



VALIDATION REPORT

For the CDM Project Activity

Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India In India

Report No. 01 997 9105075939

Version No. 02, 29/12/2014

Designated Operational Entity (DOE)

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I. Project description:

Project title:	Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.		Report No.: 01 997 9105075939
Host Country:	India		Current version No.: 02
Methodology:	AMS I.D, version 17	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale	Date of current version: 29/12/2014
			Date of first issue: 18/11/2013
Annual average emission reductions (estimate):			26,553 tCO ₂ e/yr
GHG reducing measure/technology:	Displacing fossil fuel based grid power generation with renewable hydro energy.		

Party	Project Participants	Party considered a project participant	Contract party
India(Host)	International Power Corporation Private Limited	No	<input checked="" type="checkbox"/>

II. Validation Team and Technical Reviewer:

Validation Team			Role						
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas: 1.2)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor
Ma Paa Puratchikkanal *	India	1.2, 3.1, 6.1, 13.1/13.2,15.1	X		X		X		
Mr. R Narendra Kumar**	India	1.2, 3.1	X		X		X		
Mr. R Murali (Ex-Team Member)***	India	1.2, 3.1				X	X		

(Adjust accordingly, i.e. provide one line per person)

*TL from 03/06/2014

**TL till 31/05/2014

***TM till 31/05/2014

Technical Reviewer			Role		
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas: 1.2)	Technical Reviewer	Expert to TR	Trainee TR
Ms. Indumathi	India	1.2	X		

(Adjust accordingly, i.e. provide one line per person)

Validation Phases	Validation Status
<input checked="" type="checkbox"/> Desk Review <input checked="" type="checkbox"/> Follow up interviews <input checked="" type="checkbox"/> Resolution of outstanding issues	<input type="checkbox"/> Corrective Actions / Clarifications Requested <input checked="" type="checkbox"/> Full Approval and Submission for Registration <input type="checkbox"/> Rejected

III. Validation Report:

Final approval	Released	Distribution
<input checked="" type="checkbox"/>	By: Mr. Henri Phan	<input type="checkbox"/> No distribution without permission from the Client

Date: 06/01/2015		<div>or responsible organizational unit</div> <div><input checked="" type="checkbox"/> Unrestricted distribution</div>
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Executive Summary – Validation Opinion

The validation team assigned by the DOE (TÜV Rheinland (China) Ltd.), here after called TRC, is been assigned by “Prasanna Power Limited” (now it is “International Power Corporation Private Limited”) to perform the validation of their project “Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism. 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 CDM Validation and Verification Standard (Version 07.0), Kyoto Protocol requirements, CDM Executive Board/UNFCCC rules.

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, site visit, and stakeholder interviews, review of the applicable methodology and its underlying formulae and calculations.

Validation methodology and process

The validation has been performed as described in the VVS version 07.0 and constitutes the following steps:

- Publication of the PDD on the UNFCCC website (09/07/2013 – 07/08/2013)
- Desk review of the PDD and the relevant documents
- On-site assessment (14/08/2013 – 15/08/2013)
- Issuance of Validation Report

Validation criteria

The following CDM requirements have been considered:

- Article 12 of the Kyoto Protocol,
- Modalities and procedures for CDM (Marrakech Accords)
- Subsequent decisions by the COP/MOP and CDM Executive Board
- Host country criteria
- Criteria given to provide for consistent project operations, monitoring and reporting.

The host part is India and the party fulfills the participation criteria and has approved and authorized the project and the project participant. The DNA from country name confirms that the project assists in achieving sustainable development.

The project correctly applies the baseline and monitoring methodology AMS I.D, version 17, “AMS ID – Grid Connected Renewable Electricity Generation”.

The project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. 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 validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards “India”.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is TRC’s opinion that the project participants are able to implement the monitoring plan.

By avoiding the carbon intensive grid electricity generation, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

The total emission reductions from the project are estimated to be 185,871 t of CO₂e over a 7 year crediting period, averaging 26,553 t of CO₂e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not alter.

The validation protocol describes a total of 14 findings which include:

14 Corrective Action Requests (CARs);

03 Clarification Requests (CLs);

00 Forward Action Requests (FARs);

All findings in CARs/CLs have been closed satisfactorily.

TRC concludes that the CDM Project Activity “Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.” in India, as described in the PDD (version 2.1, dated 12/12/2014), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board.

The selected baseline and monitoring methodologies (AMS I.D, Version 17) are applicable to the project and correctly applied. The TRC therefore requests the registration of the project as a CDM project activity with UNFCCC.

Ma Paa Puratchikkanal (Team Leader)



TÜV Rheinland (India) Pvt. Ltd
Bangalore, 26/12/2014

Mr. Henri Phan
(DOE Manager)



TÜV Rheinland (China) Ltd.
Beijing, 06/01/2015

Abbreviations

AHSHP	Aniyur Hole Small Hydro Project
BPLR	Benchmark Prime Lending Rate
BSE	Bombay Stock Exchange
BESCOM	Bangalore Electricity Supply Company Ltd.
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	CDM Validation and Verification Standard
CER	Certified Emission Reduction(s)
CH ₄	Methane
CMHS	Charmadi Mini Hydel Scheme
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DG	Diesel Generator
DNA	Designated National Authority
DPR	Detailed Project Report
DOE	Designated operational entity
EIA	Environmental Impact Assessment
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
JMR	Joint Meter Reading
KPTCL	Karnataka Power Transmission Corporation Limited
LoA	Letter of approval
LSC	Local Stakeholder Consultation
MESCOM	Mangalore Electricity Supply Company Limited
MOC	Modalities of Communication
N ₂ O	Nitrous oxide
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PP	Project Participant
PPL	Prasanna Power Limited
SHP	Small Hydel Power
tCO ₂ e	Tonnes of CO ₂ equivalents
TECL	Thrinethra Energy Conversions Limited
TRC	TÜV Rheinland (China) Ltd.
UNFCCC	United Nations Framework Convention on Climate Change
GWP	Global Warming Potential
VVS	Validation and Verification Standard
WACC	Weighted Average Cost of Capital

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Appendix B: Certificates of Competence

1. Introduction:

The organization “Prasanna Power Limited” (now it is “International Power Corporation Private Limited”) has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a validation of the CDM Project Activity “Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.” in India (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures or the simplified modalities and procedures for small-scale CDM project activities (as applicable) or modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities (as applicable) and the subsequent decisions by the CDM Executive Board.

1.1 Objective:

The purpose of a validation is to have an independent, professional, ethical and fair third party assessment of the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects 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).

1.2 Scope:

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Standard employed (latest version) a risk-based approach, 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 project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

While carrying out the validation, TRC determines if the project activity complies with the requirements of Para 37 of the CDM M&P and also assess the claims and assumptions made in the PDD without limitation on the information provided by the project participants.

The scope of the validation is:

- To apply TRC's own quality management system integrated with the VVS standard along with the recent decisions and guidance provided by the UNFCCC board to determine if the project activity meets all applicable CDM requirements, including those specified in the project standard, relevant methodologies, tools and guidelines and processing the same with CDM project cycle procedure;
- Asses the accuracy, conservativeness, relevance, completeness, consistency and transparency of the information provided by the project participants;
- Determine whether information provided by the project participants are reliable and credible;
- Present information in the form of validation report in a factual, neutral, coherent manner and document all assumptions, provide references to the background material and identify changes made to the documentation;
- Base the findings and conclusions on objective evidence and conduct all validation in accordance with CDM rules and procedures;
- Apply consistent validation criteria in providing expert judgments to the requirements of applicable approved methodologies, tools and also cross check the same with projects of similar characteristics, technology, time period and region; and
- Safeguard the confidentiality of all information's obtained or created during validation.
- Where sampling is involved, the standard for sampling and surveys are applied.

1.1. Methodology:

The validation consists of the following four phases:

I Document review, involving:

- (i) A review of data and information;
- (ii) Cross checks between information provided in the PDD and information from sources other than those used, if available, the DOE's sectoral or local expertise and, if necessary, independent background investigations.

II Follow-up actions (e.g. on-site visit and telephone or email interviews), including:

(i) Interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation;

(ii) Cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted.

III Reference to available information's relating to projects or technologies similar projects under validation

IV review based on the approved methodology being applied of the appropriateness of formulae and accuracy of calculations.

The following sections outline each step in more detail.

2.1 Desk Review of the Project Design Documentation:

The following table outlines the documentation reviewed during the validation:

Ref no.		Reference Document
/P1/	/P1.1/	PDD [Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.] Version 01, Date 21/06/2013
	/P1.2/	PDD [Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.] Version 02, Date 19/11/2014
	/P1.3/	PDD [Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.] Version 02.1, Date 12/12/2014
/P2/	/P2.1/	IRR calculation sheet (draft) pertains to version 01 of PDD
	/P2.2/	IRR calculation sheet (modified) pertains to version 02 of PDD
/P3/	/P3.1/	ER calculation pertains to version 01 of PDD
	/P3.2/	ER calculation pertains to version 02 of PDD
/P4/		Detailed Project Report (DPR) of CMHS prepared by ECI Renewable Energy Consultants (P) Ltd. & Venika Hydro dated August 2006 Detailed Project Report (DPR) of AHSHP prepared by ECI Renewable Energy Consultants (P) Ltd. & Venika Hydro dated August 2006
/P5/		Power purchase agreement (PPA) between BESCOM and M/s. TECL, dated 12/12/2006 Power purchase agreement (PPA) between BESCOM and M/s. PPL, dated 12/12/2006
/P6/		Technical clearance of CMHS project from Karnataka Renewable Energy Agency, dated 29/04/2003 Environmental clearance for CMHS project from department of Forest, Ecology & Environment, dated 07/10/2006 Fisheries clearance letter for CMHS project from Director of Fisheries, dated 17/05/2006 Land Lease deed between Government of Karnataka and TECL, dated 21/03/2006 NOC from Charmadi Village Panchayat for CMHS project, dated 16/09/2005
/P7/		Technical clearance of AHSHP project from Karnataka Renewable Energy Agency, dated 10/03/2005 Environmental clearance for AHSHP project from department of Forest, Ecology & Environment, dated 29/03/2008 Fisheries clearance letter for AHSHP project from Director of Fisheries, dated 23/04/2004 Land Lease deed between Karnataka Industrial Area Development Board and PPL, dated 24/11/2006 NOC from Neriya Village Panchayat for AHSHP project, dated 07/07/2003
/P8/		Consent for establishment for CMHS project from Karnataka Stage Pollution Control Board,

	<p>dated 22/06/2006</p> <p>Consent to operate for CMHS project from Karnataka Stage Pollution Control Board, dated 23/01/2009</p> <p>Consent for establishment for AHSHP project from Karnataka Stage Pollution Control Board, dated 31/03/2004 and extension dated 17/09/2008</p> <p>Consent to operate for AHSHP project from Karnataka Stage Pollution Control Board, dated 31/12/2009</p>
/P9/	<p>Loan sanction letter to PPL from State Bank of India, dated 06/11/2006</p> <p>Loan Sanction letter to PPL from State Bank of Mysore, dated 24/01/2007</p> <p>Loan sanction letter to PPL from State Bank of India, dated 03/02/2009</p> <p>Loan Sanction letter to TECL from Punjab National Bank, dated 29/08/2006</p> <p>Loan sanction letter to TECL from Punjab National Bank, dated 02/02/2008</p>
/P10/	<p>Loan Application letter to State Bank of India by PPL, dated 28/09/2006</p> <p>Loan Application letter to State Bank of Mysore by PPL, dated 30/09/2006</p> <p>Loan Application letter to Punjab National Bank by TECL, dated 11/08/2006</p>
/P11/	<p>LSC meeting documents</p> <ul style="list-style-type: none"> • Newspaper Invitation, dated 15/07/2007 • Panchayat/public notification, dated 15/07/2007 • Attendance sheet, dated 30/07/2007 • Minutes of stakeholder consultation meeting, dated 30/07/2007
/P12/	<p>Summary of minutes of board meeting of M/s Prasanna Power Limited, dated 06/09/2006</p> <p>Summary of minutes of board meeting of M/s Trinethra Energy Conversions Ltd, dated 03/08/2006</p>
/P13/	Host country approval from Ministry of Environment & Forests dated 21/02/2012
/P14/	<p>Work order from M/s Prasanna Power Limited to M/s Nechupadam Constructions Pvt Ltd, for civil construction, dated 08/11/2006</p> <p>Purchase order from M/s Prasanna Power Limited to M/ Kirloskar Brothers Ltd, for supply of electromechanical equipments, dated 27/11/2006</p> <p>Work order from M/s Trinethra Energy Conversions Ltd to M/s Sri Vijayalakshmi Constructions for civil construction, dated 16/11/2006</p> <p>Purchase order from M/s Trinethra Energy Conversions Ltd to M/ Kirloskar Brothers Ltd, for supply of electromechanical equipments, dated 01/12/2006</p>
/P15/	Negative Validation report from SGS, dated 30/01/2013
/P16/	"High Court of Karnataka" order dated 04/04/2014 which confirms the SPVs 'Prasanna Power Limited' and 'Thrinethra Energy Conversions Limited' are merged to the parent company 'International Power Corporation Private Limited'.
/P17/	Actual net generation achieved till October 2014 and its B-Forms
/P18/	<p>CDM Consultant contract with M/s Sri Vidya Consultancy dated 26/12/2008</p> <p>CDM consultant contract with M/s Kosher Climate India Pvt. Ltd dated 15/03/2013</p>
/P19/	<p>Email communication between International Power Corporation Limited and Norwegian Ministry of Finance regarding ERPA, dated 26/07/2007, 27/07/2007 & 30/07/2007</p> <p>Email communication between International Power Corporation Limited and Norwegian Ministry of Finance regarding ERPA, dated 10/06/2009, 11/06/2009</p>
/P20/	<p>Annual report of M/s Prasanna Power Limited: 2007-08, 2008-09 & 2009-10</p> <p>Annual report of M/s Trinethra Energy Conversions Ltd: 2007-08 & 2008-09</p>
/P21/	Modalities of communication signed on 22/12/2014
/P22/	<p>Commissioning Certificate of AHSHP (commissioning date 13/08/2009), dated 20/10/2009</p> <p>Commissioning Certificate of CMHS (commissioning date 05/07/2008), dated 18/09/2008</p>
/P23/	<p>Certificate from Chartered accountant confirming the actual cost spent in AHSHP project, dated 21/01/2014</p> <p>Certificate from Chartered accountant confirming the actual cost spent in CMHS project, dated 21/01/2014</p>
/P24/	Manufacture specifications of major equipments
/P25/	Bundling form

Background investigation and other referred documents/websites:

/B1/	CDM Validation and Verification Standard (Version 7.0). CDM project standard, (Version 7.0) CDM Project cycle procedure (version 7.0)
/B2/	Approved Baseline & Monitoring Methodology: AMS I.D, version 17
/B3/	Tool to calculate the emission factor for an electricity system, version 04.0
/B4/	Guidelines on the demonstration of additionality of small-scale project activities, version 9.0
/B5/	1. Glossary of CDM terms, version 07 2. Relevant CDM and PoA specific requirements (CDM M & P and decisions by the CMP and documents released by CDM EB) published on the UNFCCC CDM website
/B6/	As applicable: CDM-SSC-PDD-FORM - Project Design Document form for Small-Scale CDM project activities, version 05 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20140625145526277/PDD_form07.pdf Guidelines for completing the simplified Project Design document (CDM-SSC-PDD) and the form for proposed new Small Scale Methodologies (CDM-SSC-NM), version 1.0 http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid07.pdf
/B7/	CO ₂ Baseline Database for the Indian Power Sector, version 8 http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver8.pdf
/B8/	Corporate Tax Rate: http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx
/B9/	Guidelines on the assessment of investment analysis, Version 05
/B10/	MAT rate: http://indiabudget.nic.in/ub2006-07/bh/bh1.pdf
/B11/	2006 IPCC Guidelines on National GHG Inventories
/B12/	MNRE subsidy scheme of small scale projects http://www.mnre.gov.in/schemes/grid-connected/small-hydro/scheme-3/
/B13/	Prime Lending rates published by Reserve Bank of India: http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/72594.pdf http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/71884.pdf
/B14/	The KERC tariff order dated 18/01/2005
/B15/	Book depreciation as per the companies act.

2.2. Follow-up Interviews with Project Stakeholders:

TÜV Rheinland validation team carried out an on-site visit dated (14/08/2013-15/08/2013) and performed interviews with the project representatives and stakeholders. The site visit was conducted to validate the accuracy and completeness of the project description as specified under webhosted PDD.

During the site visit, the validation team verified the actual design and implementation of the project and did comparison analysis with equivalent projects as appropriate.

Prior to the interview salient points to be discussed were planned. Date of interview, interviewee and points discussed are given in the following table.

	Date	Name	Organization	Topic
/i/	14/08/2013 & 15/08/2013	Mr. Mahesh Kumar. S	GM (O), Prasanna Power Ltd	-PP's background -Investment decision
/ii/	14/08/2013 & 15/08/2013	Mr. Vithal M Navade	DGM – O&M, Prasanna Power Ltd	-Baseline identification -CDM consideration
/iii/	14/08/2013 & 15/08/2013	Mr. Swaminathan	Manager-O&M, Prasanna Power Ltd,	-Public funding -Additionality issues
/iv/	14/08/2013 & 15/08/2013	Mr. Bharath G	Manager-O&M, Trinetra Energy Conversions Ltd	- Technical design - Project Design -Environmental Impacts -Local stakeholder consultation
/v/	14/08/2013 & 15/08/2013	Mr. Vamsi Krishna M	Sr. Consultant, Kosher Climate India	-Project design -Baseline identification
/vi/	14/08/2013 & 15/08/2013	Mr. Anil Kumar V	Sr. Consultant, Kosher Climate India	-ER calculation -IRR Calculation -Additionality issues -Monitoring plan -Local stakeholder consultation

Validation team considered the views obtained in these interviews while arriving at Validation Opinion.

2.3 Resolution of Outstanding Issues:

The objective of this phase of the validation is to resolve any outstanding issues (issues that require further elaboration, research or expansion) which need be clarified prior to TÜV Rheinland's positive conclusion on the project design. In order to ensure transparency a validation protocol is customized for the project. The protocol shows in transparent manner criteria (requirements), means of validation 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 CDM requirements;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the validation report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for this project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfillment of CDM criteria or where a risk to the fulfillment of project objectives is identified. Corrective action requests (CAR) are issued, where:

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

There is a risk that emission reductions cannot be monitored or calculated.

A request for clarification (CL) may be used - 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 identify 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.

Validation Protocol Table 1: Validation requirements				
Checklist Question	Reference	Means of Validation (MoV)	Comment	Draft and/or Final Conclusion
The various UNFCCC requirements as specified in the VVS are linked to checklist questions the project should meet. The checklist is organized in different sections, following the logic of the VVS.	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 validation 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 corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants during the communications with the validation team should be summarized in this section.	This section should summaries the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Table 3: List of forward action requests (FARs)			
FAR number	Reference	Summary of project owner response	Validation team conclusion
Forward action request (FAR) to be raised during validation to highlight issues related To project implementation that requires review during the first verification of the project activity. FARs Shall not relate to the CDM requirements for registration.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants during the communications with the validation team should be summarized in this section.	This section should summaries the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1. Validation protocol tables

2.4 Internal Quality Control:

The final validation report underwent a technical review by a qualified independent reviewer before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

2.5 Validation Team and Technical Reviewer:

Before the assessment begins, members of the validation team are ensured to cover the technical area(s), sectoral scope(s) and relevant host country experience including local language ability for evaluating the CDM project activity. The qualification of the team is as per the criterias defined by the EB guidelines for qualification.

Validation Team			Type of Involvement					
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas: 1.2)	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support
Ma Paa Puratchikkanal *	India	1.2, 3.1, 6.1, 13.1/13.2,15.1	X				X	
Mr. R Narendra Kumar (Ex-TL)**	India	1.2, 3.1	X	X	X	X	X	
Mr. R Murali (Ex-Team Member)***	India	1.2, 3.1		X			X	X

*TL from 03/06/2014

**TL till 31/05/2014

***TM till 31/05/2014

Technical Reviewer			Type of Involvement		
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas: 1.2)	Technical Reviewer	Expert to Technical Reviewer	Trainee TR
Ms. Indumathi C	India	1.2	X		

(Adjust accordingly, i.e. provide one line per person)

2. Validation Findings:

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Approval and Participation:

3.1.1 Letter of Approval:

The below table summarizes the project participants and parties involved. The authenticity of the letters of approval has been validated by TÜV Rheinland validation team.

These LoA(s) are therefore regarded as valid and meeting the requirements.

Project participants	M/s. Prasanna Power Limited. (now it is "M/s International Power Corporation Private Limited")
Parties involved	India
APPROVAL	
LoA received	Yes
Date of LoA	21/02/2012
Reference to document	No: 4/29/2011-CCC
LoA received from	PP
Validation of authenticity	The validity of the HCA is confirmed through the Indian DNA website http://www.cdmindia.gov.in/project_details_view.php?id=1039
Validity of LoA	Valid
PARTICIPATION	
Party is party to Kyoto Protocol	Yes, India ratified the Kyoto protocol in August 2002. Statement 1 of LoA confirms the same.
Voluntary participation	Yes, statement 2 of LoA confirms the same
Diversion of official development aid towards host country	No, ODA is involved
Project contribution to SD	Yes, statement 3 of LoA confirms the same.

The validation team confirms that the information related to the letter of approval as mentioned in the above table is authentic. The validation team has confirmed the same through DNA website. The project participants have obtained the letter of approval from the DNA of India.

3.1.2 Modalities of Communications:

Requirement of MOC	Criteria fulfilled	Determination by the validation team
Is the focal point identified	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Mr.Bidarakote Parameshwaraiah Ramesh of M/s International Power Corporation Private Limited has been identified as the focal point. MOC is verified for the same. High Court of Karnataka" order dated 04/04/2014 which confirms the SPVs 'Prasanna Power Limited' and 'Thrinethra Energy Conversions Limited' are merged to the parent company 'International Power Corporation Private Limited'
Is the MOC signed by all project participant (including focal point identified entity/personal)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	M/s International Power Corporation Private Limited is the only project participant and Mr.Bidarakote Parameshwaraiah Ramesh is the person responsible for signing and further communication with EB/DNA.
Is the written confirmation obtained by the PP's stating the authorization, specimen signatures and personal details, employment status are valid and accurate?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The MOC is signed by Mr.Bidarakote Parameshwaraiah Ramesh, Director of the company. The signature of Mr. Mr.Bidarakote Parameshwaraiah Ramesh is verified through the written confirmation obtained from PP stating the authorization, specimen signatures and personal details of Mr. Ramesh.
Is MOC received by the validation team	<input checked="" type="checkbox"/> Yes	Yes, the MOC received by the DOE from M/s

from the PP with whom DOE has the contractual relationship?	<input type="checkbox"/> No	International Power Corporation Private Limited with whom TRC has contracted for validation services. (Note: The DOE has contractual relationship with M/s Prasanna Power Limited which is now merged with the parent company M/s International Power Corporation Private Limited ^{/P16/} .
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The validation team confirms that the applicable latest template is been employed by the project participant for the MOC. The MOC is received from the DOE's contractual project participant. All the personal who have duly signed the MOC are been confirmed from the written communication from PP for their personal identity, specimen signatures and employment status

The validation team checked the loan sanction letters of the project and annual report of the project developers and confirmed that the project activity did not receive public funding from Parties included in Annex I. The complete funding of the projects are sourced from bank loans.

3.2 Project Design Document:

The Project Design Document is based on the currently valid PDD template "CDM-SSC-PDD-FORM - Project Design Document form for Small-Scale CDM project activities, Version 5"^{/B6/} and is completed in accordance with the PDD filling guidelines provided in the same document^{/B6/}

3.3 Project Description:

The bundled project activity consist the following two hydro projects:

- 6 MW Aniyur Hole Small Hydro Project (AHSHP) scheme developed by Prasanna Power Limited(PPL)
- 4.5 MW Charmadi Mini Hydel Scheme (CMHS) developed by Thrinethra Energy Conversions Limited (TECL)

Aniyur Hole Small Hydro Project (AHSHP):

This project activity involves installation and operation of 6 MW hydro power plant (2 x 3 MW) across Aniyur river for electricity generation from the hydro power which a renewable energy. The generated electricity is sold to BESCOM and exported to Southern grid of India. The installed power plant is expected to generate gross generation at the plant load factor of 33.30%. The project activity is a green field activity and it does not involve alteration of any existing installation. The technology adopted by the project is the current industrial practices and are deemed environmentally safe. The PP has trained technicians for the plant operation & maintenance and hence the assuring the proper operation and maintenance of the WTGs. The electricity is generated at 11 kV and it is stepped up to 33 kV and synchronised with southern grid. The technical specifications^{/P24/} of the power plant which are verified during site visit are mentioned below:

Specification	Unit	Value
<u>Generator</u>		
Manufacturer		WEG Equipments Electricos SA
No of Generating Units		02
Capacity of Each Generating Units	kW	3000
Total Capacity of this project activity	kW	6000
Type of generator		3 phase, Synchronous Generator
Rated speed	rpm	600
Rated frequency	Hz	50
Generation Voltage	kV	11

Power factor		0.85
<u>Turbine</u>		
Manufacturer		Kirloskar Brothers Ltd
Type		Horizontal Francies
Number of units		2
Rated speed	rpm	600
Rated capacity of each unit	kW	3142
Continuous Over Load Capacity		110%
Rated net head	m	48.0
Rated discharge /Unit at rated head	m ³ /s	7.21
<u>Energy potential</u>		
Plant load factor		33.30%
<u>Transmission line</u>		
Length		12.1 km to Kakkinje Pooling Station point of Energy Recording.
Terminal Point		Kakkinje pooling station, KPTCL 33 kV substation
Type		33 kV Single Circuit

The project is located at Aniyur Village, Belthangadi Taluk, Dakshina Kannada District, Karnataka State, India. The geo-graphical coordinates are Longitude of 13.07826° N and Latitude of 75.43911° E. The location of the project is checked during site visit and also confirmed through Google maps¹.

Charmadi Mini Hydel Scheme (CMHS):

This project activity involves installation and operation of 4.5 MW hydro power plant (2 x 2.25 MW) across Charmadi stream (tributary to the Nethravathi River) for electricity generation from the hydro power which a renewable energy. The generated electricity is sold to BESCOM and exported to Southern grid of India. The installed power plant is expected to generate gross generation at the plant load factor of 31.71%. The project activity is a green field activity and it does not involve alteration of any existing installation. The technology adopted by the project is the current industrial practices and are deemed environmentally safe. The PP has trained technicians for the plant operation & maintenance and hence the assuring the proper operation and maintenance of the WTGs. The electricity is generated at 11 kV and it is stepped up to 33 kV and synchronised with southern grid. The technical specifications of the power plant^{/P24/} which are verified during site visit are mentioned below:

Specification	Unit	Value
<u>Generator</u>		
Manufacturer		WEG Equipments Electricos SA
No of Generating Units		02
Capacity of Each Generating Units	kW	2250
Total Capacity of this project activity	kW	4500
Type of generator		3 phase, Synchronous Generator
Rated speed	rpm	500
Rated frequency	Hz	50
Generation Voltage	kV	11
Power factor		0.85

¹ <https://maps.google.co.in/>

Turbine		
Manufacturer		HPP Energy India Pvt. Ltd
Type		Horizontal Francies
Number of units		2
Rated speed	rpm	500
Rated capacity of each unit	kW	2250
Continuous Over Load Capacity		110%
Rated net head	m	39.0
Rated discharge /Unit at rated head	m ³ /s	7.75
Energy potential		
Plant load factor		31.71%
Transmission line		
Length		7.00 km to Kakkinje Pooling Station point of Energy Recording.
Terminal Point		Kakkanje Pooling Station, KPTCL 33 kV substation
Type		110 kV Single Circuit

The project is located at Kakkanje Village, Belthangadi Taluk, Dakshina Kannada District, Karnataka State, India. The geo-graphical coordinates are Longitude of 13.03581° N and Latitude of 75.38811° E. The location of the project is checked during site visit and also confirmed through Google maps².

The validation team has carried out on-site visit & interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

The operational lifetime of the project has been mentioned as 30 years which corresponds to the standard design life time of a small hydro power plant in India. The project participant has opted for a renewable crediting period (7 year x 3 times). The start date of the crediting period is mentioned as 10/01/2015 or the date of submission of request for registration to UNFCCC whichever is later. The start date of project activity is considered as 08/11/2006 and 16/11/2006 for AHPS and CMHS respectively and it has been verified to be the date of civil purchase order^{/PS/} which is the first real action of the project activity.

TÜV Rheinland validation team considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration

Through the interview with the PP and cross verification through the UNFCCC website, the validation team confirms that the project is not a debundled component of a large scale project activity as the PP do not have any registered or under validation CDM project having the same technology within 1 km radius from this project activity in the last 2 years. This is confirmed by the validation team during the on-site interview with the representative of PP. In addition, the validation team has checked up with the UNFCCC website/ CDM Pipeline by UNEP and not identified other small-scale project being developed by the project participant. Therefore, the proposed project is not deemed to be a de-bundled component of a large project activity.

The validation team is of the opinion that the description of the project activity is sufficiently and accurately presented in the PDD.

Project	Starting date of project	Expected project operational lifetime	Crediting period start date
AHSHP	08/11/2006	35 years	10/01/2015

² <https://maps.google.co.in/>

CMHS	16/11/2006	35 years	
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Herewith, the Validation Team summarizes major changes between webhosted PDD and final version of PDD for submission as follows:

Subject	Webhosted PDD	Correction to webhosted PDD in the final PDD submission for registration with DOE assessment and reason of acceptance.
PDD (project title / participants involved/ project location /project technology etc.)	<p>Title: Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India. version :01 PP: M/s. Prasanna Power Limited. Location: <u>AHSHP</u>: Aniyur Village, Belthangadi Taluk, Dakshina Kannada District, Karnataka State, India. <u>CMHS</u>: Kakkanje Village, Belthangadi Taluk, Dakshina Kannada District, Karnataka State, India.</p> <p>Geo-coordinates: <u>AHSHP</u>: 13°02' 33" N, 75°23' 54" E <u>CMHS</u>: 13°15' 4" N, 75°07' 26" E. Technology: Hydro Energy</p>	<p>Title: No Change Version: 2.1 PP: International Power Corporation Private Limited Since the SPVs 'M/s. Prasanna Power Limited' & 'Thrinethra Energy Conversions Limited' are merged with the parent company 'M/s International Power Corporation Private Limited'^{/P16/}, the change in PP name in the PDD is appropriate. Please refer the CL-15 for detailed explanation. Location: No Change Geo-coordinates: <u>AHSHP</u>: 13.07826° N, 75.43911° E <u>CMHS</u>: 13.03581° N, 75.38811° E The coordinates of CMHS provided in the draft PDD was not correct and hence the same is corrected in the final PDD. Also the geographical coordinates are given in the decimal format in the final PDD Technology: No change</p>
Methodologies and tools applied (scope and version numbers)	<p>Meth: AMS I.D, version 17 Scope: 01 Tool: Tool to calculate the emission factor for an electricity system, version 2.2.1</p>	<p>Meth & Scope : No change Tool: Tool to calculate the emission factor for an electricity system, version 04.0 Since the tool version 2.2.1 is no more valid, the valid version is referred now in the PDD.</p>
CER calculations (formula applied/ amount of emission reduction)	$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$ $PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$ $ER_y = BE_y - PE_{FC,j,y-Ly}$ $= 26,553 - 0 - 0 = 26,553 \text{ tCO}_2\text{e/year}$	No change
Additionalty: (Benchmark / input values/analysis type/project start date/IRR or NPV values etc.)	<u>Benchmark</u> : WACC =13.41%.	<p>Benchmark: AHSHP: RBI PLR= 11.25% CMHS: RBI PLR = 11.00% Since the investment guidance suggest either local lending rate or WACC can be the benchmark for the project IRR, the PLR considered by the PP is appropriate. Also the PLR considered is more conservative than the WACC calculated earlier. Hence change in benchmark is accepted by validation team.</p>
	<p><u>Project Cost</u> : AHSHP: 3500.00 Lakh INR CMHS: 2550.00 Lakh INR</p>	No change

	PLF: AHSHP: 33.30% CMHS: 31.71%	No Change
	Tariff: AHSHP & CMHS: 2.80 INR/kWh	No change
	Project Post-tax IRR: AHSHP: 7.48% CMHS: 7.06%	Project Post-tax IRR: AHSHP: 7.87% CMHS: 7.45% The corrections in the IRR calculation results change in the IRR. The final IRR calculations are verified and found to be correct.
Monitoring (parameters frequency)	EG_{facility1, export y}: Quantity of electricity supplied by the project plant/unit to the grid in year y Frequency: continuous monitoring & monthly recording	No change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
	EG_{facility1, import y}: Quantity of electricity imported by the project plant/unit from the grid in year y Frequency: continuous monitoring & monthly recording	No change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
	EG_{facility1,y}: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y Frequency: calculated montly based on the contionusly monitorted value of the EG _{facility1, export y} and EG _{facility1, import y} :	No change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
	EG_{facility2, export y}: Quantity of electricity supplied by the project plant/unit to the grid in year y Frequency: continuous monitoring & monthly recording	No change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
	EG_{facility2, import y}: Quantity of electricity imported by the project plant/unit from the grid in year y Frequency: continuous monitoring & monthly recording	No change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
	EG_{facility2,y}: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y Frequency: calculated montly based on the contionusly monitorted value of the EG _{facility2, export y} and EG _{facility2, import y} :	No change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
	EG_{BL,y}: Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y. Frequency:	
	Total Net=(EG_{facility1,y} + EG_{facility2,y}): Quantity of net electricity generation supplied by the AHSHP and CMHS project plant/unit to the grid in year y Frequency: calculated monthly	EG_{BL,y} ((EG_{facility1,y} + EG_{facility2,y}): Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y. (EG _{BL,y} is calculated by addition on of EG _{facility1, y} + EG _{facility2, y} .)

		Quantity of net electricity generation supplied by the AHSHP and CMHS project plant/unit to the grid in year y <i>Frequency</i> : No change The parameter name is changed to more suitable in the final PDD
	FC _{diesel, y} : Quantity of diesel combusted in the project activity during year y <i>Frequency</i> : As and when consumed & monthly recording	No Change However some corrections were made in the measurement method and procedure to make it consistent with the site condition
Crediting period (type / start date)	Start date of CP: 30/10/2013 Type: Renewable (7 years x 3)	Start date of CP: 10/01/2015 Type: Renewable (7 years x 3) The date mentioned in the webhosted PDD is no more valid. Hence the date is changed.
<p>Please refer to Appendix A of this report for details of each change between webhosted PDD and the final PDD for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol.</p> <p>With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team.</p> <p>It is concluded that the Validation Team has reviewed the project in line with the VVS (version 07.0) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the Validation Team, issuing the positive validation opinion for project registration.</p>		

TÜV Rheinland validation team considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

3.4 Baseline and Monitoring Methodology:

3.4.1 Applicability of the selected methodology to the project activity

Approved baseline and monitoring methodology AMS .I.D “Grid connected renewable electricity generation” (version 17)^{/B2/} has been applied for the proposed project activity. At the time of GSP of the PDD (version 01, dated 20/08/2012 and methodology (AMS.I.D “Grid connected renewable electricity generation”) version 17 applied was the latest one.

The validation team determined the applicability of methodology AMS I.D (version 17) as follows:

Applicability criteria of the methodology: AMS I.D, Version 17	Criteria fulfilled	Determination by the validation team
§ 1 of methodology	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<p>The project activity is a hydro power plant of 4.5 MW & 6 MW capacity and has been checked from the document review mainly from the commissioning certificate^{/P22/} and DPR^{/P4/}. Since the project is located within Karnataka, the electricity generated by the project activity will be wheeled to captive use via Southern regional grid of India as per the delineation of CEA^{/B7/} and this has been checked from the Power Purchase agreement^{/P5/} which explicitly mention that the generated electricity from the project activity will be supplied to grid.</p> <p>Hence the applicability criterion is fulfilled</p>
§ 2 of methodology	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<p>The project falls under the following category mentioned in the AMS-I.D ‘Project supplies electricity to a national/regional grid’ The same is verified through the power purchase agreement^{/P5/} Hence the project using AMS-I.D is correct and hence the applicability criteria is fulfilled</p>

Applicability criteria of the methodology: AMS I.D, Version 17	Criteria fulfilled	Determination by the validation team
§ 3 of methodology	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	The project is installation of a new Hydro power generation plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity. The same is verified through site visit and review of the documents like purchase orders ^{/P14/} and commissioning certificates ^{/P22/} Hence the applicability criteria is fulfilled
§ 4 of methodology	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	The projects are run-off river hydro projects which does not involve construction of any reservoir. Hence the criteria is not applicable
§ 5 of methodology	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	The project activity is an installation of hydro power plant for the total aggregated capacity of 4.5 MW & 6 MW and does not involve any non-renewable energy components. Hence the criterion is not applicable for the subject project case.
§ 6 of methodology	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	The present CDM project activity is not a cogeneration plant; hence this criteria is not applicable for the subject project case
§ 7 of methodology	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	The project activity is a Greenfield project being implemented at a site where no hydro power plants exists and this is not a capacity addition project and verified during site visit and through review of the supporting documents like PDD ^{/P1.3/} and commissioning certificates ^{/P22/} Hence this criteria is not applicable to the project
§ 8 of methodology	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	The project activity is a Greenfield project being implemented and does not involve any retrofit or replacement of the equipment. Hence this paragraph is not applicable to the project

The assessment of the project's compliance with the applicability criteria of the methodology AMS I.D (version 17) as documented in the PDD part B, which are evaluated in detail under the validation protocol in Appendix A to this report based from the webhosted PDD

3.4.2 Project Boundary:

Project activity boundary is delineated as physical and geographical boundary of the project plant and all the power plants that are connected to the Southern grid and is adequately described in the PDD^{/P1.3/} in Section B.3. The project boundary included the project plants, the metering points and Southern grid which have been shown pictorially in section B.3 of the PDD

The geographical and physical project boundary of the project activity was determined by the validation team during the on-site assessment. The coordinates were correctly documented in the PDD. The sources and sinks of greenhouse gas identified in the PDD are deemed to be appropriate. The coordinates were confirmed by the validation team through Google maps (<https://maps.google.co.in/maps?hl=en>)

Emissions	GHGs involved	Description
Baseline emissions	CO ₂	Major emission source, which is emitted from the electricity generation by fossil fuel-fired power plants connected to the Southern grid.
Project emissions	CO ₂	CO ₂ emission from diesel consumption (by the DG set) is considered as source of project emission. This is acceptable as it is in line with the methodology and Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion
Leakage	N/A	Not applicable as per AMS.I.D since the project has purchased the new energy generating equipment (i.e.,

		Hydro turbine-generator) from the manufacturer; not from any other project activity
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In summary, the project boundary was correctly identified in accordance with the methodology AMS I.D, version 17. All greenhouse gas emissions occurring within the proposed project activity boundary as a result of the implementation of the proposed CDM project activity have been appropriately addressed in the PDD.

The identified project boundary and selected sources of emissions are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, with respect to the methodology applied.

3.4.3 Baseline Identification:

According to § 10 of applied methodology AMS-I.D, Version 17^{B2/}, the validation team can confirm that the identified baseline scenario to the bundled Greenfield grid connected hydro power project, is that the 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 into the Southern grid.

In addition, as described in the PDD^{P1.3/}, the baseline emission of the bundled project is the electricity generated by the project multiplied by the emission coefficient which is reflected in the combined margin (CM), i.e. the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor as per the “Tool to calculate the emission factor for an electricity system” version 04.0., which is in line with the applied methodology AMS-I.D/Version 17

Hence the validation team confirms that the proposed project activity meets the methodological requirement. Therefore, the baseline scenario as prescribed in the AMS I.D (version 17) is applicable to the proposed project activity. The validation took cognizance of § Section 7.12 of VVS (version 7.0).

The approved baseline methodology applicable to the - project explicit criteria - implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The selected AMS-I.D/Version 17 is demonstrated to be applicable to the project in the section 3.4.1 above
PDD includes all assumptions and data used by project participants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.
All the references and documents used are relevant for establishing the baseline scenario	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.
All relevant policies / regulations considered are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.
Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.
The baseline scenario selection is appropriate and determined according to the methodology	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.
The approved methodology used is applicable to the identified baseline scenario	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario to the project is prescribed as per the applied methodology AMS-I.D/Version 17.

The approved baseline methodology has been correctly applied to identify a realistic and credible baseline scenario, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM project activity.

All the assumption and data used by the project participants are listed in the PDD and/or supporting documents. All documentation relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.

The approved baseline methodology has been correctly applied to identify a realistic and credible baseline.

3.4.4 GHG Emission Reductions:

The GHG emissions reduction calculations are transparently documented and appropriate assumptions regarding the expected amount of electricity generated have been used to forecast emission reductions.

According to the applied formulae in the PDD^{P1.3/}, the emission reductions (ER_y) by the project activity during the crediting period is the difference between the baseline emissions (BE_y) and sum of emissions arising from leakage (LE_y) and project (PE_y), which is expressed as follows:

$$ER_y = BE_y - PE_y - LE_y$$

While the leakage (refer section 3.4.2 of this report) is zero, the project emission is calculated as follows:

Since project installs diesel generator in the project site, the emission from usage of fossil fuel (ie, Diesel) is considered as project emission. The method provided for the calculation of project emission is in line with the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” version.2.

$$PE_{FC, j, y} = \sum_i FC_{i, j, y} \times COEF_{i, y}$$

Where:

$PE_{FC, j, y}$ = Are the CO₂ emissions from diesel combustion in process j during the year y (tCO₂/yr);

$FC_{i, j, y}$ = Is the quantity of diesel combusted in process j during the year y (mass or volume unit/yr);

$COEF_{i, y}$ = Is the CO₂ emission coefficient of diesel in year y (tCO₂/mass or volume unit)

i = Are the fuel types combusted in process j during the year y

The CO₂ emission coefficient will be calculated based on the Option B provided in the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” version.2. ie,

$$COEF_{i, y} = NCV_{diesel, y} \times EF_{CO_2, diesel, y}$$

Where:

$COEF_{i, y}$ = CO₂ emission coefficient of diesel in year y (tCO₂/mass or volume unit)

$NCV_{diesel, y}$ = weighted average net calorific value of the diesel in year y (GJ/mass or volume unit)

$EF_{CO_2, diesel, y}$ = weighted average CO₂ emission factor of diesel in year y (tCO₂/GJ)

Hence, the project emissions for the proposed project activity can be calculated as follows:

$$PE_{diesel, j, y} = FC_{diesel, j, y} \times NCV_{diesel, y} \times EF_{CO_2, diesel, y}$$

Where,

$FC_{diesel, j, y}$ = quantity of diesel used during the year

$NCV_{diesel, y}$ = weighted average net calorific value of diesel in year y

$EF_{CO_2, diesel, y}$ = weighted average CO₂ emission factor of fuel type diesel in year y

However, for the ex-ante emission reduction calculation PP considers zero diesel consumption and hence the project emission is calculated as zero.

The baseline emissions are equal to the emission reductions due to the project activity. According to the § 11 of applied meth, the baseline emissions are demonstrated in Section B.6.1 of PDD and are calculated as follows:

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where,

BE_y Baseline Emissions in year y; t CO₂

$EG_{BL,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO_2,grid,y}$ CO₂ emission factor of the grid in year y; t CO₂/MWh

Since the bundled project consist the two project facility the $EG_{BL,y}$ is calculated as below:

$$EG_{BL,y} = EG_{facility1,y} + EG_{facility2,y}$$

$EG_{BL,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EG_{facility1,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh) by the facility 1

$EG_{facility2,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh) by the facility 2

$EG_{facility1,y}$ is estimated as 17,064 MWh (for AHSH) and $EG_{facility2,y}$ is estimated as 12, 437 MWh (for CMHS) and hence the $EG_{BL,y}$ is estimated as 29,501 MWh/ year which is based on plant load factor 32.47% (for AHSH) and 31.55% (for CMHS) as per the respective DPRs^{/P4/}.

EF , $EF_{CO_2,grid,y}$ in this case is taken as Combined margin CO₂ emissions factor for grid connected power generation in year y. According to the Tool to calculate the emission factor for an electricity system (version 07, EB75)^{/B3/}, the grid emission factor of the project calculated in the PDD is 0.9001 tCO₂e/MWh which is assessed by the validation team as follows:

STEP 1. Identify the relevant electricity systems:

The PP has selected Southern grid as the relevant electricity system.

As per the Central electricity authority all the Southern states will falls under the Southern grid^{/B7/}. Since both project activity and the consumption industry are located in the state of Karnataka the project also falls under Southern grid. Hence selecting Southern grid as relevant electricity system is appropriate for this project activity.

STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional).

The PP has selected Option-I (ie., Only grid power plants are included in the calculation.)

Since the tool^{/B3/} allows to choose both the option for any project without any condition, choosing not to include the off grid power plants and include only grid connected power plant is acceptable.

STEP 3. Select a method to determine the operating margin (OM) method.

PP has selected simple OM method for calculation of operation margin emission factor and 'ex-ante' option for usage of the OM

As per the tool^{/B3/} the OM can only be selected if the percentage of total grid generation by low cost/must run plants (on the basis of average of the five most recent years or based on long-term averages for hydroelectricity production.) for the electricity system is less than 50% of the total generation. As per the CEA CO₂ baseline database of India, version 7^{/B7/} the average percentage of low cost must run power plants in the last five years (ie., 2007-08 to 2011-12) in the Southern grid is just 22.50% of total generation which is less than 50%. Hence selecting simple OM method is appropriate for this project activity.

Also the tool allows choosing any option among ‘ex-ante’ and ex-post’ for the usage of the OM without any condition, choosing ‘ex-ante’ option is acceptable.

STEP 4. Calculate the operating margin emission factor according to the selected method.

PP has calculated generation weighted average of the simple operating Margin is calculated as 0.9482 tCO₂/MWh

The CEA CO₂ database itself the operating margin of every year is calculated. This has been calculated in accordance with the tool to calculate emission factor of an electricity system^{/B3/} and the same is explained in the CO₂ Baseline Database for the Indian Power Sector User Guide, version 7^{/B7/}.

It is verified that the calculation provided in the database is correct. Moreover the calculation is published by Central Electricity Authority (CEA) of India, a government agency which is responsible for power sector in India. Hence the data and the calculation provided in the database are most authentic.

Since the PP chose to use ‘ex-ante’ option for the operating margin, as per the tool the operating margin should be calculated based on the generation weighted average of most recent 3 years OM. The weighted average simple operating margin (0.9482 tCO₂/MWh) calculated in the emission reduction calculation sheet^{/P3/} is verified and found to be correct and appropriate.

STEP 5. Calculate the build margin emission factor (EF_{BM,y})

The Build margin is calculated as 0.8522 tCO₂/MWh^{/P1.3/P3.2/}.

As per the tool^{/B3/} the generation-weighted average emission factor (tCO₂/MWh) of all power units connected to the electricity system during the most recent year for which power generation data is available should be calculated. The CO₂ baseline database provides the calculation and the BM of the most recent year (during the time of webhosting based on the data availability) 2010-11 for the Southern grid is 0.8522 tCO₂/MWh. Since the calculation is published^{/B7/} by Central Electricity Authority (CEA) of India, a government agency which is responsible for power sector in India, the data and the calculation provided in the database are most authentic. Hence the build margin considered for the project activity is correct and appropriate.

STEP 6. Calculate the combined margin (CM) emissions factor

The PP calculated combined margin as 0.9001 tCO₂/MWh.

As per the tool^{/B3/}, the weights of OM & BM for the project other than wind and solar project should be considered as 50% and 50% for the calculation of combined margin emission factor. Since the project is hydro power project the PP has considered same weightage for the calculation of CM. The same is verified through calculation provided in the PDD^{/P1/} & ER sheet^{/P3/}.

Hence it is concluded that the combined margin emission factor calculated (0.9001 tCO₂/MWh) in this project is correct and appropriate.

So, based on the estimated net electricity generation (29,501 MWh/ year) and the calculated emission factor of the Southern grid (0.9001 tCO₂/MWh), the ex-ante emission reduction of this project is estimated as follows:

$$\begin{aligned}
 ER_y &= BE_y - PE_y = (EG_{BL,y} * EF_{CO_2,grid,y}) - PE_y \\
 &= (29,501 * 0.9001) - 0 = 26,553.85 \text{ tCO}_2/\text{year} \\
 &\approx 26,553 \text{ tCO}_2/\text{year (rounded down)}
 \end{aligned}$$

The source of the parameter which are used for ex-ante calculation are verified and found to be correct. The emission reduction calculation provided in the excel spread sheet is verified and found to be transparent, correct and in line with the methodology.

In summary, the calculation of emission reductions was correctly demonstrated by the PP according to the methodology AMS I.D (version 17) and its tool “Tool to calculate the emission factor for an electricity system” version 07.0. The table below summaries validation team’s determination of emission reduction:

All assumptions made for estimating GHG are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All the assumption made for the calculation of emission factor is listed in the Section B.6.1.
All data used by project participants are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All the data used for the ex-ante emission reduction calculation by the project participants are listed in the section B.6.1 of PDD
Their references and sources are also listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>The baseline data is taken from CEA CO₂ baseline database^{/B7/} and the reference for the same is given in the section B.6.1 of the PDD</p> <p>The electricity generation is calculated from the PLF mentioned in the DPR^{/P4/} and the reference for the same is given in the section B.6.3</p>
Formulas, parameters, values are complete, accurate, transparent and conservative	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>All the formulas, parameters used in the emission reduction calculation are in line with the requirements of AMS. I.D version 17^{/B2/} and Tool to calculate the emission factor for an electricity system” version 07.0^{/B3/}. The data used for the calculation of emission reduction is in line with the respective sources. The emission reduction calculation is conservatively calculated and transparently provided in the emission reduction calculation sheet^{/P3.2/}.</p> <p>Hence the formulas, parameters, values used for the ER calculation are complete, accurate, transparent and conservative</p>
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All the references and documents used have been correctly quoted and conservatively interpreted in the PDD Section B.6. Baseline Information are according to the CEA baseline database ^{/B7/} and the Tool to calculate the emission factor for an electricity system (version 07.0) ^{/B3/}
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>The methodology (i.e. AMS.I.D/Version 17) has been correctly applied to calculate project emissions, baseline emissions, leakage emissions and emission reductions.</p> <p>Please also see above descriptions in this section</p>
All the emissions of baseline emissions can be replicated using information provided in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All the emissions of baseline emissions can be replicated by multiplying the annual net electricity output (i.e. 29,501 MWh) by the CO ₂ emission factor of Southern grid (i.e. 0.9001 tCO ₂ e/MWh). The baseline emissions calculation is thus calculated as) 26,553 tCO ₂ e/yr

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average ex-ante estimation of emission reduction conservatively calculated to be 26,553 tCO₂e per year for the selected crediting period.

All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources. All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD. All values used in the PDD are considered reasonable and conservative in the context of the proposed CDM project activity. The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD.

3.5 Additionality :

The additionality of the project has been presented in the PDD Section B.5 using the following approach:

According to “Guidelines on the demonstration of additionality of small-scale project activities”^{/B4/}, the additionality has been demonstrated by investment barrier, using benchmark analysis.

The data, rationales, assumptions, justifications and documentation provided by the project participants are reliable and credible to the demonstrated additionality. The validation team was able to verify that CDM has been introduced and considered prior to the starting of the project

In conclusion, the assessment of the arguments presented in the PDD has been sufficient to demonstrate that the proposed project is not likely the baseline scenario and the emission reductions resulting from the project activity are additional

Parallel to the implantation of the project activity, the PP has started CDM related activities to secure the CDM benefits, which are explained in the below sections.

The following sections described how is the additionality of the project activity has been validated

3.5.1 CDM consideration:

The following chronology clearly justify that PP has seriously considered the CDM benefit for this project activity.

Timeline		Milestone	Determination by the validation team
AHSHP	CMHS		
06/09/2006	03/08/2006	Board Decided to invest in the project activity	The extract of the board resolution copies ^{/P12/} of M/s. Prasanna Power Limited (PPL) and Thrinethra Energy Conversions Limited (TECL) are verified and found that the CDM was the decisive factor in the investment decision on these project activities. As mentioned above Prasanna Power Limited and Thrinethra Energy Conversions Limited decided to go ahead the project with the consideration of CDM benefits and hence acceptable by validation team.
06/11/2006	04/11/2006	Loan Sanction by SBI & PNB	The respective loan sanction letters ^{/P9/} were verified and found to be correct.
08/11/2006	16/11/2006	Placement of the Work Order for Civil Work	The respective work order for civil works ^{/P14/} are verified and found to be correct. Since placing the civil work order is the first real action in the project activity, the dates of these work orders were considered as start date of the respective project activities.
12/12/2006	12/12/2006	Signing of PPA with BESCOM	The respective PPAs ^{/P5/} were verified and found to be correct
24/01/2007	-	Loan Sanction by SBM	The loan sanction letter ^{/P9/} was verified and found to be correct.
30/07/2007		Local Stake holder's meeting	This is a CDM action is verified from the LSC documents ^{/P11/} and found to be correct.

Timeline		Milestone	Determination by the validation team
AHSHP	CMHS		
30/07/2007		Email communication for Sale proposal of CERs	This is a CDM action and it is verified from the email communication between International Power Corporation Limited and Norwegian Ministry of Finance regarding ERPA ^{/P19/} and found to be correct.
26/12/2008		Appointment of the CDM consultant	This is a potential CDM action is verified from the consultancy contract with Sri Vidhya Consultancy ^{/P18/} and found that the date is matching.
11/06/2009		Email Communication Negotiating Price of CER	This is a CDM action and it is verified from the email communication between International Power Corporation Limited and Norwegian Ministry of Finance regarding ERPA ^{/P19/} and found to be correct.
13/08/2009	05/07/2008	Commissioning of the Project	The commissioning dates are verified from the respective commissioning certificates ^{/P22/} and found to be correct.
29/07/2010		Appointment of Validator	This is a potential CDM action and the date is confirmed through verification of work order ^{/P15/} to SGS by PP.
24/09/2010		Webhosting of the project on UNFCCC website	This is a potential CDM action and it is verified from the UNFCCC website and found to be correct. http://cdm.unfccc.int/Projects/Validation/DB/SQP301IRAKXAT3P44J69Q20ZL7KDB8/view.html
21/02/2012		Host Country Approval	It a potential CDM action and it is verified from HCA letter ^{/P13/} and found to be correct.
30/01/2013		Negative validation report given by DOE	It is verified from the negative validation report ^{/P15/} issued by SGS.
15/03/2013		Appointment of new Consultant	It a potential CDM action and it is verified from contract between PP & M/s Kosher Climate India Pvt. Ltd ^{/P18/} and found to be correct.
15/05/2013		Appointment of another DOE	It a potential CDM action and it is verified from the contract between PP & M/s TUV Rheinland ^{/P18/} and found to be correct.
09/07/2013		Webhosting of the PDD (2 nd time)	This is a potential CDM action and it is verified from the UNFCCC website and found to be correct. http://cdm.unfccc.int/Projects/Validation/DB/V8OSV7ET0Q9CCZWD3PZVKGGQM0HP1N/view.html

From verification of the board resolution copy it is confirmed that the project participant is aware of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project CDM.

From the verification of the above documents related to real action, the gap between the real actions taken to secure CDM status for the project activity is less than 2 years before starting the CDM validation. Hence it is also confirmed that the PP has taken that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

Hence it can be confirmed that the PP have seriously considered CDM for the resume the ceased implementation of the hydro project activity. Therefore, the validation team confirms that the implementation of the proposed project activity as a CDM project is fully in line with the requirements of VVS Section 7.12.9.

3.5.2 Alternatives:

The AMS-I.D Version 17 methodology has prescribed the baseline scenario requirements & the project participant has considered the baseline scenario provided in methodology. Hence no alternative considered for this project activity for the baseline identification

3.5.3 Investment analysis:

The additionality of the project activity has been demonstrated in the PDD justifying the investment barrier as per the “Guidelines on the demonstration of additionality of small-scale project activities”, version 09^{B4/}. The investment barrier is justified through investment analysis route. The detailed assessment has been illustrated as follows.

3.5.3.1 Choice of approach:

The project proponent has chosen a “benchmark analysis” approach for the investment analysis. Since the project activity is grid connected power generation which can be developed by any developer other than PP and the baseline is the grid electricity which involves no capital investment by the PP, the benchmark analysis approach is correct for this project activity.

In benchmark analysis the PP has selected ‘pre-tax project IRR’ as financial indicator as the benchmark selected is PLR which is pre-tax.

Benchmark selection:

As noted in the PDD, an investment analysis is carried out through applying benchmark analysis method, which is mainly based on the comparison between project IRR and the local commercial lending rate. The project participant has considered local commercial lending rate as the benchmark, which is considered appropriate according to the § 12 of “Guidelines on the Assessment of Investment Analysis” (Version 05) EB 62

Since the hydro power project can be developed by any entity other than the PP, the benchmark (lending rate) is calculated based on the publically available data.

The prime lending rate published by Reserve bank of India applicable at the time of investment decision is considered as benchmark for this project. The Reserve Bank of India (RBI) is the Central Bank of India, and hence the prime lending rate provided by RBI is considered to be appropriate benchmark. The benchmark considered in the project are as below:

S. No	Project Proponent	Investment decision date	BPLR Range	Benchmark (Avg PLR)	Reference ^{/B13/}
1	Aniyur Hole Small Hydro Project (AHSHP)	06/09/2006	11.00% – 11.50%	11.25%	RBI published data for 01/09/2006: http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/72594.pdf
2	Charmadi Mini Hydel Scheme (CMHS)	03/08/2006	10.75% – 11.25%	11.00%	RBI published data for 28/07/2006: http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/71884.pdf

The PP has considered the average BPLR as benchmark for the respective project. The data is available and valid at the time of investment decision. This is found to be appropriate and conservative benchmark. Since the prime lending rate provide by RBI is a post-tax benchmark, PP has considered the post-tax project IRR as financial indicator in the analysis. It is also found that the benchmark considered is much lower than the interest rate of the bank loan for the projects.

Therefore, the validation team considers that the benchmark considered is appropriate and conservative.

Input parameters:

For the purpose of validating the financial input parameters, the validation team has considered the investment decision date in order to validate the consistency, appropriateness of the input values with this timing & consistency of the listed input values application in the financial calculation sheet^{/P2.2/}. The validation team had

reviewed the following input values used in the financial calculation through review of sources presented in the PDD Section B.5 & financial calculation sheets.

Aniyur Hole Small Hydro Project (AHSHP):

Date of investment decision: 06/09/2006

Parameter:	Project Cost												
Value applied for the IRR calculation:	3500.00 lakh INR												
Source of the value:	Detailed Project Report (DPR), §2.21 ^{/P4/}												
Consistency of the value:	Yes												
Validity of input value at the time of investment decision making:	Yes												
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	The project cost is based on the DPR which was available at the time of investment decision. The bank loan application (attested by bank) ^{/P10/} was also verified, and found that the project cost provided in the bank loan application is same as cost mentioned in the DPR (ie, 3500 lakh INR) which is on the same month of investment decision.												
	As per the report provided by the chartered accountant firm M/S M.Venkatachalam & Associates on 21/01/2014 ^{/P23/} , the actual cost of project is 4178 lakh INR which could be recalculated again though verification of purchase/work orders and annual reports of the PPL. This value could also be verified though the annual reports of PPL ^{/P20/} . Hence the actual project cost is 19.4% is higher than the cost considered for the financial calculation.												
	Based on the project cost considered for the financial calculation, the cost per MW works out to be 583.33 Lakh INR/MW. The cost/MW is less than the cost/MW considered in many registered run-off river hydro projects resisted in India. Some of the registered projects are listed below:												
	<table><tr><td>Ref. No</td><td>Project</td><td>Capital cost (lakh INR/MW)</td></tr><tr><td>3966</td><td>Small Hydro Power Project at Jirah</td><td>825.00</td></tr><tr><td>4818</td><td>24 MW Dummagudem Hydel project by SLS Power Corporation Limited</td><td>768.14</td></tr><tr><td>6048</td><td>Rukti-II (5 MW) Small Hydro Electric Project</td><td>687.22</td></tr></table>	Ref. No	Project	Capital cost (lakh INR/MW)	3966	Small Hydro Power Project at Jirah	825.00	4818	24 MW Dummagudem Hydel project by SLS Power Corporation Limited	768.14	6048	Rukti-II (5 MW) Small Hydro Electric Project	687.22
	Ref. No	Project	Capital cost (lakh INR/MW)										
3966	Small Hydro Power Project at Jirah	825.00											
4818	24 MW Dummagudem Hydel project by SLS Power Corporation Limited	768.14											
6048	Rukti-II (5 MW) Small Hydro Electric Project	687.22											
Moreover the sensitivity analysis has been done for the project cost and it shows that IRR is below benchmark with ± 10% variation. Taking into consideration of all these factors and based on the local and sectoral expertise, the validation team concludes that the project cost considered in the project activity is appropriate for the given project activity.													
Parameter:	MNRE capital Subsidy												

Value applied for the IRR calculation:	220.00 lakh INR
Source of the value:	MNRE Subsidy scheme ^{/B12/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The MNRE capital subsidy is based on the MNRE subsidy scheme^{/B12/} which was available at the time of investment decision</p> <p>Hence the MNRE capital subsidy amount considered for the project activity is appropriate.</p>

Parameter:	Generation/Plant Load Factor												
Value applied for the IRR calculation:	17.5 Million kWh/33.30%												
Source of the value:	Detailed Project Report, § 4.08 ^{/P4/}												
Consistency of the value:	Yes												
Validity of input value at the time of investment decision making:	Yes												
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	The gross generation/PLF is based on Detailed project report ^{/P4/} which was prepared by M/s ECI Renewable Energy Consultants (P) Ltd, and it was also available at the time of investment decision. The same PLF is also considered for bank loan which is verified from bank loan application letter (attested by State Bank of India) ^{/P10/} . Since the PLF calculated is based on the power study is conducted by third party engineering company and also the same is considered for sanction of loan, it is inline with EB 48, annex 11 requirement.												
	The KERC tariff order dated 18/01/2005 recommends the PLF of 30% for the small hydro projects in Karnataka. The following run-off hydro projects in Karnataka registered under UNFCCC in Karnataka are also checked and its PLF is found to be in the same range of PLF considered in this project.												
	<table><tr><th>Ref. No</th><th>Project</th><th>PLF</th></tr><tr><td>0836</td><td>24 MW Chayadevi Mini Hydro Power Project in Karnataka, India</td><td>23.54%</td></tr><tr><td>1549</td><td>9 MW Neria Hydroelectric project, Karnataka, India</td><td>31.15%</td></tr><tr><td>3568</td><td>13 MW Grid Connected Dandela Mini Hydel Scheme, Karnataka State, India</td><td>33.54%</td></tr></table>	Ref. No	Project	PLF	0836	24 MW Chayadevi Mini Hydro Power Project in Karnataka, India	23.54%	1549	9 MW Neria Hydroelectric project, Karnataka, India	31.15%	3568	13 MW Grid Connected Dandela Mini Hydel Scheme, Karnataka State, India	33.54%
	Ref. No	Project	PLF										
0836	24 MW Chayadevi Mini Hydro Power Project in Karnataka, India	23.54%											
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3568	13 MW Grid Connected Dandela Mini Hydel Scheme, Karnataka State, India	33.54%											
Moreover sensitivity analysis has been done for the PLF and it shows that IRR is below benchmark with ± 10% variation.													
	In the earlier PDD (which was rejected by SGS), the PLF considered is 47.35% which is based on a 50% dependable energy provided in the DPR. However the PLF considered in the current PDD (ie, 33.30%) is based on the 75% dependable												

	<p>energy provided in the DPR. In the context of energy calculation, the normal practice is considering 75% dependable energy which can be verified from the bank loan application. Hence the PLF of 33.30% is more appropriate for financial calculation.</p> <p>It is also to be noted that the actual average PLF is achieved in the last 5 years is (from September 2009 to August 2014) is only 22.5%^{/P17/}.</p> <p>Hence the gross generation/PLF considered in the project activity is appropriate, conservative and in line with EB 48, annex 11 requirements.</p>
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Parameter:	Auxiliary consumption & transmission loss
Value applied for the IRR calculation:	Auxiliary consumption: 0.5% Transmission loss : 2 %
Source of the value:	Detailed Project Report, § 9.05 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The Auxiliary consumption and transmission loss are based on Detailed project report^{/P4/} which was prepared by M/s ECI Renewable Energy Consultants (P) Ltd and it was also available at the time of investment decision.</p> <p>Most of the registered hydro projects in Karnataka also considers 1% of auxiliary consumption and 2% of transmission loss.</p> <p>Considering above fact the auxiliary consumption and transmission loss considered in the financial calculation is appropriate and conservative.</p>

Parameter:	O & M Cost & insurance
Value applied for the IRR calculation:	O&M: 1.0% of the project cost. Insurance: 0.5% (@ 5% escalation)
Source of the value:	Detailed Project Report, § 9.05 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The O&M cost, insurance and their escalation is based on the Detailed project report^{/P4/} which was available at the time of investment decision</p> <p>The KERC Renewable energy tariff order^{/B10/} suggests 1.5% of project capital cost as O&M cost (with insurance) with 5% escalation. The CERC suggest the O&M cost of 3.09% of the capital cost and KREDL 3% of the project cost with 5%</p>

	<p>escalation. Hence the O&M cost considered in the project is appropriate.</p> <p>It is also to be noted that even without considering O&M cost, the IRR will be within the benchmark.</p> <p>Taking into consideration all these factors and based on the local and sectoral expertise, the validation team concludes that the escalation O&M cost is reliable and appropriate for the given project activity.</p>
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Parameter:	Tariff
Value applied for the IRR calculation:	2.80 INR/kWh fixed
Source of the value:	Detailed Project Report, § 1.15 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The tariff rate is based on the Detailed Project report^{/P4/} which was available at the time of investment decision. The power purchase agreement^{/P5/} also verified and found that the actual tariff applicable for the project is same (ie, 2.80 INR/kWh) fixed for 10 years. Hence, the actual tariff applicable to the project activity is considered for the financial calculation. Though the tariff is not provided after 10th year, the PP has considered the same tariff after the 10th year also, which seems to be acceptable.</p> <p>Moreover sensitivity analysis has been done for the tariff rate and it shows that IRR is below benchmark with $\pm 10\%$ variation.</p> <p>Hence the tariff rate considered for the project activity is appropriate.</p>

Parameter:	Debt:Equity
Value applied for the IRR calculation:	50:50
Source of the value:	Detailed Project Report, § 1.14 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (05.0) (cross checking and comparison as applicable)	<p>The debt-equity ratio is based on the Detailed project report^{/P4/} which was available at the time of investment decision. Normally in infrastructure sector the loan amount of 50% to 80% is given and the project debt component is within this limit.</p> <p>Hence the debt amount considered for the project activity is appropriate.</p>

Parameter:	Interest on Debt
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Value applied for the IRR calculation:	11.50%
Source of the value:	Detailed Project Report, § 9.05 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The interest rate is based on the Detailed project report^{/P4/} which was available at the time of investment decision.</p> <p>At the time of investment decision the Prime Lending Rate (PLR) of RBI (Central Bank of India) is 11.00% – 11.50%.^{/B13/}</p> <p>Hence the interest rate of debt considered in the project is appropriate.</p>

Parameter:	Working capital requirements
Value applied for the IRR calculation:	2 months of power revenue
Source of the value:	Detailed Project Report, § 9.05 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The working capital requirement is based DPR which was available at the time of investment decision. This is in line with the KERC tariff order^{/B14/} and CERC renewable energy tariff order.</p> <p>Hence the working capital requirements considered in the project are appropriate.</p>

Parameter:	Interest on working capital
Value applied for the IRR calculation:	12.5%
Source of the value:	Detailed Project Report, § 9.05 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The working capital interest rate is based DPR which was available at the time of investment decision. This is also in line with the KERC tariff order^{/B14/} and hence acceptable.</p> <p>Hence the working capital requirements considered in the project are appropriate.</p>

Parameter:	Book depreciation
Value applied for the IRR calculation:	<p>Civil work: 3.34%</p> <p>Equipment & machinery : 5.28%</p> <p>(SLM method)</p>

Source of the value:	As per companies act ^{/B15/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (05.0) (cross checking and comparison as applicable)	The book depreciation considered is based on the Companies act ^{/B15/} in the SLM method. Validation team checked book depreciation provided in the companies act and found it to be correct. Hence, the input parameter is valid, correct and appropriate.

Charmadi Mini Hydel Scheme (CMHS):

Date of investment decision: 03/08/2006

Parameter:	Project Cost										
Value applied for the IRR calculation:	2550.00 lakh INR										
Source of the value:	Detailed Project Report (DPR), §2.21 ^{/P4/}										
Consistency of the value:	Yes										
Validity of input value at the time of investment decision making:	Yes										
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	The project cost is based on the DPR which was available at the time of investment decision. The bank loan application (attested by bank) ^{/P10/} was also verified, and found that the project cost provided in the bank loan application is same as cost mentioned in the DPR (ie, 2550 lakh INR) which is on the same month of investment decision.										
	As per the report provided by the chartered accountant firm M/S M.Venkatachalam & Associates on 21/01/2014 ^{/P23/} , the actual cost of project is 3124 lakh INR which could be recalculated again though verification of purchase/work orders and annual reports of the PPL. This value could also be verified though the annual reports of TECL ^{/P20/} . Hence the actual project cost is 22.5% is higher than the cost considered for the financial calculation.										
	Based on the project cost considered for the financial calculation, the cost per MW works out to be 566.67 Lakh INR/MW. The cost/MW is less than the cost/MW considered in many registered run-off river hydro projects resisted in India. Some of the registered projects are listed below:										
	<table><tr><td>Ref. No</td><td>Project</td><td>Capital cost (lakh INR/MW)</td></tr><tr><td>3966</td><td>Small Hydro Power Project at Jirah</td><td>825.00</td></tr><tr><td>4818</td><td>24 MW Dummagudem Hydel project by SLS Power Corporation Limited</td><td>768.14</td></tr></table>			Ref. No	Project	Capital cost (lakh INR/MW)	3966	Small Hydro Power Project at Jirah	825.00	4818	24 MW Dummagudem Hydel project by SLS Power Corporation Limited
Ref. No	Project	Capital cost (lakh INR/MW)									
3966	Small Hydro Power Project at Jirah	825.00									
4818	24 MW Dummagudem Hydel project by SLS Power Corporation Limited	768.14									

	6048	Rukti-II (5 MW) Small Hydro Electric Project	687.22
	<p>Moreover the sensitivity analysis has been done for the project cost and it shows that IRR is below benchmark with $\pm 10\%$ variation.</p> <p>Taking into consideration of all these factors and based on the local and sectoral expertise, the validation team concludes that the project cost considered in the project activity is appropriate for the given project activity.</p>		

Parameter:	MNRE capital Subsidy
Value applied for the IRR calculation:	190 lakh INR
Source of the value:	MNRE Subsidy scheme ^{P12/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The MNRE capital subsidy is based on the MNRE subsidy scheme^{P12/} which was available at the time of investment decision</p> <p>Hence the MNRE capital subsidy amount considered for the project activity is appropriate.</p>

Parameter:	Generation/Plant Load Factor		
Value applied for the IRR calculation:	12.5 Million kWh/31.71%		
Source of the value:	Detailed Project Report, § 7.0 ^{P4/}		
Consistency of the value:	Yes		
Validity of input value at the time of investment decision making:	Yes		
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	The gross generation/PLF is based on Detailed project report ^{/P4/} which was prepared by M/s ECI Renewable Energy Consultants (P) Ltd, and it was also available at the time of investment decision. The same PLF is also considered for bank loan which is verified from bank loan application letter (attested by State Bank of India) ^{/P10/} . Since the PLF calculated is based on the power study is conducted by third party engineering company and also the same is considered for sanction of loan, it is inline with EB 48, annex 11 requirement.		
	The KERC tariff order dated 18/01/2005 ^{/B14/} recommends the PLF of 30% for the small hydro projects in Karnataka. The following run-off hydro projects in Karnataka registered under UNFCCC in Karnataka are also checked and its PLF is found to be in the same rage of PLF considered in this project.		
	Ref. No	Project	PLF

	0836	24 MW Chayadevi Mini Hydro Power Project in Karnataka, India	23.54%
	1549	9 MW Neria Hydroelectric project, Karnataka, India	31.15%
<p>Moreover sensitivity analysis has been done for the PLF and it shows that IRR is below benchmark with $\pm 10\%$ variation.</p> <p>In the earlier PDD (which was given negative opinion by SGS)^{/P15/}, the PLF considered is 44.10% which is based on a 50% dependable energy provided in the DPR. However the PLF considered in the current PDD (ie, 31.71%) is based on the 75% dependable energy provided in the DPR. In the context of energy calculation, the normal practice is considering 75% dependable energy which can be verified from the bank loan application. Hence the PLF of 31.71% is more appropriate for financial calculation.</p> <p>It is also to be noted that the actual average PLF is achieved in the last 5 years (from August 2008 to July 2014) is only 19.0%^{/P17/}.</p> <p>Hence the gross generation/PLF considered in the project activity is appropriate, conservative and in line with EB 48, annex 11 requirements.</p>			

Parameter:	Auxiliary consumption & transmission loss
Value applied for the IRR calculation:	Auxiliary consumption: 0.5% Transmission loss : 0 %
Source of the value:	Detailed Project Report, § 20.4 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 121 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The Auxiliary consumption and transmission loss are based on Detailed project report^{/P4/} which was prepared by M/s ECI Renewable Energy Consultants (P) Ltd and it was also available at the time of investment decision.</p> <p>The 0.5% auxiliary consumption is matching with the auxiliary consumption suggested by KERC tariff order^{/B14/}. Most of the registered hydro projects in Karnataka consider 1% of auxiliary consumption and 2% of transmission loss.</p> <p>Considering above fact, the auxiliary consumption and transmission loss considered in the financial calculation is appropriate and conservative.</p>

Parameter:	O & M Cost & insurance
Value applied for the IRR calculation:	O&M: 1.0% of the project cost. Insurance: 0.5% (@ 5% escalation)
Source of the value:	Detailed Project Report, § 20.4 ^{/P4/}

Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The O&M cost, insurance and their escalation is based on the Detailed project report^{/P4/} which was available at the time of investment decision</p> <p>The KERC Renewable energy tariff order^{/B14/} suggests 1.5% of project capital cost as O&M cost (with insurance) with 5% escalation. The CERC suggest the O&M cost of 3.09% of the capital cost and KREDL 3% of the project cost with 5% escalation. Hence the O&M cost considered in the project is appropriate.</p> <p>It is also to be noted that even without considering O&M cost, the IRR will be within the benchmark.</p> <p>Taking into consideration all these factors and based on the local and sectoral expertise, the validation team concludes that the escalation O&M cost is reliable and appropriate for the given project activity.</p>

Parameter:	Tariff
Value applied for the IRR calculation:	2.80 INR/kWh fixed
Source of the value:	Detailed Project Report, § 20.4 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The tariff rate is based on the Detailed Project report^{/P4/} which was available at the time of investment decision. The power purchase agreement^{/P5/} also verified and found that the actual tariff applicable for the project is same (ie, 2.80 INR/kWh) fixed for 10 years. Hence, the actual tariff applicable to the project activity is considered for the financial calculation. Though the tariff is not provided after 10th year, the PP has considered the same tariff after the 10th year also, which seems to be acceptable.</p> <p>Moreover sensitivity analysis has been done for the tariff rate and it shows that IRR is below benchmark with $\pm 10\%$ variation. Hence the tariff rate considered for the project activity is appropriate.</p>

Parameter:	Debt:Equity
Value applied for the IRR calculation:	60:40
Source of the value:	Detailed Project Report, § 2.01 ^{/P4/}
Consistency of the value:	Yes

Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (05.0) (cross checking and comparison as applicable)	<p>The debt-equity ratio is based on the Detailed project report^{/P4/} which was available at the time of investment decision</p> <p>Normally in infrastructure sector the loan amount of 50% to 80% is given and the project debt component is within this limit.</p> <p>Hence the debt amount considered for the project activity is appropriate.</p>

Parameter:	Interest on Debt
Value applied for the IRR calculation:	11.50%
Source of the value:	Detailed Project Report, § 2.01 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The interest rate is based on the Detailed project report^{/P4/} which was available at the time of investment decision.</p> <p>At the time of investment decision the Prime Lending Rate (PLR) of RBI (Central Bank of India) is 10.75% – 11.25%^{/B13/}. Even with this value, the IRR is well below the banchmark.</p> <p>Hence the interest rate of debt considered in the project is appropriate.</p>

Parameter:	Working capital requirements
Value applied for the IRR calculation:	2 months of power revenue
Source of the value:	Detailed Project Report, § 20.4 ^{/P4/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The working capital requirement is based DPR which was available at the time of investment decision. This is in line with the KERC tariff order^{/B14/} and CERC renewable energy tariff order.</p> <p>Hence the working capital requirements considered in the project are appropriate.</p>

Parameter:	Interest on working capital
Value applied for the IRR calculation:	12.5%
Source of the value:	Detailed Project Report, § 20.4 ^{/P4/}
Consistency of the value:	Yes

Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (07.0) (cross checking and comparison as applicable)	<p>The working capital interest rate is based DPR which was available at the time of investment decision. This is also in line with the KERC tariff order^{B14/} and hence acceptable.</p> <p>Hence the working capital requirements considered in the project are appropriate.</p>

Parameter:	Book depreciation
Value applied for the IRR calculation:	Civil work: 3.34% Equipment & machinery : 5.28% (SLM method)
Source of the value:	As per companies act ^{B15/}
Consistency of the value:	Yes
Validity of input value at the time of investment decision making:	Yes
Justification by the validation team according to §120, 122 of VVS version (05.0) (cross checking and comparison as applicable)	The book depreciation considered is based on the Companies act ^{B15/} in the SLM method. Validation team checked book depreciation provided in the companies act and found it to be correct. Hence, the input parameter is valid, correct and appropriate.

Financial calculation and conclusion:

The financial analysis is in accordance with the “Guidelines on the assessment of investment analysis” version 05. Spread sheet IRR calculation sheets^{P2.2/} are submitted by PP. The Excel spread sheet is a clear, viewable and unprotected. All input parameters used in the IRR calculation were valid at the time of investment decision making. Though the project life time is 30 years, the financial calculation is projected for 20 years and remaining book values and expected profit/loss are added along with the residual value on the 20th year and hence is in line with guidance 3 of Investment guideline^{B9/}. The validation team confirms that the project IRR – post-tax without any CDM revenue works out to be as follows:

Project	IRR (%)	Benchmark (%)
Aniyur Hole Small Hydro Project	7.87%	11.25%
Charmadi Mini Hydel Scheme	7.45%	11.00%

From the above table, it is clear that the IRR of the project activity is well below the benchmark. It is clearly demonstrated that the proposed project activity without CER revenues is financially unattractive. The validation took cognizance of § 119 of VVS (version 07.0).

3.5.3.2 Sensitivity analysis:

According to the “Guidelines on the assessment of investment analysis” (version 05), 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 and the results of this variation should be presented in the PDD and be reproducible in the associated spread sheets. The validation team thus confirms that the following parameters meet the requirement and these parameters have been subjected to variations in the range of +10% and -10% in the PDD.

- Project Cost
- Electricity Generation/PLF
- Tariff Rate
- O& M Cost

Aniyur Hole Small Hydro Project:

Input Values	-10%	0%	10%
Project Cost	9.28%	7.87%	6.72%
Electricity Generation/PLF	6.38%	7.87%	9.27%
Tariff Rate	6.38%	7.87%	9.27%
O& M Cost	8.03%	7.87%	7.71%

The validation took cognizance of § 120 (e) of VVS (version 07.0). The table below summaries the situation where the IRR would reach the benchmark:

Input value	Variation	Validation team's opinion
Project cost	If the investment cost decreases by 21.03%, the IRR reaches the benchmark.	If the project cost decrease to 21.03% then the project cost will be 2763.95 Lakh INR. Project cost decreasing to 2763.95 Lakh INR is not possible as the project activity is already commissioned and spent about 4178 Lakh INR ^{/P23/} .
Electricity Generation/PLF	If the PLF/annual electricity supply to the grid increases by 25.60%, the IRR crosses the benchmark.	The annual gross generation considered in the project is 17,500 MWh (33.30% PLF) based on DPR. The PLF increase of 25.60% (ie., achieving 21,980 MWh generation or 41.82% PLF) in this project is unlikely as the KERC itself suggest the PLF of only 30% ^{/B10/} . Moreover the PLF considered in this project is more than the PLF considered in the many registered hydro projects in Karnataka. The actual average PLF is achieved in the last 5 years is (from September 2009 to August 2014) is only 22.5% ^{/P17/} . Hence PLF/generation increasing the 25.60% from the value considered now is unlikely.
Electricity tariff	If the electricity tariff increases by 25.60%, the IRR reaches the benchmark.	Increase in the electricity tariff up to 25.60% is hypothetical as the actual tariff itself is same as tariff taken is taken for calculation.
O&M cost	Even without considering O&M cost, the IRR will not cross the benchmark	Even without considering O&M cost, the IRR will not cross the benchmark

Charmadi Mini Hydel Scheme:

Input Values	-10%	0%	10%
Project Cost	8.82%	7.45%	6.34%
Electricity Generation/PLF	6.05%	7.45%	8.82%
Tariff Rate	6.05%	7.45%	8.82%
O& M Cost	7.60%	7.45%	7.30%

The validation took cognizance of § 120 (e) of VVS (version 07.0). The table below summaries the situation where the IRR would reach the benchmark:

Input value	Variation	Validation team's opinion
Project cost	If the investment cost	If the project cost decrease to 22.47% then the

Input value	Variation	Validation team's opinion
	decreases by 22.47%, the IRR reaches the benchmark.	project cost will be 1977.02 Lakh INR. Project cost decreasing to 1977.02 Lakh INR is not possible as the project activity is already commissioned and spent about 3124 Lakh INR ^{/P23/} .
Electricity Generation/PLF	If the PLF/annual electricity supply to the grid increases by 27.41%, the IRR crosses the benchmark.	The annual gross generation considered in the project is 12,500 MWh (31.71% PLF) based on DPR. The PLF increase of 27.41% (ie., achieving 15,926 MWh generation or 40.41% PLF) in this project is unlikely as the KERC itself suggest the PLF of only 30% ^{/B10/} . Moreover the PLF considered in this project is more than the PLF considered in the many registered hydro projects in Karnataka. The actual average PLF is achieved in the last 5 years (from August 2008 to July 2014) is only 19.0% ^{/P17/} . Hence PLF/generation increasing the 27.41% from the value considered now is unlikely.
Electricity tariff	If the electricity tariff increases by 27.41%, the IRR reaches the benchmark.	Increase in the electricity tariff up to 27.41% is hypothetical as the actual tariff itself is same as tariff taken is taken for calculation.
O&M cost	Even without considering O&M cost, the IRR will not cross the benchmark	Even without considering O&M cost, the IRR will not cross the benchmark

The validation team thus confirms that the sensitivity analysis is in accordance with the “Guidelines on the assessment of investment analysis” version 05. All input parameters used for sensitive analysis constitute more than 20% of either total project costs or total project revenues. The justifications provided by the PP with the variations of these parameters are been analysed, clarified and accepted by the DOE.

3.5.4 Barrier analysis

The investment barrier is justified through investment analysis above. PDD does not describe any other barrier.

3.5.5 Common practice analysis

Not applicable as the project is SSC project.

3.5.6 Conclusion of assessment of Additionality

The CDM was seriously considered by the PP. The evidences were transparently reviewed by the validation team and considered to be effective. Investment analysis and sensitivity analysis clearly demonstrate that the proposed project activity is financially unattractive. Therefore, the proposed project activity is not business-as-usual, i.e. the proposed project activity is additional.

3.6 Monitoring

The project monitoring plan is in compliance with the monitoring methodology AMS I.D (version 17).

It is DOE's opinion that the project participant is able to implement the monitoring plan.

3.6.1 Parameters determined ex-ante

The project adopts the ex-ante calculation of Operating Margin emission factor ($EF_{grid,OM,y}$), Build margin emission factor ($EF_{grid,BM,y}$) and Combined margin emission factor ($EF_{grid,CM,y}$) of the grid. This calculation

process, incl. the applied parameters and equations, were assessed by the validation team in accordance with the Tool to calculate the emission factor for an electricity system, Version 04.0 by using the CEA baseline database, version 8 (which was available at the time of webhosting). Please refer to Section 3.4.4 for the detailed discussion. The emission factor is calculated based on the CEA baseline database

The validation team confirms that all relevant parameters have been sufficiently considered and the values of the parameters are real, measureable and conservative

3.6.2 Parameters monitored ex-post

According to the methodology AMS I.D, version 17, the main parameter required for the hydro power project to be monitored is net electricity supplied to the grid. However the PP implemented the diesel generator at the project site for the emergency situation, PP decided to monitor diesel consumption for the purpose of project emission calculation.

Sl. No.	Parameters	Description	Measured/calculated
1	$EG_{\text{facility1, export } y}$	Quantity of electricity supplied by the project plant/unit to the grid in year y	The $EG_{\text{facility1, export } y}$ is measured through a two way energy meter continuously. The energy meter readings are recorded by the jointly MESCOM officials and PP representative every month. The MESCOM calculate the net energy value and provide the same along with export and import values in the B-Form which will be issued to PP every month. Hence the $EG_{\text{facility1, export } y}$ value can be directly taken from B-Form.
2	$EG_{\text{facility1, import, } y}$	Quantity of electricity imported by the project plant/unit from the grid in year y	The $EG_{\text{facility1, import, } y}$ is measured through a two way energy meter continuously. The energy meter readings are recorded by the jointly MESCOM officials and PP representative every month. The MESCOM calculate the net energy value and provide the same along with export and import values in the B-Form which will be issued to PP every month. Hence the $EG_{\text{facility1, import, } y}$ value can be directly taken from B-Form.
3	$EG_{\text{facility1, } y}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	The $EG_{\text{facility1, } y}$ is measured through a two way energy meter continuously. The energy meter readings are recorded by the jointly MESCOM officials and PP representative every month. The MESCOM calculate the net energy value and provide the same along with export and import values in the B-Form which will be issued to PP every month. Hence the $EG_{\text{facility1, } y}$ value can be directly taken from B-Form.
4	$EG_{\text{facility2, export } y}$	Quantity of electricity supplied by the project plant/unit to the grid in year y	The $EG_{\text{facility2, export } y}$ is measured through a two way energy meter continuously. The energy meter readings are recorded by the jointly MESCOM officials and PP representative every month. The MESCOM calculate the net energy value and provide the same along with export and import values in the B-Form which will be issued to PP every month. Hence the $EG_{\text{facility2, export } y}$ value can be directly taken from B-Form.
5	$EG_{\text{facility2, import, } y}$	Quantity of electricity imported by the project plant/unit from the grid in year y	The $EG_{\text{facility2, import, } y}$ is measured through a two way energy meter continuously. The energy meter readings are recorded by the jointly MESCOM officials and PP representative every month. The

			MESCOM calculate the net energy value and provide the same along with export and import values in the B-Form which will be issued to PP every month. Hence the $EG_{\text{facility2, import, y}}$ value can be directly taken from B-Form.
6	$EG_{\text{facility2, y}}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	The $EG_{\text{facility2, y}}$ is measured through a two way energy meter continuously. The energy meter readings are recorded by the jointly MESCOM officials and PP representative every month. The MESCOM calculate the net energy value and provide the same along with export and import values in the B-Form which will be issued to PP every month. Hence the $EG_{\text{facility2, y}}$ value can be directly taken from B-Form.
7	$EG_{\text{BL, y}} ((EG_{\text{facility1, y}} + EG_{\text{facility2, y}}))$	Quantity of net electricity generation supplied by the AHSHP and CMHS project plant/unit to the grid in year y	Calculated from the net electricity supplied values of facility 1 & facility 2. i.e., $EG_{\text{BL, y}} = EG_{\text{facility1, y}} + EG_{\text{facility2, y}}$
8	$FC_{\text{diesel, y}}$	Quantity of diesel combusted in the project activity during year y	The diesel consumption at the DG set will be monitored as and when DG set is in operation and will be recorded in the plant log book. This is recorded based on the level difference before and after operation of the DG set.

The accuracy class of energy meter installed for the measurement of electricity exported & electricity imported is 0.2 which is verified during site visit. This energy meter will be calibrated annually which is in accordance with the power purchase agreement^{/P5/} requirement.

The energy meters (main meter & check meter) are installed in the KPTCL substation at the 110 kV side. The energy meters are sealed and are at the control of KPTCL/MESCOM.

The measurement and calculation method EG_y given in the PDD is verified and found it is correct and inline with the PPA requirements. The net electricity is not only monitored for the CDM purpose but it will be the basis for the electricity billing to the state utility. The MESCOM & PP jointly monitor the electricity readings and calculate the net electricity supplied to grid every month. So, the joint meter reading given by MESCOM every month will be used as the source for EG_y (i.e., Quantity of net electricity generation supplied by the project plant to the grid in year y) for ex-post emission reduction calculation.

In summary, the validation team is convinced of compliance of the monitoring plan with the requirements of the monitoring methodology of AMS I.D, version 17. During the on-site assessment, the validation team interviewed the PP also confirmed that the monitoring arrangements described in the monitoring plan are feasible within the project design. The emission reductions resulting from the proposed CDM project activity can be reported ex post and verified.

3.6.3 Management system and quality assurance

The project owner appointed trained technicians for operation and maintenance of power plant and management of monitoring and reporting of the project. The management team for monitoring of the project is identified in the PDD.

Detailed procedures have been developed in the PDD for the following:

- Monitoring organization;
- Monitoring equipment and installation;
- Data collection and QA/QC;
- Training of monitoring personnel
- Calibration;
- Data management;
- Monitoring.

All the personnel of the operation and maintenance are appointed by PPs. The PDD also provides provision of training for the monitoring personnel. The monitoring arrangements described in the monitoring plan of the PDD have been assessed by the validation team, by means of documentation review, interviewing with the representative from the project owner^{/I/} and on-site observation. On that basis the effective implementation of the monitoring plan is considered feasible.

In conclusion, it is the validation team's opinion that the monitoring, management & quality assurance plan of the project identified in the PDD is in compliance with the requirements of the methodology AMS I.D, version 17

3.7 Sustainable Development

The DNA of India as host country, i.e. Ministry of Environment and Forest, issued the LoA of the project on 21/02/2012^{P13/}. It is stated in the LoA that the project "Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India." assists India in achieving sustainable development. The validity of the LoA from India has been assessed by the validation team in the section 3.1.1.

3.8 Environmental Impacts

The validation team concludes that the environmental impact by the project activity is been assessed by the project proponent and the same is stated in the PDD. To confirm the impact associated with the project proponent, the validation team has physically inspected during the on-site visit and also through conducting the relevant stakeholders. It is validation team's opinion that the project activity does not cause the adverse environmental impacts and there are no regulations or requirement by the host country to conduct the EIA for the project activity. The same is confirmed from the MOEF website (<http://envfor.nic.in/legis/eia/sol533.pdf>)

3.9 Local Stakeholder Consultation

TUV Rheinland considers the local stakeholder consultation carried out adequately. The local stakeholder consultation was carried on 30/07/2007 at the project sites. The stakeholders were invited by the means of newspaper advertisement, Individual invitation letters, notice at public places and Gram Panchayat notice board Invitations, dated 15/07/2007^{P11/}. The stakeholders identified were Local Farmers, villagers, government officials, land owners, gram panchayat representatives. All the stakeholders appreciated the project and no negative comments received from the stakeholders. The summary of the LSC meeting is provided as minutes of the LSC meeting and the same is explained in the PDD. These are confirmed through filled questionnaire by minutes of stakeholder consultation meeting^{P11/} and through interview^{/I/} with the stakeholders during the site visit

3.10 Comments by Parties, Stakeholders and NGOs

The PDD version 01 dated 21/06/2013 was made publicly available for global stakeholder consultation on (<http://cdm.unfccc.int/Projects/Validation/DB/V8OSV7ET0Q9CCZWD3PZVKGGQM0HP1N/view.html>) from "09/07/2013" to "07/08/2013" in order to invite comments from public stakeholders. The PDD was published prior to commencement of the validation and the validation team has taken a due note on the outcome of its result.

The following comments were received and is given (in unedited form) in the below text box.

Comment by: jhoncraig

☐

Accredited NGO

☐

Party

☐

Stakeholder

Provided on:

Subject:

Comment:

Comment set I

1. The project is claimed to be run of river hydro project. So the calculation of reservoir is wrong. The criterion 3 is applicable only to pumped storage or accumulation hydro projects. What does reservoir refer to as per PP?
2. The justification of opting out alternative 3 and alternative 4 is not justified adequately. It should be based on latest published data and figures. Refer B.4. Pls. clarify.

3. The bilateral agreements, PPA with India are the documents, DOE to check thoroughly
 4. Date of investment decision should be at the time of DPR preparation. So, the basis of the cost escalation factors at a later date for CDM consideration is not valid. Pls. clarify. Refer B5. Step 3a. (Investment barrier).
 5. How the CDM benefit will alleviate the technical barriers. As per additionality tool, if the barriers are not alleviated by CDM, then the project is not additional.
 6. Emission factor for state is not calculated. it should be made available to DOE to clearly validate this value. Emission factor for India is not as per "Tool for emission factor for the system".
 7. Electricity generated by the project, auxiliary consumption, transmission losses, transformer losses, net electricity exported to India, net electricity exported to the grid. These parameters to be monitored continuously and to be cross checked with sale receipts.
 8. The Meth mentions that if investment analysis option is used, apply the following:
 - a. Apply an investment comparison analysis, as per Step 3 of the .Combined tool to identify the baseline scenario and demonstrate additionality., if more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P3;
 - b. Apply a benchmark analysis, as per Step 2b of the .Tool for the demonstration and assessment of additionality. If more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P2.
- But PP failed to apply like this. Pls. clarify.
- PLF should be based on EB48 Annex 11 guideline which says 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); But PDD doesn't demonstrate how PLF has been arrived at.
9. Whether PLF includes machine shutdown, machine availability. Whether grid availability is accounted for in the calculation of gross generation. To my surprise, critical parameter like PLF is missing from the PDD. How DOE has allowed this.
 10. Common practice analysis should be based on EB 39 Annex 10 (Additionality tool). Each step of common practice analysis should be fulfilled as per tool.
 11. Emission reduction calculation should be based on EB 50 Annex 14 "Tool for emission factor for the electricity system.
 12. Whether only one set of main meter, check meter set is enough for three projects. The monitoring parameters need to be checked by DOE.
 13. The main meter and check meter technical parameters like accuracy level, make, etc. needs to be mentioned in the PDD.
 14. Layout of power transmission lines from the generation to the consumer with the metering system is not shown. It should include the distance of transmission lines. DOE has to check the meters are installed to monitor electricity generated, net electricity used in Bhutan, net electricity exported to India. Pls. clarify.
 15. The status of the construction & commission of the project is not stated in the PDD.
 16. What is the basis of calculation for transmission loss, auxiliary consumption and transformer losses? What is the length of transmission line?

Comment set II

- 1) DOE to ensure that the PDD values are consistent and ensure that the CDM project is a genuine project.
- 2) DoE to check the Detailed Project Report and Feasibility Report which is submitted to the other agencies and Banks by Project owner and ensure that the values match with the DPR/FR submitted to DoE also.

- 3) Careful study must be done so that the DPR/FR is not in different versions made and submitted with different purposes to different agencies, which is totally unacceptable, illegal and unethical.
- 4) Project owner should show some undertaking letter from bank manager to DoE stating that both DPR's are same. These kinds of letters should not be accepted and entertained by DoE at face value, but must be checked independently. While collecting the DPR/FR from banks and other agencies, all DPR/FR pages should be counter signed by Banks and other agencies so that the real DPR/FR given to other parties by the PP/Consultant is same as the one submitted to DOE.
- 5) DPR/FR values must be probed fully. DOE must take a written undertaking from the PP/Consultant about the list of parties to whom this DPR/FR is submitted and for what purposes. Then DOE should cross check with all the parties and confirm that the same DPR/FR is submitted to all the parties correctly without any changes. DOE must not accept any reports and undertakings from PP/Consultant. DOE must make independent evaluation and use totally different parties without informing the PP or Consultant to cross check the facts.
- 6) DOE to write to the party who prepared the DPR/FR which is submitted to the banks and other agencies and the same is verified against the one submitted to the DOE by PP/Consultant.
- 7) DOE must not entertain this project any more if found the DPR/FR is tampered with at any point in time. PP can not give different DPR's and FR's. They must submit only the one given to Banks and other agencies while obtaining loans and decision making time.
- 8) Has the PP considered the CDM revenues while envisaging the project? Without CDM the project was not viable, is it right? This project is having a debt component? Then how bankers or lenders gave the loan? Have the bankers or lenders considered the CDM revenues while agreeing to give loan to this projects? If not this project should be rejected right away by DOE by terminating the contract forthwith. If yes, where is the proof? What is the date of the evidence document from bank? Is this document printed now a days or earlier. DOE to independently check the same. If the document is available from Bank it must be checked from all angles so that it is genuine and not forged and date changed by putting back dated. This is normally done, DOE to be aware of this please. Please check the communication the PP had during that time with banks, emails and postal receipts and the weights and dates mentioned on the receipts. Do not believe in courier bills and receipts since these can be cooked up easily. Insist on government owned postal service receipts only. If the project is fully equity project then on what basis the PP has invested full equity in to the project while considering the CDM revenue? DOE to check the same in detail and bring out the facts. Is there any past record of this PP to invest or not to invest at returns what he is talking about in this project? Proper evidences must be reviewed and digged out by the DOE and take decision on the project based on established facts. Do not ask documents from PP, DOE to collect the same from different sources to do independent evaluation.
- 9) Is the project equipment purchased second hand equipment or sourced from cheap foreign sources? If yes, the issue must be probed by DOE since invoices will invariably be inflated and forged. Total project costs mentioned by PP will not be the same as originals. Hence no additionality. These facts must be probed in full by DOE by checking all documents and money transactions along with bank statements and certified accounts by a legally acceptable financial analyst.
- 10) From DOE side which auditor has done marketing and business development for acquiring this business of validating this project? With whom he or she was co-ordinating at PP or CER buyer? The same person who has done the marketing and business development to acquire the business do validation or participate in any manner what so ever in the validation process? One cannot do like that. It is against the accreditation rules and norms followed since ages. DOE should send auditors from different offices or countries to do this validation audit. DOE must take care of impartiality and accreditation rules. Due to the targets set by the DOE managements auditors are doing marketing and meeting clients and giving promises that the project will be taken care. Is it acceptable and fair? This must be stopped. No auditor should do marketing. Only non-auditing staff should do marketing. DOE to ensure the same please.
- 11) If applicable only: Is these machines, equipment was a part of any bundle of CDM activity envisaged and developed earlier. DOE to check the same through independent sources also. Once some bundles are non-additional and getting negative validation from a DOE, PP is rolling out the same project as an individual project which is not a CDM project at all. DOE to verify the same from independent sources and also take undertaking in the form of an affidavit from the PP's that any misrepresentation or false statement with respect this would attract strict legal action from UNFCCC and DOE. Furthermore the registered project must be de-registered in case of any future findings contradicting the submissions made by the project owner.

12) DOE to be more careful so that this is a genuine CDM project. What is the exact project cost? The project cost is covering what? Each value considered must be validated with proof. The machinery is second hand purchased or fresh and new from an OEM? In either case DOE to check all the quotations, proposals, purchase orders, invoices, way bills, transport bills, proof of payments like bank statements. DOE to check with banks by way of written confirmation the amount transacted, to whom the money is paid, when the money is paid, is the party paid is the correct party as shown in the purchase orders. It may so happen that the values, party names, dates are fabricated and misrepresented in this project. DOE should terminate their contract for this project immediately. This is the only way out to protect the value of CDM process. If the PP is purchasing second hand or second quality equipment and inflating the purchase order values and invoices, this must be probed thoroughly and real values to taken for additionality calculation. Then I'm sure the additionality is not there at all in such a situation.

13) How is the base line defined in this project? Is Base line hypothetically defined with no proper evidences and proper justification? In such case, DOE cannot take the base line as suggested by the PDD. Please check that there are real emission reductions beyond the real and factual base line. It may so happen that this project qualifies for no CER's. DOE cannot assume values and things as giving by this PP. Whatever values are considered throughout the project in all documents including the real DPR (not the one prepared for CDM, the one given to the banks and others), they must be validated, verified and double checked. Do not ask PP for DPR. Ask the parties who have been given DPR by the PP. Get directly from the bank and others by each page of the DPR and Feasibility report signed. Such document can be considered as a real DPR or FR. UNFCCC CDM process cannot be degraded by fabricating and misinterpreting the project base line and additionality.

DOE Response:

The comments were received before site visit and all issues in comments were addressed during site visit. Based on document review, interview and site visit Validation team confirms that all the documents are authentic and credible. Furthermore all the input parameters were also cross checked from publically available or third party information/sources. Please refer to the assessment in section 3.5.3 of this report.

Validation team also noted that other proposed CDM projects in Thailand, Zambia & Guatemala have also received the same comment by the same stakeholder in the same period of time. Therefore, the validation Team has reason to believe that the comments submitted by stakeholder are not for this project particularly. Concern raised by the stakeholders, seems to be generic (not specific to the subject project), groundless and anecdotal.

Appendix A

CDM Validation Protocol

Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.
In
India

Report No. 01 997 9105075939

Table 1: Validation requirements (based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Standard version 03.0) & updated to VVS version 7.0					
Checklist question	Ref.	MoV3	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Approval(VVS Section 7.6, 7.7, 7.8 & 7.9)					
1.1 Have Letters of Approval have been provided from all involved Parties? <i>If yes, indicate: when and by which Party the LoA has been issued, with a clear reference to the LoA itself and any supporting documentation; whether the LoA was provided to the DOE by the project participants or directly by the DNA; the means of validation employed to assess the authenticity of the document; and by a clear statement, that the DOE considers the LoA to be valid.</i>	/unfccc/ /P1.1/	DR,I	As per the webhosted PDD this is a unilateral project with India as a host country. The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised.	CAR-01	OK
1.2 Are all Parties, who issued the LoA, Parties to the Kyoto Protocol and are this, stated in the LoA?	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.3 Is every LoA from the Parties involved issued by an organization listed as Designated National Authority (DNA) on the UNFCCC web site? <i>Indicate the official name of the DNA and contact person name.</i>	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.4 Is the participation in the CDM project activity voluntary and is this stated in all LoAs? <i>Indicate the source of proof.</i>	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.5 Is the LoA unconditional with respect to 1.2 to 1.4?	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK

³ MoV = Means of Validation, DR = Document Review, I = Interview, www = internet search.

1.6 Is the title of the CDM project activity as given in the PDD identical with the title given in all LoAs and Modalities of Communication? <i>Provide Yes/No answer, and include details into Tables 2, 3 and 4 accordingly.</i>	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.7 If any of provided LoAs contains additional specification of the CDM project activity (PDD version number, validation report version number, amount of ER, etc.) are those specifications valid and consistent with other documents?	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.8 Does the project activity involve any public funding from Annex I Parties? If yes, has Annex I Party provided a written confirmation that the use of such funding does not lead to the diversion of the official development assistance.	/unfccc/ /P1.1/	DR,I	No the project does not involve any public funding.	OK	OK
1.9 Is the MOC provided in line with the latest template available from the UNFCCC?	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.10 Is MOC correctly filled and signed by authorized signatories identifying the focal point?	/unfccc/ /P1.1/	DR,I	The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised	CAR-01	OK
1.11 Is the written confirmation obtained by the PP's stating the authorization, specimen signatures and personal details are valid and accurate?	/unfccc/ /P1.1/	DR,I	No written communication is submitted by PP stating the authorization, specimen signatures and personal details. Hence CAR-01 is raised	CAR-01	OK
2. Participation (VVS Section 7.6, 7.7 & 7.8)					
2.1 Are the Parties and project participants (PP) listed in the section A.3 of the PDD correctly and is this information consistent with the contact details provided in Annex 1 of the PDD?	/P1.1/	DR	Yes, PP listed in the section A.3 of the PDD is M/s Prasanna Power Limited. which is correct and consistent with the contact details provided in the Annex 1 of the PDD.	OK	OK

2.2 Has every Party involved approved the participation of each corresponding PP, either by means of a LoA or by a separate written document? <i>Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.</i>	/unfccc/ /P1.1/	DR,I	The proposed project is a unilateral one, with India as host party. The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised.	CAR-01	OK
2.3 Do all participating Parties fulfill the participation requirements as follows: a) Party has ratified the Kyoto Protocol b) Party has designated a Designated National Authority c) The assigned amount has been determined	/unfccc/ /P1.1/	DR,I	PP has mentioned India as the host party participating in the project activity which is found to be correct. Party has ratified as the host party under the Kyoto protocol which is verified through UNFCCC website. Party has designated National CDM Authority, Ministry of environments and Forests (MoEF) as the Designated National Authority for providing the Host country approval for the CDM project activities. Letter of Approval from the DNA is pending CAR-01	CAR-01	OK
2.4 Do the letters of approval meet the following requirements? a) LoA confirms that Party has ratified the Kyoto Protocol b) LoA confirms that participation is voluntary c) The LoA confirms that the project contributes to the sustainable development of the host country? d) The LoA refers to the precise project activity title in the PDD <i>In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic</i>	/unfccc/ /P1.1/	DR,I	The proposed project is a unilateral one, with India as host party. The Letter of Approval from the host party has not been submitted. Hence CAR-01 is raised.	CAR-01	OK
3. Project Design Document (VVS Section 7.10)					

3.1 Is the PDD presented for validation based on the latest template available at the UNFCCC website? <i>Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.</i>	/P1.1/ /B6/	DR,I	The PDD applied template F-CDM-SSC-PDD - Project Design Document form for Small-Scale CDM project activities, Version 04.1 which is the latest template available at the UNFCCC	OK	OK
3.2 Has the PDD been established in accordance with the CDM requirements for completing PDDs issued by the CDM EB?	/P1.1/ /B6/	DR	Yes. The PDD has been established in accordance with Guidelines for completing the simplified Project Design document (CDM-SSC-PDD) and the form for proposed new Small Scale Methodologies (CDM-SSC-NM), Version 01, which is the latest guidelines available in the UNFCCC	OK	OK
4. Project Description (VVS Section 7.11)					
4.1 Does the PDD contain a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? 4.1b) Is the description (incl. any process flow-charts, Spreadsheets etc.) complete, coherent and consistent with the provisions of the monitoring plan? 4.1c) Is the project's location clearly defined?	/P1.1/ /B6/	DR	Subject to closure of below CAR: <u>CAR-03:</u> PDD-Section A.2: 1. The project district name of CMHS project is mentioned as Mangalore. However during site visit it is verified to be Dakshin Kannad. Please correct it 2. It is mentioned that the project site distance from Bangalore is mentioned as 300 km which is not correct The geographical coordinates of CMHS project provided in PDD is not correct.	CAR-03	OK
4.2 In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals? <i>Provide Yes/No answer and include reference to the documents which have been reviewed in relation to the issue.</i>	/P1.1/	DR	Yes, the project is green field project activity and the project design is described sufficiently by means of purchase order of the hydro turbine generator.	OK	OK

<p>4.3 Does the project activity reflects current good practices, uses state of the art technology or would the technology result in a significantly better performance, than any commonly used technologies in the host country?</p> <p><i>Provide the description of how validation has been carried out and what comparisons have been made.</i></p>	/P1.1/	DR,I, www	Yes, The PP has employed the hydro turbine generator for the electricity generation which is state of art technology in India.	OK	OK
<p>4.4 In cases where the project activity involves the alteration of an existing installation or process, does the PDD provide a clear description of the differences between the project and the pre-project scenario?</p> <p><i>Please, provide Yes/Now answer and update Tables 2, 3 and 4 accordingly, if there is anything unclear in the provided description.</i></p>	/P1.1/	DR, I	No, the project is a Greenfield project activity. Hence it does not involve any alteration of an existing installation.	OK	OK
<p>4.5 What type is the project? Is it a microscale, or small scale: If small scale – whether is it Type I or type II or type III? Type I – is maximum output capacity is equal or less then 15MW Type II – is maximum output equal or less then 60GWh/year Type III – is maximum output exceeds 60GWh/year</p> <p>i) Project in existing facility or utilizing existing equipment(s) ii) Project is either a large scale project or a non-bundled small scale project with emission reductions exceeding 15,000 tCO₂e per year. In this case, a site visit must be performed. iii) Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO₂e per year. In such case the number of physical site visits may be based on sampling, if the sampling size is appropriately</p>	/P1.1/	DR, I	The project is greenfield small scale project activity and falls under Type I. A physical site visit is conducted to check the actual technical design and implementation & monitoring plan	OK	OK

<p>justified through statistical analysis.</p> <p>iv) The project is an individual small scale project activity with emission reductions not exceeding 15,000 tCO₂e per year. In this case, DOE may not conduct a physical site visit as appropriate.</p> <p>v) Greenfield project</p> <p>For small scale biomass, biofuel and biogas project activity – the maximal limit is 15MW (e) and 45MWth thermal output.</p> <p>For small scale solar energy projects with exceptional of parabolic and trough type collectors – rest all shall have maximum output eligibility limit in terms of aperture area is 64,000m².</p> <p>If microscale – whether is it Type I or type II or type III?</p> <p>Type I – is maximum output capacity is equal or less then 5MW, or</p> <p>Type II – is maximum output equal or less then 20GWh/year, or</p> <p>Type III – is maximum emission reductions at a scale of no more than 20kt CO₂e/year.</p>					
<p>4.6 How was the design of the project assessed?</p> <p>i) Physical site inspection</p> <p>ii) Reviewing available designs and feasibility studies</p> <p><i>If a physical site inspection is not undertaken, justify why no site visit was undertaken.</i></p>	/P1.1/	DR, I	The project design was assessed through a physical site inspection.	OK	OK
<p>4.7 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?</p>	/P1.1/	DR,I	<p>The project is a Small scale project activity Type I (Renewable Energy Projects).</p> <p>Type I (Renewable Energy Projects):</p> <p>This is the grid connected hydro power plant with installed capacity of 10.5 MW, less than 15 MW which is the qualifying limit for the type I Small scale project activities. Hence</p>	OK	OK

			this condition is justified.		
4.8 In case of small scale project – is the project a bundle project activity? In this case the bundle output shall not exceed the small scale project activity limit Refer « general principles for bundling»	/P1.1/	DR,I	It is a bundled project activity, with the total capacity (10.5 MW) is within the small scale limit of 15 MW.	OK	OK
4.9 Is the small scale project activity a debundled component of a larger project activity in accordance with the rules defined in appendix C of the simplified modalities and procedures for small-scale CDM project activities? Refer «guidelines on assessment of debundling for SSC project activities» <i>A proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:</i> <i>(a) With the same project participants;</i> <i>(b) In the same project category and technology/measure; and</i> <i>(c) Registered within the previous 2 years; and</i> <i>(d) Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.</i>	/P1.1/	DR,I, www	No, the proposed project activity is not a de-bundled component of a large scale project activity. PP has defined the same in section A.4.5 of the PDD and confirmed the de-bundling conditions as described in paragraph 2 of Appendix C of simplified modalities and procedures. DOE team has also cross verified the occurrence of de-bundling by checking with the NCDMA and UNFCCC website and found no CDM projects are in pipeline with the same project proponent in the project region.	OK	OK
5. Baseline and Monitoring methodology(VVS Section 7.12)					
5.1 General requirements (VVS Section 7.12.1)					

<p>5.1.1 Is the methodology used in the project activity approved by the CDM EB and is the selected version still valid?</p> <p><i>If during the course of validation the originally applied version of the methodology expires, a CAR shall be raised in Table 3 of the validation protocol. Any new requirements of the revised version of the methodology not yet validated in Table 2 of the validation protocol shall be validated in Table 3 as part of the assessment of the CAR raised.</i></p>	/unfccc/ /P1.1/ /B2/	DR www	PP has applied the approved small scale methodology AMS I.D “Grid connected Renewable Energy generation” version 17 which is valid while submitting to the validation. No updated version is available at the time of validation. DOE has confirmed this through UNFCCC website.	OK	OK
5.2 Applicability of the selected methodology (VVS Section 7.12.2)					
<p>5.2.1 How was it validated that the project complies with the applicability criteria set out in the methodology AMS I.D version 17: (list the individual criteria, copied from the methodology)</p>	/P1.1/ /B2/	DR, I	Please refer below justifications	OK	OK
<p>§1: This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass:</p> <p>(a) Supplying electricity to a national or a regional grid; or</p> <p>(b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling</p>	/P1.1/ /B2/	DR, I	<p>The project activity is a hydro power plant of 10.5 MW capacity. The project supply electricity to Southern grid of India.</p> <p>Hence the applicability criterion is fulfilled</p>	OK	OK
<p>§2: Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included in Table 2.</p>	/P1.1/ /B2/	DR, I	<p>The project falls under the following category mentioned in the AMS-I.D</p> <p><i>‘the project displaces grid electricity consumption (eg. Grid import) and/or captive fossil fuel electricity generation at the user end’</i></p> <p>Hence the project using AMS-I.D is correct and hence the applicability criteria is fulfilled</p>	OK	OK

§3: This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition; (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s).	/P1.1/ /B2/	DR, I	The project is installation of a new Hydro power generation plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity. Hence the applicability criteria is fulfilled	OK	OK
§4: Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m²; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m² 	/P1.1/ /B2/	DR, I	The project is run-off river canal based hydro project which does not involve construction of any reservoir. Hence the criteria is not applicable	OK	OK
§5: If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW	/P1.1/ /B2/	DR, I	The project activity is an installation of hydro power plant for the total aggregated capacity of 10.5 MW and does not involve any non-renewable energy components. Hence the criterion is not applicable for the subject project case.	OK	OK
§6: Combined heat and power (co-generation) systems are not eligible under this category	/P1.1/ /B2/	DR, I	The present CDM project activity is not a cogeneration plant; hence this criteria is not applicable for the subject project case	OK	OK
§7: In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility,	/P1.1/ /B2/	DR, I	The project activity is a Greenfield project being implemented at a site where no hydro power plants exists and this is not a capacity	OK	OK

the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.			addition project Hence this criteria is not applicable to the project		
§8: In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	/P1.1/ /B2/	DR, I	The project activity is a Greenfield project being implemented and does not involve any retrofit or replacement of the equipment. Hence this paragraph is not applicable to the project	OK	OK
5.2.2 Are all applicability conditions of the selected baseline and monitoring methodology and all tools involved satisfied by the project activity? <i>Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures.</i>	/P1.1/ /B2/	DR,I	Yes. Please refer above	OK	OK
5.2.3 Is the selection of the applied baseline and monitoring methodology justified?	/P1.1/	DR,I	Yes, the selection of applied monitoring methodology is justified in the PDD.	OK	OK
5.2.4 Is the selected methodology correctly quoted in all related documents?	/P1.1/	DR	Yes, the selected methodologies are correctly quoted in all related documents.	OK	OK
5.3 Project boundary (VVS Section 7.12.5)					
5.3.1 Does the PDD correctly describe the project boundary? Are they clearly defined and in accordance with the methodology? <i>Provide Yes/No answer. And amend the Tables 2, 3 and 4, if needed.</i>	/P1.1/ /B2/	DR	Yes. The project boundary is clearly defined in PDD in accordance with the methodology.	OK	OK
5.3.2 Does the PDD correctly indicate and describe the emission sources and sinks of GHG gases that are included in the project boundary?	/P1.1/ /B2/	DR	As per the PDD and selected methodology CO ₂ is the only emission sources of GHG gases that are included in the project boundary. This is correctly indicated in the PDD.	OK	OK
5.3.3 In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, is the choice explained and justified by PPs?	/P1.1/ /B2/	DR	Yes, the choice of source of gas is to be included in the project boundary has been sufficiently justified in section B.3 of the PDD.	OK	OK

5.3.4 Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/P1.1/ /B2/	DR	No	OK	OK
5.4 Baseline identification (VVS Section 7.12.6)					
5.4.1 Has the procedure contained in the selected methodology to identify the most reasonable baseline scenario been applied correctly and documented in the PDD?	/P1.1/ /B2/	DR	The baseline for the project activity has been provided by the methodology AMS I.D, version 17. As per the chosen methodology baseline scenario is the equivalent amount of electricity would have otherwise been generated from the grid connected power plants. PP has applied the same baseline to the proposed project activity which is plausible and reasonable in the host country.	OK	OK
5.4.1.1 Is the identified baseline scenario plausible?	/P1.1/ /B2/	DR	Yes, The identified baseline scenario is most plausible for the project.	OK	OK
5.4.1.2 Are all assumptions stated in a transparent and conservative manner?	/P1.1/ /B2/	DR	Not applicable as the applied methodology AMS.D version 17 has prescribed the baseline scenario for the project activity.	OK	OK
5.4.2 Does the selected methodology require the use of tools and does PDD reflects that correctly?	/P1.1/ /B2/	DR	Yes, the selected AMS I.D version 17 requires the use of Tool to calculate the emission factor for an electricity system. However latest version of tool is not used. Hence CAR 04 is raised.	CAR-04	OK
5.4.2.1 Were all the tools applied correctly? <i>List all the tools and the version.</i>	/P1.1/ /B2/	DR	Yes, the Tool to calculate the emission factor for an electricity system was applied for baseline identification. However in some places the latest version of the tool is not referred. Hence CAR-04 is raised	CAR-04	OK

5.4.3 In case the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, have all scenarios supplying comparable output and services that are to be supplied by the proposed project activity been considered and have no reasonable alternative scenario been excluded?	/P1.1/ /B2/	DR	Not applicable as the applied methodology AMS I.D version 17 has clearly prescribed the baseline scenario.	OK	OK
5.4.3.1 Has the choice of the baseline scenario been done using conservative assumptions? <i>Explain how the assumptions have been accepted.</i>	/P1.1/ /B2/	DR	Not applicable as the applied methodology AMS I.D version 17 has clearly prescribed the baseline scenario.	OK	OK
5.4.4 Is the identified baseline scenario reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources?	/P1.1/ /B2/	DR	Not applicable as the applied methodology AMS I.D version 17 has clearly prescribed the baseline scenario.	OK	OK
5.4.6 Does the PDD describe how the national and sectoral policies, macro-economic trends and political aspirations relevant to the baseline scenario have been identified and considered in the PDD? Refer CDM PS para 45	/P1.1/ /B2/	DR	Not applicable as the applied methodology AMS I.D version 17 has clearly prescribed the baseline scenario.	OK	OK
5.4.7 Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the project activity?	/P1.1/ /B2/	DR	In the project case baseline is the electricity grid which is hypothetical situation. Hence this condition is not applicable for the project case.	OK	OK
5.5 Algorithm and/or formulae used to determine emission reductions (VVS Section 7.12.7)					
5.5.1 Are all calculations applied and documented according to the selected methodology and in a complete and transparent manner to calculate emission reductions from the project activity?	/P1.1/ /B2/	DR	Yes, PP has documented all the emission reduction calculation correctly in the PDD. All the units applied for the parameters are found consistent in all the reference documents presented for the validation.	OK	OK

5.5.2 In case the methodology allows a selection between different options for equations or parameters, has adequate justification been given and have the correct equations and parameters been used, in accordance with the methodology selected?	/P1.1/ /B2/	DR	PP has applied the correct equations for the emission reduction calculations as specified in the selected baseline methodology. $BE_y = EG_{PJ,Y} * EF_{CO2, grid,y}$	OK	OK
5.5.3 In case some data and parameters will not be monitored throughout the crediting period, but have already been determined and fixed, are all data sources, assumptions and calculations correct, applicable to the proposed CDM project activity and conservative? <i>Note: List the individual parameter and how the estimates are reasonable and value is verified</i>	/P1.1/ /B2/	DR	Yes, PP has chosen the ex-ante option for the build and operating margin emission factors used in the estimation of emission reductions. These parameters have been determined and fixed for the crediting period. PP has used the Emission factor Tool and CEA database version 08 for the calculation of these parameters.	OK	OK
5.5.3.1 Parameter: $EF_{y,- CO2}$ emission factor for the regional grid system	/P1.1/ /B2/	DR	The build margin calculation, the latest data is not used. Hence CAR-08 is raised	CAR-08	OK
5.5.3.2 Parameter $EF_{CO2, diesel, y}$: Weighted average CO2 emission factor of the diesel consumed in the project activity in year y.	/P1.1/ /B2/	DR	IPCC value is considered. Hence appropriate	OK	OK
5.5.3.3 Parameter $NCV_{Diesel,y}$: Weighted Average net Calorific Value of Diesel combusted in the project activity during the year, y	/P1.1/ /B2/	DR	Upper limit value of uncertainty at a 95% is considered for calorific value of diesel which is not conservative, in project emission calculation. Hence CAR-09 is raised	CAR-09	OK
5.5.4 In case data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters reasonable?	/P1.1/ /B2/	DR	Yes.	OK	OK
5.5.5 Have the major risks and uncertainties, which can influence the emission reduction estimates, been identified and addressed in the PDD?	/P1.1/ /B2/	DR	No major major risks and uncertainties is expected in this project	OK	OK

5.5.6 Are the calculations documented according to the approved methodology and in a complete and transparent manner in calculating the project emissions? Have conservative assumptions been used when calculating the project emissions?	/P1.1/ /B2/	DR	Yes.	OK	OK
5.5.7 Are uncertainties in the project emission estimates properly addressed?	/P1.1/ /B2/	DR	Please refer the above comment	OK	OK
5.5.8 Does any of the parameters require the use of sampling? If yes – how the sampling is been carried out <i>Refer «standard for sampling and surveys for CDM project activities and programme of activities»</i>	/P1.1/	DR	Not applicable as no parameter requires sampling approach to monitor	OK	OK
5.6 Leakage					
5.6.1 Has the leakage been identified and calculated according to the approved methodology?	/P1.1/ /B2/	DR	Not applicable as leakage is zero	OK	OK
5.6.2 Have the leakage been addressed in complete, conservative and substantiated manner? <i>Note: for small scale project activity – the leakage should be considered within the non-annex 1 parties.</i>	/P1.1/ /B2/	DR	Not applicable as leakage is zero	OK	OK
5.6.3 Are uncertainties in the leakage emission estimates properly addressed?	/P1.1/ /B2/	DR	Not applicable as leakage is zero	OK	OK
6. Methodology-related issues for afforestation or reforestation CDM project activities					
<i>Add specific A/R requirements – if applicable!</i>			Not applicable for this CDM project activity	OK	OK
7. Additionality (VVS Section 7.12.8)					

7 a) What approach/tool does the project use to assess additionality? Is this in line with the methodology? In case of small-scale CDM project activities, is Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities applied considering also the “Non-binding best practice examples to demonstrate additionality for SSC project activities” with any applicable additionality tools. <i>For microscale projects « guidelines for demonstrating additionality of microscale project activities» shall be referred.</i>	/P1.1/ /P2.1/	DR	The financial barrier is selected to prove the additionality of the project activity. The benchmark analysis is selected as a financial analysis method to prove the financial additionality of the project activity. It is inline with Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities applied considering also the “Non-binding best practice examples to demonstrate additionality for SSC project activities”.	OK	OK
7 b) Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives? Is sufficient evidence provided to support the relevance of the arguments made?	/P1.1/ /P2.1/	DR	Not applicable as the project is SSC project and the baseline itself is provided by methodology.	OK	OK
7 c) What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/P1.1/ /P2.1/	DR	The financial barrier is selected to prove the additionality of the project activity. The financial barrier is justified through investment analysis route.	OK	OK
7.1 Prior consideration of the CDM (VVS Section 7.12.9)					
7.1.1 Is there documented evidence provided by the project participants on how and when the decision to proceed with the project activity was taken?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.2 Is the starting date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms” and VVS (§106)? <i>Note: Confirm the starting date indicated in C.1. is consistent within the PDD, in particular with respect to the project implementation history.</i>	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK

7.1.3 Is the date stated in the provided evidence consistent with other available real action evidence (e.g. dates of construction, purchase orders for equipment)? <i>Note: In case where the project is not started but the project PDD is already webhosted – the expected start date can be considered.</i>	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.4 If the project was not published and the starting date is on or after 2nd August 2008, was it possible to receive from UNFCCC secretariat and DNA a written confirmation that PPs previously informed the above entities on commencement of the project activity and of their intention to seek CDM status?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.5 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were previously aware of CDM?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.6 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that CDM benefits have been a decisive factor in the decision to proceed with the project activity?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.7 Does the individual or body that took the decision to proceed with the project activity have/had the authority to do so?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.8 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were taking continuing and real actions to secure CDM status for the project in parallel with its implementation?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK

7.1.7 In case there is a significant gap between the start date of the project activity and the commencement of validation, how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion?	/P1.1/	DR	Serious/Prior consideration of CDM is not justified in the PDD. Hence CAR-05 is raised	CAR-05	OK
7.1.8 How has the starting date of the project activity been determined? What are the dates of the first contracts for the project activity? When was the first construction activity? <i>Note: If start date is the expected contract signing date, request for a tentative contract signing date which will be the start date, and project schedule.</i>	/P1.1/	DR	subject to closure of CL-11	CL-11	OK
7.1.9 Is the stated expected operational lifetime of the project activity reasonable? <i>Note: Request for evidence of the claimed operational lifetime.</i>	/P1.1/	DR	PP has stated that the expected operational lifetime of the plant is 35 years which is reasonable for a hydro power plant. However no proof for the same is submitted. Hence CAR-14 is raised	CAR-14	OK
7.1.10 Is the crediting period start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable? <i>Note: the start date of crediting period shall be in dd/mm/yyyy format only. And shall not use any qualification to the start date such as «expected»</i>	/P1.1/	DR	PP has selected the renewable crediting period (7 years x 3 time renewal) which is reasonable considering the life time of hydro power plant	OK	OK
7.2 Identification of alternatives(VVS Section 7.12.10)					
7.2.1 Does the PDD identify and list credible alternatives to the CDM project activity in order to determine the most realistic baseline scenario, unless selected approved methodology prescribes/identifies the baseline scenario and no further analysis is required?	/P1.1/	DR	Not applicable as it is SSC project	OK	OK
7.2.2 Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a CDM project activity?	/P1.1/	DR	Not applicable as it is SSC project	OK	OK

7.2.3 Does the list contain all realistic/credible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the project activity? <i>Note: All alternatives listed in the selected methodology should be included, as well as those not covered by the methodology.</i>	/P1.1/	DR	Not applicable as it is SSC project	OK	OK
7.2.4 Is the exclusion of the alternatives for legal reasons justified? <i>Note: Some alternatives might be illegal, according to the local regulations, but still widely practiced due to lack of enforcement. It should be verified.</i>	/P1.1/	DR	Not applicable as it is SSC project	OK	OK
7.3 Investment Analysis(VVS Section 7.12.11)					
7.3.1 Are all sources of revenues (including savings) have been considered in the PDD and all calculations? <i>Refer «guidelines on the assessment of investment analysis»</i>	/P1.1/	DR	As per the webhosted PDD and DOE assessment the revenue from electricity selling is the only standard revenue for the project activity. No other revenue will be generated by the project activity. CDM revenue has been considered at the time of decision making for making the project financially more viable.	OK	OK
7.3.2 Is the type of investment analysis selected correctly in the PDD? Is the choice of benchmark analysis, investment comparison or simple cost analysis correct and justified?	/P1.1/	DR	Benchmark analysis has been considered for the demonstration of additionality. The choice of benchmark analysis is clearly justified in the PDD. This is inline with the guidelines on the assessment investment analysis Annex 05, EB 62	OK	OK
7.3.3 Is the selected financial indicator chosen and applied correctly? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/P1.1/	DR	Post tax project IRR has been selected as a financial indicator which is applied correctly. The post tax project IRR has been compared with the weighted average capital cost which is appropriate for the financial indicator selected. Nevertheless CAR-06 is raised	CAR-06	

<p>7.3.4 Is the guidance on IRR calculation and assessment correctly applied?</p> <p><i>Note: Means of validation should be recorded.</i></p> <p><i>All input parameters need to be assessed and if possible compared with the input parameters applied by similar project activities. Special procedure (ICP-5-8-CDMJIG2) applies for validation of input data derived from FSR/PDR or other governmentally approved project-specific study. A similar approach should also be taken for other project types.</i></p> <p><i>In case the validation team is not able to cross-check information with other similar projects activities for one or several of the input parameters, due to limited number of registered CDM projects being available, the team is required to determine and describe other information sources that are used by the validation team to make an assessment of the reasonableness of the respective input parameter.</i></p>	/P1.1/ /P2.1/	DR	Subject to closure of CAR-07 & CAR-14	CAR-07 CAR-14	OK
7.3.5 In case project participants use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?	/P1.1/ /P2.1/	DR	The input parameter values are taken from detailed project report (DPR). However the DPR is not submitted to check the date of DPR. Hence CAR-14 is raised	CAR-14	OK
7.3.6 Are all the values consistent between FSR and PDD and are inconsistencies properly justified?	/P1.1/ /P2.1/	DR	Subject to closer of CAR-14	CAR-14	OK
7.3.7 Were all the values from FSR applicable and valid at the time of the investment decision?	/P1.1/ /P2.1/	DR	Subject to closer of CAR-14	CAR-14	OK
7.3.8 Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have led to a change in the benchmark?	/P1.1/ /P2.1/	DR	Not applicable as internal benchmark is not used	OK	OK

7.3.9 Is the Investment Analysis prepared in compliance with the latest version of the "Guidance on the Assessment of Investment Analysis" as provided by the CDM EB?	/P1.1/ /P2.1/	DR	Subject to closure of CAR-06, CAR-07 & CAR-14	CAR-06 CAR-07 CAR-14	OK
7.3.10 Do the project include all the data sources used (input & output / loss & profit) and list all the projects that have been used for cross-checking in accordance with VVS § 123: a. Explain, how was the total investment cost accepted, and if it was available at the time of decision, b. Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country? c. Has salvage value been taken into account? Is working capital returned in the last year of operation? d. How are the PLF of the project assessed? e. How are output price assessed? f. How are O&M cost assessed?	/P1.1/ /P2.1/	DR	Subject to closure of CAR-06, CAR-07 & CAR-14	CAR-06 CAR-07 CAR-14	OK
7.3.11 Sensitivity analysis: Have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered? Is the range of variations (10% in default) is reasonable in the project context? Have the key parameters been vary to reach or cross the benchmark and have the likelihood of this to happen been justified?	/P1.1/ /P2.1/	DR	Yes, the parameters contributing to more than 20% of revenue/costs during the operation or implementation have been identified The default range of $\pm 10\%$ is considered for the sensitivity analysis which is reasonable in the project context.	OK	OK
7.4 Barrier analysis(VVS Section 7.12.12)					

7.4.1 Are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis? <i>Refer «guidelines for objective demonstration and assessment of barriers»</i>	/P1.1/	DR	Not applicable as the project activity does not select barrier analysis to prove additionality	OK	OK
7.4.2 Do the listed barriers exist and is their existence substantiated? <i>Note: (a) by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics and/or (b) by interviews with relevant individuals: including members of industry associations, government officials or local experts if necessary?</i>	/P1.1/	DR	Not applicable as the project activity does not select barrier analysis to prove additionality	OK	OK
7.4.3 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of the identified baseline scenario?	/P1.1/	DR	Not applicable as the project activity does not select barrier analysis to prove additionality	OK	OK
7.5 Common practice analysis(VVS Section 7.12.13)					
7.5.1 If the PPs claim in the PDD that CDM project activity is not common practice, is it justified? <i>Refer «guideline on common practice». Assess that: PDD provide similar projects within the region with similar measure and energy source/fuel and feedstock with comparable quality/properties/application areas as the proposed project activity?</i>	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK
7.5.2: Step 1: How is the assessment done on capacity output within the applicable range, is it within (+/- 50%) of the proposed projects	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK

<p>7.5.3: Step 2: How have similar projects (both CDM and non-CDM) projects been identified, confirm data source and information:</p> <ul style="list-style-type: none"> - Located at applicable geographical area, - Apply the same measure as the proposed project activity, - Use same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity, - The plants in which the projects are implemented produce goods or services with comparable quality, properties and application areas (e.g. clinker) as the proposed project plant, - The capacity or output of the projects is within the applicable capacity or output range calculated (+/- 50%) of the proposed projects, - The projects started commercial operation before the CDM-PDD is published for GSC or before the start date of the proposed project activity, whichever is earlier for the proposed project activity. 	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK
<p>7.5.4: Step 3: Within the projects identified in Step 2, how many have been identified : are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note N_{all}.</p>	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK
<p>7.5.5: Step 4: Within similar projects identified in Step 3; has it been identified those that apply technologies that are different to the technology applied in the proposed project activity. Note N_{diff}.</p>	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK

7.5.6: Step 5: Assess the calculation of $F = 1 - N_{diff}/N_{all}$ and confirm if it is acceptable.	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK
7.5.7: Conclusion: Is the assessment of common practice completed with evaluation of N_{all} , N_{diff} and F and concluded that the proposed project activity is not a common practice: $F < 0.2$, and $N_{all} - N_{diff} < .3$	/P1.1/	DR	Not applicable as the project activity is a SSC project	OK	OK
7.6 First-of-its-kind (VVS Section 7.12.13)					

<p>If the PPs claim in the PDD that CDM project activity is the “first of its kind”, is it justified?</p> <p><i>Refer «guideline on additionality of first-of-its-kind activities»</i></p> <p><i>Assess that:</i></p> <ul style="list-style-type: none"> a. <i>Applicable geographical area covering entire host country unless justification on essential distinction between the identified specific geographical area and rest of the Project is the first in the applicable host technologies that are implemented by any other project, which are able to deliver the same output and have started commercial operation country has been distinctly justified,</i> b. <i>geographical area that applies in the applicable geographical area before the CDM-PDD is published for GSC or before the start date of the proposed project activity, whichever is earlier,</i> c. <i>The project implements one or more of the measures (refer definition in «guideline on additionality of first-of-its-kind activities»),</i> d. <i>The project participants selects crediting period of a maximum of 10 years with no option of renewal.</i> 	/P1.1/	DR	Not applicable as the PP does not claim first of its kind	OK	OK
8. Conclusion					
8.1 What is the conclusion with regard to the additionality of the project activity.	/P1.1/ /P2.1/	DR	Subject to closure of CAR-06, CAR-07 & CAR-14	CAR-06 CAR-07 CAR-14	OK
9. Monitoring plan (VVS Section 7.12.14)					

9.1	Are all parameters required by the selected approved methodology or tool identified and listed in the PDD? Note: All parameters indicated in the methodology and applicable to the project must be listed in the PDD, omissions due to non-applicability be justified.	/P1.1/ /B2/	DR	Yes, all parameters required by the selected methodology and tools identified are listed in the PDD	OK	OK
9.2	Are the parameters in the PDD clearly described and that the measurement method clearly stated for each value to be monitored and deemed appropriate:	/P1.1/ /B2/	DR	Yes	OK	OK
9.3	Does the monitoring plan record data in the original form as generated, providing QA/QC procedures to be used on the measurement method? <i>Note 1: if the measurement unit is different from the unit to be applied in the methodology, describe the actual measurement and any according conversion method to match the unit used in the methodology. Example: liquid fuels may be monitored as weight or volume. If measured as volume, the measurement method and equipment including the according unit (e.g., liter) shall be described in B.7.1, as well as the conversion into weight units as needed. Note 2: Data on invoices / delivery slips may be used for QA/QC purposes, but do not constitute an actual means of monitoring and thus cannot be applied as a source of data.</i>	/P1.1/ /B2/	DR	Subject to closure of CAR-10	CAR-10	OK
9.4	Is the measurement equipment for each parameter described and deemed appropriate? Are the locations of all measurement equipment clearly identified and consistently described, incl. process flow-charts contained in the PDD?	/P1.1/ /B2/	DR	Subject to closure of CAR-10	CAR-10	OK

9.5	Is the measurement accuracy addressed and deemed appropriate?	/P1.1/ /B2/	DR	Subject to closure of CAR-10	CAR-10	OK
9.6	Are procedures in place on how to deal with erroneous measurements and are the corrective actions identified?	/P1.1/ /B2/	DR	Yes, the procedures on how to deal with the erroneous measurement and the corrective actions for the same is explained in the PDD and it is deemed to be appropriate	OK	OK
9.7	Is the frequency of measurement identified and deemed appropriate?	/P1.1/ /B2/	DR	The monitoring frequency of the parameter 'Net electricity supplied to the grid by the project' is mentioned as continuous which is appropriate for this parameter as the parameter is continuously monitored through energy meter.	OK	OK
9.8	Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/P1.1/ /B2/	DR	Subject to closure of CAR-10	CAR-10	OK
9.9	Are the sampling, measurement methods and procedures defined?	/P1.1/ /B2/	DR	Not applicable as no parameter is monitored through sampling	OK	OK
9.10	Are procedures identified for maintenance of monitoring equipment and installations?	/P1.1/ /B2/	DR	Yes, the procedures for maintenance of monitoring equipment and installations. The same is explained in Section B.7.3 of PDD	OK	OK
9.11	Are the equipment calibration intervals identified and justified? Is the calibration conducted by accredited person or intuition? <i>Note: in case where applied methodology(s) or board guidelines does not specify the frequency. National or local or manufacturer or international standard may apply but conservativeness shall be considered.</i>	/P1.1/ /B2/	DR	Yes, the energy meters will be calibrated once in a year which is in line with PPA requirement.	OK	OK
9.12	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/P1.1/ /B2/	DR	Yes, procedures identified for day-to-day records handling.	OK	OK
9.13	Are the monitoring arrangements described in the monitoring plan feasible within the project design?	/P1.1/ /B2/	DR	Subject to closure of CAR-10	CAR-10	OK

9.14 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified?	/P1.1/ /B2/	DR	Subject to closure of CAR-10	CAR-10	OK
9.15 Do the PPs make provisions for personnel training needs?	/P1.1/ /B2/	DR	Yes, the PDD provides provision for personnel training needs for monitoring.	OK	OK
9.16 Is the authority and responsibility of overall project management clearly described?	/P1.1/ /B2/	DR	Yes, the monitoring management and role & responsibilities of personnel are explained in the PDD	OK	OK
9.17 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/P1.1/ /B2/	DR	Yes, the emergency preparedness procedures are explained in the PDD	OK	OK
9.18 Are procedures identified for review of reported results/data?	/P1.1/ /B2/	DR	Yes, the procedures identified the review of reported data is explained in the PDD	OK	OK
9.19 Does responsibilities and institutional arrangements for data collection and archiving in place? Is the data archiving period for this project activity stated in the PDD and appropriate? <i>Note: All archived monitoring data, required for verification and issuance, should be kept for at least two years after the end of the crediting period or the last issuance of CER.</i>	/P1.1/ /B2/	DR	Yes, the responsibilities and institutional arrangements for data collection & archiving are in place. The data archiving period for this project activity stated in the PDD is appropriate.	OK	OK
9.20 Is the monitoring parameters for all project emissions captured?	/P1.1/ /B2/	DR	Not applicable	OK	OK
9.21 Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/P1.1/ /B2/	DR	Yes, the Monitored Data to be kept for a minimum of two years after the end of the crediting period or the last issuance whichever is later.	OK	OK

9.22 Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/P1.1/ /B2/	DR	Yes, the data management and quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified	OK	OK
9.23 Is operational and management structure in place to implement the monitoring plan?	/P1.1/ /B2/	DR	Yes, the operational and management structure is in place to implement the monitoring plan	OK	OK
9.2 Monitoring of the leakage					
9.2.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/P1.1/ /B2/	DR	Not applicable	OK	OK
9.2.2 Is the choice of project leakage indicators made according to selected methodology in a reasonable and conservative manner? <i>Note: local knowledge and sectoral expertise shall also be considered.</i>	/P1.1/ /B2/	DR	Not applicable	OK	OK
9.2.3 Is the measurement method clearly stated and deemed appropriate for each leakage value?	/P1.1/ /B2/	DR	Not applicable	OK	OK
10. Sustainable development(VVS Section 7.5)					
10.1 Does the LoA from the Host country DNA contain the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party?	/P1.1/	DR	LOA from the host country is not yet submitted CAR-01	CAR-01	OK
10.2 If PDD indicates any additional environmental benefits of the project, other than GHG emission reductions, were those benefits properly substantiated?	/P1.1/	DR	Yes, it has been described in the PDD	OK	OK
11. Stakeholders' consultation and comments (VVS Section 7.5 & 7.14)					

11.1 Were the stakeholders identified in appropriate and complete manner?	/P1.1/	I	Supporting documents (invitation, public notice & minutes of meeting) for the stakeholder consultation meeting is not submitted. Hence CAR-14 is raised Also the LSC meeting date and location are not mentioned in the PDD. Hence CAR-13 is raised	CAR-13 CAR-14	OK
11.2 Are the identified stakeholders plausible?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
11.3 Does PDD describe the means being used to invite local stakeholder's comments?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
11.4 Were those means appropriate?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
11.5 Was the project presented to the stakeholders in unbiased manner?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
11.6 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?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
11.7 Is a summary of the stakeholder comments provided in the PDD?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
11.8 Has due account of any stakeholder comments been taken by PPs and reflected in the PDD?	/P1.1/	I	Subject to closer of CAR-13 & CAR-14	CAR-13 CAR-14	OK
12. Environmental impacts (VVS Section 7.13)					
12.1 Is the documentation supplied by the PPs regarding environmental impacts relevant and accurately reflected in the PDD?	/P1.1/	I, www	EIA is not requirement of host country small scale hydro power projects.	OK	OK
12.2 Is an environmental impact assessment (EIA) required for the CDM project activity? <i>Note: determine by using a review of relevant legislation and local expertise.</i>	/P1.1/	I, www	Same as above	OK	OK

12.3 In case an EIA is required, has the EIA has been approved by local authorities and is the outcome accurately reflected in the PDD?	/P1.1/	I, www	Not applicable	OK	OK
12.4 Does the PDD include a brief description of the environmental effects of the project, including transboundary?	/P1.1/	I, www	Not applicable	OK	OK
12.5 Are those effects properly addressed in the design of the project activity?	/P1.1/	I, www	Not applicable	OK	OK
12.6 Does the project comply with environmental legislation in the host country?	/P1.1/	I, www	Yes, the project complies with all the environmental regulations in India	OK	OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

Validation / Verification Standard

(Para 25) The DOE shall raise a corrective action request (CAR) if one of the following occurs:

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

(Para 26) The DOE shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

No.	CAR/CL		Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1	CAR	01	The host country approval form Government of India is not provided.	1.1 to 1.11	The DOE is provided with a copy of Host Country Approval from Govt. of India with Reference No: 4/29/2011-CCC.	<p>The letter of approval from Ministry of Environment & Forest, the Indian DNA has been submitted for verification. LOA submitted by the PP was reviewed and followings are confirmed.</p> <ul style="list-style-type: none"> The approval is issued by the Ministry of Environment & Forests which is listed in the UNFCCC website as the DNA in India. This is confirmed through the website http://cdm.unfccc.int/DNA/view.html?CID=101 Point no (i) of the HCA letter confirms that Government of India ratified the Kyoto Protocol on August 2002. Point no (ii) of the HCA letter confirms that the project participation is a

						<p>voluntary action.</p> <ul style="list-style-type: none"> Point no (iii) in the HCA letter confirms that the project contributes to the sustainable development in the country The project title in the HCA is “Bundled Charmadi Mini Hydel and Aniyur Hole Small Hydro Project at Karnataka, India.” and it matches with the project title mentioned in A.1 of the DD. The only PP is listed in the PDD is “M/s Prasanna Power Limited.” and its participation is approved by the Party India and the same has confirmed by HCA letter. There is no other PP approved by the DNA and not listed in the PDD. <p>Also through board resolution copy authorization, specimen signatures and personal details of the signatory in MOC is verified.</p> <p>CAR-01 is closed</p>
2	CAR	02	PDD-Section A.1: The details about the group company of TECL and PPL and its role in this project activity needs to be explained.	-	Both Prassana Power Ltd & Trinethra Energy Conversions Ltd are 100% subsidiaries and fully owned by the parent company International Power Corporation Ltd. (IPCL). Detailed description of this has been updated in	The details about the group company International Power Corporation Ltd. (IPCL) is explained in the section A.1 of the PDD which is confirmed through the interview with the

					the section A.1 of the revised PDD.	PP. CAR-02 is closed.
3	CAR	03	<p>PDD-Section A.2:</p> <p>a) The project district name of CMHS project is mentioned as Mangalore. However during site visit it is verified to be Dakshin Kannad. Please correct it</p> <p>b) It is mentioned that the project site distance from Bangalore is mentioned as 300 km which is not correct</p> <p>c) The geographical coordinates of CMHS project provided in PDD is not correct.</p>	4.1	<p>a) The typographical error has been corrected in the section A.2 of the revised PDD.</p> <p>b) After checking the precise coordinates the distance between Bangalore and the project site was found to be 370 km. It has been corrected in the section A.2.4 of the revised PDD.</p> <p>c) The geographical coordinates of CMHS project is corrected in the section A.2.4 of the revised PDD.</p>	<p>a) The district name is corrected Dakshin Kannad district in the section A.2 of the PDD</p> <p>b) The distance of the site from Bangalore is corrected to 370 km.</p> <p>c) The geographical coordinates of the CMHS project is corrected.</p> <p>CAR-03 is closed</p>
4	CAR	04	<p>PDD-Section A.6:</p> <p>PP used version 2.2.1 of Tool to calculate the emission factor for an electricity system for the calculation of grid emission factor. The tool is no more valid.</p>	<p>5.4.2</p> <p>5.4.2.1</p>	<p>The PDD has been updated with the latest “Tool to calculate the emission factor for an electricity system”, version- 4.0, EB75; where ever applicable in the revised PDD.</p>	<p>The version- 4.0 of ‘Tool to calculate the emission factor for an electricity system’ is used for calculation of the grid emission factor which is the latest available version in the UNFCCC. Hence found to be appropriate.</p> <p>CAR-04 is closed</p>
5	CAR	05	<p>PDD-Section B.5:</p> <p>Serious/prior consideration of CDM is not justified.</p>	7.1.1 – 7.1.7	<p>The justification on Prior consideration of CDM has been elaborated in the section B.5 of the revised PDD. The project activity meets the two key elements of the “Guidelines of Prior Consideration of the CDM” and hence its applicability has been justified in the PDD.</p>	<p>The justification of the prior consideration is now justified in the section B.5 of the PDD. Since the project start date is before 2nd August 2008, the prior consideration is justified with the parallel CDM action along with the implementation of the project. The time gap between two CDM actions is within 2 years. Hence the</p>

						validation team concludes that the project considers CDM benefit seriously for the implementation project. CAR-05 is closed
6	CAR	06	<p>PDD-Section B.5:</p> <ol style="list-style-type: none"> 1. In the benchmark calculation it is mentioned that <i>BSE 200 was considered as a conservative approach for calculating risk premium</i>. However as verified from the table provide, the BSE sensex is more conservative than BSE 200 2. Government security rate is considered as risk free rate in the benchmark calculation. But the timing of the value and appropriateness of the same is not explained. 3. Cost of debt is taken as 13%. But basis for the same is not justified 4. WACC calculation formula is given. But explanation of the formula parameters are not given 	<p>7.3.3 7.3.9 7.3.10 8.1</p>	<ol style="list-style-type: none"> 1. Corrected in the PDD. 2. Required revision made in the PDD. 3. Required revision made in the PDD. 4. Required revision made in the PDD. 	<p>The benchmark is now revised to prime lending rate published by Reserve Bank of India. Hence the CAR lost its relevance.</p> <p>CAR-06 is closed</p>
7	CAR	07	<p>PDD-Section B.5:</p> <ol style="list-style-type: none"> 1. The IRR value provided is not consistent with the values provided in other parts of PDD as well as IRR sheet. 2. Mention the breaching values at which the IRR cross the benchmark and explain the possibility of the occurrence. 	<p>7.3.4 7.3.9 7.3.10 8.1</p>	<ol style="list-style-type: none"> 1. Necessary corrections are made in all the relevant section of the revised PDD. 2. The section B.5 of the revised PPD has been updated with description of values at which benchmark is breached. Possibility of occurrence of such scenarios and current actual values has also been elaborated. 	<ol style="list-style-type: none"> 1. The IRR value is now made consistent throughout the PDD and IRR sheet. 2. The breaching values of sensitive parameters at which IRR cross the benchmark is provided and the possibility of the accordance is justified. <p>CAR-07 is closed.</p>
8	CAR	08	<p>PDD-Section B.6.1:</p> <p>For the build margin calculation the 2010-11 data is used which is not latest available data</p>	<p>5.5.3.1</p>	<p>The latest version of CEA database at the time of "PDD submission to global</p>	<p>The typo on the year is now corrected in the PDD.</p> <p>CAR-08 is closed</p>

			at the of PDD submission to global stakeholder consultation.		<p>stakeholders' consultation was "version-8" in which the data pertaining to the year 2011-12 was available for build margin.</p> <p>The same version of CEA database was used in the PDD however; due to a typo error the year was wrongly mentioned to be 2010-11.</p> <p>This has been corrected now in the section B.6.1 of revised PDD.</p>	
9	CAR	09	<p>PDD-Section B.6.2:</p> <ol style="list-style-type: none"> For the net calorific value of diesel upper limit of the uncertainty at a 95% is considered which is not conservative in the context of project emission. Grid emission factor value mentioned in the parameter (EF_y) table is not correct and consistent with the value calculated in the previous section. 	5.5.3.3	<ol style="list-style-type: none"> As identified by the DOE, it would not be conservative to consider a upper calorific value limit for diesel as it constitute to project emissions. The value has been revised to a lower limit now which is it has been changed from 43.3 to 41.4 TJ/Gg. Related changes can be found in section B.6.2 of the revised PDD. In the section B.6.2 of the PDD the "Gird Emission factor" was incorrectly mentioned to be 9001 tCO₂/GWh. This was mere a typo error as the correct value calculated in section B.6.1 is 0.9001 tCO₂/MWh. In other words the correct value should be 900.1 tCO₂/GWh and the same have been corrected in the revised PDD. 	<ol style="list-style-type: none"> The NCV value of diesel is now considered based on the 5% lower limit which is found to be appropriate for the project emission. The grid emission factor value is now corrected in the parameter table. <p>CAR-09 is closed.</p>
10	CAR	10	<p>PDD-section B.7.1:</p> <ol style="list-style-type: none"> In the monitoring parameter table it is mentioned that the energy meter readings are taken form Line1 and Line 2. However as per site condition, there is only one line 	<p>9.3</p> <p>9.4</p> <p>9.5</p> <p>9.8</p> <p>9.13</p>	<ol style="list-style-type: none"> The description under section B.7.1 to exclude the incorrect description of two lines. There is only evacuation line for each site which has energy meters installed at 	<ol style="list-style-type: none"> The description on the energy meter reading is now corrected which is in consistent with the site condition

			<p>is available.</p> <ol style="list-style-type: none"> The purpose of the data is not filled in accordance with the PDD filling guidance Location of energy meters are mentioned wrongly Details of the measuring equipment used in monitoring of diesel are not provided. 	9.14	<p>intersection point.</p> <ol style="list-style-type: none"> The description for “purpose of the data” under monitoring table section B.7.1 has been corrected as per the “<i>Guidelines for completing the project design document form for small-scale CDM project activities</i>”, version 01.1. It has been included whether the parameter contributed to baseline, project or leakage emissions. Location of the meter is at the nearest intersection point. This has been corrected in monitoring table of the revised PDD. A dipstick or a level gauge is used to measure the quantity of diesel consumed. 	<ol style="list-style-type: none"> The purpose of the data is now corrected accordance with PDD filling guidance. The location of the energy meters is now included in the PDD. The details of the measuring equipment for measurement of diesel is now included in the PDD. <p>CAR-10 is closed</p>
11	CL	11	<p>PDD-Section C.1.1: The start dates of the project are mentions as follows: CMHS : 04/11/2006 and AHSHP 08/11/2007 But as per the previous PDD, the start date is 2nd august 2008. Clarify</p>	7.1.8	<p>Kindly note that the start sate as mentioned in the previous PDD was incorrect. This was due to the lack of understanding of CDM guidelines by the previous project management/consultant. Hence, values used were not in-line with the applicable or relevant CDM guidelines. In the current PDD, the start date of the project activity has been chosen in-line with the guideline under CDM Glossary, version 07. The dates AHSHP 08/11/2006 and CMHS : 16/11/2006, are chosen as both the projects has placed work orders for civil contracts on these respective dates.</p>	<p>The validation team verified the civil work orders of both the projects and found that the dates of the placement of work order for civil constructions are 08/11/2006 and 16/11/2006 for AHSHP and CMHS respectively. Since placing civil work order the first real action of the project activity, the start date considered in the present PDD is correct and in line with the glossary of CDM terms, version 7. CL-11 is closed</p>
12	CL	12	<p>PDD-Section C.2.2: The start date of the crediting period</p>	-	<p>Necessary correction has been done in the section C.2.2 of the revised PDD.</p>	<p>The start date of the crediting period is now corrected.</p>

			mentioned is no more valid.			CL-12 is closed
13	CAR	13	PDD-Section E1: Local stakeholder consultation meeting date & location details are missing	11.1-11.8	Details of the local stakeholders consultation are provided in the PDD	The LSC meeting date and location details are now included in the PDD. CAR-13 is closed
14	CAR	14	Please submit the following documents: <ol style="list-style-type: none"> 1. Detailed Project Report 2. Power Purchase agreement 3. Government order for allotment 4. Consent to Establish from PCB 5. Consent to Operate from PCB 6. LSC meeting documents 7. Proof for investment decision 8. Proof for CDM consideration 9. Proof for PLF (in line with EB 48, annex 11) 10. Proof for start date 11. Proof for the lifetime of project 12. Purchase order of major equipment & major work orders 13. Commissioning certificates of the plants 14. Loan Sanction Letter 15. Manufacturer specification of equipment 16. Negative Validation Report issued by 'SGS United Kingdom Limited' 17. Bundling form 	7.1.9 7.3.4-10 8.1 11.1-11.8	All documents are enclosed	All the requested documents are submitted. The validation team verified the documents and found that the details mentioned in the PDD are correct. CAR-14 is closed.
15	CL	15	In the webhosted PDD, the PP name is mentioned as 'Prasanna Power Limited'. But in the final PDD submitted, the PP name is mentioned as 'International Power Corporation Private Limited'. Please clarify the reason		The two projects which are bundled under this CDM project activity are AHSH & CMHS which were started under the companies named PPL & TECL. Both PPL and TECL were SPV (Special Purpose Vehicle) and 100% subsidiary of IPCPL. However, the management decided restructure the	The "High Court of Karnataka" order dated 4th April 2014 was verified which confirms the SPVs 'Prasanna Power Limited' and 'Thrinethra Energy Conversions Limited' are merged to the parent company 'International Power

					company and to merge all SPV of the company under IPCPL. In this process the two subsidiary companies under IPCPL were merged under into the parent company as one single entity through "High Court of Karnataka" order dated 4th April 2014. However, the projects AHSHP & CMHS are still separate projects due to separate allocation and approvals.	Corporation Private Limited ^{P16/} . Hence the specifying the PP name as 'International Power Corporation Private Limited' in the PDD is appropriate. The MOC is also signed by 'International Power Corporation Private Limited'. CL-15 is closed
16	CAR	16	The PP used the PDD template, version 4.1 which is not the latest version of the PDD.		The new template as applicable has been used now. The PDD is now made available under version 5.0.	The PDD is now made according to latest template version, ie, version 5. CAR-16 is closed
17	CAR	17	PP referred version 2.2.1 of 'Tool to calculate emission factor for an electricity system' which is not a valid version of the tool		The PDD has been revised where ever applicable to use the latest version (version 4) of "Tool to Calculate Emission Factor for an Electricity System".	The PP has now referred version 4 of 'Tool to calculate emission factor for an electricity system' in PDD for calculation of grid emission factor, which is the latest version available. CAR-17 is closed

Table 3: List of forward action requests (FARs)

Validation / Verification Standard

(Para 27) The DOE shall raise a forward action request (FAR) 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.

FAR number	Reference	Summary of project owner response	Validation team conclusion
-			

Appendix B

Certificates of Competence

Qualification

MP, Kanal /

Emission Trading United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:
(AuditorenRegNr)

Appointed: (Zugelassen)	ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
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External: (Externer)	Add. reviewer: (Zusätzlicher Prüfer)
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EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources)
	CDM 03 - Energy demand
	CDM 06 - Construction
	CDM 13 - Waste handling and disposal
	CDM 15 - Agriculture

Add.
qualification:
(zus. Qualifikation)

First Appointment: (Erstberufung)	02-06-2012	Valid to: (Gültig bis)	02-05-2015
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Remarks:	TA. 1.2, 3.1, 6.1, 13.1/13.2, 15.1
Languages:	English
	Tamil
	Hindi

Qualification

C, Indumathi /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification

Lead Auditor

Level:

(Qualifikationsstufe)

External:
(Externer)

Add. reviewer: yes
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

06-07-2012

Valid to:
(Gültig bis)

06-05-2015

Remarks:

TA 1.2

Languages:

Tamil

English

Hindi

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

Date: 2012-08-02
Change: EAC CDM added
By: Praveen Urs
Reason:

History

Created:	07/30/2012 12:45:55 PM	Kaustubh Rane/Ind/TUV
Modified:	08/02/2012 05:58:28 PM ZE8	Praveen Urs/Chn/TUV
	07/30/2012 12:46:56 PM	Kaustubh Rane/Ind/TUV

Export to ICMS

Last Export:

Qualification

R, Narendra Kumar /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification
Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

Add. reviewer:
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 03 - Energy demand

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

15-05-2012

Valid to:
(Gültig bis)

14-05-2015

Remarks:

TA. 1.2, 3.1

Languages:

Tamil

English

Hindi

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date: 2012-06-29
Change: EAC CDM removed; CDM added
By: Praveen Urs
Reason:

Date: 2012-06-28
Change: EAC CDM, CDM added
By: Praveen Urs
Reason:

History

Created:	27-06-2012 12:58:24	Kaustubh Rane/Ind/TUV
Modified:	29-06-2012 18:18:45 ZE8	Praveen Urs/Chn/TUV
	28-06-2012 18:04:05 ZE8	Praveen Urs/Chn/TUV
	27-06-2012 12:58:53	Kaustubh Rane/Ind/TUV

Qualification

Ramalingam, Murali /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification
Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

Add. reviewer:
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 03 - Energy demand

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

15-05-2012

Valid to:
(Gültig bis)

14-05-2015

Remarks:

TA 1.2

TA 3.1

Languages:

Tamil

English

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date: 2012-06-18
Change: EAC CDM, CDM added
By: Praveen Urs
Reason:

History

Created:	18-06-2012 10:47:56	Kaustubh Rane/Ind/TUV
Modified:	18-06-2012 18:02:36 ZE8	Praveen Urs/Chn/TUV
	18-06-2012 18:02:33 ZE8	Kaustubh Rane/Ind/TUV
	18-06-2012 10:48:25	

Export to ICMS

Last Export: