



# VALIDATION REPORT DODSON – LINDBLOM HYDRO POWER PRIVATE LIMITED (DLHPPL)

RENEWAL OF CREDITING PERIOD  
12 MW HYDROPOWER PLANT IN  
BHANDARDARA IN  
MAHARASHTRA, INDIA.

REPORT No. INDIA-VAL/13/2008

REVISION No. 01

BUREAU VERITAS CERTIFICATION

# VALIDATION REPORT

Date of first issue:  <b>03/05/2008</b>	Organizational unit:  <b>Bureau Veritas Certification Holding SA</b>
Client: Dodson – Lindblom Hydro Power Private Limited (DLHPPL)	Client ref.: <b>Mr. Prem Paunikar</b>

Summary:  
Bureau Veritas Certification has made the validation of the renewal of the crediting period of the project titled '12 MW hydropower plant in Bhandardara in Maharashtra, India' of 'Dodson – Lindblom Hydro Power Private Limited (DLHPPL)' located in Maharashtra, India on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology AMS I.D, version 13 and meets the relevant UNFCCC requirements for the renewal of the crediting period.

Report No.: <b>INDIA-Val/13/2008</b>	Subject Group: <b>CDM</b>
Project title:  <b>12 MW hydropower plant in Bhandardara in Maharashtra, India</b>	
Work carried out by: <b>Sandeep Lele – Team Leader</b>	
Work verified by: <b>Ashok Mammen</b>	
Date of this revision: <b>13/05/2008</b>	Rev. No.: <b>01</b>
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## Indexing terms

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### Abbreviations change / add to the list as necessary

AMS	Approved small scale methodology
Art.	Article
BE <sub>y</sub>	Baseline emissions for year y
BH-1	Short name for the project activity
BH-2	Another power plant by project participant near BH-1
BM	Build margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CERC	Central electricity regulatory commission
CL	Clarification Request
CM	Combined margin
CO <sub>2</sub>	Carbon-di-oxide
CO <sub>2e</sub>	Equivalent CO <sub>2</sub>
DG	Diesel Generator
DLHPPL	Dodson - Lindblom Hydro Power Private Limited
DNA	Designated national authority
DOE	Designated Operational Entity
EF	Emission factor
EF <sub>y</sub>	Emission factor for year y
EG <sub>y</sub>	Electricity generated in year y
ER <sub>y</sub>	Emission reductions for year y
GHG	Green House Gas(es)
GOMID	Government of Maharashtra irrigation Department
I	Interview
IETA	International Emissions Trading Association
IPCC	Inter governmental panel on climate change
JMR	Joint Meter Reading
kWh	Kilowatt-hour
MERC	Maharashtra electricity regulatory commission
MoV	Means of Verification
MP	Monitoring Plan
MSEDCL	Maharashtra state electricity distribution company limited
MW	Megawatt
MWh	Megawatt-hour
NA	Not applicable
NCV	Net calorific value
NGO	Non Government Organization
NGO	Non-governmental organization
No	Number
OM	Operating margin
PCF	Prototype Carbon Fund
PDD	Project Design Document
QA	Quality assurance
QC	Quality control
SF <sub>6</sub>	Sulfur hexa-fluoride
SHP	Small Hydro Power



tCO <sub>2</sub>	Tons of CO <sub>2</sub>
tCO <sub>2e</sub>	Tons of equivalent CO <sub>2</sub>
UNFCCC	United Nations Framework Convention for Climate Change
VROM	DNA of Netherlands



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## 1 INTRODUCTION

Dodson – Lindblom Hydro Power Private Limited (DLHPPL) has commissioned Bureau Veritas Certification to validate its CDM project 12 MW hydropower plant in Bhandardara in Maharashtra, India (hereafter called “the project”) at Maharashtra, India.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

### 1.1 Objective

The validation of renewal of crediting period serves as assessment of baseline of the project that has opted for a renewal of the crediting period. The validation is an independent third party assessment of the project baseline. In particular, the project's baseline and the monitoring plan (MP) are validated in order to confirm that the project baseline, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. The estimated emission reductions are also assessed to ensure that the estimate is reasonable and conservative. Validation of baseline is a requirement for all CDM projects seeking renewal of the crediting period and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

### 1.2 Scope

The validation scope is defined as an independent and objective review of 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.

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

### 1.3 GHG Project Description

The project activity is a small hydropower plant of 12 MW capacity, exporting power to the grid.

The project activity (BH-1) is constructed at the foot of a hill adjacent to the Bhandardara dam. BH-1 was originally built by the GOMID with a



single hydropower generating unit of 10 MW in 1984. The generating unit at BH-1 was commissioned in 1986 and entered commercial operation in 1987. After operating for eight years, a mishap occurred which severely damaged the entire plant and the plant ceased to operate. The damaged equipment was beyond use and could not be used and hence disposed as scrap. The accident had caused such damage that entire plant had to be reconstructed. The rehabilitation and operation of this plant was awarded on a lease, own, operate and transfer basis to DLHPPL.

Bhandardara powerhouse (BH-2) of 34 MW capacity is located 10 kilometers downstream from BH-1. BH-1 has no impact on the generation of BH-2. BH-2 is designed as peaking project, which has been transferred on lease to DLHPPL in December 2006 for refurbishment/rehabilitation and currently being operated and maintained by DLHPPL. The control of the release of water for irrigation needs is exercised from Bhandardara dam. To satisfy the current demand of irrigation, water is released at rates much larger than that can be utilised for power generation at BH-1. At the same time, farmers of the command area are not happy with inadequate irrigation water releases. To provide comprehensive solution to these problems, GOMID has been constructing a new irrigation dam, the Nilwande dam, along the Pravara river, about 20 kilometers downstream from BH-2. When Nilwande dam is commissioned to the design elevation by 2009, power generation from BH-1 is expected to increase.

#### **1.4 Validation team**

The validation team consists of the following personnel:

Sandeep Lele

Bureau Veritas Certification Team Leader, Climate Change Verifier

## **2 METHODOLOGY**

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;



- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of five tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.





Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a <b>Corrective Action Request (CAR)</b> or a <b>Clarification Request (CL)</b> of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Protocol Table 2: Requirements checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	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 (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Baseline and Monitoring Methodologies				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	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 (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.



Validation Protocol Table 4: Legal requirements				
Checklist Question	Reference	Means verification (MoV)	Comment	Draft and/or Final Conclusion
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	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 ( <b>OK</b> ), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.

Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3/4	Summary of project owner response	Validation conclusion
If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

**Figure 1 Validation protocol tables**

## 2.1 Review of Documents

The Project Design Document (PDD) submitted by Dodson – Lindblom Hydro Power Private Limited (DLHPPL) and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Name of Dodson – Lindblom Hydro Power Private Limited (DLHPPL) revised the PDD and resubmitted it on May 2008.

The validation findings presented in this report related to the project as described in the PDD version 04.



## 2.2 Follow-up Interviews

On 10/04/2008 and 28/04/2008 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of DLHPPL were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

Interviewed organization	Interview topics
DLHPPL	<ul style="list-style-type: none"> <li>➤ Status of the project and any modifications with respect to the registered project activity</li> <li>➤ Developments in the project vicinity that may affect the applicability of methodology and / or baseline</li> <li>➤ Baseline of the project</li> <li>➤ National policies and changes thereto</li> <li>➤ Environmental license</li> <li>➤ Project emissions</li> </ul>
Bunge, India.	<ul style="list-style-type: none"> <li>➤ Baseline and emission factor</li> <li>➤ National policies and changes thereto</li> <li>➤ Project emissions and materiality</li> </ul>

## 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

## 3 VALIDATION FINDINGS

In the following sections, the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively,



have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 2 Corrective Action Requests and 6 Clarification Requests.

3) The conclusions for validation subject are presented.

### 3.1 Project Design

Since the current validation is for renewal of the crediting period for the project already registered as a small scale CDM project activity, the assessment did not focus on the project design.

Project participant confirmed that there have been no changes / alternations to the project activity and its equipment that could change the project activity with respect to the registered PDD. Project participant also conformed that there is no change to the project participants and the modalities of communication.

### 3.2 Baseline and Additionality

The '12 MW hydropower plant in Bhandardara in Maharashtra, India' project uses the approved methodology AMS I.D (Grid connected renewable electricity generation, version 13).

At the time of registration, project participant had used the same methodology [version 09]. Therefore it meets the condition that for renewal of the crediting period, the methodology shall not change.

The applicability of the methodology was re-assessed based on the knowledge of the project from the initial validation, subsequent verifications and the confirmation from the project participant. As discussed in the attached protocol at section 1.1 of Table 3, the project activity meets each of the applicability conditions of the methodology. It also meets all the other stipulations and limitations mentioned in the other sections of the methodology, e.g. stipulation related to limited source of renewable energy, etc.

The project boundary described most of the components of the project activity. Clarification request CL2 was raised as the description of project boundary did not include turbine and generator as well as the power plants connected to the grid. In response, project participant revised section B.3 of the PDD to include these components. With this correction, the project boundary is completely described.

The PDD correctly considers the baseline as kWh produced by the renewable energy generating unit multiplied by an emission coefficient.



Project participant calculated this emission coefficient using the option (a) of the methodology, viz. a combined margin in line with the 'tool to calculate the emission factor for an electricity system'.

Project participant has revised the baseline emission factor with respect to the previous crediting period. Project participant has used the latest version [version 3 dated 15/12/2007] of Central Electricity Authority [CEA] data for the baseline emission factor. The guidance by CEA for this database clearly states that it is based on the tool referred above and therefore meets the requirements of the PDD. Further, this data is publicly available directly from the central authority in India and hence is reliable. Project participant has used the correct weights of 0.25 & 0.75 for OM & BM respectively as required by the said tool. The operating margin is 0.99 tCO<sub>2e</sub>/MWh and the build margin is 0.59 tCO<sub>2e</sub>/MWh. The combined emission factor thus calculated is 0.69 tCO<sub>2e</sub>/MWh.

### 3.3 Monitoring Plan

The Project uses the approved monitoring methodology AMS I.D (Grid connected renewable electricity generation, version 13). Refer discussions on the relevance of the methodology at section 3.2 above.

The monitoring plan correctly uses the electricity exported to the grid as the baseline parameter. This is taken from the main meter readings recorded by the authorities in a joint meter reading [JMR] record and hence reliable. This is crosschecked with the check meter reading also taken from the JMR. The uncertainty on these meters is low as these are under the custody of authorities for all purposes including calibration.

The monitoring plan also includes –

- Recording of electricity imported by the project activity using the meter under the custody of electricity supply authority, including calibration.
- Diesel consumption measured and recorded daily using the levels in the main diesel storage tank.

There is no crosschecking possible for the electricity consumed. For diesel, the cross checking is by internal records of issue of diesel from stores to the DG set.

CL4 was issued since PDD provided for archiving of records other than those used in monitoring. Project participant corrected the provision to close the request. CL6 was raised since the cross checking method for different meters was not consistent. Project participant corrected this also to close the request. CAR 1 and CAR 2 were raised since the PDD did not explain the project emission consideration transparently and there was inconsistency in data source used for monitoring. Project participant



corrected the PDD to explain the project emission transparently and used JMR as the source for monitored data to close the requests.

Since this validation is for the renewal of the crediting period, additionality was not re-assessed.

### 3.4 Calculation of GHG Emissions

As per methodology AMS I.D, the baseline emission sources considered are power plants connected to the western regional grid.

Project participant has taken the baseline emission factor from the CEA database available publicly. Project participant has used the latest database version 3 dated 15/12/2007. CEA guideline for the database says that the emission factors are based on 'tool for calculation of emission factor for an electricity system' referred by AMS I.D. project participant has applied correct weights [0.25 for OM & 0.75 for BM] applicable for the second crediting period. The validation team therefore confirms that the emission factor of 0.69 tCO<sub>2e</sub>/MWh arrived at by project participant is in line with the methodology. The detailed algorithms are described later under sections B.6.3 of the PDD.

Methodology AMS I.D does not require project emissions to be considered. Project participant however has provided to consider project emissions on account of electricity consumption and diesel consumption if these individually exceed 0.5% of the respective project activity parameter. Accordingly, project participant has provided under section B.6.2 for ex-ante emission factors for western grid and diesel to be used for project emission calculations. The grid emission factor is the same as that used for baseline emissions. For diesel, the emission factor values are the upper limit of the 95% confidence intervals from IPCC default values of 2006 version. The consideration of upper values calculates project emissions at the higher level and is therefore conservative. The density of diesel is taken from the Motor Spirit and High Speed Diesel Order of 1998.

Since the project did not involve transfer of equipment, no leakage emissions are considered. This is in line with the methodology.

The estimated annual average of approximately 35,091 tCO<sub>2e</sub> over the 7 year crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.

### 3.5 Sustainable Development Impacts

Since this validation is for the renewal of the crediting period, these impacts were not re-assessed.





### 3.6 Comments by Local Stakeholders

Since this validation is for the renewal of the crediting period, the local stakeholders were not consulted.

## 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

Since this validation is for the renewal of the crediting period, comments from parties, stakeholders and NGOs were not invited.

## 5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of renewal of the crediting period for CDM project '12 MW hydropower plant in Bhandardara in Maharashtra, India'. The validation was performed on the basis of UNFCCC criteria, procedures for renewal of the crediting period of a registered CDM project activity and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project participant; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

The additionality was not re-assessed during this validation.

By generation of electricity using renewable hydropower, the project is likely to result in reductions of GHG emissions partially. Given that the project is maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (version 4) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and provides for appropriate baseline scenario and emission factor.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

## 6 REFERENCES

### Category 1 Documents:

Documents provided by Type the name of Dodson – Lindblom Hydro Power Private Limited (DLHPPL) that relate directly to the GHG components of the project.



- /1/ PDD version 4
- /2/ Approved methodology AMS I.D, version 13
- /3/ Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM projects.
- /4/ Tool to calculate emission factor for an electricity system.
- /5/ Procedure for renewal of the crediting period
- /6/ Tool to calculate project or leakage CO2 emissions from fossil fuel combustion

### **Category 2 Documents:**

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /1/ Latest CEA database version 3 for emission factor for Western Regional grid.
- /2/ Motor Spirit and High Speed Diesel Order of 1998
- /3/ CEA baseline emission database version 3, December 2007.

### **Persons interviewed:**

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

- /1/ Mr. Prem Paunikar Director, DLHPPL
- /2/ Ms. Chithra Srinivasan Consultant, Bunge India Limited

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## APPENDIX A : VALIDATION PROTOCOL

**TABLE 1 MANDATORY REQUIREMENTS FOR SMALL SCALE CLEAN DEVELOPMENT MECHANISM (CDM) PROJECT ACTIVITIES**

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	Yes	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	NA	Not assessed since project activity is already registered with reference N° 430
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	Yes	Table 2, Section E.4.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	NA	Not assessed since project activity is already registered with reference N° 430
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	Yes	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are	Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small	NA	Not assessed since project activity is already registered with reference N° 430

\* MoV = Means of Verification, DR= Document Review, I= Interview



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
reduced below those that would have occurred in the absence of the registered CDM project activity	Procedures for Small Scale CDM Project Activities §26		with reference N° 430
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	Yes	Declaration by DLHPPL at Annex 2 of the PDD and by VROM, the DNA of Netherlands in their letter of approval of the participation.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities§ 29)	Yes	Government of India has designated the National Clean Development Mechanism (CDM) Authority under Ministry of Environment & Forest to act as DNA.  Source <a href="http://cdm.unfccc.int/DNA">http://cdm.unfccc.int/DNA</a>
9. The host country shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	Yes	Date of accession – 26/08/2002  Source <a href="http://unfccc.int/parties_and_observers/parties/items/2109.php">http://unfccc.int/parties_and_observers/parties/items/2109.php</a>



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a de-bundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	Yes	Table 2, Section A.1
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	Yes	Reference 1 to this checklist
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	Yes	Table 2, Section A.1.3 and B.1
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	NA	Not assessed since project activity is already registered with reference N° 430
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	NA	Not assessed since project activity is already registered with reference N° 430
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c, d	NA	Not assessed since project activity is already registered with reference N° 430



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**TABLE 2 REQUIREMENTS CHECKLIST**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1. Small scale project activity It is assessed whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	1- 3	DR	The project activity is already registered as a small-scale project activity.  It is noted that after the registration of the project activity, the project participant has developed another hydropower project activity in the vicinity of the project activity.  PDD does not refer to this activity and clarify whether the project activity still is eligible as a small-scale project activity.	CL 1	OK
A.1.2. The small-scale project activity is not a de-bundled component of a larger project activity?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
A.1.3. Does proposed project activity conform to one of the project categories defined for small-scale CDM project activities?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview



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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>A.2. Project Design</b> Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	1- 3	DR I	This is explained in section B.4 of the PDD.	OK	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1- 3	DR I	These include water diversion structure, power canal, penstock, powerhouse, and power evacuation system to the grid and tailrace canal. For calculation of baseline emission factor, the electricity grid is also included in the project boundary. This is defined in section B.3 of the PDD.  The turbine and generator are not separately identified in the project boundary.  The description of boundary for the purpose of baseline emissions does not include plants connected to the grid within the boundary.	CL 2	OK
A.2.3. Does the project design engineering reflect current good practices?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
A.2.4. Will the project result in technology transfer to the host country?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?		I			
<b>A.3. Contribution to Sustainable Development</b> The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
A.3.2. Will the project create any adverse environmental or social effects?	1- 3	I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	1- 3	I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	1- 3	DR	The India legislation allows private sector hydropower plants in line with the hydropower policy of the Government of Maharashtra.	OK	OK
<b>B. Project Baseline</b> The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
<b>B.1. Baseline Methodology</b> It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in	1- 3	DR	Yes. Project participant has used the simplified	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
line with the baseline methodologies provided for the relevant project category?		I	baseline methodology AMS I.D, version 13 titled 'Grid connected renewable electricity generation'.  During the first crediting period, project participant has used version 9 of the same methodology. This is in line with the procedure for renewal of the crediting period according to which the methodology cannot change.		
B.1.2. Is the baseline methodology applicable to the project being considered?	1- 3	DR	Yes, the baseline methodology type I.D is applicable to the project. The project activity fully meets the applicability conditions of the methodology. This is justified in section B.2 of the PDD.  The project activity meets the applicability conditions of the selected methodology AMS I.D version 13 as follows –  1. This is a hydropower plant supplying electricity to the western regional grid. About 60% of the power generation units supplying power to the western regional grid are fossil fuel based.  2. There is no non-renewable component in the project activity. The total rated capacity of the plant is 12 MW.  3. The project activity is not a combined heat & power system.  4. The project activity replaces the old non-functional hydropower generation system. There is no addition to the capacity.  5. The project activity can be considered to retrofit	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			the existing hydropower generation facility. The total rated output of the retrofitted facility is 12 MW.		
<b>B.2. Baseline Determination</b> It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	1- 3	DR	<p>The section B.4 of the PDD describes how the baseline is developed.</p> <p>As per section B.2 of the PDD, the latest data [version 3 dated 15/12/2007] from official source of Central Electricity Authority [CEA] and made publicly available on their website is used for determining the baseline.</p> <p>As per the tool, project participant has used weightage of 0.25 for the operating margin and 0.75 for the build margin for calculation of the combined margin for the second crediting period.</p> <p>The values of simple operating margin including imports, build margin without imports, weightages</p>	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>used in the PDD match with those available on the CEA database and these values are as follows –            Simple OM = 0.99 tCO<sub>2</sub> / MWh            Build margin = 0.59 tCO<sub>2</sub> / MWh            Combined margin = 0.69 tCO<sub>2</sub> / MWh</p> <p>These values are taken for the year 2007, which is the latest year for which the data is available. The guidance by CEA of the database clarifies that the data is based on the information till the year 2007 and that the calculations are done based on the requirements of the 'tool to calculate the emission factor for an electricity system'.</p> <p>It is therefore concluded that the baseline determination is transparent and appropriately done.</p>		
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	1- 3	DR I	<p>Section B.5 of the PDD includes discussions on the national and sectoral policies.</p> <p>The discussion does not identify if there are any changes in the policy after registration of the project activity and if changed how these changes affect the project activity.</p>	CL 3	OK
B.2.4. Is the baseline selection compatible with the available data?	1- 3	DR	Refer section B.2.2 above.	OK	OK
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	1- 3	DR	<p>As stated in section B.2 of the PDD, the selected baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO<sub>2</sub>e/ kWh).</p> <p>Refer B.2.2 above.</p>	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>C. Duration of the Project / Crediting Period</b> It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1- 3	DR	Yes. The renewable 7 year crediting period is chosen. The first crediting period ends on 26/07/2008.  The renewed crediting period will start from 27/07/2008.	OK	OK
<b>D. Monitoring Plan</b> The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
<b>D.1. Monitoring Methodology</b> It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	1- 3	DR	Yes. AMS I.D version 13 is selected and is relevant for the project category.	OK	OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	1- 3	DR	The project activity meets the applicability conditions of the project activity. This is justified in section B.2 of the PDD.  Refer sections B.1.1 and B.1.2 of the PDD.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.3. Is the application of the monitoring methodology transparent?	1- 3	DR	<p>As per section B.7.1 of the PDD, the monitoring methodology includes monitoring of –</p> <ol style="list-style-type: none"> <li>1. Net electricity exported in kWh</li> <li>2. Electricity imported in kWh</li> <li>3. Gross electricity generation in kWh</li> <li>4. Daily electricity export to the grid in kWh</li> </ol> <p>There is inconsistency in the measurement provisions for these parameters. The data source is mentioned as 'plant record book' and 'monthly billing records' while under the description of the measurement methods, the PDD mentions Joint Meter Readings using main meter and check meter.</p> <p>The QA / QC procedure does not define the action to be taken in case any of the meters is observed to be outside the defined accuracy level.</p>	CAR 1	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	1- 3	DR	<p>The monitoring method measures the net electricity exported to the grid. As per the methodology, the baseline emissions would be calculated by multiplying this number by the grid emission factor. This is in line with the methodology. This will enable real measurement of baseline emissions.</p> <p>Any project emissions and leakage emissions need to be reduced from the baseline emissions. As per the PDD and the initial validation report, leakage emissions can be considered to be zero.</p> <p>The project activity has a standby DG set for power generation during the period that the project activity</p>	CAR 2	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			does not generate power. The breakers in the switchyard use SF <sub>6</sub> . The monitoring plan under section B.7.1 of the PDD however does not provide for monitoring of the project emissions on account of the potential project emissions.		
<b>D.2. Monitoring of Project Emissions</b> It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission indicators reasonable?	1- 3	DR	Project emissions are considered as nil since the emissions on account of the imported electricity and diesel consumption have been historically observed to be negligible.  Project participant has used the monthly bills raised by the electricity distributor as the source for the quantity of electricity imported. This is reasonable since it is from the authority itself. The project emissions will be accounted if the electricity imported is equal to or more than 0.5% of the electricity exported for the JMR period.  The project activity involves occasional power generation using Diesel generator sets. The breakers in the switchyard are SF <sub>6</sub> gas based. The likely emissions from these sources are not accounted by the monitoring plan.  Refer D.1.4 above.	OK	OK
D.2.2. Will it be possible to monitor / measure	1- 3	DR	Refer D.2.1 above.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
the specified project emission indicators?					
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	1- 3	DR	Refer D.2.1 above.	OK	OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	1- 3	DR	Refer D.2.1 above.	OK	OK
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity. As per the initial validation report, the leakage emissions are to be considered as zero.	OK	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>D.4. Monitoring of Baseline Emissions</b> It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1- 3	DR	Refer section B.2.2 above.	OK	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1- 3	DR	Refer D.1.4 above	OK	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	1- 3	DR	The grid emission factor is planned to be monitored once for the entire project activity over the second crediting period [ex-ante] basis. This is derived from the publicly available data furnished by the Central Electricity Authority.  The net electricity exported to the grid will be monitored and recorded in JMR records on monthly basis. The	OK	OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1- 3	DR	The monitoring plan at section B.7.1 of the PDD provides for archiving of data for two years after the end of the crediting period.  The monitoring plan provides for archiving of monthly invoices while the source of data for baseline emissions is the JMR Records.	CL 4	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>D.5. Project Management Planning</b> It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.2. Is the authority and responsibility for monitoring measurement and reporting clearly described?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.3. Are procedures identified for training of monitoring personnel?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how	1- 3	DR 	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
to process performance documentation)					
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1- 3	DR I	<p>Project participant has updated the procedure for data adjustment and uncertainty at section B.7.2 of the PDD.</p> <p>Project participant has proposed data adjustment in two cases –</p> <ol style="list-style-type: none"> <li>1. The dates of JMR do not match with the verification period.</li> </ol> <p>For this case, project participant proposes to use the hourly readings of main meter recorded by project participant on a regular basis. These can also be crosschecked with the hourly readings of the check meter recorded by project participant. Since this data can easily be crosschecked with the total period of the respective JMR, the method is reliable. The validation team therefore accepts this approach to overcome the stated uncertainty.</p> <ol style="list-style-type: none"> <li>2. The dates of monthly bill for import of electricity do not match with the verification period.</li> </ol> <p>As per project participant, the difference in the dates of the JMR and the date of monthly bill for electricity imported will not be significant. Further, over 7 years of the crediting period, the difference will be very negligible. Hence project participant proposes to use the monthly bill quantity without any adjustments towards the project emissions if these exceed 0.5% of the electricity exported in the corresponding period.</p>	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The validation team accepts this method since there is no other data available for use. Project participant's records of daily imports could be used but the method suggested by project participant does not need any data adjustments and hence more reliable.		
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.11. Are procedures identified for project performance reviews?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
D.5.12. Are procedures identified for corrective actions?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
E. Calculation of GHG emission It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
E.1. Project GHG Emissions The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	1- 3	DR	Refer D.2.1 of the checklist above.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	1- 3	DR	CO <sub>2</sub> is evaluated. Refer D.2.1 of this checklist	OK	OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	1- 3	DR I	Project emissions are considered as nil. Refer D.2.1 of this checklist.	OK	OK
E.1.4. Are the calculations documented in a complete and transparent manner?	1- 3	DR	Refer E.1.3 above.	OK	OK
E.1.5. Have conservative assumptions been used?	1- 3	DR	Refer E.1.3 above.	OK	OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	1- 3	DR	<p>The uncertainty in diesel consumption measurement is likely since it is measured using a level of the storage tank. This is crosschecked using the data of issuance of diesel from stores to DG set. This reduces the uncertainty since as per project participant; such issuance is always in full drums of 20 litres each.</p> <p>The overall uncertainty therefore is negligible since the use of diesel is relatively less and only during the period when electricity is not available from either the project or the grid.</p>	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.2. Leakage</b> It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.	1- 3				
E.2.1. Are leakage calculations required for the selected project category and if yes, are the relevant leakage effects assessed?	1- 3	DR I	Leakage is to be considered if the equipment is transferred. Refer D.3.1 of this checklist.	OK	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	1- 3	I	Refer E.2.1 above.	OK	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	1- 3	I	Refer E.2.1 above.	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	1- 3	DR	Refer E.2.1 above.	OK	OK
E.2.5. Have conservative assumptions been used (if applicable)?	1- 3	DR	Refer E.2.1 above.	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1- 3	DR	Refer E.2.1 above.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.3. Baseline GHG Emissions</b> The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	1- 3	DR	The baseline boundary is defined in section B.3 of the PDD. Accordingly, for the purpose of baseline emissions, the western regional grid is included in the boundary.  The description does not include plants connected to the grid within the boundary.  Refer section A.2.2 of this checklist.	OK	OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	1- 3	DR	The baseline emissions occur on account of the grid connected power plants. These are addressed in the methodology.	OK	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	1- 3	DR	Yes, CO <sub>2</sub> is evaluated. There are no other GHG gases relevant to the baseline emissions.	OK	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1- 3	DR	The baseline emission are derived from the readily calculated emission factors by the central electricity authority and made publicly available.	OK	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	1- 3	DR I	Section B.6.3 of the PDD gives the calculations for the baseline grid emission factor. This is derived from the latest database of Central Electricity Authority [CEA]. The calculations therefore are transparent.	OK	OK
E.3.6. Have conservative assumptions been used?	1- 3	DR	The baseline emission factor is derived from CEA database, which is based on the tool for calculation	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			of emission factor of an electricity system'.		
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	1- 3	DR	Since the baseline emission factor is made available by the authority, there is no uncertainty.	OK	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	1- 3	DR	The project activity being a renewable electricity source has insignificant direct and indirect emissions. The baseline emissions mainly are on account of the fossil fuel powered grid connected power plants.  The project activity therefore will result in fewer GHG emissions than the baseline case.	OK	OK
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
F.1.2. Does the project comply with environmental legislation in the host country?	1- 3	I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
F.1.3. Will the project create any adverse environmental effects?	1- 3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
F.1.4. Have environmental impacts been identified and addressed in the PDD?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
G.1.4. Is a summary of the comments received provided?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
G.1.5. Has due account been taken of any comments received?	1- 3	DR I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK

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## VALIDATION REPORT

**TABLE 3 BASELINE AND MONITORING METHODOLOGIES: AMS – I.D VERSION 13**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1 Baseline Methodology</b>					
<b>1.1 Applicability</b>					
1.1.1 Does the project activity generate electricity from a renewable source such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass	3	DR I	Yes. The project activity generates electricity from renewable source, viz. hydropower.	OK	OK
1.1.2 Is the power connected to the grid or displace electricity from electricity distribution system?	3	DR I	The generated power is connected to the Western regional grid.	OK	OK
1.1.3 Does the project activity have both components - renewable and non-renewable?	3	DR I	No, the project activity has only one component – renewable.	OK	OK
1.1.4 If answer to question 1.1.3 above is yes, then is renewable portion within small-scale limits?	3	DR I	Not applicable.	OK	OK
1.1.5 Does the project activity involve the addition of renewable energy generation units at an existing renewable power generation facility,	3	DR I	The project activity replaces the previously defunct hydropower unit. It does not involve addition [of capacity] at an existing renewable generation facility.	OK	OK
1.1.6 Does the project retrofit or modification an existing facility ?	3	DR I	No, the project does not modify or retrofit an existing facility. The project activity replaces the previously defunct hydropower equipment.	OK	OK
1.1.7 What is the sub-type of the project activity?	3	DR I	AMS I D, Grid connected renewable electricity generation.	OK	OK
<b>1.2 Project boundary</b>					
1.2.1 Does the project boundary encompass the physical, geographical site of the renewable generation source ?	3	DR	Yes the project boundary encompasses the physical, geographical site of the renewable generation source and is defined in section B.3 of	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			PDD. The project boundary therefore includes water discharge from the reservoir to the point of electricity supply to the grid interconnection point. Thus the project boundary includes water diversion structure, power canal, penstock, powerhouse, power evacuation system to the grid and tailrace canal. Refer A.2.2 of table 2 above.		
1.2.2 Does the spatial extent of the project boundary include the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	4	DR	Refer 1.2.1 and section A.2.2 of table 2 above.	OK	OK
1.2.3 Is the regional project electricity system identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints?	4	DR	The western regional grid is identified as the project electricity system. It is identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints.	OK	OK
1.2.4 Are the assumptions made in determining the project electricity system defined and justified?	4	DR	There are no assumptions made in defining the project electricity system. The project electricity system is defined based on the guidance provided in the tool for emission factor for the electricity system as applied to the Indian electricity grid.	OK	OK
1.2.5 Does the application of this methodology result in a clear grid boundary?	4	DR	Yes, the application of the methodology results in a clear western regional grid boundary.	OK	OK
1.2.5.1 If answer to question is no whether DNA guidance is available for defining the boundary.	4	DR	Not applicable.	OK	OK
1.2.5.2 If answer to question is no and if the host	4	DR	Western regional grid is used.	OK	OK





## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
country has a layered dispatch system (e.g. state/provincial/regional/national), which is the regional grid used?					
1.2.6 If the regional grid is not used whether the national grid is used.	4	DR	Not applicable.	OK	OK
1.2.7 Have the electricity transfers from connected electricity systems to the project electricity system are defined as electricity imports?	4	DR	This is not explicitly stated in the PDD. However, the readymade data used from the CEA website is with due consideration of the imports for the operating margin.	OK	OK
1.2.8 Have the electricity transfers to connected electricity systems to the project electricity system are defined as electricity exports?	4	DR	This is not explicitly stated in the PDD. No reductions are available on account of the any such exports.	OK	OK
1.2.9 For the purpose of build margin, is the spatial extent to the project boundary limited to project electricity system?	4	DR	Yes the spatial extent to the project boundary limited to the western regional grid.	OK	OK
1.2.10 Are recent or likely future additions to transmission capacity likely to significantly increase imported electricity?	4	DR I	As per the guidance by CEA, the baseline emission factors are calculated using the provision of the tool.	OK	OK
1.2.10.1 If answer to question is yes whether transmission capacity is considered a build margin source with the emission factor determined as for the OM imports.	4	DR	NA	OK	OK
1.2.11 Is the emission factor determined as one of the four options for the OM imports?	4	DR	The emission factor for operating margin including the imports is used from the CEA database.	OK	OK
1.2.12 For determining the operating margin, is one of the four options chosen to determine the CO <sub>2</sub>	4	DR	The emission factor for operating margin including the imports is used from the CEA database.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
emission factors for net electricity imports within the same host country?					
1.2.13 If the import of electricity is from another country, is the CO <sub>2</sub> emission factors for net electricity imports considered as 0 t CO <sub>2</sub> per MWh.	4	DR	There is no import of electricity from another country.	OK	OK
1.3 Identification of alternative baseline scenarios					
1.3.1 Does the project involve recovered methane for power generation?	3	DR	No.	OK	OK
1.3.2 Does the system involve all generators using exclusively fuel oil and/or diesel fuel?	3	DR I	No.	OK	OK
1.3.3 If answer to all the above questions is no, then is the baseline considered as the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO <sub>2</sub> e/kWh) calculated in a transparent and conservative manner as described in reference 4 to this checklist?	3	DR I	Yes, the baseline is considered as stated. The energy produced in kWh is multiplied with the emission factor as published by CEA to arrive at the baseline in a conservative manner.	OK	OK
1.3.4 Whether a minimum of three years data is referred and used in case the project is non-hydro?	3	DR	Not applicable since the project activity is a hydropower project.	OK	OK
1.3.5 Whether the typical average technical lifetime of the type equipment is determined and documented taking into account common practices in the sector and country e.g. based on industry surveys, statistics, and technical literature?	3	DR	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
1.3.6 Whether the baseline emission factor is	3	DR	Yes, the baseline emission factor is calculated as a	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
calculated as a combined margin consisting of the combination of operating margin (OM) and build margin factors according to three steps indicated in the reference 4 to this checklist?			combined margin.		
1.3.7 Whether the weighted average applied by project participant is fixed for a crediting period.	3	DR	The weighted average applied by the project participant is fixed for the crediting period.	OK	OK
1.3.8 If the project is generation of electricity from wind or solar, whether weighted average takes in to account the default weights as wOM = 0.75 and wBM = 0.25 as required by reference 4 to his checklist?	3	DR	Not applicable.	OK	OK
1.3.9 If the answer to the question at 1.3.8 above is no, are the weights taken as 0.25 & 0.75 for the operating margin and build margin respectively.	4	DR	Yes, the weightages are taken as stated.	OK	OK
1.3.10 Whether operating margin emission factors calculations are based on one of the four methods described?	4	DR	Yes. The simple operating margin including imports is used for calculating the operating margin emission factor. The simple OM is considered to be calculated using the ex-ante approach and fixed for the crediting period.	OK	OK
<b>1.4 Project Emissions</b>					
1.4.1 Does the project activity share limited resources with the existing units?	3	DR I	The project activity shares limited renewable water reserves with another hydropower plant called BH-2 by the same participant. However, the PDD does not address this situation and the relevant condition of the methodology of limited resources.	CL 5	OK
<b>1.5 Baseline Emissions</b>					
1.6 Are the baseline emissions determined according	3	DR	Yes.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
to the formula $BE_y = EG_y \times EF_y$ ? in case of project activities using renewable sources but without retrofit / modification ?					
1.7 Was the Emissions Factor for displaced electricity calculated as in reference 4 to this checklist?	3	DR	Yes.	OK	OK
1.8 Leakage					
1.9 Is the leakage considered if any equipment transfer is evident ?	3	DR	No leakage is considered as there is no equipment transfer. Refer B.3.1 of table 2 above.	OK	OK
1.10 Emission Reduction					
1.11 Are the emissions reductions determined according to the formula $ER_y = BE_y - PE_y - LE_y$ ?	3	DR	Emissions reductions are determined according to the stated formula. Since the project emissions and leakage emissions are considered as zero, the emission reductions therefore are considered as $ER_y = BE_y$ . Refer 1.4.1 above.	OK	OK
1.12 Were all values chosen in a conservative manner and was the choice justified?	3	DR I	Refer D.1.4 of table 2 and 1.4.1 of table 3 above.	OK	OK
1.13 Whether an estimate of likely project emission reductions for the proposed crediting period is prepared as part of the PDD?	3	DR	Under section A.4.3, the PDD includes an estimate of likely project emission reductions over the second renewable crediting period.	OK	OK
1.14 Whether the emission factor is determined ex-post during monitoring?	3	DR	No, the emission factor is determined ex-ante and fixed for the crediting period.	OK	OK
2 Monitoring Methodology					
2.1 Does the monitoring plan include monitoring of electricity generation from the proposed project activity?	3	DR	Yes. Monitoring plan includes monitoring of net electricity exported to the grid by the project activity.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.2 Does monitoring plan include monitoring of biomass or biomass and fossil fuel where only biomass or biomass and fossil fuel co-firing done?	3	DR	Not applicable.	OK	OK
2.3 Does the methodology require monitoring of data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM) as per reference 4 to this checklist?	3	DR	Not applicable as project participant has considered ex-ante emission factor from the second crediting period.	OK	OK
2.4 Does the monitoring plan require monitoring of Data needed to recalculate the build margin emission factor, if needed?	3	DR	Not applicable as the option of ex-ante is chosen.	OK	OK
2.5 Does the monitoring plan require monitoring of data needed to calculate fugitive carbon dioxide and methane emissions and carbon dioxide emissions from combustion of fossil fuels required to operate the geothermal power plant ?	3	DR	Not applicable since the project activity is not a geothermal project.	OK	OK
3 Quality Control (QC) and Quality Assurance (QA) Procedures					
3.1 Did all measurements use calibrated measurement equipment that is regularly checked for its functioning?	3	I	Not re-assessed as the project activity is already registered as a small-scale project activity.	OK	OK
3.2 Are the data double-checked against commercial data?	3	DR I	Under section B.7.1, PDD provides for crosschecking of the data.  However, the means of crosschecking data are not consistent and vary from check meter to commercial bills.	CL 6	OK



## VALIDATION REPORT

**TABLE 4 LEGAL REQUIREMENTS**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1. Legal requirements</b>					
1.1. Is the project activity environmentally licensed by the competent authority?	2	DR	The project holds valid consent to operate. The validity is till 31/08/2009.	OK	OK
1.2. Are the conditions of the environmental license being met?	2	DR	The consent requires monitoring of diesel and handling of transformer oil. The project meets these conditions.	OK	OK
1.3 Are the conditions of the Designated National Authority being met?	2	DR	DNA approval is available. There are no conditions applicable.	OK	OK



## VALIDATION REPORT

**TABLE 5 RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2,3 & 4	Summary of project owner response	Validation team conclusion
<b>CL 1</b> It is noted that after the registration of the project activity, the project participant has developed another hydropower project activity in the vicinity of the project activity. PDD does not refer to this activity and clarify whether the project activity still is eligible as a small-scale project activity.	A.1.1	The Section A.4.5 of the PDD has been revised which justifies that the project activity is eligible as a small scale project activity considering the 'Appendix C to the Simplified Modalities and Procedures for small scale CDM project activities'	The other hydropower plant, which is taken up as a large-scale CDM project, was developed by the project participant after the project activity. The project activity therefore is eligible as a small-scale project activity. Project participant has described the other project in the revised PDD. The clarification request is therefore closed.
<b>CL 2</b> The turbine and generator are not separately identified in the project boundary. The description of boundary for the purpose of baseline emissions does not include plants connected to the grid within the boundary.	A.2.2	In the section B.3 of the revised PDD the turbine and generator are included in the project boundary. Further the power plants connected to the western regional grid are also included in the project boundary for the purpose of calculating baseline emissions	Project participant has revised the PDD to include the stated components in the project boundary, spatial and for baseline emissions. The boundary definition is now adequate. The clarification request is therefore closed.



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2,3 & 4	Summary of project owner response	Validation team conclusion
<b>CL 3</b> The discussion does not identify if there are any changes in the policy after registration of the project activity and if changed how these changes affect the project activity.	B.2.3	The section B.5 of the revised PDD addresses the revisions/ modifications to the 'State Hydel Policy for development of Small Hydro Power projects through private sector participation'. This revision to policy does not affect the project activity.	Project participant has discussed at length, the revised policy in section B.5. The revision in policy provided incentives for SHPs. But since the policy revision came after the project implementation, the project activity was not eligible for the same.  Other policies by MERC [for projects above 500 MW] and CERC [National Electricity Policy] are not directly affecting the project activity. Hence their omission from the PDD is acceptable.  The clarification request is closed.
<b>CAR 1</b> There is inconsistency in the measurement provisions for these parameters. The data source is mentioned as 'plant record book' and 'monthly billing records' while under the description of the measurement methods, the PDD mentions Joint Meter Readings using main meter and check meter.	D.1.3	The Section B.7.1 of the PDD has been revised accordingly and the data source is mentioned as 'Joint meter readings taken and signed by authorised officials of MSEDCL'	The revisions at section B.7.1 have now consistently applied the monitoring plan and parameters used for measurements and cross checking.  The PDD now uses main meter value in JMR for quantity of electricity exported. This is to be crosschecked using check meter value in JMR.





## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2,3 & 4	Summary of project owner response	Validation team conclusion
			The corrective action request is closed.
<b>CAR 2</b> <p>The project activity has a standby DG set for power generation during the period that the project activity does not generate power. The breakers in the switchyard use SF<sub>6</sub>.</p> <p>The monitoring plan under section B.7.1 of the PDD however does not provide for monitoring of the project emissions on account of the potential project emissions.</p>	D.1.4	<p>The monitoring plan under Section B.7.1 of the PDD has been revised to provide for the monitoring of the project emissions on account of standby DG set use.</p> <p>With regard to breakers in the switchyard that use SF<sub>6</sub>, it may be noted that even high – tension circuit breakers associated with the regional grids (in order to protect the transformers and transmission system from electrical failures on the distribution lines) also contain SF<sub>6</sub>. Therefore the occurrence of SF<sub>6</sub> leakage during maintenance activities is also likely in the baseline. Therefore the leakage of SF<sub>6</sub> due to the project activity is not considered under project emissions.</p>	<p>The revised PDD now provides for additional measurements in relation to project emissions from diesel consumption, viz. diesel consumption [section B.7.1], NCV and emission factor for diesel [section B.6.2]. The NCV and EF are taken as the upper limit for 95% confidence interval from 2006 version of IPCC default values. The density of diesel is considered as 0.88 and is taken from Motor Spirit and High Speed Diesel Order of 1998.</p> <p>It is correct that SF<sub>6</sub> related emissions would also happen in the baseline scenario. It is therefore accepted that no project emissions are accounted in the PDD.</p> <p>The corrective action request is closed.</p>
<b>CL 4</b> <p>The monitoring plan provides for archiving of monthly invoices while the source of data for</p>	D.4.4	The revision has been made to section B.7.1 of the PDD accordingly.	Project participant has revised the comments at section B.7.1 of the PDD to archive records relevant to



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2,3 & 4	Summary of project owner response	Validation team conclusion
baseline emissions is the JMR Records.			measurement parameters.  The clarification request is closed.
<b>CL 5</b> The project activity shares limited renewable water reserves with another hydropower plant called BH-2 by the same participant. However, the PDD does not address this situation and the relevant condition of the methodology of limited resources.	Table 3, 1.4.1	The explanation for the same is contained in the Section A.2 and A.4.5 of the revised PDD. The project activity does not and would not affect the power generation from the BH-2 hydropower project. Therefore there would be no impact on the baseline emissions on account of this.	As explained at section A.4.5 of the PDD, BH-2 is located on downstream side of BH-1. BH-2 receives all the water released from the dam and therefore its generation is not affected by BH-1.  The clarification request is closed.
<b>CL 6</b> The means of crosschecking data are not consistent and vary from check meter to commercial bills.	3.2, Table 3	The revision has been made to section B.7.1 of the PDD accordingly.	Project participant has revised section B.7.1 of the PDD.  The cross checking is now mainly through the check meter data to be taken from JMR.

1. Guidelines for completing the simplified project design document, version 05 dated 14<sup>th</sup> September 2005
2. Appendix B of the simplified modalities and procedures for small scale CDM project activities.
3. Indicative simplified baseline and monitoring methodologies – AMS I.D, version 13 dated 14/12/2007
4. Tool to calculate the emission factor for an electricity system, version 01.



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**APPENDIX B : VALIDATOR CVs**

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Mr. Sandeep  
Lele

Bureau Veritas  
Certification, India

Team Leader, Lead GHG Verifier.

Mr. Sandeep Lele holds Bachelor's degree in Civil Engineering and Master's Degree in Environmental Engineering. He has 15 years of experience in the environmental engineering field. He has worked in system certification activities over the last 7 years.

Mr. Sandeep Lele was trained as a Lead Verifier for Clean Development Mechanism & Joint Implementation in March 2003. Since then, he has guided the team of CDM verifiers in the CDM assignments in India. He has lead number of validations and verifications of CDM projects till date.

His qualifications, industrial experience and experience in CDM validation and verification facilitates him to assess renewable energy projects in general and hydropower projects in particular to sufficient degree.

Dr. Ashok  
Mammen

Bureau Veritas  
Certification, India

Internal Technical Reviewer, Lead GHG Verifier.

He is PhD (Oil & Lubricants), M. Sc. (Analytical Chemistry) with over 20 years experience in petrochemical sector.

He was trained as a Lead Verifier for Clean Development Mechanism & Joint Implementation in June 2004. He has been involved in validation / review of more than 50 CDM projects.