td> </tr> <tr> <td>8</td> <td>Manjhal</td> <td>1 MW</td> </tr> <tr> <td>9</td> <td>Baragran <sup>#6</sup></td> <td>3 MW</td> </tr> <tr> <td>10</td> <td>Salag</td> <td>0.15 MW</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>22.35 MW</b></td> </tr> </tbody> </table> <p>(Note: * Project activities which are registered with CDM Executive Board # Project under request for registration)</p> <p>The data reveal that all similar project activities are being established only with CDM revenue. Even the Planning Commission of India has recognised the hardships occurring in the State of Himachal Pradesh. Please refer to the document Himachal Pradesh Development Report on Natural Disaster Management prepared by Planning Commission of India.</p> <p>In view of the serious nature of these barriers the PP desired to explain them in the PDD.</p>		S. No	Name of the Project	Capacity	1	Raskat	0.8 MW	2	Titang	0.9 MW	3	Dehar* <sup>2</sup>	5 MW	4	Maujhi* <sup>3</sup>	4.5 MW	5	Ching	1 MW	6	Manal* <sup>4</sup>	3 MW	7	Aleo* <sup>5</sup>	3 MW	8	Manjhal	1 MW	9	Baragran <sup>#6</sup>	3 MW	10	Salag	0.15 MW	<b>Total</b>		<b>22.35 MW</b>
S. No	Name of the Project	Capacity																																			
1	Raskat	0.8 MW																																			
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10	Salag	0.15 MW																																			
<b>Total</b>		<b>22.35 MW</b>																																			
<b>Documentation Provided by Project Participant:</b>																																					
Financial Analysis Excel Sheet DPR for both project Luni II & Luni III. Prepared by NHP Consultants, November 2004.																																					
<b>Information Verified by Lead Assessor:</b>																																					
The excel spread sheet was cross checked with DPR estimates																																					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 20/10/2008																																				

<sup>2</sup> Reference No: 0035, 18 July 2005, <http://cdm.unfccc.int/Projects/registered.html>

<sup>3</sup> Reference No: 0098, 6 November 2005, <http://cdm.unfccc.int/Projects/registered.html>

<sup>4</sup> Reference No. 0330, 21 July 2006, <http://cdm.unfccc.int/Projects/registered.html>

<sup>5</sup> Reference No: 0244, 14 April 2006, <http://cdm.unfccc.int/Projects/registered.html>

<sup>6</sup> Reference No: 1253, Request for registration, [http://cdm.unfccc.int/Projects/request\\_reg.html](http://cdm.unfccc.int/Projects/request_reg.html)



<p>CAR is open as the financial analysis shown in the excel spread sheet submitted is not consistent with DPR. The project revenue is found consistent with DPR whereas expenses are shown higher compared to DPR. Hence the profit after tax in excel sheet is lesser whereas it is higher in DPR. As per DPR, the IRR for Luni II is around 13% and for Luni III is 12% during first ten years. But in the excel calculation where IRR has been calculated for 20 years it is around 10.97% and when the same is calculated for 10 years it is not matching with DPR. The input values used in the financial analysis has been taken from DPR which has been done in the month of November 2004 whereas the reference for benchmark is taken at later years. As per CDM guidelines "Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. This decision will therefore be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point." Floods and Flash Floods in Himachal Pradesh: A Geographical Analysis Dr. D. D.Sharma, Himachal Pradesh University, Shimla , <a href="http://www.nidm.net/idmc/Proceedings/Flood/B2-%206.pdf">www.nidm.net/idmc/Proceedings/Flood/B2-%206.pdf</a> . The reference link is not accessible. Some of the discussion on additionality has been done after the start date of the project. As per CDM guidelines the discussion on additionality should be done before the start date of the project.</p>	
<b>Project Participant Response:</b>	<b>Date:</b> 24/11/2008
<p>The differences between DPR and PDD with respect to IRR is analysed and furnished below:</p> <ul style="list-style-type: none"> <li>• Service Tax is provided on O &amp; M expenditure while working out IRR in the PDD</li> <li>• Interest on working capital is considered as cash outflow in the IRR analysis of PDD</li> <li>• Salvage value in the case of DPR is prepared at the end of 10<sup>th</sup> year where as in the case of IRR worked out in the PDD, the same is taken at the end of 20<sup>th</sup> year.</li> <li>• Provision for income tax is made based on rates available in 2005-06 instead of 2004-05.</li> <li>• Phasing of expenditure in cashflow of PDD is different from DPR</li> </ul> <p>All the above issues are corrected in the revised IRR analysis which has increase the IRR from 10.97% to 11.26%.</p> <p>With respect to benchmark we have considered risk free return based on RBI bulletin of January 2005 for which necessary source has been provided. As on that date the latest rate was available for November'04</p> <p>With respect to article on geographical analysis for which link could not be accessible, we are attaching the document for your verification.</p> <p>With respect to additionality argument, necessary changes have been effected in the PDD. The PP desires to emphasizes that the anticipated problems have actually occurred in the state.</p>	
<b>Documentation Provided by Project Participant:</b>	
<p>Revised PDD Revised IRR Calculation Excel Spread Sheet Floods and Flash Floods in Himachal Pradesh: A Geographical Analysis by Dr.D.D.Sharma, Sr.Lecturer, Dept. of Geography, Himachal Pradesh University.</p>	
<b>Information Verified by Lead Assessor:</b>	
<p>The Input values in IRR calculation are now consistent with DPR. The RBI benchmark chosen is now consistent with the project timeline From the report on Floods and Flash Floods in Himachal Pradesh: A Geographical Analysis by Dr.D.D.Sharma, Sr.Lecturer, Dept. of Geography, Himachal Pradesh University it was verified that lot of natural barrier does exist for the project because of flash floods and land slides.</p>	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 03/12/2008
<p>CAR is open as per EB41 annex45 guidance point 9, the cost of financing expenditures (i.e. loan repayments and interest) should not be Included in the calculation of project IRR.</p>	
<b>Project Participant Response:</b>	<b>Date:</b> 04/12/2008
<p>It is submitted that as per EB 41 Annex 45 guidance point 9, interest is not included as expense but treated as cash inflow in the calculation of project IRR. To the profit after tax, interest on term loan and depreciation are added back to arrive at the cash inflow for the purpose of estimation of project IRR.</p>	



<b>Documentation Provided by Project Participant:</b>	
EB41 Annex 45 Guidelines	
<b>Information Verified by Lead Assessor:</b>	
The IRR calculation was checked.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 19/12/2008
<p>CAR is open as IRR with CDM as mentioned in excel sheet uses EF as on today but additionality discussion is based on the project start date and thus Emission Factor for estimating Emission Reductions for CDM revenue should be as on project start date proper evidence for the same need to be provided in PDD. Even after considering CDM the project is not able to meet the benchmark return. Please clarify how CDM will make the project viable?</p> <p>The following reference given in PDD under section B.5 are not accessible.</p> <p>Page No: 3, CEA Report as on 30th June 2006. <a href="http://www.cea.nic.in/planning/POWER%20SCENARIO%20AT%20A%20GLANCE/index.htm">www.cea.nic.in/planning/POWER SCENARIO AT A GLANCE/ index.htm</a></p> <p>Page No: 7, CEA Report as on 30th June 2006. <a href="http://www.cea.nic.in/planning/POWER%20SCENARIO%20AT%20A%20GLANCE/index.htm">www.cea.nic.in/planning/POWER SCENARIO AT A GLANCE/ index.htm</a></p> <p>Page No: 53, Table 9.2, Annual Report 2005-06, Ministry of Non-conventional Energy Sources, Govt. of India <a href="http://www.cea.nic.in/planning/POWER%20SCENARIO%20AT%20A%20GLANCE/index.htm">www.cea.nic.in/planning/POWER SCENARIO AT A GLANCE/ index.htm</a></p> <p>As indicated earlier some additionality discussion has been done after the start date of the project. As per CDM guidelines the discussion on additionality should be done before the start date of the project. Please correct.</p>	
<b>Project Participant Response:</b>	<b>Date:</b> 30/12/2008
<p>Estimation of emission reductions for CDM revenue has been revised considering the emission factor available as on the date of start date of project activity.</p> <p>IRR in the baseline is working out to 11.26% and with CDM revenue the same is reaching to 14.59%. The benchmark is estimated at 15.12%. These figures indicate that the IRR is almost reaching the benchmark justifying the significance of CDM revenue. The estimation of CDM revenue is also made on a conservative basis at Euro 12 and the minimum price for spot CERs is around Euro 15.</p> <p>The references given in the PDD under Section B.5 are updated and now they are accessible.</p> <p>Necessary changes have been made in the PDD to restrict the discussion in respect of barriers before the start date of the project.</p>	
<b>Documentation Provided by Project Participant:</b>	
Revised PDD	
<b>Information Verified by Lead Assessor:</b>	
<p>The section B.5 of PDD was checked. The Emission Factor has not been changed in the IRR Calculation with CDM.</p> <p>Proper justification has not been provided why PP has decided to proceed with the project even when the project is not financially viable even after considering CDM</p> <p>Still some of the additionality discussions are after the project start date.</p>	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 05/01/2009
<p>CAR is open as</p> <p>The Emission Factor has not been changed in the IRR Calculation with CDM as on or before the project start date. All the input values used should be applicable at the time of decision making to invest in the project.</p> <p>Proper justification has not been provided why PP has decided to proceed with the project even when the project is not financially viable even after considering CDM</p> <p>Still some of the additionality discussions are after the project start date.</p> <p>Also it is suggested that instead of listing all types of barriers use only those which are really strong barrier to the project.</p>	
<b>Project Participant Response:</b>	<b>Date:</b> 23/01/2009

The emission factor is changed now in respect of IRR calculation with CDM based on emission factor for the year 2004-05. The emission factor has worked out to 767.8 tCO<sub>2</sub>/GWh in place of 810 tCO<sub>2</sub>/GWh considered earlier. The emission factor is taken from the PDD of a registered 14.8MW wind power project in Rajasthan (Ref.No.0243).

The IRR with CDM now worked out to 14.41%. Required changes have been made in the PDD.

IRR with CERs income was considered as viable despite the remaining gap between IRR and benchmark, for the following reasons:

- Expectation of an upward movement in CER Price as per the CER market information available at the time of decision making;
- Expectation of Rupee losing its strength against Euro based on the past trend. The exchange rate has moved from Rs.56/€ in 2005 to around Rs.65/€. Euro is further expected to gain strength and hence, the PP is confident of achieving the benchmark, if not crossing it.

Necessary changes have been made to delete additionality discussion in the PDD after the project start date. The common practice barrier is deleted from the additionality discussion in the PDD.

**Documentation Provided by Project Participant:**

Revised PDD  
Revised IRR Calculation excel spread sheet  
Thomson Reuters Carbon Market  
<http://www.reuters.com/>

**Information Verified by Lead Assessor:**

The grid emission factor as applicable at the time of decision making is now used in the revised IRR calculation with CDM. The grid emission factor is taken from a registered PDD (Ref.No.243) and same was found correct as checked from UNFCCC website. The revised IRR with CDM now comes to 14.41%. The same is now corrected in revised PDD.

Historically the prices of CER has moved upwards. Also the value of INR has moved downwards over the years compared to Euro. Hence the IRR with CDM is expected to increase over the years and meet the benchmark return.

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

**Date:** 10/02/2009

CAR is closed as the emission factor is corrected in the IRR calculation in line with the time of decision making for the project and the reason for proceeding with the project even when not meeting the benchmark return was found reasonable.

**Acceptance and Close out by Lead Assessor:**

**Date:** 10/02/2009

Date:	08/08/2008		Raised by:	Sathis Kumar	
Type:	CAR	Number:	9.	Reference:	B.5.6

**Lead Assessor Comment:**

**GHG emission reduction has been estimated based on potential net generation and export of 40.3 GWh of electricity per annum. The basis for this assumption needs to be justified.**

**Project Participant Response:**

**Date:** 02/10/2008

GHG emission has to be computed on the potential net generation and export of electricity. The estimation of generation is based on hydrology data as furnished in the DPR.

**Documentation Provided by Project Participant:**

DPR  
ER Calculation excel sheet

**Information Verified by Lead Assessor:**

The potential net generation from the project.

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

**Date:** 20/10/2008

CAR is closed as the supporting document for ER estimation has been provided

**Acceptance and Close out by Lead Assessor:**

**Date:** 20/10/2008

Date:	08/08/2008	Raised by:	Sathis Kumar		
Type:	CAR	Number:	10.	Reference:	B.7.4
<b>Lead Assessor Comment:</b>					
The excel sheet for ER calculation needs to be provided.					
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008	
Excel sheet for ER calculation is provided for verification					
<b>Documentation Provided by Project Participant:</b>					
ER Calculation excel spread sheet					
<b>Information Verified by Lead Assessor:</b>					
The excel spread sheet was checked.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008	
CAR is closed as the excel spread sheet has been provided.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008	

Date:	08/08/2008	Raised by:	Sathis Kumar		
Type:	CAR	Number:	11.	Reference:	C.1.1
<b>Lead Assessor Comment:</b>					
<b>As per PDD the start date of the project activity is 3/3/2006 and the operational lifetime is 20 years. Documentary proof for start date and operational life time needs to be produced.</b>					
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008	
The proof for start date of the project activity is furnished. TERI Report to CERC on Pricing of Power from Non-Conventional Sources indicates "For estimation of depreciation, life of the plant can be assumed as 20 years" (page 44). The report is enclosed for verification.					
<b>Documentation Provided by Project Participant:</b>					
Letter No.SSKHEPL/C/III/111 dated 3.3.2006 for construction of Civil Works for the Project.					
TERI report to CERC on pricing of power from Non Conventional Energy Sources					
<b>Information Verified by Lead Assessor:</b>					
The start date was checked from the Letter No.SSKHEPL/C/III/111 dated 3.3.2006 for construction of Civil Works for the Project and lifetime from TERI report.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008	
CAR is closed as supporting documents have been provided for the start date and lifetime of the project.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008	

Date:	08/08/2008	Raised by:	Sathis Kumar		
Type:	CAR	Number:	12.	Reference:	D.1.3
<b>Lead Assessor Comment:</b>					
PDD states that as per MOEF requirements, EIA study need not be carried out for the projects less than US \$ 21.74 million and the total cost for the project is only US \$ 13.90 million. Hence EIA study has not been done. Documentary proof is to be submitted to substantiate this.					
<b>Project Participant Response:</b>				<b>Date:</b> 02/10/2008	
MoEF notification dt.13.06.2002 is enclosed for verification which indicates that the project having investment less than Rs.100 crores does not require environmental clearance and therefore EIA study is not required.					
<b>Documentation Provided by Project Participant:</b>					
MoEF notification dt.13.06.2002					
<b>Information Verified by Lead Assessor:</b>					
As per the notification for new hydel projects if the investment is less than 100 crores then EIA study is not required.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 20/10/2008	
CAR is closed as EIA study is not required for the project as the total investment is less than 100 crores.					

<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 20/10/2008	
<b>Date:</b>	20/10/2008		<b>Raised by:</b>	Sathis Kumar	
<b>Type:</b>	CAR	<b>Number:</b>	13.	<b>Reference:</b>	B.10.4
<b>Lead Assessor Comment:</b>					
In section B.7.1 of PDD for the parameter auxiliary consumption whether it will be measured using meter or calculated is not clear from PDD. Also for fossil fuel consumption i.e. diesel for DG set it is mentioned as weigh bridge will be calibrated as per standards which is not clear.					
<b>Project Participant Response:</b>				<b>Date:</b> 24/11/2008	
Necessary changes have been made in the PDD in Section B.7.1					
<b>Documentation Provided by Project Participant:</b>					
Revised PDD					
<b>Information Verified by Lead Assessor:</b>					
The monitoring plan in section B.7.1 is now corrected.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 05/01/2009	
CAR is closed as the monitoring plan in the revised PDD is found ok.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 05/01/2009	

## A.4 Annex 4: Team Members Statements of Competency

Name: Kumar, Sathis SGS Affiliate: SGS India

### Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	<input checked="" type="checkbox"/>
<i>Sub scope(s): Combined heat and Power &amp; Waste Heat, Biomass Electricity Utilization</i>	
<b>2. Energy Distribution</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>3. Energy Demand</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>4. Manufacturing</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>5. Chemical Industry</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>6. Construction</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>7. Transport</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>8. Mining/Mineral Production</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>9. Metal Production</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>12. Solvent Use</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>13. Waste Handling and Disposal</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>14. Afforestation and Reforestation</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>15. Agriculture</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	

Approved Member of Staff by: Siddharth Yadav Date: 28/10/2009

Name:  SGS Affiliate:

#### Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

#### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	<input checked="" type="checkbox"/>
<i>Sub scope(s): Combined heat and Power &amp; Waste Heat and Biomass Electricity Utilization</i>	
<b>2. Energy Distribution</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>3. Energy Demand</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>4. Manufacturing</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>5. Chemical Industry</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>6. Construction</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>7. Transport</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>8. Mining/Mineral Production</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>9. Metal Production</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>12. Solvent Use</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>13. Waste Handling and Disposal</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>14. Afforestation and Reforestation</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	
<b>15. Agriculture</b>	<input type="checkbox"/>
<i>Sub scope(s):</i>	

Approved Member of Staff by:  Date:

Name: Mahawar, Abhishek SGS Affiliate: SGS India

#### Status

- Lead Assessor	<input type="checkbox"/>	- Expert	<input type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input checked="" type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

#### Scopes of Expertise

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

Approved Member of Staff by: Siddharth Yadav Date: 12/11/2009

Name: **Banerjee, Sanjay**      SGS Affiliate: **SGS India**

#### Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

#### Scopes of Expertise

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

Approved Member of Staff by: **Siddharth Yadav**      Date: **28/10/2009**



Name: Jimmy Sah

SGS Affiliate: India

Status

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

Validation

Verification

- Local Assessor ☒
- Lead Assessor ☐
- Assessor ☐
- / Trainee Lead Assessor

Scopes of Expertise

1. Energy Industries (renewable / non-renewable) ☐
2. Energy Distribution ☐
3. Energy Demand ☐
4. Manufacturing ☐
5. Chemical Industry ☐
6. Construction ☐
7. Transport ☐
8. Mining/Mineral Production ☐
9. Metal Production ☐
10. Fugitive Emissions from Fuels (solid,oil and gas) ☐
11. Fugitive Emissions from Production and ☐

Consumption of Halocarbons and Sulphur Hexafluoride

12. Solvent Use ☐
13. Waste Handling and Disposal ☐
14. Afforestation and Reforestation ☐
15. Agriculture ☐

Approved Member of Staff by Siddharth Yadav Date: 23-05-2007