



VALIDATION REPORT

ALAKNANDA HYDRO POWER COMPANY LIMITED

VALIDATION OF THE RUN-OF-THE-RIVER HYDROELECTRIC POWER PROJECT IN UTTARAKHAND BY ALAKNANDA HYDRO POWER COMPANY LIMITED

REPORT NO. INDIA-VAL/215.49/2011

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BUREAU VERITAS CERTIFICATION

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VERITAS

VALIDATION REPORT

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Summary:

Bureau Veritas Certification has made the validation of the Run-of-the-river Hydroelectric Power Project in Uttarakhand by Alaknanda Hydro Power Company Limited project of Alaknanda Hydro Power Company Limited located in Kirtinagar Tehsil, Tehri District, Uttarakhand (Uttaranchal), India on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

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

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

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM 0002 version 12.1.0 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: INDIA-val/215.49/2011	Subject Group: CDM
Project title: Run-of-the-river Hydroelectric Power Project in Uttarakhand by Alaknanda Hydro Power Company Limited	
Work carried out by: Mr. H.B.Muralidhar – Team Leader Mr. Sandeep Lele – Team Leader Mr. Ajesh Kumar – Team Member Mr. G.N.Jayaram- Financial Expert	
Internal Technical Review carried out by: Sanjay Patankar – <i>Sanjay Patankar</i> Sapna Pednekar – Specialist - ITR	
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Work approved by:

Flavio Gomes- Global Product

Manager *Flavio Gomes*
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APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOLERREUR ! SIGNET NON D



1 INTRODUCTION

Alaknanda Hydro Power Company Limited (AHPCL) has commissioned Bureau Veritas Certification to validate its CDM project Run-of-the-river Hydroelectric Power Project in Uttarakhand by Alaknanda Hydro Power Company Limited' (hereafter called "the project") at Kirtinagar Tehsil, Tehri District, Uttarakhand (Uttaranchal), India.

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

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is 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).

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER*	TASK PERFORMED
Lead Verifier	H.B. Muralidhar	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Lead Verifier	Sandeep Lele	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input type="checkbox"/> RI
Verifier	S.Ajesh Kumar	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input type="checkbox"/> RI



Financial Specialist	G.N.Jayaram- CA	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Internal Technical Reviewer (ITR)	Sanjay Patankar	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Specialist supporting ITR	Sapna Pednekar	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Report Approval	Flavio Gomes	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI

*DR = Document Review; SV = Site Visit; RI = Report issuance

2 METHODOLOGY

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

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010. The protocol shows, in a 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;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

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

2.1 Review of Documents

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

To address Bureau Veritas Certification corrective action and clarification requests, Alaknanda Hydro Power Company Limited revised the PDD and resubmitted it on 22nd March 2011.

The validation findings presented in this report relate to the project as described in the PDD version 5.3

2.2 Follow-up Interviews

On 23/03/2009, 24/03/2009 at project site and on 26/03/2009 at the corporate office, Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Alaknanda Hydro Power Company Limited, General Carbon Advisory Services Pvt. Ltd. and local stakeholders were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Alaknanda Hydro Power Company	<ul style="list-style-type: none"> ➤ CDM consideration ➤ Methodology application ➤ Benchmark analysis ➤ Additionality ➤ Local stakeholder consultation and resolution of their concerns ➤ Supporting data, evidences and documentation ➤ Resolution of CARs and CLs ➤ Monitoring system ➤ Metering system
LOCAL Stakeholder	<ul style="list-style-type: none"> ➤ Views and concerns about the project activity ➤ Confirmation of local stakeholder consultation by project participant
General Carbon Advisory Services Pvt. Ltd.	<ul style="list-style-type: none"> ➤ Methodology application ➤ Baseline determination and emission factor ➤ Benchmark analysis ➤ Additionality ➤ Resolution of CARs and CLs

2.3 Resolution of Clarification and Corrective Action Requests

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

Corrective Action Requests (CAR) is issued, where:

- (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.



The validation team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

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

2.4 Internal Technical Review

The validation report underwent a Internal Technical Review (ITR) before requesting registration of the project activity.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Lead Verifier provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Validation Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized validation report is accepted for further processing such as uploading on the UNFCCC webpage.



3 VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 17 Corrective Action Requests (CARs) and 11 Clarification Requests (CLs).

The CARs and CLs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the end of each section correspond to the VVM paragraph

3.1 Approval (49-50)

India is the host party involved in this project activity. The project participant Alaknanda Hydro Power Company limited has obtained approval /Ref 03/ from DNA of India and have provided copy of this letter (Letter No: 4/25/2008-CCC dated 06/02/ 2009) to the validation team. The validation team has verified the authenticity of the approval from the website of DNA of India*. The website confirms approval by DNA under project ID No. **1159-08**. The letter of approval of DNA of India for Alaknanda Hydro Power CompanyL was provided by project participant to the validation team. The letter of approval for Alaknanda Hydro Power Company clearly states that India has ratified the Kyoto Protocol and the approval is for voluntary participation in CDM project activity. Also, the letter of approval of DNA of India states and confirms that project activity contributes to sustainable development in India. The letter of approval of DNA of India states the precise proposed CDM project activity title in the PDD being submitted for registration. The letter of DNA of India is unconditional with respect to party to the Kyoto Protocol, voluntary participation, contribution to sustainable development and title of project activity.

Bureau Veritas Certification considers the letter of DNA of India is in accordance with paragraphs 45 - 48 of the VVM.

The title and contents of the letter of approval refer to the precise proposed CDM project activity title in the PDD being submitted for registration.

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* http://cdmindia.nic.in/cdm_india.htm



3.2 Participation (54)

The participation of Alaknanda Hydro Power Company Limited has been approved by a Party of the Kyoto Protocol as detailed below.

India is the host party for this project. India has ratified the Kyoto Protocol on 26th Aug 2002. This has been confirmed from UNFCCC website <http://maindb.unfccc.int/public/country.pl?country=IN>

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 14th January 2009 and invited comments within 12th Feb 2009 by Parties, stakeholders and non-governmental organizations. No comments were received.

The participation of Alaknanda Hydro Power Company Limited is approved by DNA approval letter (Letter No: 4/25/2008-CCC dated 6th Feb 2009) and is accepted. The participation for project participant AHPCL has been approved by a Party of the Kyoto Protocol. The validation team confirmed the authenticity of the approval from the website of DNA of India. The website confirms approval by DNA under project ID no. 1159-08. The letter of approval clearly states that India has ratified the Kyoto Protocol and the approval is for voluntary participation in CDM project activity. Also, the letter of approval of DNA of India mentions that project contributes to sustainable development in India.

3.3 Project design document (57)

During the validation process it was found that the explanation provided in Section A.2 of the webhosted PDD related to spatial boundary, the status of the pondage and the actual flow of the river were not appropriate and therefore CAR 1 was raised. The responses of the project developer and the corrections effected in the PDD by the project participant were accepted and accordingly CAR 1 has been closed.

PDD was revised by project participant in a response to the CLs (CL1, 2 and 3) which are related to improvements to infrastructure in the vicinity of the project, its actual location as well the rated capacity of the turbine. The validation team confirms that the PDD complies with the latest forms and guidance documents for completion of PDD. The PDD is as per Guidelines for completing the Project Design Document (CDM-PDD) (EB 41 Annex 12).

3.4 Changes in the Project Activity

The project is still under construction and has not been commissioned. The generation of power is expected to start in 2012. There are no changes observed in the implementation of project under the present circumstances.



The PDD Version 5.3 has following major changes in comparison to Version 1 which was webhosted

1. Latest version of methodology is used
2. CER estimates have been revised
3. Chronology of events has been further detailed
4. Benchmark has been revised
5. IRR calculations have been revised
6. Barrier analysis has been removed
7. Common practice analysis has been revised
8. Monitoring parameters and monitoring plan have been revised.

3.5 Project description (64)

Alaknanda Hydro Power Company Limited (AHPCL) is setting up a 330 MW 'run of the river' hydropower project in the state of Uttarakhand.(Erstwhile Uttaranchal state) The project activity also known as Shrinagar Hydro Electric Project is located on Alaknanda River, a major perennial river and a tributary of the Ganga River. The location and coordinates have been verified by the validation team. All components of the project have also been verified from the relevant documents such as the, CEA approval, UPERC order and restated PPA. The power project is estimated to begin commercial operation in March 2012. The project proponent does not own or operate any other renewable energy project in any part of India.

There would be four generating units (turbine and alternators) each of 82.5 MW capacities. The maximum design discharge would be 560m³/s for power generation capable for 4 hours power generation at full rated capacity.

The project activity is expected to generate primary energy of about of 1397 GWh per annum and secondary energy of about 117 GWh per annum respectively. After commissioning it is estimated to supply 1514 GWh per annum to the power deficient regional grid. These details have been assessed from various documents such as the CEA approval

The generation of power at 13.8 kV from the turbo generator is stepped up to 400 kV by power transformers. The arrangement for power evacuation from Shrinagar Hydro Power Station will be as described below:

1. One circuit of 400 kV Muzaffarnagar-Vishnuprayag line will be made with line in and line out (LILO) at the Switchyard of Shrinagar Power House.



2. One double circuit may be connected from Shrinagar Power House substation to PTCUL substation at Shrinagar.

The project activity is expected to export 88% of the energy generated to Uttar Pradesh Power Corporation Limited (UPPCL). The remaining 12% will be supplied free of cost to Government of Uttarakhand. The restated Power Purchase Agreement (PPA) which was signed in June 2006 with Uttar Pradesh Power Corporation Limited (UPPCL) has been verified by the validation team. This PPA will be valid for a period of 30 years from the date of commissioning of the last unit. The lifetime of the project activity is 35 years in accordance with applicable conditions in the UPERC Guidance*.

The mechanism for determining the tariff is explained in the Uttar Pradesh Electricity Regulation (UPERC) Terms and Conditions of Generation Tariff Regulations, 2004

The validation has verified and reviewed several documents and discussed with senior officials of project participant during the course of validation.

A hydro power project at the same location was initially conceived by Uttar Pradesh State Electricity Board (UPSEB) for 200 MW (40 MW x 5 units) in 1984. However, after subsequent review of the hydrology, the techno economic clearance by Central Electricity Authority (CEA) was accorded for 330 MW (55 MW x 6 units) in 2000. UPSEB considered seeking World Bank assistance and accordingly project planning was started. The project could not however be implemented due to lack of financial support.

In 1994, the Government of Uttar Pradesh decided to execute the project with private sector participation and signed MOU with M/s.Duncans Industries Ltd. This company along with them M/s.Synergics Hydro Asia (SHA) formed Duncans North Hydro Power Company Ltd. (DNHPCL). As a first step, PPA was signed with the UP State Electricity Board in 1998 and Detailed Project Report was prepared in 2000. Based on the DPR, CEA approved the project (Techno Economic Clearance) on 14/06/2000 at total project cost 17,228.0 million INR. In 2001, Uttar Pradesh was divided in two states and project area came in new state region Uttarakhand (then Uttaranchal). The project could not move ahead due to reason beyond the

* Gazette Notification on 18th June 2005. <http://www.uperc.org/regulations.htm>

'Primary Energy' MEANS THE QUANTUM OF ENERGY GENERATED UP TO THE DESIGN ENERGY ON PER YEAR BASIS AT THE GENERATING STATION;

Secondary Energy' means the quantum of energy generated in excess of the design energy on per year basis at the generating station; **'Saleable Secondary Energy'** means the quantum of secondary energy available for sale (ex-bus);



control of DNHPL and the Tata Power Company Ltd. (TPC) took over the project (that was a Special Purpose Vehicle Company) in October 2003. There was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits. The name of the company was then changed to the Alaknanda Hydro power Company Ltd. in April 2004 under the ownership of Tata Power Company Ltd. The company also continued exploratory work and invited civil works and E&M (engineering and Mechanical) works bids. At this stage the following pre project activities had been completed:

- Power Purchase Agreement was signed and DPR was completed in 2000
- Techno Economic Clearance was obtained from Central Electricity Authority in 2000
- Quotations were invited for Civil and Electro Mechanical works in 2004

TATA Power Company Ltd decided to divest its stake in 330 MW hydro project SPV Alaknanda because it wanted to focus on mega power projects.

In November 2005, GVK Group took over Alaknanda Hydro Power Company Ltd. and the process was concluded through a share purchase agreement on 12th Nov 2005. After this, the restated implementation agreement between the AHPCL, Government of Uttarakhand and Government of Uttar Pradesh was signed on 10/02/2006. The UPERC approved the revised cost vide its order dated 7th June 2006 and approved the revised PPA. on 28th June 2006.

Subsequent to this, detailed project implementation plan was drawn up and first project activity implementation work (construction of a diversion tunnel) was awarded on 26/04/2006 and started only after the financial closure in 2007.

Bureau Veritas Certification recognizes that the Hydro electric power project of Alaknanda Hydro power Company Ltd. is helping country fulfill its goals of promoting sustainable development. The project is expected to be in line with host-country specific CDM requirements because it –

- is approved for voluntary participation by DNA of India
- provides direct and indirect employment to the local people
- provides electricity to the deficient electricity grid of NEWNE
- leads to reduced fossil fuel consumption



- does not release pollutants like SPM, CO₂, CO, etc.

The DOE hereby confirms that the project description in PDD /ref 2/ is accurate and complete in all respects and that there are no changes to the project activity/design or boundary as compared to the webhosted PDD.

The site visit was conducted on 23/03/2009, 24/03/2009 at the project site and on 26/03/2009 at the corporate office of AHPCL. The location of the project is at Kirtinagar Tehsil, Paurhi Garwhal and Tehri Garwhal District in the Uttarkhand state of India. The corporate office is located at Hyderabad, the state capital of Andhra Pradesh in India. The documents related to the approval of the project by the management of AHPCL have been reviewed by the validation team. It is confirmed that the starting date of the project activity is 26/04/2006 which is the LOI for the construction of diversion tunnel. This is as per CDM Glossary of Terms. The project participant has selected a fixed crediting period of ten years.

Based on site visits and document review, the validation team hereby confirms that the project description in PDD /Ref 2/ is accurate and complete in all respects.

3.6 Baseline and monitoring methodology

3.6.1 General requirement (76-77)

The steps taken to assess the relevant information contained in the PDD against each applicability condition are described below.

The proposed Project Activity 'Alaknanda Hydro Power Company Limited (AHPCL) uses the approved methodology ACM 0002 Ver.12.1.0 The project activity meets the applicability conditions as shown below

1. The project activity is installation of a new grid connected run-of-the river hydro power project. This is verified from the techno-economic clearance given by CEA which recommended the project and the DPR.
2. The project is a green-field project and does not involve capacity additions, retrofits or replacements.
3. This is a run of the river hydro power project There is only a diversion weir capable of holding water sufficient for operation for period is about four hours This has again been verified from the techno-economic clearance given by CEA
4. Since the project activity involves installation of a new grid connected run-of-the river hydro power project, it does not involve switching from fossil fuel to renewable energy or the use of any biomass.



The validation team therefore confirms that the project activity meets all the applicability conditions of the selected approved methodology ACM 0002, version 12.1.0. Conditions under which methodology is not applicable were not mentioned in webhosted PDD and CAR 10 was raised. CAR 10 was closed after these conditions were included and addressed in the revised PDD.

The validation team hereby confirms that the selected baseline and monitoring methodology, the 'Tool to calculate the emission factor for an electricity system' and the 'Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion' have been previously approved by the CDM Executive Board, and is applicable to the project activity, which, complies with all the applicability conditions therein.

The validation hereby also confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

3.6.2 Project boundary (80)

As per ACM 0002 ver. 12.1.0 the spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to.

The spatial extent of the project boundary is assessed through the description in the PDD and the grid structure in India as known from the official data available from the Central Electricity Authority, CEA. The project activity boundary therefore includes the CDM project and all power plants connected physically to the NEWNE grid of India that the CDM project plant is connected to.

The consideration of only CO₂ gas for computation of baseline emissions is conservative and in line with the methodology and hence appropriate. The project is run-of-the river project and power density of the pondage is more than 10 W/m² and in line with methodology project emissions are taken as zero.. Further, no leakage emissions are considered in line with ACM 0002 ver. 12.1.0

The project design is sound and the geographical and temporal boundaries of the project have been clearly defined in the PDD. The life of the project activity is 35 years. Project boundary was revised in response to CAR 2



Based on the above assessment, the validation team hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

The validation team has confirmed the project boundary in line with para 79 of VVM ver. 1.2 by reviewing documents for the project such as approval of Central Electricity Authority (CEA), UPERC and UPPCL clearly records that the project is located on the river Alaknanda in Uttarakhand state and power house is located on right bank of River Alaknanda near the town Shringar.

The same was also confirmed during the site visit. The validation team visited the power house which was under construction. Based on the above assessment, the validation team hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

3.6.3 Baseline identification (87-88)

The steps taken to assess the relevant information contained in the PDD against each applicability condition are described below.

The proposed Project Activity is located in the state of Uttarakhand" uses the approved methodology ACM 0002 ver. 12.1.0 The project activity meets the applicability conditions as described in Section 3.6.1 of the Validation Report and therefore the validation team therefore confirms that the project activity meets all the applicability conditions of the selected approved methodology ACM 0002, version 12.1. The applicability conditions of the methodology were not analysed in line with the guideline document for PDD completion and CAR 2 was raised. CAR 2 was closed after all the applicability conditions were adequately addressed in revised PDD.

The validation team hereby also confirms that the selected baseline and monitoring methodology, the 'Tool to calculate the emission factor for an electricity system' and the 'Tool to calculate project or leakage CO2 emissions from fossil fuel combustion' that have been previously approved by the CDM Executive Board is applicable to the project activity, which, complies with all the applicability conditions therein.

Further , the validation team hereby confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.



The validation team has assessed the baseline identification using the provisions of the applicable methodology.

The project participant has provided the details on the baseline scenario in section B.4 of the PDD. In the Para 105 of the VVM manual ver 1.2, it is stated that the PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. ACM 0002 ver. 12 prescribes the baseline scenario for installation of a new grid-connected renewable power plant/unit as follows

“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, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Accordingly, project participant identified two possible alternatives to the project activity, viz., implementation of the project activity without CDM benefits and continuation of power generation in existing and new grid connected thermal power stations i.e. continuation of current situation.

Through additionality, the project participant has established that project activity without CDM would not have been implemented through a comprehensive explanation of additionality. Therefore, the baseline scenario applicable to the project activity is – ‘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’, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. This is in line with the methodology. Since the methodology already specifies the baseline, no further analysis is required.

The project participant has used the official published data on operating and build margin emission factors. The version of the data used is as available on the date of validation. This data is published by Central Electricity Authority, CEA who is the sole authority for the publication of such data in India. This data is based on the emission factor tool approved by UNFCCC. Project participant has applied weight factors for the OM and BM [50% & 50% respectively] as specified in the tool to arrive



at the emission factor for the combined margin. Accordingly, the combined margin emission factor is 0.8034 tCO₂/MWh for NEWNE Grid.

The validation team agrees to this emission factor since it is based on the official data published by CEA. The validation team further notes that the emission factors are not provided by DNA but by the competent authority.

It is noted that the selected baseline scenario is in line with the selected approved methodology.

In the context of the national policy, the PP has explained the national scenario in Section B.5 of the PDD. The Policy on Hydro Power Development of the Government of India- 1998 (which is still relevant) provides an estimate on the untapped potential of hydropower generation in the country. Most of this untapped power is available in the northern part of the country (Himalayan Ranges). The policy details the provision of different subsidies and incentives for private sector participation in the domain of hydropower generation during the 9th and 10th Five Year Plans. The validation team has referred to these policies and other relevant documents provided by the PP and available in the Indian Government Planning Commission website (planning.commission.gov.in/plans) and confirms that the implementation of the project encompasses the objectives of the policy.

The national policies however have no bearing on the predetermined baseline in the methodology applicable to this project (i.e. ACM 0002).

Based on the above assessment, the validation team hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)

The project participant has used the algorithm and formulae in line with the 'emission factor' tool. The detailed algorithm and formulae used are

provided in section B6.1 and calculations are detailed in section B.6.3 of the PDD.

As per ACM0002, the baseline emission sources considered are only CO₂ emissions from electricity generation in fossil fuel fired power plants in the grid that is displaced due to the project activity.

As required under ACM0002, project participant has calculated the baseline emissions by multiplication of the net electricity supplied by the project activity and the grid emission factor. The detailed algorithms are described later under sections B.6.1 of the PDD and calculations are shown in section B6.3 of PDD.

The project activity is electricity generation by run-of-the river hydro plant. With reference to this methodology, project does not lead to any leakage.

The validation team assessed the calculations of estimated CERs as provided by project participant in a spreadsheet (Ref 46). The assumptions in this spreadsheet were validated as follows -

Parameter, Value	Source of information	Validation justification
Project Capacity, MW 330	Design capacity approved by CEA – TEC, 14/04/2000 Amended and restated Power Purchase agreement between AHPCL and UPPCL.	Capacity is as approved Design capacity approved by CEA – TEC, 20/04/2000 The same capacity of generator is stated as per contract to Bharat Heavy Electricals Ltd by AHPCL. The Central Electricity Authority (CEA) is government body which has been vested with the authority to provide the techno economic clearances of large scale hydro-projects in India.
Design primary energy- 1397 GWh and secondary energy- 117Gwh(Amounting to PLF of 52.30%)	Design capacity approved by CEA – TEC, 14/04/2000	The CEA vide their letter F No/UP/28/2000-PAC/4723-44 dated 14/04/2000 has accorded the techno economic clearance (TEC) for this project. The design energy approved in the TEC
Baseline EF, 0.8034 for NEWNE Grid	CEA database ver. 4	CEA database is an official source of data and hence acceptable. EF is determined ex-ante. CEA database version 4 is used which is applicable at the time of submitting PDD for validation. This is in line with Tools to calculate emission factor for an electricity system.
Auxiliary consumption, 0.5%	UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004.	The Uttar Pradesh Electricity Regulatory Commission (UPERC) Tariff Regulations are official source of information and they were available



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	pg.31-32	at the time of decision making and hence it is considered reasonable. This is also in line with Para 6 of EB 51 Annex 58. This is also in line with the Central Electricity Regulatory Commission (CERC) Tariff Regulations, 2004
Transformation losses, 0.5%	UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. pg.31-32	The Uttar Pradesh Electricity Regulatory Commission (UPERC) Tariff Regulations are official source of information and they were available at the time of decision making and hence it is considered reasonable. This is also in line with Para 6 of EB 51 Annex 58. This is also in line with the Central Electricity Regulatory Commission (CERC) Tariff Regulations, 2004

The estimated annual average of approximately 1,204,120 tCO₂e over the crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project participant. Emission factor was not properly explained in webhosted PDD and CAR 3 was raised. CAR 3 was closed after the emission factor calculations were detailed and it was calculated as per CEA version 4. All the assumptions for this estimate either come from the assumptions used for investment analysis or grid emission factor as taken from CEA website. These are already validated in Section 3.7.3 of this report. It also can be verified using the spreadsheet for calculations of CERs.

Based on the above assessment, the validation team hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- (c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

3.7 Additionality of a project activity (97)

The project participant has demonstrated additionality in accordance with Additionality tool. The approach adopted by the Validation Team including the method of verification of the available documents, and other sources of information used, to cross-check/verify the information contained in the



PDD on all aspects related to additionality have been described in detail below.

3.7.1 Prior consideration of the clean development mechanism (104)

A hydro power project was initially conceived at the same site by Uttar Pradesh State Electricity Board (UPSEB) for 200 MW (40 MW x 5 units) in 1984. However, after subsequent review of the hydrology, the techno economic clearance by Central Electricity Authority (CEA) was accorded for 330 MW (55 MW x 6 units) in 2000. UPSEB considered seeking World Bank assistance and accordingly project planning was started. The project could not however be implemented due to lack of financial support.

In 1994, the Government of Uttar Pradesh decided to execute the project with private sector participation and signed MOU with Duncans Industries Ltd. This company along with the Synergics Hydro Asia.(SHA) formed Duncan North Hydro Power Company Ltd. (DNHPCL). As a first step, PPA was signed with the UP State Electricity Board in 1998 and Detailed Project Report was prepared in 2000. Based on the DPR, CEA approved the project (Techno Economic Clearance) on 14/06/2000 at total project cost 17,228.0 million INR. In 2001, Uttar Pradesh was divided in two states and project area came in new state region Uttarakhand (then Uttaranchal). The project could not move ahead due to reason beyond the control of DNHPCL and the Tata Power Company Ltd. (TPC) took over the project. The name of the company was then changed to the Alaknanda Hydro power Company Ltd. in April 2004 under the ownership of Tata Power Company Ltd. and that was a Special Purpose Vehicle Company. There was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits. The company also continued exploratory work and invited civil works and E&M (engineering and Mechanical) works bids. At this stage the following pre project activities have been completed:

1. Power Purchase Agreement was signed and DPR was completed in 2000
2. Techno Economic Clearance was obtained from Central Electricity Authority in 2000
3. Quotations were invited for Civil and Electro Mechanical works in 2004

TATA Power Company Ltd decided to divest its stake in 330 MW hydro project SPV Alaknanda because its wanted to focus mega power projects.

In November 2005, GVK Group took over Alaknanda Hydro Power Company Ltd. and the process was concluded through a share purchase



agreement on 12th Nov 2005. AHPCL board was reconstituted on 13th Nov 2005 after the SPV was taken over by GVK group. After this, the restated implementation agreement between the AHPCL, Government of Uttarakhand and Government of Uttar Pradesh was signed on 10/02/2006. The UPERC approved the revised cost vide its order dated 7th June 2006 and approved the revised PPA. on 28th June 2006.

Subsequent to this, detailed project implementation plan was drawn up and first project activity implementation work (construction of a diversion tunnel) was awarded on 26/04/2006 and started only after the financial closure in 2007.

The name of the company was changed from Duncan North Hydro Power Company Limited to Alaknanda Hydro Power Company Limited (AHPCL) and the same was accepted and approved by the Registrar of Companies vide their letter TC/S-21/19443/2016 dated 26/04/2004./Ref 28/

As per Glossary of CDM terms, the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. The project activity is not yet commissioned and it is under construction. The project participant had issued LOI /Ref 20 / for construction of diversion tunnel on 26/04/2006 to Ms SHRING Construction Company Pvt Limited and this is taken as start date for the project activity. There cannot be any real action before the LOI so the validation team has accepted this letter for confirming the start date of project activity. In fact, the start date was not correctly mentioned in webhosted PDD and CL 07 was raised. CL 07 was closed after start date was corrected in the revised PDD and it is in line with Glossary of CDM terms.

Project participant has provided minutes of meeting between PWC Mumbai and GVK Management (currently owners of AHPCL) in which carbon credits for this project being available for acquisition were discussed. Thus, the project participant was having awareness of CDM.

Validation team assessed the serious consideration of CDM from the extract of the meeting of the Board of Directors, dated 13/11/2005 /Ref 15/. The validation team physically checked the Board minutes register /Ref 15/ of Board of Directors meeting records and observed that the extract provided was verbatim same as that recorded Board minutes register. The minutes of the meeting clearly record that taking into account the availability of carbon credits, the Board has decided to implement the project.



There was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits which shows that carbon credit benefits were considered even prior to taking over of the company by current project participant. More over the share purchase agreement dated 12/11/2005 between Tata power Company limited and GVK Hydel Pvt. Limited clearly refer to the technical service agreement between Tata Power Company and SHA which include carbon credit sharing .A agreement was also signed on 21st July 2007 between AHPCL and SHA regarding sharing of carbon credits. The Board resolution clearly documents that project has been implemented taking into account availability of carbon credits. These show that CDM was a decisive factor in the decision to proceed with the project activity.

The CDM consultant was appointed on 04/01/2007./Ref 18/ First DOE was appointed on 16/08/2007/Ref19/.However, work could not progress further due to certain disagreement on pricing. The documents for taking HCA approval were submitted to DNA on 21/08/2008 and HCA meeting was held on 16/10/2008. The second DOE was appointed on 25/09/2008. The PDD was webhosted for Global Stakeholders comments from 14/01/2009 to 12/02/2009. HCA approval was awarded on 06/02/2009.

The time gap between Board decision date (13/11/2005) and appointment of CDM consultant (04/01/2007) is less than 2 years. The time gap between appointment of CDM consultant (04/01/2007) and first DOE (16/08/2007) is less than 2 years. Time gap between appointment of CDM consultant (04/01/2007) and second DOE (25/09/2008) is less than 2 years. Since the time gap between the two documented evidences is less than two years, there has been real action to secure CDM status in parallel to the implementation of the project activity as per EB 49, Annex 22.

The validation team therefore confirms that CDM was seriously considered by the Project Proponent in the decision to proceed with the implementation of the project activity. Based on the above assessment, the validation team hereby confirms that the proposed CDM project activity complies with the requirements of EB 49, Annex 22.

CAR 05 was raised as it was not clear initially from the webhosted PDD and documents provided initially that CDM was a decisive factor in decision making. CAR 05 was closed after documents such as the Board Note, Project viability note / Ref 14/, and carbon revenue sharing technical agreement between the previous owners of project / Ref



16,17 /were provided and it was determined that CDM was a decisive factor as also described above.

Based on the above assessment, the validation team hereby confirms that the proposed CDM project activity complies with the requirements of Annex 22 of EB 49.

3.7.1.1 Historical information on project timeline

There is no historical information on project timeline applicable to the project activity with respect to any real action prior to start date of project activity. This hydro power project is Greenfield project. The historical background of this project has already been explained in the section above.

A hydro power project was initially conceived at the same site by Uttar Pradesh State Electricity Board (UPSEB) for 200 MW (40 MW x 5 units) in 1984. However, after subsequent review of the hydrology, the techno economic clearance by Central Electricity Authority (CEA) was accorded for 330 MW (55 MW x 6 units) in 2000. UPSEB considered seeking World Bank assistance and accordingly project planning was started. The project could not however be implemented due to lack of financial support.

In 1994, the Government of Uttar Pradesh decided to execute the project with private sector participation and signed MOU with Duncans Industries Ltd. This company along with the Synergics Hydro Asia (SHA) formed Duncans North Hydro Power Company Ltd. (DNHPCL). As a first step, PPA was signed with the UP State Electricity Board in 1998 and Detailed Project Report was prepared in 2000. Based on the DPR, CEA approved the project (Techno Economic Clearance) on 14/06/2000 at total project cost 17,228.0 million INR. In 2001, Uttar Pradesh was divided in two states and project area came in new state region Uttarakhand (then Uttaranchal). The project could not move ahead due to reason beyond the control of DNHPCL and the Tata Power Company Ltd. (TPC) took over the project. The name of the company was then changed to the Alaknanda Hydro power Company Ltd. in April 2004 under the ownership of Tata Power Company Ltd. and that was a Special Purpose Vehicle Company. There was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits. The company also continued exploratory work and invited civil works and E&M (engineering and Mechanical) works bids. At this stage the following pre project activities have been completed:

1.Power Purchase Agreement was signed and DPR was completed in 2000



2. Techno Economic Clearance was obtained from Central Electricity Authority in 2000

3. Quotations were invited for Civil and Electro Mechanical works in 2004

TATA Power Company Ltd decided to divest its stake in 330 MW hydro project SPV Alaknanda because it wanted to focus mega power projects.

In November 2005, GVK Group took over Alaknanda Hydro Power Company Ltd. and the process was concluded through a share purchase agreement on 12th Nov 2005. After this, the restated implementation agreement between the AHPCL, Government of Uttarakhand and Government of Uttar Pradesh was signed on 10/02/2006. The UPERC approved the revised cost vide its order dated 7th June 2006 and approved the revised PPA. on 28th June 2006.

Subsequent to this, detailed project implementation plan was drawn up and first project activity implementation work (construction of a diversion tunnel) was awarded on 26/04/2006 and started only after the financial closure in 2007

Based on the above assessment, the validation team hereby confirms that the proposed CDM project activity complies with the requirements of EB49 Annex 22.

3.7.2 Identification of alternatives (107)

Project participant has provided the steps for identification of the alternative scenario in section B.5 of the PDD. It is stated in Para 105 of VVM manual ver. 1.2, that the PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. ACM 0002 ver. 12.1.0 prescribes the baseline scenario for installation of a new grid-connected renewable power plant/unit as follows

“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, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Accordingly, project participant identified 2 possible alternatives to the project activity, viz., project activity without CDM benefits and no project activity and equivalent amount of energy would have been produced by the project grid electricity system through its currently running power



plants and by new capacity addition to the grid i.e. Continuation of current situation.

The methodology ACM 0002 ver. 11 prescribes the baseline scenario and as per Para 105 of VVM ver. 1.2 no further analyses is required. The PP considered two alternatives as described above. The validation team is of the opinion that requirement of identification of alternatives is met as per VVM ver. 1.2.

3.7.3 Investment analysis (114)

Project participant has shown additionality using the investment analysis. The input values for investment analysis have been validated as follows:

Parameter, Value	Source of information	Validation justification
Cost of project INR 20134 Million	Note of the Project Cost and Financial Viability to Board of Directors at the time of decision making, 13 /11/2005(Ref 14)	Project cost is taken from note on project cost and financial viability presented to the Board of Directors Meeting on 13/11/2005 (Section II). This cost is applicable at the time of decision making which is in line with para 6 of EB 51 Annex 58. The cost approved by UPERC in its order dated 7 th June 2006 is INR 19778.70 million. Sensitivity of $\pm 10\%$ is carried on project cost which covers cost approved by UPERC. Also, UPERC in its order dated 10 th Dec 2008 has approved a revised cost of INR 26977 million which is much higher than the cost considered at the time of decision making.
Project Capacity, 330 MW	Design capacity approved by CEA – TEC, 20/04/2000 and CEA extension dated 20 th July 2005, CEA approval dated, PPA dated 28 th June 2008.	Design capacity is approved by CEA vide its letter dated 14 th June 2000. The same capacity is also stated in revised CEA approval dated. The same capacity is also stated in restated PPA dated 28 th June 2006. The CEA approval is in line with para 6 of EB 51 Annex 58. The same capacity of generator is stated as per contract to Bharat Heavy Electricals Ltd (Ref xx).



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Parameter, Value	Source of information	Validation justification
Design primary energy- 1397 GWh and secondary energy-117 Gwh(amounting to a total of 1514 Gwh PLF of 52.30%)	Design energy is as per CEA letter dated 20 th April 2000. The same design primary energy is stated in UPERC order dated 8 th May 2006 and PPA signed with UPPCL on 28 th June 2006.	Design energy is as per CEA letter dated 20 th April 2000. The same design primary energy is stated in UPERC order dated 8 th May 2006 and PPA signed with UPPCL on 28 th June 2006. This is in line with para 6 of EB 51 Annex 58. As per EB 48 Annex 11, PLF can be taken as PLF provided to Government while applying the project activity for implementation approval. The project was approved by CEA, Government of India. Thus PLF is in line with EB 48 Annex 11.
Auxiliary Consumption + 0.5 %	As per UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. pg.31	The auxiliary consumption is taken from UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. pg.31. UPERC regulations are the official source of information and is applicable at the time of decision making and hence it is considered reasonable. This is also in line with para 6 of EB 51 Annex 58.
Transformation Loss, 0.5%	As per UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. pg.32	The transformation loss is taken from UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. pg.32. UPERC regulations are the official source of information and is applicable at the time of decision making and hence it is considered reasonable. This is also in line with para 6 of EB 51 Annex 58.
O&M cost, 1.5% of capital cost	UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004.	O&M cost is taken from UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. UPERC regulations are the official source of information and are applicable at the time of decision making and hence it is considered reasonable. This is also in line with para 6 of EB 51 Annex 58.



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Parameter, Value	Source of information	Validation justification
Escalation in O&M cost, 4% per year.	UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004.	Escalation in O&M cost is taken from UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. UPERC regulations are the official source of information and are applicable at the time of decision making and hence it is considered reasonable. This is also in line with para 6 of EB 51 Annex 58.
Tariff, INR 2.80 per kWh for first year and calculated as per UPERC regulations for other years	Tariff is calculated as per UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004	Tariff is calculated as per UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. The tariff calculations have been checked by financial expert and it is calculated as per procedures laid down in UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. The same procedure for calculation of tariff is also stated in PPA dated 28 th June 2006. The project participant will be filing application for tariff every year after commissioning of project. Accordingly sensitivity of $\pm 10\%$ on tariff is carried out.
Debt: equity ratio, 80: 20	Note of Project Cost and Financial Viability to Board of Directors at the time of decision making, 13 /11/2005	Debt equity ratio is taken from Note on project cost and financial viability considered at the time of decision making. This document has been verified. This debt equity ratio is applicable at the time of decision making which is in line with para 6 of EB 51 Annex 58. The same debt equity ratio is also stated in common Rupee Loan agreement between project participant and consortium of Banks dated 3 rd August 2007.
Interest on term loan, 10.5%	Reserve Bank of India PLR	Project participant has not availed any recent debt. As per EB 51 Annex 58, prevailing commercial interest rate has been taken from Reserve Bank of India PLR. This is applicable at the time of decision making and it is in line with para 6 of EB 51 Annex 58.
Interest rate on Working capital, 10.5%	Reserve Bank of India PLR	Prevailing commercial interest rate has been taken from Reserve Bank of India PLR. This is applicable at the time of decision making and it is in line with para 6 of EB 51 Annex 58.



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Parameter, Value	Source of information	Validation justification
Free power to Uttarakhand at 12%	Project Implementation Agreement for Srinagar Hydro Electric Project dt. 28/08/1998 (pg. 18) Ref xx, Restated implementation agreement dated 10 th Feb 2006	As per the implementation agreement of the project participant with Uttar Pradesh/Uttaranchal Government dated 28 th Oct 1998, 12% of the power will be given free to the state government. The same provision of supply of free power is also stated in restated implementation agreement dated 10 th Feb 2006. The validation accepted this as it is as per agreement with state government and it is applicable at the time of decision making which is in line with para 6 of EB 51 annex 58.
Baseline EF, 0.8034 tCO ₂ /MWh for NEWNE Grid	CEA database ver 4	CEAdatabase is an official source of data and hence acceptable. EF is determined ex-ante. CEA database version 4 is used which is applicable at the time of submitting PDD for validation. This is in line with Tools to calculate emission factor for an electricity system.

The validation team has verified the assumptions as above and observed that they are correct and based on conservative values that are applicable at the time of investment decision making. The input values are validated as per para 111 of VVM ver 1.2 and input values are as per para 6 of EB 51 Annex 58 as explained above.

The project cost has been taken from Note of the Project Cost and Financial Viability to Board of Directors and it is applicable at the time of decision making. This is in line with para 6 of Guidelines on the Assessment of Investment Analysis (EB 51, Annex 58). The cost as approved by UPERC in the final order (Petition No 327/2006) is at INR 19778.70million. This cost is slightly lesser (about 3%) than the cost projected at the time of decision making. Also, UPERC in its order dated 10th Dec 2008 has approved a revised cost of INR 26977 million which is much higher than the cost considered at the time of decision making. Sensitivity of $\pm 10\%$ is carried on project cost which covers cost approved by UPERC in 2006. . O&M cost and escalation in O&M cost have been taken from UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004 which is applicable at the time of decision making. This is in line with para 6 of Guidelines on the Assessment of Investment Analysis (EB 51, Annex 58). Sensitivity of $\pm 10\%$ is carried on O&M cost.



Tariff is calculated as per UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. The tariff calculations have been checked by financial expert and it is calculated as per procedures laid down in UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004. The project participant will be filing application for tariff every year after commissioning of project. Accordingly sensitivity of $\pm 10\%$ on tariff is carried out.

The design energy of 1514 GWh is approved by CEA-TEC, which amounts to PLF of 52.30%. This has been verified by the validation team. This is in line with para 6 of EB 51 Annex 58. As per EB 48 Annex 11, Sensitivity analysis was carried on $\pm 10\%$ variation in energy generation.

Depreciation Rate and Income Tax have been checked by financial expert. Provision of 80IA has also been considered by project participant. The financial expert and the validation team hereby confirm that project participant has applied all the statutory levies and taxes as per the then valid Income Tax rules.

There is no financial support or any subsidies available from the Government of India or the states of Uttarakhand or Uttar Pradesh for this project.

The validation team validated the assumptions as above and observed that they are correct. The financial expert verified the IRR calculations and observed them to be correct. The financial expert and the validation team hereby confirm that project participant has calculated IRR correctly.

The project participant had used Weighted Average Cost of Capital (WACC) as benchmark. Weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Weighted average cost of capital (WACC) is calculated as weighted average cost of equity and cost of debt. Cost of debt is taken as Prime Lending rate (PLR) published by Reserve Bank of India (RBI) at the time of investment. The average RBI PLR is taken as 10.5%. Expected cost of equity in the project type calculated based on the CAPM (Capital Asset Pricing Model) using publicly available financial data. The required rate of return on equity is calculated as risk free rate plus beta times risk premium where beta represents the risk involved in the project type. This method is in accordance with the additionality tool as benchmark is based on official publicly available financial data (based on parameters that are standard in market) and hence the above approach for calculating benchmark was accepted.



Further, each of the parameters used in calculation of WACC was checked for their appropriateness. Risk free rate has been sourced from weighted average yield from Central Government Securities published by Reserve Bank of India (RBI) and hence acceptable. Risk free rate is taken as 6.11% as per weighted average yield from Central Government Securities published by RBI. Risk premium is calculated as the difference between the market return and weighted average yield from Central Government Securities. The market return is arrived at based on the BSE Sensex data. The market return based on BSE Sensex data is 17.86% and the risk premium is 11.75%.

As explained in the PDD, the beta value for the project type was based on Beta values of power generating companies in India and listed on the stock exchange at the time of investment decision. The source of beta value is Bloomberg data. Average of beta values of 5 companies is taken as 1.31. Since beta is of power generating companies and sourced from Bloomberg and hence was accepted.

The validation team also verified the correctness and authenticity of the data used for the calculation of WACC and found them to be correct and publicly available. This is also in line with the guidelines for benchmark selection stipulated in the Guidance on the Assessment of Investment Analysis, EB 41 Annex 45 and hence the validation team has accepted the same.

Sources to IRR input values were not provided and salvage value was not considered in initial IRR calculations and CAR 4 was raised. CAR 4 was closed after IRR calculations were revised and salvage value was considered. Beta values considered in earlier benchmark calculations was not correct and CAR 7 was raised. Beta value was revised and it was taken from Bloomberg and other parameters in benchmark were revised and they are applicable at the time of decision making and CAR 7 was closed.

The validation team confirms that the post tax project IRR for the project activity works out to be 9.70 % which is lower than the benchmark of 11.33%. The IRR with CDM benefits works out to be 11.93 %.

This shows that project without CDM revenues is not financially viable. The validation team, based on the assessment result by the financial expert engaged, hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct.

As per the guidance to assessment of investment analysis, the sensitivity for all parameters constituting more than 20% of either total project costs or total project revenues have been analysed, subject to reasonable variation. Although project cost, tariff and generation are linked, sensitivity is carried out varying each parameter independently of each other. Sensitivity was carried out on project cost, power generation, tariff, as well as operation and maintenance cost. The validation team agrees with these parameters are in line with para 17 of EB 51 annex 58. The results are summarized below.

Parameter	Project IRR values (%)	
	+10%	-10%
Project cost	8.63	10.95
Tariff	11.25	8.06
Generation	10.93	8.37
O&M cost	9.50	9.89

The project IRR is less than the benchmark. It can be observed that even with increased generation, increased tariff, decreased project cost and decreased operation and maintenance cost the project IRR is below the benchmark of 11.33%. The validation team, based on the assessment result by the financial expert engaged, hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct. Thus the project without CDM revenues is not financially viable.

The validation team, based on the assessment result by the financial expert engaged, hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct.

3.7.4 Barrier analysis (118)

In the webhosted PDD, project participant had described barriers like seismicity and landslides. The validation team was of the opinion that these are not prohibitive and CAR 8 were raised. The CAR 8 was closed when these barriers was removed from the revised PDD.



3.7.5 Common practice analysis (121)

The region selected for common practice analysis is Uttarakhand (Erst while Uttaranchal) and Uttar Pradesh. The project activity is located in Uttarakhand and 88% of the power generated will be sold to UPPCL as per PPA and 12% free power will be given to Uttarkhand state. The tariff is calculated as per Uttar Pradesh Electricity Regulatory Commission (UPERC) (Terms and Conditions of Generation Tariff) Regulations, 2004. Different states have different regulatory regimes in terms of clearances and approvals so projects implemented only in the state of Uttarakhand and Uttar Pradesh is considered for common practice analysis as the project is located in Uttarakhand and power is sold to Uttar Pradesh. The validation team agrees with this as Tools for demonstration for assessment of additionality states that projects are considered similar if they take place in comparable environment with respect to regulatory framework etc. Thus the projects implemented only in the state of Uttarakhand and Uttar pradesh are considered for common practice analysis.

Project participants has provided the following key information for common practice analysis –

1. Only run-of-river projects have been considered as the project activity is run-of-the river. Dam based projects reduce the risk of unavailability of water and serve as storage areas, thereby ensuring a continuous supply of water to generate power, hence are not similar to run-of-river hydro power projects which face a higher hydrological risk. This ensures that the comparison is done with projects of similar scale and nature.
2. A comparison is made to similar run-of-the river projects with capacity range varying from $\pm 50\%$ of the project capacity. There is no cap on the upper limit on capacity. The validation team considers this range as appropriate as it also mentioned in one of the review questions of EB (similar projects assuming a capacity range of $\pm 50\%$) as given in the link provided in PDD (<http://cdm.unfccc.int/Projects/DB/DNV-CUK1218186379.41/Review/3TJH2TJ7RN4X5NST0Q7FFB1EQVMEKT/display>). Also validation team is of the opinion that a range of $\pm 50\%$ can be considered similar to the project activity. The validation team has undertaken the analysis of existence of similar projects from the CEA data base (Version 4) as explained below in the last paragraph.
3. Projects which are under the CDM pipeline are excluded.



4. Projects implemented post the start date of project activity have not been considered.
5. Projects conceptualized prior to 2003 are excluded from analysis. Electricity Act came in India in 2003 and CERC tariff regulations were published in 2004 and UPERC tariff regulations, 2004 were published in 2005. The project participant has defined regulatory regime pre and post 2003. In the period prior to 2003, tariffs were considered on project to project basis and later on when UPERC tariff regulations came into force, it detailed procedure to compute tariff based on capital cost, capacity charges, depreciation etc. The validation team agrees with this because, the regulatory and tariff policies in India for hydro electric projects vary from state to state and also the regulatory and tariff policy has undergone change after 2003 Therefore, the regulatory environment would be comparable only at the state level and for investment in the same regulatory regimes (i.e. excluding projects prior to 2003).
6. Hydro electric power projects implemented by Government and public sector are not considered as they can access debt at lower rates and they have additional drivers for implementing the project such as ensuring reliable supply of electricity to community.

The project participant has identified list of projects from CEA database ver 4 published by Central Electricity Authority, Government of India. The validation team checked the data and the same was accepted as it is an official source of data. Only one project namely Vishnu Prayag HEP was found in Uttarakhand, however it was commissioned in 2006 which is after decision date and also it is under VCS. No similar projects were observed in Uttarakhand and Uttar Pradesh. The project participant also analysed all private sector in the entire country. Two projects were observed. Bhira project in Maharashtra, which is outside the geographical domain is selected for common practice analysis, because the capacity of the project falls within +/- 50 % size criteria as mentioned above (Based on EB review question on capacity) ,however was commissioned in 1999 which is prior to 2003 and hence falls in a different regulatory regime. Moreover the project is not a run of the river project. Hence this was excluded from analysis. Another project BASPA Stage II was observed in Himachal Pradesh. BASPA Stage II is availing carbon credits under VCS. Hence the same was excluded from analysis.



From the above discussions, it is concluded that similar activities are not widely observed and commonly carried out and hence not a common practice in the region. .

The validation team hereby confirms that the proposed CDM project activity is not common practice.

This in line with the additionality tool, the project participants has demonstrated additionality by investment analysis and common practice analysis. The project IRR without CDM revenues is less than the benchmark. It can be observed that even with increased generation, increased tariff, decreased project cost and decreased operation and maintenance cost the project IRR is below the benchmark of 11.33%.. Thus, the project without CDM revenues is not financially viable. Also as demonstrated above, the project is not a common practice in the region. Thus, the validation team is of the opinion that the project is additional.

The validation team therefore is of the opinion that the project activity is proven to be additional.

3.8 Monitoring plan (124)

The Project activity uses the approved consolidated monitoring methodology ACM0002 ver 12.1.0 The applicability of the methodology have been discussed in Section 3.6.1 above.

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

1. In line with the methodology, project participant has included monitoring of $EG_{\text{facility},y}$, which is the net electricity supplied by project activity to grid.
2. $EF_{\text{grid,CM},y}$ is fixed ex-ante which is in line with Tools to calculate emission factor for an electricity system.
3. Project participant has provided for electronic archiving of all the monitored data. There will be 100% data capture by meters. This is stated in the PDD.
4. Project participant has provided for keeping the data for 2 years after the end of the last crediting period or the last issuance of CER whichever is later.
5. The monitoring plan includes requirements for calibration. The main meter and check meter will be calibrated annually.



6. The net electricity exported to grid will be cross-checked with records of sold electricity as required by methodology.
7. The monitoring frequency for $EG_{\text{facility}, y}$ matches with that of the methodology, viz. continuous measurement and monthly recording.
8. Under section B.7.2 of the PDD, project participant has provided additional procedures to deal with data uncertainty etc. In case of failure of main meter, readings will be taken from check meters.

The project activity is under construction. During the site visit, the validation team interacted with the concerned officials at the site and at their office. The monitoring system proposed to be implemented was explained by concerned officials of the project activity (AHPCL). Four transmission lines from the outgoing feeder will supply power to the substation at the Switchyard of Shrinagar Power House, 400kV substation at Nehtaur and PTCUL substation at Shrinagar. There will be four outgoing feeders on 400 KV side at the sub station. Two feeders will be going to UPPCL (Uttar Pradesh) and two feeders to PTCUL (Uttarakhand). There will be a main and check meter at each feeder. In addition there will be summation meters one each for two feeders going to Uttar Pradesh and PTCUL (Uttarakhand). The power from the substation will be supplied to National Regional Load Despatch Centre (NRLDC) and finally to the NEWNE Grid. The reading at the meters on the transmission lines will record the electricity exported to the grid and these reading will be used to calculate emission reductions.

Monitoring plan was not correctly described in the PDD and it was not complete. Accordingly CAR 11&12 were raised. Monitoring plan was revised and complete details were added and CAR 11&12 were then closed. Validation team confirms that the description now correctly represents the metering system available at the project activity sites.

Based on the interactions with project participant during the site visit regarding monitoring aspects, the validation team therefore is of the opinion that the project participant (AHPCL) is capable of implementing the monitoring plan in the context of the project activity.

The validation team hereby confirms that the project participants will be able to implement the monitoring plan. Based on the line diagrams and project schematic provided, the validation team confirms that monitoring arrangements described in the monitoring plan are feasible within the ambit of the project design.

The validation team hereby confirms that the monitoring plan complies with the requirements of the methodology.



3.9 Sustainable development (127)

The host Party's DNA confirmed the contribution of the project to the sustainable development of the host Party. Refer to item 3.1 of this report. The project participant has described contribution to sustainable developed as per four indicators of sustainable development stipulated by Ministry of Environment & Forests (DNA for India). The validation team is of the opinion that the description is adequate as the project will lead to sustainable development through employment generation, generation of clean energy and reducing the electricity supply-demand gap. The project provides employment to local people as was confirmed by meeting with stakeholders during site visit.

The host Party's DNA (India) confirmed the contribution of the project to the sustainable development in India. Please refer to section 3.1 of this report. Project participants AHPCL has provided a copy of this letter (No 4/25/2008-CCC dated 06/02/ 2009) to the validation team. The validation team confirmed the authenticity of the approval from the website of DNA of India*. The website confirms approval by DNA under project ID no. 1159-08. The letter of approval of DNA of India was provided by project participant to the validation team. The letter of approval of DNA of India clearly states that India has ratified the Kyoto Protocol and the approval is for voluntary participation in CDM project activity. Also, the letter of approval of DNA of India states and confirms that project activity contributes to sustainable development in India.

3.10 Local stakeholder consultation (130)

The steps taken to assess the adequacy of the local stakeholder consultation are described below.

The local stakeholder consultation meeting to discuss stakeholder concerns on the proposed hydro project of AHPCL was held on 31/07/2007. AHPCL had invited the local villagers, Block Development Officer of Shrinagar Taluka, employees of Shrinagar Hydro Electric Power Project, government officials for this meeting. The stakeholders had been duly informed of the consultation meeting through written invitation letters two weeks in advance. This has been verified by the validation team during the site visit.

The records related to the stakeholder consultation viz. invitation letters, acknowledgement of invitation letters, list of participants, minutes of meeting were provided by the project participants. Project participant has provided sufficient and transparent information on the process of local



stakeholder consultation in the PDD. The information indicates that project participant provided sufficient time to stakeholders for providing comments.

The validation team interviewed a few of the local stakeholders during site visit.

The stakeholders have expressed their satisfaction on the measures taken by the management of the project activity. There were no negative comments by stakeholders. Stakeholders confirmed the process of stakeholder invitation and meeting which is stated in PDD.

Several initiatives have been planned such as rehabilitation of the PAF (Project Affected families)

AHPCL has prepared plan for R&R (Rehabilitation and Resettlement) for the relocation of the people affected by the project activity, which has been verified by the validation team. The R&R Plan has been approved by the Government of Uttaranchal. /Ref 21/

The project activity does not have transboundary impacts as the river originates and meets the sea in the host country.

As explained above, the validation team is of the opinion that the project participant has appropriately implemented necessary and appropriate measures. The stakeholders also confirmed the process of invitation as described in the PDD. The validation team hereby confirms that the process of local stakeholder consultation is observed to be adequate.

3.11 Environmental impacts (133)

The project participant have undertaken an analysis of environmental impacts as required by the host Party in India, and environmental impact assessment in accordance with procedures as required by the host Party in India.

According to Indian regulations, it is mandatory to carry out an Environmental Impact Assessment (EIA) for all large scale hydroelectric projects. EIA was carried out by project participant and it was approved by Uttaranchal Government.

Apart from the CEA-TEC approval, the project participant obtained the following approvals for the project activity:



- 1) Environmental Clearance -Ministry of Environment and Forest (MOEF), Government of India, New Delhi
- 2) Approval for Diversion of Forest Land -Ministry of Environment and Forest (MOEF), Government of India, New Delhi
- 3) Approval to establish, operate and maintain project from Uttar Pradesh State Government
- 4) No Objection Letter for Water Use from Uttar Pradesh State Government
- 5) Approval form Central Water Commission (National Committee on Seismic Design Parameters)
- 6) Approval of EIA and R&R Plan from Uttar Pradesh State Government

Copies of these approvals were provided to the validation team by project participant. This project activity has received environmental clearance and the environmental impacts are not significant.

The project participants have undertaken analysis of environmental impacts mainly with respect to various environmental aspects such as land environment and socio-economic environment etc. A well conceived environment management plan has been prepared to mitigate the environmental impacts of project activity.

As explained above, the validation team is of the opinion that environmental impacts due to project activity are sufficiently addressed in Environmental Management Plan

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD using methodology ACM0002 Ver.08 was webhosted on the UNFCCC for global stakeholder's comments as per CDM requirements. The project was webhosted from 14/01/2009 to 12/02/2009.

No comments were received.

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Alaknanda Hydro Power Company Limited Project in India. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up



interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides investment analysis and common practice analysis to determine that the project activity itself is not the baseline scenario.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of investment analysis and common practice analysis demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the latest project design documentation (ver. 5.3) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of 'Run-of-the-river Hydroelectric Power Project in Uttarakhand by Alaknanda Hydro Power Company Limited as CDM project activity.

6 REFERENCES

Category 1 Documents:

Documents that relate directly to the GHG components of the project.

- /1/ Project Design Document Ver -03 dated 19/12/2008 Published for Global Stake holder comment
- /2/ Project Design Document Ver 5.3 dated 22/03/2011
- /3/ Host country Approval Letter No.4/25/2008-CCC dated 06/02/2009
- /4/ Techno Economic Clearance F.No./UP/28/2000-PAC/4723-44dated 14/06/2000 by CEA
- /5/ Transfer of TEC and extension of validity up to 14/06/2005 letter of approval No.2/UP/28/2000-PAC/412-36 dated 14/07/2004 by Central Electricity Authority
- /6/ TEC extension till 14/06/2006 Approval letter No.2/UP/28/2000 -PAC/706-14 dated 20.07.2005
- /7/ Order for approval of PPA dated 08/05/2006 by UPERC, Lucknow
- /8/ Approval for design energy dated No.3/115/99 -PAC/32/6-17 dated 20/04/2000 by CEA, Govt. of India .
- /9/ Petition to UPERC for approval of PPA & revised project cost dated 01/06/2006 & 07/06/2006



- /10/ Restated PPA between UPPCL and AHPCL dated 28/06/2006
- /11/ Final order for approval of final project cost and revised PPA ,UPERC/Secy/D(G)/ S.Ngr/2006-451 dated 07/06/2006
- /12/ Restated Implementation Agreement (RIA) between Govt. of Uttar Pradesh ,Govt.of Uttaranchal , UPPCL and AHPCL dated 10/02/2006
- /13/ Share Purchase Agreement dated 12/11/2005 Between The Tata Power company limited , SHA ,AHPCL and GVK Hydel Pvt Limited
- /14/ Note on Project cost and Financial Viability dated 13/11/2005
- /15/ Board Note dated 13/11/2005 by AHPCL
- /16/ Technical service agreement between M/s.Synergics Hydro Asia Mauritius , M/s.Duncan North Hydro Power Company limited and Tata Power company limited dated 03/10/2003
- /17/ Agreement for sharing of monetary value of carbon credit Between AHPCL and M/s Synergics Hydro Asia Mauritius dated 21/07/2007
- /18/ MOU for appointment of CDM consultant dated 04/01/2007
- /19/ First DOE appointment letter AHPCL/D(PD)/DOE/2007/696 dated 16/08/2007
- /20/ Letter of intent SHEP /DT/Shring/01 dated 26/04/2006
- /21/ Approval of EIA and R&R ,No.302/1X-3Energy/2001 dated 27/07/2001 from Govt. of Uttaranchal.
- /22/ EIA study report Vol.1&2 by Centre for Environment ,Water and Power consultancy ,Govt. of India – May 2001
- /23/ Consent to Establish Approval No 653/Cell/P-1/99-24 by Govt. of Uttar Pradesh dated 05/06/1999
- /24/ Transfer of EIA from Duncans to Alaknanda No.J-12011/6/9-IA.I dated 27/03/2006 by Ministry of environment and forest , Govt. of India .
- /25/ Additional cost approval by UPERC based on petition No. 585/08 dated 10 /12/ 2008
- /26/ CER Excel Spread sheet
- /27/ IRR working Excel spread sheet (Include Sensitivity calculation)
- /28/ Name Change letter TC/S-21/19443/2016 dated 26/04/2004

Category 2 Documents:

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

- /29/ Guidelines for completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodologies (CDM-NM) ver 7, EB 41, Annex 12.
- /30/ ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.1
- /31/ Additionality tool - Tool for the demonstration and assessment of additionality, version 05.2, EB 39, Annex 10.
- /32/ Tool to calculate emission factor for an electricity system ver 2
- /33/ CEA CO2 baseline database for Indian power sector version 4 dated Oct 2008
- /34/ Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion"



(Version 02), EB 41, Annex 11

/35/ EIA Notification (S.O 1533) dated 14th September 2006

/36/ Guidelines for formulation of detailed project reports for hydroelectric schemes, their acceptance and examination for concurrence of central Electricity Authority dated Jan 2007

**Persons interviewed:**

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

- /1/ Mr. M .Shivaji – Director – Project Development ,Srinagar Project Site
- /2/ Mr. BikshaPathy- Chief Civil Engineer - AHPCL
- /3/ B.K. Uniyal – Local Contractor for AHPCL
- /4/ Mr. Rama Murthy – Director – Finance
- /5/ Mr. Srinivas Sistla- GM- Finance -AHPCL
- /6/ Mr.G. Madhava reddy-GM – Finance- AHPCL
- /7/ Mr. Anil Kumar Sanga – Manager – Finance
- /8/ Mr.A.Issac George- Chief Financial Officer-GVK
- /9/ Mr.RamRao- Director – Technical
- /10/ Mr. Pravin Jadav- CDM consultant – General Carbon
- /11/ Mr .Ravindra Silwal- Villager and Project affected family member
- /12/ Mr.Makan Singh Rawdji- Ex – Chief of Village &Samthi Member
- /13/ Mr.OmprakashBhat- Ex-Pradan- Gram Panchayat- Ghodsali Village

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7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Mr. H B Muralidhar Bureau Veritas Certification, Team Leader

Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. Graduate in Electrical Engineering with 25 years of experience power generation and distribution related fields as well as in management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 50 CDM Projects

Mr.S.Ajesh Kumar, Bureau Veritas Certification, Team Member.

Mechanical Engineer with over all 16 years of experience in various industries related to Auto components, Medium Engineering, Powder Metal Processing, Ceramics and Electronic hardware manufacturing. His industrial experience includes enterprise management, Green field projects related to manufacturing line installation and commissioning for process industries and engineering industries. He is the lead auditor for Environment management system, Quality management system and Occupational health and safety management system and his auditing experience spans for 3 year with BVCL. He has undergone intensive training on Clean Development Mechanism and was trained as Lead Verifier for CDM in the year 2008 and working as a lead Verifier for validation and verification of CDM/VCS projects

CA.G.N.Jayaram (Financial Specialist)

Jayaram & Karthikeyan Associates

Services from Jayaram & Karthikeyan Associates were delivered by Mr. Jayaram, who is a Chartered Accountant. He possesses in depth understanding and experience in Assurance services relating to financial appraisals & analyses, those specially related to CDM projects. He is empanelled with other DOE's for scrutinizing the financial additionality aspects of the CDM projects handled by them and expressing opinions on the financials of the project participant. Has has appraised over 50 CDM projects for financial additionality on behalf of CDM validators of repute.

Mr. Sanjay Patankar Bureau Veritas Certification, Internal Technical Reviewer

Educational qualifications: B.E. (Mech.) M.E. (Mech.)

He has over 20 years of experience in engineering manufacturing industry covering various functions like enterprise management, product design, engineering, tool & die design, improvements in the production shop, quality assurance & control and systems planning and implementation, including ISO 9001 based quality management systems. He is working for the last 4years in Bureau Veritas Certification (India) Private Ltd. as Lead Auditor for ISO 9001,



14001 and OHSAS 18001 standards/specifications. He has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of CDM project activities.

Ms. Sapna S Pednekar

Bureau Veritas Certification, Climate Change Verifier

Ms Sapna Pednekar is a Post Graduate in Environmental Science from University of Pune, India. She has total Industrial work experience of 5 years in the field of environmental studies of which 2 years experience is in the field of CDM and VCS consulting. She is working in Bureau Veritas Certification (India) Pvt. Ltd. for last 10 months and has undergone training related to Clean Development Mechanism and is currently involved in various validation and verification of CDM/ VCS project activities.

Mr. Sandeep Lele , Bureau Veritas Certification, Team Leader

Mr. Sandeep Lele hold Bachelors degree in Civil Engineering and Masters degree in Environmental Engineering. He has more than 15 years of exp in the Environmental Engineering field. He has worked in system certification over last 8 yrs. Sandeep Lele was trained as a Lead verifier for Clean Development Mechanism and Joint Implementation in March 2003. Since then he has lead and guided the team of CDM verifiers in the CDM assignments in India for numerous validation and verification projects. His qualification, industrial experience and experience in CDM facilitate him to assess renewable energy projects in general and hydro projects in particular to sufficient degree

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APPENDIX A: CDM PROJECT VALIDATION PROTOCOL

Table 1 Validation requirements based on the Validation and Verification Manual V 01.2 (EB55 Annex 3) and methodology ACM0002 version 12.1 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources”

CHECKLIST QUESTION	Ref.	§	comments		Draft Concl	Final Concl
1. Approval			COUNTRY A (Country A)	COUNTRY B (Country B)		
1.1. Have all Parties involved approved the project activity?	VVM	44	Yes , DNA approval from the Party is available to the PP for the project activity.	Not applicable as India is the only Party	OK	OK
1.2. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? State the country.	VVM	45	India is the Party where the project site is located.		OK	OK
1.3. Does the letter of approval from DNA of each Party confirm that : A . The Party is a Party of the Kyoto Protocol B . The participation is voluntary C . In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country D . Refers to the precise proposed CDM project activity title in the PDD being submitted for registration	VVM	45	HCA approval available in the Title Name as mentioned in the PDD Application for HCA approval submitted by the PP	Web hosted PP Ver-03 dated 19/12/2008 indicate Cantor Fitzgerald as the PP , how ever the latest PDD Ver 3.1 submitted as response to the DVR not indicating the above said PP ,Pls explain for the removal of PP from the project activity	CAR-17	OK
1.4. Is(are) the letter(s) of approval unconditional with respect to (1.2) above?	VVM	46	No ,		CAR-10	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			HCA approval for the Host DNA indicate that 2% of CDM revenue to be used for sustainable development and an monitorable action plan to be developed for this purpose be included in the PDD. However the same is not evidenced in the PDD.		
1.5. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA)? If there is doubt with respect to (1.2) above, was verified with the DNA that the letter of approval is valid for the proposed CDM project activity under validation?	VVM	47	Letter of approval is valid for the project and No doubt exist on the approval	OK	OK
2. Participation					
2.1. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Section A3 of PDD indicate PP as Alaknanda Hydro Power company Limited an public entity	OK	OK
2.2. Is the information in tabular form of section A.3 consistent with the contact details provided in Annex 1 of the PDD?	VVM	52	Yes, Annex –1 in agreement with section A3 of PDD	OK	OK
2.3. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation?	VVM	52	HCA approval available from the Host party DNA	OK	OK
2.4. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	A 3 of PDD indicate Alaknanda Hydro Power Company Limited, India as Host country	OK	OK
2.5. Has the approval of participation issued from the relevant DNA?	VVM	53	YES	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
3. Project design document					
3.1. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	PDD (CDM-SSC-PDD) Version –03 Effect from 28 July 2006 Used for this Project	OK	OK
3.2. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56			
3.3. In CDM-PDD section A.1 -Title of project -Current version number and date of document	EB 41	Ann 12	Run –of- the- river Hydroelectric power project in Uttarakhand by Alaknanda Hydro Power Company Limited	OK	OK
3.4. In CDM-PDD section A.2, are following provided?	EB 41	Ann 12			
3.4.1. A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, project scenario and baseline scenario	EB 41 - VVM	Ann 12 - 58 59 60	1. The project description does not describe the terms capacity index, annual fixed charges, capacity charges, the way the tariff is determined for the project, primary and secondary energy, etc. which are essential features to have a clear and complete understanding of the project activity. 2. The project activity description also does not provide information on the historical development including number of changes of hands before GVK took over the project activity. Some of the components like penstock are not included in the project description.	CAR-01	OK
3.4.2. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63			
3.4.3. Explanation on how the GHG emission reductions effected.	EB 41	Ann 12	CHG emission reduction achieved due to Use of run of water in river Alaknanda to	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			generate electricity which is GHG emission free		
3.4.4. The PP's views on the contribution of project activity to sustainable development	EB 41	Ann 12	Approval of the project activity by Indian DNA towards voluntary participation is considered as meeting the above criteria. Under section A.2, the PDD states benefits like better roads, telecommunication facilities, reduction in NO _x / SO ₂ emissions, etc. Project participant should explain how the project activity provides these to the local community.	OK CL-01	OK OK
3.5. In CDM-PDD section A.3, are following provided in the tabular format? List of project participants and parties Identification of Host Party Indication whether the Party wishes to be considered as project participant	EB 41 VVM	Ann 12 51,52	Provided, Here, India is the host country and UK is the additional party and it is mentioned that the host country and the additional party does not wish to be a project participant. Refer to CAR 17 above	--	OK
3.6. In CDM-PDD section A.4.1, are following provided?	EB 41	Ann 12			
3.6.1. Physical description, location, host party(ies) and address as required	EB 41	Ann 12	Host Party – India Region/ State – Uttarakhand City / Town / Dist–Krithinagar Tehsil, Tehri Dist	OK	OK
3.6.2. Detailed physical location with unique identification of the project activity (e.g. Longitude/latitude)	EB 41	Ann 12	Longitude – 78 ° 50' 01" E Latitude – 30° 14' 20" N Project site 26 KM down stream of Rudraprayag Confluence The location coordinates stated in the	 CL-03	 OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			section A.4.1.4 of the PDD relate to a place NE of Pauri while the location is shown as SE of Pauri. PDD should correctly identify the location and coordinates.		
3.7. In CDM-PDD section A.4.2, is the list of categories of project activities provided?	EB 41	Ann 12	Under section A.4.2 of the PDD, the category of the project activity is identified Sector – Energy Scope No –01 Sectoral scope – Energy Industry (Renewable / Non renewable)	OK	OK
3.8. In CDM-PDD section A.4.3, are following provided?	EB 41	Ann 12			
3.8.1. A description of how environmentally safe and sound technology, and know-how, is transferred to the Host Party(ies)	EB 41	Ann 12	PDD claims the project is environmentally safe and sound with the adaptation of all the newest techniques available for hydro power generation and no technology transfer involved from outside the host country	OK	OK
3.8.2. Further explanation of purpose of project activity with scenario existing prior to the start of project, scope or present activities and the baseline scenario	EB 41	Ann 12	3. Yes, Purpose of the project briefly explained in the section, Pre project and post project scenario explained in the section A –2 Refer to CAR -01 above	--	OK
3.8.3. List and arrangement of the main manufacturing/production technologies, systems and equipments involved	EB 41	Ann 12	The rated capacities of turbines and generators as stated in the supplier's [BHEL] technical manual are 84.5 MW and 82.5 MW respectively. This document also states that these equipment have a continuous overload capacity of 10%, These details are not stated in the project	CL -02	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			description nor accounted in the project activity baseline determination and additionality demonstration, etc.		
3.8.4. The emissions sources and GHGs involved	EB 41	Ann 12	Emission Sources & GHG explained	OK	OK
3.9. In CDM-PDD section A.4.4, is the estimation of emission reductions provided as requested in a tabular format?	EB 41	Ann 12	Yes	OK	OK
3.10. In CDM-PDD section A.4.5, is information regarding public funding provided?	EB 41	Ann 12	No Public Funding/ Grand form ODA Involved, The project financing funds are met by equity and debt from PP and banks / Financial firms respectively	OK	OK
3.11. In CDM-PDD section (Baseline identification)	EB 41	Ann 12			
3.11.1. The approved methodology and version number	EB 41 VVM	Ann 12 69	ACM 0002 Ver - 08 Sectoral Scope - 01 EB 44, Revised PDD Ver 3.1 indicate the applied meth is ACM002 Ver -11	OK	OK
3.11.2. Are the following applicability conditions of the methodology ACM0002 met?	VVM	70			
3.11.2.1. This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plants); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	ACM	0002	<p>4. The applicability conditions of the methodology are not analysed in line with the guideline document for PDD completion.</p> <p>1. Under section B.2, the PDD does not state clearly whether the reservoir is existing or new.</p> <p>2. The applicability of tools used in the PDD is not assessed.</p> <p>3. The spatial extent of the project activity</p>	CAR -02	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			<p>is not described in line with the methodology.</p> <p>4. The flow diagram is not provided for the project boundary.</p> <p>The sketch of the boundary includes river which is incorrect</p>		
3.11.2.2. The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	ACM	0002	Installation of a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant).	OK	OK
3.11.2.3. In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter $EGPJ,y$): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.			Not Applicable	OK	OK
<p>3.11.2.4. In case of hydro power plants, one of the following conditions must apply:</p> <p>- The project activity is implemented in an existing</p>	ACM	0002	The proposed project activity implementation will result in the formation of a new reservoir having power density of	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
<p>reservoir, with no change in the volume of reservoir; or</p> <ul style="list-style-type: none"> - 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; or - 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. 			<p>101.85 W/m².</p> <ul style="list-style-type: none"> - Reservoir surface area at full at full reservoir level: 324 hectares⁴ - Total installed capacity: 330,000,000 W (i.e. approved capacity = 330 MW) 		
<p>3.11.2.5. The methodology is not applicable to the following conditions. Please confirm</p> <ul style="list-style-type: none"> • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity • Biomass fired power plants; • Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m². 	ACM	0002	<p>The project activity installs a new hydro power plant and does not involve fuel switch or biomass fired power plant. The project activity plant results in a new reservoir having power density > 4 W/m². Thus, this condition is not applicable.</p>	OK	OK
<p>3.12. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?</p>	VVM	77 78	<p>Refer to CAR -02 above</p>	—	OK
<p>3.13. In CDM-PDD section B.3, are following provided?</p> <p>(a) Description of all sources and gases included in the project boundary in the table</p> <p>(b) A flow diagram of the project boundary physically delineating the project activity with all equipments, systems and flows of mass and energy etc</p>	VVM EB 41	79 Ann 12	<p>The flow diagram is not provided for the project boundary</p> <p>Ref. to CAR -02 above</p>	--	OK
<p>3.14. Is an explanation how the most plausible baseline scenario is identified in accordance with the selected</p>	EB 41	Ann	<p>5. The methodology has a predefined</p>	CL-04	OK

⁴ EIA report page 19. (1 hectare = 10⁴ m²)

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baseline methodology is provided in CDM-PDD section B.4?		12	baseline scenario Project participant should clarify why – 1. Baseline alternatives are identified? 2. the identified alternatives are not considered in the investment analysis? some of the alternatives are eliminated only because they have higher emission		
3.14.1. If the project activity is the install a new grid-connected renewable power plant/unit (Greenfield plant), is the baseline scenario identified appropriately in accordance with the ACM0002 Ver.11?	ACM	0002	In the absence of the Project activity the most plausible scenario is the equivalent power supplied to the grid by the grid existing electricity generation mix .	OK	OK
3.14.2. If the project activity is a capacity addition to existing grid-connected renewable power plant/unit, is the baseline scenario identified appropriately in accordance with the ACM0002 Ver.11 and the point of time at which the generation facility would likely be replaced or retrofitted (DATE Baseline Retrofit) defined reasonably?	ACM	0002	Not Applicable	OK	OK
3.14.3. If the project activity is the retrofit or replacement of existing grid-connected renewable power plant/unit, is the baseline scenario identified following step-wise procedure in accordance with the ACM0002 Ver.11?	ACM	0002	Not Applicable	OK	OK
3.14.3.1. Are the realistic and credible alternative baseline scenarios for power generation appropriately identified following the Step 1 of the “Combined tool to identify the baseline scenario and demonstrate additionality”? (Step 1)	ACM	0002	Not Applicable		
3.14.3.2. Are the realistic and credible alternative baseline scenarios i.e. P1, P2 and P3 appropriately applied Barrier analysis following the Step 2 of the “Combined tool to identify the baseline scenario and demonstrate additionality”? (Step 2)	ACM	0002	Not Applicable		
3.14.3.3. If more than one alternative is remaining after Step 2, is Investment analysis appropriately applied (apply an Investment Comparison as per step 3 of the	ACM	0002	Not Applicable		

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
“Combined tool to identify the baseline scenario and demonstrate additionality” or a Benchmark Analysis as per step 2b of the “Tool for the demonstration and assessment of additionality”? (Step 3)					
3.15. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	80	In the absence of the Project activity the most plausible scenario is the equivalent power supplied to the grid by the grid existing electricity generation mix.	Ok	OK
3.16. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	81	Methodology provide pre defined base line for new grid-connected renewable power plant/unit,	OK	OK
3.17. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionality” and the “Combined tool to identify the baseline scenario and demonstrate additionality”) to establish the baseline scenario?	VVM	81	Yes , Following tools required and identified in the PDD Tool for the Demonstration and assessment of additionality, Tool to calculate the emission factor for an electricity system, Tool to calculate project or leakage CO2 emissions from fossil fuel combustion”	OK	OK
3.18. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	82	No , Methodology provide predefined base line scenario for new green field project .	OK	OK
3.19. Are the documents and sources referred to in the PDD correctly quoted and interpreted And are they cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	83	NA	--	--
3.20. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	84	NA	--	--
3.21. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in	VVM	84	NA , as the methodology provide Pre-determined baseline scenario	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
accordance with the guidance by the CDM Executive Board?					
3.22. 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 proposed CDM project activity?	VVM	85	Not Applicable	--	--
3.23. In CDM-PDD section B.5, are following provided?	EB 41	Ann 12			
3.23.1. Explanation and Justification of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology	EB 41	Ann 12	Yes	OK	OK
3.23.2. Has the latest version of the "Tool for the demonstration and assessment of additionality" been used?	ACM	0002	Yes	OK	OK
3.23.3. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation	EB 41	Ann 12	6. AHPCL project is implemented long ago before take over by present promotes viz. group and is the only activity of that company prior to acquisition. The decision to invest in AHPCL project therefore by the GVK promoters. Project participant should clarify how the decision of AHPCL board under GVK management as against the promoters (SPV) themselves is relevant in terms of serious CDM consideration.	CL-05	OK
3.24. In CDM-PDD section B.6.1, are following provided? (Algorithms and/or formulae used to determine emission reductions)	EB 41	Ann 12			
3.24.1. Explanation how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission	EB 41	Ann 12			

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reductions are applied to the proposed project activity					
3.24.2. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology?	VVM	88	1. The condition for use of simple OM is to check the data for 5 years with respect to low cost must run projects. The data is checked only for 3 years. 2. The reference to the source of information for this data is not provided in the PDD. 3. The grid EF should be calculated with respect to the date of requesting validation. 4. The CM EF is not defined in section B.6.1 The use of EFres is not defined in the PDD.	CAR-03	OK
3.24.2.1.Are the Project emissions appropriately calculated?	ACM	0002	No project emission as the result of the project since the power density is more than 4 W/m2.	OK	OK
3.24.2.2.Are the Baseline emissions appropriately calculated specifically for (a)greenfield plants or (b) retrofit and replacements or (c) capacity additions?	ACM	0002	Base line emission calculated as per the Ver 11 of ACM -002	OK	OK
3.24.2.3.Are the Leakage appropriately calculated?	ACM	0002			
3.24.2.4.Are the Emission reductions appropriately calculated?	ACM	0002	Under section B.6.3, only the primary energy is considered for CERs. Project participant should explain why the secondary energy is not considered for the CER estimate	CL-08	OK
3.24.3. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	89	Yes, $BE_y = EGPJ_y \times EF_{grid\ CM\ y}$ Is applied as the power plant is a new green field facility as confirmed during site visit	OK	OK
3.24.4. Does the methodology provide for selection	VVM	89	NO	OK	OK

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between different options for equations or parameters?					
3.24.5. If yes, has adequate justification been provided and correct equations and parameters been used in accordance with the methodology selected?	VVM	89	NA	OK	OK
3.24.6. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	89	YES	OK	OK
3.24.7. Appropriate and correct?	VVM	90	YES	OK	OK
3.24.8. Applicable to the proposed CDM project activity?	VVM	90	YES	OK	OK
3.24.9. Resulting in a conservative estimate of the emission reductions?	VVM	90	CM of Northern grid is used to calculate the Emission factor which is taken from the CEA Ver -03, as per the revised PDD ver 3.1 PP to justify the why Ver-04 which available at the time of validation request is not used (refer earlier CAR -03 –point No 3)	CAR -03 Cont.,	OK
3.24.10. A compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period and that are available when validation is undertaken	EB 41	Ann 12	Surface area of the reservoir is monitored annually to calculate the power density of the reservoir as per PDD , Compilation of Emission factor is provided in the PDD Data Complied and available up front for validation as per the Methodology.	OK	OK
3.24.11. Explanation and justification for the choice of the source of data	EB 41	Ann 12	All data is taken from the appropriate source , All data taken are from the publically available data source (CEA data)	OK	OK
3.24.12. Clear and transparent references or additional documentation in Annex 3	EB 41	Ann 12	Yes Documented in Annex -3	OK	OK

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3.24.13. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results	EB 41	Ann 12	Available to the required level	OK	OK
3.25. In CDM-PDD section B.6.3, are following provided?	EB 41	Ann 12			
3.25.1. A transparent ex ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology	EB 41	Ann 12	Adequately explained in the PDD sec 6.3 as per the methodology	OK	OK
3.25.2. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 41	Ann 12	PDD sufficiently explained all the equation and is easily understandable by the reader	OK	OK
3.25.3. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 41	Ann 12	Provided , Annex –3 have data information related to CEA as per Ver – 03 dated Oct –2008 No spread sheet attached (Refer CAR -03)	--	OK
3.26. In CDM-PDD section B.6.4 are, the results of the ex ante estimation of emission reductions for all years of the crediting period, provided in a tabular format?	EB 41	Ann 12	Yes , provided	OK	OK
3.27. In CDM-PDD section B.7.1, are following provided?	EB 41	Ann 12			
3.27.1. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 41	Ann 12	Yes Explained in the PDD	OK	OK
3.27.2. For each parameter the following below information, using the table provided:	EB 41	Ann 12			
3.27.2.1. The source(s) of data that will be actually used	EB 41	Ann	All data will be used from production log /	OK	OK

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for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred.		12	Metering and third party survey. .		
3.27.2.2. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, how the measurement is undertaken: (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment.	EB 41	Ann 12	Monitoring Frequency and Quality Test method indicated for metering devices in the B.7.2 not in agreement with the PPA Clause 4.7 and 4.8 The QA / QC procedures do not state the frequency of calibration and other monitoring parameters according to the guideline for completion of the PDD.	CAR-12	OK
3.28. In CDM-PDD section B.7.2, is a detailed description of the monitoring plan provided?	EB 41	Ann 12			
3.29. Are all data monitored as per monitoring methodology?	ACM	0002	7. Under section B.7.1, PDD does not make use of official records for monitoring of the electricity supplied to the grid. Some of the parameters like CapPJ required by the methodology are not included in the monitoring plan	CAR-11	OK
3.30. Are all data collected as part of monitoring archived electronically and kept at least for 2 years after the end of the last crediting period?	ACM	0002	YES , Provided in the PDD	OK	OK
3.31. In CDM-PDD section B.8, are following provided?	EB 41	Ann 12			
3.31.1. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 41	Ann 12	12/04/2010 as per PDD ver 3.1	OK	OK
3.31.2. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and	EB 41	Ann 12	AHPCL and their CDM Advisors General Carbon (www.general-carbon.com)	OK	OK

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monitoring methodology to the project activity					
3.31.3. Indication if the person/entity is also a project participant listed in Annex 1	EB 41	Ann 12	AHPCL is the project participant	OK	OK
3.32. In CDM-PDD section C.1.1, are following provided?	EB 41	Ann 12	Real action date quoted is the date of financial closure of the project i.e. 03/08/2007 Chronology of events reveals that some actions were taken before this, viz. construction of diversion tunnel, EPC contract dated 17/07/2007, etc. The start date of the project activity is not correctly stated.	CL-09	OK
3.32.1. Is the project's starting date clearly defined and evidenced?	EB 41	Ann 12	Yes , 26/04/2006 – (LOI for the construction of diversion tunnel) 8. The implementation agreement [page number 1] dated 1998 implies that the project life is 50 years and the CERC 2004 order indicates a useful life of 35 years. Project participant should explain why the life of the project activity is considered as 30 years.	OK CAR-13	 OK
3.33. In CDM-PDD section D., are the conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the Host Party, if environmental impacts are considered significant by the project participants or the Host, provided?	EB 41	Ann 12	PDD not state whether the EIA study conducted for the project is shared and discussed in the stake holder meeting	CL-10	OK
3.34. In CDM-PDD section E.1, are the following provided?	EB 41	Ann 12			
3.34.1. The process by which comments by local stakeholders have been invited and compiled. An invitation for	EB 41	Ann 12	The PDD states that the stakeholders were send invitations 15 days in advance	CL-11	OK

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comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted.			of the meeting. However, the copies of the invitation letters provided to the validation team indicate that the letters were dated only 8 – 10 days in advance and not 15 days.		
3.34.2. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures.	EB 41	Ann 12	YES		
3.34.3. The local stakeholder process has been, completed before submitting the proposed project activity to the DOE for validation.	EB 41	Ann 12	Section E 1 of PDD describes the stakeholder consultation process that was conducted on 04.08.2007 near the project site. Personal Invitation sent to the participant	OK	OK
3.35. In CDM-PDD section E.2, are following provided?	EB 41	Ann 12			
3.35.1. Identification of local stakeholders that have made comments	EB 41	Ann 12	YES	OK	OK
3.35.2. A summary of these comments.	EB 41	Ann 12	Yes, all the comments summarized in tabular form	OK	OK
3.36. In CDM-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 41	Ann 12	No adverse comments as reported in PDD. Nevertheless all the query raised by the stake holder are answered	OK	OK
3.37. In CDM-PDD Annex 1, are the following provided?	EB 41	Ann 12			
3.37.1. Contact information of project participants	EB 41	Ann 12	YES	OK	OK
3.37.2. For each organization listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 41	Ann 12	YES	OK	OK
3.38. In CDM-PDD Annex 2, is information from Parties	EB 41	Ann	Provided	OK	OK

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included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties provided?		12			
3.39. In CDM-PDD Annex 3, is the background information used in the application of the baseline methodology provided?	EB 41	Ann 12	Provided Refer Earlier CAR -03 A	--	OK
3.40. In CDM-PDD Annex 4, is the background information used in the application of the monitoring methodology provided?	EB 41	Ann 12	Not provided , refer to Sec B7.1 & B 7.2	--	OK
4. Additionality of a project activity					
4.1. General checklist for additionality					
4.1.1. Does the CDM-PDD state the latest version of the additionality tool being used?	VVM	94	Yes , Tool for the Demonstration and assessment of additionality Ver 5.2	OK	OK
4.1.2. Were the steps taken of the "Tool for the Demonstration and Assessment of Additionality" to assess additionality used:	EB 39	Ann 10			
4.1.3. Have the following alternatives been included while defining alternatives as per sub-step 1a?	EB 39	Ann 10	NA, as the pre determined baseline is provided by the meth	OK	OK
4.1.3.1. The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Refer above		
4.1.3.2. Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services or services with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;	EB 39	Ann 10	Refer above	OK	OK

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4.1.3.3. If applicable, continuation of the current situation (no project activity or other alternatives undertaken).	EB 39	Ann 10	NA	OK	OK
4.1.4. Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly?	EB 39	Ann 10	Step 1 is not required to be followed to identify possible alternatives as the applicable baseline is already give as per the applicable methodology	OK	OK
4.1.5. Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution, and outcome of Step 1.b is thus concluded?	EB 39	Ann 10	NA	OK	OK
4.1.6. If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country?	EB 39	Ann 10	NA	OK	OK
4.1.7. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	PP selected step -2 Investment analysis	OK	OK
4.1.8. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10	All the sub steps carried out	OK	OK
4.1.9. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10	Yes	OK	OK
4.1.9.1. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I).	EB 39	Ann 10	NA		
4.1.9.2. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	YES, Investment Bench Mark analysis considered	OK	OK

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4.1.10. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.	EB 39	Ann 10	NA	OK	OK
4.1.11. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	EB 39	Ann 10	9. NA	--	--

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.12. Has the most suitable benchmark for the project been determined in Sub-step 2b?	EB 39	Ann 10	<p>10. In determination of the benchmark,</p> <p>1. The time over which the input values and data are considered is not stated</p> <p>2. Such time duration should be suitable to arrive at a benchmark that can be considered applicable to the project activity with stated operating life</p> <p>3. Beta factor value is not considered for a longer short time frame of all the power companies in general power sector and not specific to the type of the project activity.</p> <p>Beta value of 1 is used for arriving at the WACC based benchmark calculation. Basis of using this value is not explained in the PDD.</p> <p>Under CAPM Beta factor for Tata Power is taken for the Investment analysis. Project participant should clarify how the Beta factor selected is relevant to the type of the project activity.</p>	CAR-7	OK
4.1.12.1. Which source shall the discount rates and benchmarks derived from? Please specify benchmark and justify.	EB 39	Ann 10	BM is calculated using /WACC /CAPM model and is 15.08%	OK	OK
4.1.13. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10			

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4.1.13.1. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.	EB 39	Ann 10	NA	--	--
4.1.13.2. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	Provided in the PDD , no separate annexure provided	OK	OK
4.1.13.3. Justify and/or cite assumptions.	EB 39	Ann 10	NA	--	--
4.1.13.4. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	NA	--	--
4.1.13.5. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	NA	--	--
4.1.13.6. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	NA	--	--
4.1.13.7. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 41	Ann 45			

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4.1.13.8. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?	EB 41	Ann 45	11. IRR reflect the life of the project which is 35 years 12. 13. 14.	OK	OK
4.1.13.9. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 41	Ann 45	15. For the investment analysis, 1. PDD does not provide reference to the source of input values / data [e.g. design energy, secondary energy, free power, CER price, etc.] 2. The cost of the project activity of INR 20689 Million considered for IRR calculation is not conservative with respect to the cost information available from the project documentation on the date of decision. 16. 3. Capacity index of 90% considered is as per PPA of AHPCL, which came after the decision.	CAR-04	OK

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4.1.13.10. Do the project participants justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?	EB 41	Ann 45	4. Salvage value and escalation in cost are not considered for the land 5. Dividend and dividend tax are accounted in the IRR calculation, which is not a correct practice for the CDM purpose. 6. Transmission losses should not be account over and above the PLF 7. The project IRR does not change in the spreadsheet with increase in PLF. 8. Base PLF is considered as 90% while earlier in the PDD it is stated to be less	CAR-04 Cont,..	OK
4.1.13.11. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessme nt period?	EB 41	Ann 45	9. Accelerated depreciation benefits are not considered 10. Capital subsidy available to hydropower projects is not accounted in the investment analysis		
4.1.14.Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	17. 11. The capital cost incurred prior to the take over of the project activity by GVK is not reflected as a recoverable value of the assets [refer point no. 7 of Annex 45 to EB 41] 12. The debt and equity provide different rates of revenue. The sensitivity is not done for debt:equity ratio.	CAR-04	OK
4.1.15.Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	YES	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.16. Have the barrier analysis been conducted?	EB 39	Ann 10	PDD does not provide reference to the supporting evidences towards the barriers discussed. Nor are the barriers proven to be prohibitive	CAR-8	OK
4.1.17. In step 4: Common practice analysis has all the sub-steps as below followed?	EB 39	Ann 10			
4.1.17.1. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	EB 39	Ann 10	<p>The common practice analysis does not identify similar projects and also does not distinguish project activity from them to demonstrate why these projects were attractive without CDM benefits.</p> <p>Further, M/s. Tata Power Limited had taken over the project in 2003, without CDM. The PDD does not identify the differences, which made the project attractive to M/s. Tata Power and not attractive to AHPCL.</p>	CAR-09	OK
4.1.17.2. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring?	EB 39	Ann 10			
4.1.18. Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10			
4.2. Prior consideration of the clean development mechanism					
4.2.1. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	96	Yes , project start date is prior to the webhosting for Stake holder comment	OK	OK
4.2.2. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	96	PDD does not demonstrate with evidence that the management of AHPCL was aware of CDM at the time of decision to implement the project activity.	CL-06	OK
4.2.3. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project	VVM	97	YES		

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
activity is the earliest date at which either the implementation or construction or real action of a project activity begins”?					
4.2.4. Does the project activity require construction, retrofit or other modifications?	VVM	97	Project activity require construction of a new DAM along with the power plant	OK	OK
4.2.5. Is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	97	YES		
4.2.6. Is it a new project activity (project activities with starting date on or after 02 August 2008) or an existing project activity (project activities with a start date before 02 August 2008)?	VVM	98	Project activity started On 26/04/2006	OK	OK
4.2.7. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the Executive Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status?	VVM	99	NA	--	--
4.2.8. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	100			
4.2.8.1. Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project,	VVM	100	18. Board of AHPCL under the GVK group management have recorded decision on 13/11/2005 to implement the project activity stating that project is financially not viable as the returns are low. It further states that the project will be viable with ‘the realisation of carbon credits’. However, the criteria applied for viability of the project activity is not demonstrated.	CAR-05	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			19. Further, the share transfer agreement was executed with M/s Tata Power one day prior to this date. Apparently, the carbon credits / CDM consideration was only after the first ever decision to implement the project activity [on or before the date of share transfer].		
4.2.8.2. Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation	VVM	100	<p>20. The management personnel interviewed have confirmed that the management considers a project viable only if the 'equity IRR' post tax and dividends is minimum 15%. The original board minutes available in the register record that the 'project IRR' is expected to be 9.0% with out the CER revenue . In spite of this, the board decided to implement the project.</p> <p>21. PP to confirm and Justify the bench mark used to evaluate the project for its financial viability and to demonstrate how the CDM revenue alleviate the investment barrier faced by the Project</p> <p>22. Moreover the management personnel referred to equity IRR for the project , How ever the additionality argument is entirely based on Project IRR , PP to clarify whether the SPV consider equity IRR or project IRR for financial viability</p> <p>Further, it is observed that the text wording</p>	CAR-06	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			in the original records is not in agreement with the extracts provided to the validation team pertaining to the name of the directors. PP to clarify the same why the difference is?		
4.3. Identification of alternatives					
4.3.1. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	103	NA as the methodology indicate predetermined baseline	OK	OK
4.3.2. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	103	NA	--	--
4.3.3. Does the list of alternatives given in the PDD ensure that: <ul style="list-style-type: none"> One of the options that the project activity is undertaken without being registered as a proposed CDM project activity The list contains all plausible alternatives The alternatives comply with all applicable and enforced legislation 	VVM	104	NA	--	--
4.4. Investment analysis					
4.4.1. If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity , does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	106	NA	--	--
4.4.1.1. The most economically or financially attractive alternative?	VVM	106	NA , alternatives need not be analyzed , as the Meth give default baseline for the project .	OK	OK
4.4.1.2. Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	107	PDD give details that the project is economically not viable with out the CDM revenue .	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.4.2. Was this shown by one of the following approaches?	VVM	107			
4.4.2.1. Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income.	VVM	108	NA	--	--
4.4.2.2. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	108	NA	--	--
4.4.2.3. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	108	Financial return of the project with out CDM revenue is about 9.0% IRR which would be insufficient to justify the required investment.	OK	OK
4.4.3. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	109	PDD not clearly indicating the PLF for the project activity and the the PLF is not stated as per the guidelines (EB 48 annex -11)	CAR -14	OK
4.4.4. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur and the likelihood of these conditions assessed?	VVM	109	1)PDD not clear whether all the parameter which affect the project return is considered for sensitivity (Say PLF and secondary energy revenue) 2)PDD Ver 3.1 incomplete on the sensitivity carried out for project cost 3)Project IRR with 90 % capacity index indicate 12 % return How ever the financial working and the board resolution indicate appx 9.0% IRR , pls clarify.	CAR -15	OK
4.4.5. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by: 7 Assessing previous investment decisions by the project participants involved, and 8 Determining whether the same benchmark has been	VVM	110	This Project is the first SPV of the PP, Hence previous benchmark not available for comparison	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
applied, or 9 Determining if there are verifiable circumstances that have led to a change in the benchmark					
4.4.6. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities?	VVM	111	Project Initial approval by the CEA Techno economic committee indicate an cost of `17000 Million which validity is extended till 14/06/2006, However the due diligence carried out by board before go a head decision for the project with CDM revenue indicate an revised estimate of ` 20134 Million PP to provide the basis for the revised estimate (Comparison with `17000 Million vis-à-vis ` 20134 or justify `20134), Pls note the revised cost estimate approved dated 07/06/2006 tentatively post board decision by the UPERC indicate a capital cost of ` 19877 Million	CAR-16	OK
4.4.7. If yes: (EB38 para.54)	VVM	111			
4.4.7.1. Has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	111	FSR is been the basis of decision for the Project activity . (refer Car 16)	--	OK
4.4.7.2. Are the values used in the PDD and associated annexes fully consistent with the FSR? If not, was the appropriateness of the values validated?	VVM	111	Refer CAR -16 above	--	OK
4.4.7.3. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking	VVM	111	Project viability note Cross verified with the UPERC revised cost approval	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?					
4.5. Barrier analysis					
4.5.1. Has barrier analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	113	NA	--	---
4.5.2. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that: A] Prevent the implementation of this type of proposed CDM project activity? B] Do not prevent the implementation of at least one of the alternatives?	VVM	113	NA	--	--
4.6. Common practice analysis					
4.6.1. Is this a large-scale or first-of-its kind small-scale project activity?	VVM	117	Large scale project activity	OK	OK
4.6.2. Was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	117	Refer CAR -09 above		
4.6.3. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be trans-national /global.)	VVM	118	Refer CAR -09 above		
4.6.4. Was a region other than the entire host country chosen?	VVM	118	NO	OK	OK
4.6.5. If yes, was the explanation why this region is more appropriate assessed?	VVM	118	NA	--	--
4.6.6. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or	VVM	118	Refer CAR -09 above	--	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
practice), other than CDM project activities, and have been undertaken in the defined region?					
4.6.7. Are similar and operational projects, other than CDM project activities, already “widely observed and commonly carried out” in the defined region?	VVM	118	NO	OK	OK
4.6.8. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	118	--	--	--
5. Monitoring plan					
5.1. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	120	Yes	OK	OK
5.2. Does the monitoring plan contain all necessary parameters?	VVM	121	YES	OK	OK
5.3. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	121	Yes	OK	OK
5.4. Are the means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	VVM	121	The project is under implementation and the Validator feel the explanation provided in the PDD ver 3.1 will be sufficient to carry out the emission reduction accurately expost .	OK	OK
6. Sustainable development					
6.1. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	124	Letter of approval from the Host country DNA available	OK	OK
6.2. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	124			
7. Local stakeholder consultation					
7.1. Were local stakeholders (public, including individuals,	VVM	126	Local stake holder meeting conducted	OK	OK

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?			and all the affected communities invited by the PP		
7.2. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	127	YES	OK	OK
7.3. Is the summary of the comments received as provided in the PDD complete?	VVM	127	YES	OK	OK
7.4. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	127	YES	OK	OK
8. Environmental impacts					
8.1. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	129	EIA conducted by the state authority	OK	OK
8.2. Have the project participants undertaken an analysis of environmental impacts?	VVM	130	Yes	OK	OK
8.3. Does the host Party require an environmental impact assessment?	VVM	130	Yes	OK	OK
8.4. If yes, have the environmental impact assessment approved by local government?	VVM	130	Approved and an R & R devised and approved by the authority	OK	OK

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>CAR 1</p> <p>The project description does not describe the terms capacity index, annual fixed charges, capacity charges, the way the tariff is determined for the project, primary and secondary energy, etc. which are essential features to have a clear and complete understanding of the project activity.</p> <p>The project activity description also does not provide information on the historical development including number of changes of hands before GVK took over the project activity.</p> <p>Some of the components like penstock are not included in the project description</p>		<p>The Section B.5 of PDD is revised to describe the terms of PPA, relevant for tariff calculation and understanding of the project.</p> <p>Historical development for the project development is now included under the sub heading – “Project history”.....- in Section A.2</p> <p>Penstock and other project components are discussed in Section A.4.3 of the PDD – in the part preceding the Figure depicting “Schematic representation of the project activity”.</p>	<p>The project description has been revised in revised PDD. Details on tariff is calculated is included in revised PDD. Historical development of project is also included in revised PDD. The tariff calculation procedures have been checked by validation team and historical development has been checked by the supporting documents provided. Details on penstock and other components have been included in revised PDD. Hence the CAR is closed.</p>
<p>CAR-2</p> <p>The applicability conditions of the methodology are not analysed in line with the guideline document for PDD completion. Under section B.2, the PDD does not state clearly whether the reservoir is existing or new.</p>		<p>1. The reservoir is new. Hence the modified sentence - in column “project activity condition” and second row - in the table under section B2, now reads as follows, in the revised PDD:</p> <p>The proposed project activity is a run-off-the river hydro project. It involves a diversion weir and thus implementation will result in the formation of a new</p>	<p>The project participant has clarified that the project is run-of the river project with a pondage and a diversion weir. The applicability conditions tools and methodology are detailed in revised PDD and the same was found to be correct by validation team. Spatial extent of the project is stated in revised PDD. Project boundary is revised in</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>The applicability of tools used in the PDD is not assessed.</p> <p>The spatial extent of the project activity is not described in line with the methodology.</p> <p>The flow diagram is not provided for the project boundary.</p> <p>The sketch of the boundary includes river which is incorrect</p>		<p>pondage for 4 hours of operations only at full load 330 MW design capacity.</p> <p>2. Applicability Conditions: The Baseline Methodology and Tools applicability conditions are included in the revised PDD. New paragraphs have been introduced in the B.2. section of the revised PDD – to assess and justify use of the two Tools.</p> <p>3. Para 2 under section B3 has now been inserted to directly state that “Spatial extent of project activity include the Alaknanda hydro power plant with all its components and all the power plants connected to the NEWNE grid.”</p> <p>4. A flow diagram is now provided in Figure: “Depiction of project boundary” under section B.3. in the revised PDD.</p> <p>5. The project boundary sketch in section B.3. has been revised to exclude the river.</p>	<p>PDD and found to be correct. Hence the CAR is closed.</p>
<p>CAR3</p> <p>The condition for use of simple OM is to check the data for 5 years with respect to low cost must run projects.</p>		<p>1. In the revised PDD, at section B.6.1, data for five years has been incorporated. The para following the table has also been modified. With the above changes, data for</p>	<p>Data for 5 years in incorporated for low cost must run projects in revised PDD. Reference for source</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>The data is checked only for 3 years</p> <p>The reference to the source of information for this data is not provided in the PDD.</p> <p>The grid EF should be calculated with respect to the date of requesting validation.</p> <p>The CM EF is not defined in section B.6.1</p> <p>The use of EFres is not defined in the PDD</p>		<p>5 years is now counted in establishing that the share of low cost must run projects is less than 50%. Therefore, condition for use of simple OM is established.</p> <p>2. This is corrected now. The references are incorporated alongside the caption for the two tables under section B.6.1.</p> <p>3. The grid EF under “Baseline Calculation” sub-head in section B.6.1 is “CO₂ Baseline Database for the Indian Power Sector – Central Electricity Authority (Version 4.0)” - latest available at the time of requesting validation.</p> <p>4. The CM EF is now defined in the Section B.6.1</p> <p>5. This is corrected now. EFres is defined in the revised PDD, under Section B.6.1, sub-head “Project Emissions” sub-point (a).</p>	<p>of this data is also provided in revised PDD. CEA database version 4 is used in revised PDD which is applicable at the time of requesting validation. EFcm and Ef res are defines in revised PDD. Since the above mentioned corrections have been incorporated in revised PDD, Hence the CAR is closed.</p>
<p>CAR 4</p> <p>For the investment analysis,</p> <p>PDD does not provide reference to the source of input values / data [e.g. design energy, secondary energy, free power, CER price, etc.]</p> <p>The cost of the project activity of INR 20689 Million considered for IRR calculation is not conservative with respect to the cost information available from the</p>		<p>1. The references (available at investment decision) are provided now for the input values/ data in the table within sub-step 2c of Investment Analysis under Section B.5 and financial analysis.</p> <p>2. The web hosted PDD for GSC referred project cost INR 20689 Million as per the actual financial closure (please refer common loan agreement). In response to CAR 4.1 above, the inputs were changed to those available at investment decision as per the Guidance (EB 51, Annex 58, para 6).</p>	<p>References of sources to input values in investment analysis have been provided. The same have been checked by the validation team. The cost is taken as INR 20134 million based on note of project and financial viability which was considered at the time of Board approval. The cot approved by UPERC is INR 199778.7 million which is 2% less than the cost considered at the time of decision.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>project documentation on the date of decision.</p> <p>Capacity index of 90% considered is as per PPA of AHPCL, which came after the decision.</p> <p>Salvage value and escalation in cost are not considered for the land</p>		<p>The project cost estimates were done before the investment decision by the Board and evidences are provided to the DOE. Based on CEA's TEC in 2000, project cost 17,000 million INR is appropriately escalated considering new commissioning schedule to 20,134 million INR. INR in a detailed 'Note of Project Cost and Financial Viability' presented to the Board of Directors at the time of decision making, 13/11/2005. The minutes of the Board of Directors for investment decision also mention project cost about 20,000 million (2,000 Crore is mentioned in Board approval). An undertaking is also given by the Company Secretary of AHPCL that this Note was part of the documents presented to the Board of Directors for the meeting on 13/11/2005. Thus, this project cost value is used for the investment analysis and a sensitivity of $\pm 10\%$ is also studied. This sensitivity range covers the actual project cost approved within eight months of investment decision (which in fact is $< 2\%$ of the estimates used. Also, the project cost today (INR 26,977 million) is 34% higher than that used for the investment analysis and hence may be considered conservative.</p> <p>3. The capacity index of 90% was a known value before the decision. UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004; pg. 31 (Copy submitted to the DOE)</p>	<p>Sensitivity of $\pm 10\%$ is carried out on project cost which covers cost approved by UPERC. The actual cost as on date is INR 26977 million which is much higher than cost considered at the time of decision. Thus the cost considered at the time of decision is conservative and hence was accepted by the validation team. Capacity index of 90% is taken from UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004 which is applicable at the time of decision. Salvage value has been considered in IRR analysis and the same has been checked by financial expert. Dividend and dividend tax have been removed from IRR calculations. Project participant has clarified that they have considered transformation loss as UPERC tariff guidelines which are applicable at the time of decision. Sensitivity has been carried out on energy generation (which is PLF) and IRR changes on change in generation and IRR has been revised. Project participant has clarified that PLF is not 90% but capacity index is 90%. Project participant has also clarified that accelerated depreciation is not applicable for hydro project and no</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>Dividend and dividend tax are accounted in the IRR calculation, which is not a correct practice for the CDM purpose.</p> <p>Transmission losses should not be account over and above the PLF.</p> <p>The project IRR does not change in the spreadsheet with increase in PLF.</p>		<p>4. Salvage value of the project and land cost are considered as revenue in the revised financial analysis (refer IIRF sheet, row 10). The land cost is not escalated as the project may have to be sold to state Government at the end of PPA term based on terms at that time.</p> <p>5. The financial model is revised to rectify taxation wherein Dividend and dividend tax are removed.</p> <p>6. 'Transmission losses' was a typographical mistake and stands for 'transformation losses'. The PLF is estimated based on the generation at turbine. The net power available to the grid would be lower on account of auxiliary consumption (0.5% as per UPERC tariff guidelines, 2004 Page 31) and transformation losses occurring due to stepping up of voltage from generation voltage to transmission voltage (0.5% as per UPERC guidelines, Page 32). There is no Transmission loss in the financial analysis and the calculations are modified as per.</p> <p>7. The project activity has a CERC approved Design energy (CEA letter dt. 20/04/2000 – primary energy =1397 + secondary energy = 117 GWh) based on a detailed hydrology study. The PP has studied sensitivity analysis independent of other parameter for 'energy generation, capital cost, O&M cost and tariff'. The energy generation sensitivity will cover impact that would have been</p>	<p>capital subsidy has been availed. Validation team accepted the claim based on independent verification of the same using publically available data and govt notification (Refer Notification No. 67/2005dt. 28th February, 2005 w.e.f. 2-4-2005) The debt equity considered at the time of decision and actual debt equity is same. Since the above stated corrections have been made in IRR and revised PDD, hence the CAR is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>Base PLF is considered as 90% while earlier in the PDD it is stated to be less.</p> <p>Accelerated depreciation benefits are not considered</p> <p>Capital subsidy available to hydropower projects is not accounted in the investment analysis.</p> <p>The capital cost incurred prior to the take over of the project activity by GVK is not reflected as a recoverable value of the assets [refer point no. 7 of Annex 45 to EB 41]</p>		<p>achieved by PLF change. Also, the IRR changes by change in each parameter and results are presented in the Section B.5 of the revised PDD.</p> <p>8. It was not base PLF but the capacity index. The PLF is not considered in the calculations as CEA approved design energy is available for the technical and financial calculations. It is the capacity index which is 90% mentioned in the current PDD and this is as per the UPERC Tariff Order 2004.</p> <p>9. Accelerated depreciation benefit is not applicable for this large hydro project. Income Tax exemption (under Section 80IA) will be eligible and is considered.</p> <p>10. The project activity has not availed any capital subsidy. An undertaking of this effect is submitted to the DOE.</p> <p>11. The referred guidance is applicable for project activities that had ceased implementation and restarted with CDM consideration. This project activity implementation was never started before and this guidance is thus not applicable here. Also, the total project cost considered in analysis is exclusive of any earlier expenditure before investment decision.</p> <p>12. The D/E ratio at decision making and at the time of financial closure is same (80/20).</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
The debt and equity provide different rates of revenue. The sensitivity is not done for debt:equity ratio.		Thus, as realistic approach, it is not subjected to sensitivity as it can not vary.	
<p>CAR 5</p> <p>Board of AHPCL under the GVK group management have recorded decision on 13/11/2005 to implement the project activity stating that project is financially not viable as the returns are low. It further states that the project will be viable with 'the realisation of carbon credits'. However, the criteria applied for viability of the project activity is not demonstrated.</p> <p>Further, the share transfer agreement was executed with M/s Tata Power one day prior to this date. Apparently, the carbon credits / CDM consideration was only after the first ever decision to implement the project activity [on or before the date of share transfer].</p>		<p>A power project at the same site was initially conceived by Uttar Pradesh State Electricity Board for 200 MW (40 MW x 5 units) in 1984. After subsequent review, the techno economic clearance by CEA was accorded for 330 MW (55 MW x 6 units) in 1987. The project proponent considered seeking World Bank assistance and accordingly project planning was started. The project planning was not progressing from 1990 due to the paucity of funds.</p> <p>In 1994, the Government of Uttar Pradesh decided to execute the project with private sector participation and signed MOU with Duncans Industries Ltd. This company along with the Synergics Energy Development Inc. (SHA) USA formed Duncans North Hydro Power Company Ltd. (DNHPCL). As a first step, PPA was signed with the UP State Electricity Board in 1998 and Detailed Project Report was prepared in 2000. Based on the DPR, CEA approved the project (Techno Economic Clearance) on 14/06/2000 at total project cost 17,228.0 million INR. In 1999, Uttar Pradesh was divided in two states and project area came in new state region Uttarakhand (then Uttaranchal). The project could not move ahead and the Tata Power Company Ltd. (TPC) took over the project (that was a</p>	<p>The project participant has clarified that there was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits which shows that carbon credit benefits were considered even prior to taking over of the company by current project participant. A agreement was also signed on 21st July 2007 between AHPCL and SHA regarding sharing of carbon credits. The Board resolution clearly documents that project has been implemented taking into account availability of carbon credits. These show that CDM was a decisive factor in the decision to proceed with the project activity. WACC has been used as benchmark to assess financial viability and the WACC calculations have been checked and found to be correct. WACC is a appropriate benchmark for project IRR. Hence the CAR is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
		<p>Special Purpose Vehicle Company) in October 2003. The name of the company was then changed to the Alaknanda Hydro power Company Ltd. in April 2004. The company also continued exploratory work and invited civil works and E&M (engineering and Mechanical) works bids. At this stage the following pre project activities have been completed:</p> <ul style="list-style-type: none"> o Power Purchase Agreement was signed and DPR was completed in 2000 o Techno Economic Clearance was obtained from Central Electricity Authority in 2000 o Quotations were invited for Civil and Electro Mechanical works in 2004 <p>The project has been taken over from Tata Power Company (TPC) by GVK Group on 12/11/2005 through a share transfer agreement. The TPC had in turn acquired the project company from DNHPL in 2003. In the technical agreement between TPC, DNHPCL and SHA (dt. 03/10/2003) there is clear reference to sharing of 'Renewable Energy benefits including carbon credits' arising from the implementation of the project (copy submitted to DOE). This clearly substantiated the fact that CDM and carbon credits sharing has been a part of consideration of the process of acquisition and prior to the investment decision date. A similar agreement is signed by PP and SHA</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
		<p>that also included negotiations on carbon credit sharing (copy submitted to DOE). Thus, CDM consideration was before the investment decision by the PP.</p> <p>The criteria applied for assessing the viability of the project activity was benchmark analysis (project IRR compared with WACC), as presented in the PDD and discussed in the interviews with DOE during the validation site visit.</p>	
<p>CAR 6</p> <p>The management personnel interviewed have confirmed that the management considers a project viable only if the 'equity IRR' post tax and dividends is minimum 15%. The original board minutes available in the register record that the 'project IRR' is expected to be 9.0% without the CER revenue. In spite of this, the board decided to implement the project.</p> <p>PP to confirm and Justify the bench mark used to evaluate the project for its financial viability and to demonstrate how the CDM revenue alleviate the investment barrier faced by the Project</p> <p>Moreover the management personnel referred to equity IRR for the project, How ever the additionality argument is entirely based on Project IRR, PP to clarify whether the SPV consider equity IRR or project</p>		<p>The GVKPIL, the holding company of AHPCL has different hurdle rates for different sectors (with business spanning infrastructure, power, hospitality, etc.). This is an internal benchmark and can not be applied for the project activity as the hydro power project can be implemented by any other developer in the country. As per the Guidance EB 51, Annex 58, Para 14, <i>'Internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC), should only be applied in cases where there is only one possible project developer'</i>.</p> <p>Thus, the benchmark chosen is WACC calculated using CAPM approach. The risk free rate is used from the Government bond rates for long term, the market returns are calculated from longest available market index BSE SENSEX since inception and</p>	<p>The project participant has clarified that benchmark based on equity IRR is an internal benchmark. Since this project can be developed by any developer, internal benchmark can not be applied as per para 13 of EB 51 Annex 58. project participant has used external benchmark WACC based on publicly available data which has been checked by validation team and found to be correct. As per EB 51 Annex 58, WACC is suitable for project IRR. Error in extract provided has been corrected by the project participant. Hence the CAR is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>IRR for financial viability.</p> <p>Further, it is observed that the text wording in the original records is not in agreement with the extracts provided to the validation team pertaining to the name of the directors. PP to clarify the same why the difference is?</p>		<p>beta is chosen as average of five power sector companies.</p> <p>The project activity is coming under a SPV – AHPCL. As the project IRR was very low (even compared to the commercial lending rate for lenders to find it viable) in AHPCL financial analysis, it is recorded as the most important financial indicator in the Minutes of the Board meeting. This was also reiterated in personal interview by the Group CFO and Director.</p> <p>After including the CDM revenue, the project IRR meets the recorded benchmark.</p> <p>PP has chosen project IRR as the suitable financial indicator and compared with WACC. The benchmark is in line with EB 51, Annex 58, para 12 ‘...weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR’. After including the CDM revenue, the project IRR of the project activity crosses the benchmark WACC. Thus, CDM revenue is alleviates the investment barrier.</p> <p>In the extracts of minutes of meeting provided earlier, name of one of the Directors was typed wrong inadvertently. The DOE is now given a copy of original minutes of the meeting and revised extracts of the minutes of the meeting.</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<p>CAR 7</p> <p>In determination of the benchmark,</p> <p>1. The time over which the input values and data are considered is not stated</p> <p>2. Such time duration should be suitable to arrive at a benchmark that can be considered applicable to the project activity with stated operating life</p> <p>3. Beta factor value is not considered for a longer⁵ short time frame of all the power companies in general power sector and not specific to the type of the project activity.</p> <p>4. Beta value of 1 is used for arriving at the WACC based benchmark calculation. Basis of using this value is not explained in the PDD.</p>		<p>1) The Section B.5 of PDD is updated to include 'five years' as the time over which beta is studied. As the project activity entails hydro power generation, the beta to be considered should ideally be of listed hydro power companies. However, since no such companies with hydro power sector only or renewable energy generation portfolio were available at the investment decision, the beta values of following companies in power generation sector have been considered for the five years before the investment decision.</p> <p>BF Utilities, CESC Ltd., Jindal Steel & Power Ltd., Gujarat Industries and Tata Power Ltd. The beta values are taken from Bloomberg web site and snapshots of the screen from website giving these beta values have also been provided to the DOE.</p> <p>The beta values used now are for five year duration. This duration is also justified as appropriate from a reference (quoted from Reuters.com in the section B.5 of the revised PDD).</p> <p>4) beta value used now is the average of five similar companies</p>	<p>Beta value have been taken from Bloomberg and Bloomberg snaps have been provided. The data has been taken for about 5 years which are applicable at the time of decision making. The beta has been taken for power generating companies and hence is accepted by validation team. Risk free rate and other parameters are applicable at the time of decision making. Hence the CAR is closed.</p>
CAR 8			

⁵ <http://www.bu.edu/library/management/tutorials/beta/index.html>

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PDD does not provide reference to the supporting evidences towards the barriers discussed. Nor are the barriers proven to be prohibitive.		As the demonstration of additionality is done using investment barrier, other barriers have been removed from the PDD.	Other barriers have been removed from revise PDD. Hence the CAR is closed.
<p>CAR 9</p> <p>The common practice analysis does not identify similar projects and also does not distinguish project activity from them to demonstrate why these projects were attractive without CDM benefits.</p>		<p>Common practice analysis is elaborated in accordance with "Methodological Tool for Demonstration and Assessment of additionality" Version 05.2.</p> <p>The first step in the tool is to - Analyze other activities 'that are operational and that are similar to the project activity'. To find the similar projects, following criteria are chosen.</p> <p>(1) Technology: projects those are not run-of-the river type are excluded (2) scale: projects not falling in installed capacity within $\pm 50\%$ of the project activity (330 MW) are excluded (3) Comparable environment: projects set up by the Government are also excluded. Tariff of hydro projects is determined by UPERC and Statutory approvals are also given by the state level agencies. Thus, projects commissioned outside UP and Uttarakhand were excluded. (4) time line: project conceptualized and commissioned before the Electricity Act 2003 and CERC Tariff Regulations 2004 are also excluded.</p> <p>With this analysis, there was no similar project found. Hence conservatively, the analysis was extended to the entire country and to the present date. Three similar</p>	<p>Common practice analysis has been revised in PDD. Projects in $\pm 50\%$ of capacity is considered. Nongovernment projects developed by Independent power producers were considered. Tariff is determined by state electricity regulatory commission and approval are also provide by state, hence in order to compare projects in same regulatory environment projects in same state Uttar Pradesh and Uttaranchal were compared and no similar project were observed. For conservativeness, projects in entire country were compared and three similar projects were found. Two project was commissioned before 2003 and before and hence falls in different regulatory regime and one project is under CDM. Hence such projects are not commonly observed and widely carried out and common practice is established.</p>

⁶ http://www.domain-b.com/print_article.aspx?sect=dom&docid=O0s5ORZvV7A%3d

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
Further, M/s. Tata Power Limited had taken over the project in 2003, without CDM. The PDD does not identify the differences, which made the project attractive to M/s. Tata Power and not attractive to AHPCL.		<p>projects were found and two of these were commissioned before 2004 and hence fall in different regulatory regime and one project is under CDM. Thus, there was no similar project commissioned without CDM. Thus, it is concluded that the project activity is not a common practice.</p> <p>M/s Tata Power Company Ltd. (TPC) had done carbon credit sharing agreement in Oct. 2003 with earlier developer (SHA) during project take over (Copy provided to the DOE).</p> <p>Tata Power sold project as quoted in their notification to BSE 'because it wants to focus on mega power projects⁶'.</p>	<p>The project participant has clarified that there was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits which shows that carbon credit benefits were considered even prior to taking over of the company by current project participant. A agreement was also signed on 21st July 2007 between AHPCL and SHA regarding sharing of carbon credits.</p> <p>Since the above stated corrections have been made in revised PDD, hence the CAR is closed.</p>
<p>CAR 10</p> <p>HCA approval for the Host DNA indicate that 2% of CDM revenue to be used for sustainable development and a monitorable action plan to be developed for this purpose be included in the PDD.</p> <p>However the same is not evidenced in the PDD.</p>		A detailed monitorable action plan submitted to NCDMA is presented in the Annex 5 of revised PDD.	Monitorable action plan is incorporated in revised PDD. Hence the CAR is closed.
<p>CAR 11</p> <p>Under section B.7.1, PDD does not make use of official records for monitoring of the electricity supplied to the grid.</p>		The project activity will use the joint meter readings (JMR) signed together by the PP and the power purchaser for monitoring of the net electricity supplied to grid. JMR is an	The project participant has clarified that project activity will use joint meter readings signed by project participant and power purchaser

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Some of the parameters like Cap_{PJ} required by the methodology are not included in the monitoring plan.		<p>official document for the monitoring of electricity supplied to grid. In the PDD, Section B.7.1, EG_y is already referred to have a cross check with 'electricity supply invoice from the grid'. This invoice from grid is an official record of monitoring, given by Uttar Pradesh Power Corporation Ltd. (electricity purchaser). Also, the 12% free power to Uttarakhand will be monitored to get the net electricity supplied to grid.</p> <p>The parameters to be monitored are updated including the parameter Cap_{PJ} as per the applicable methodology.</p>	will be used as official document monitoring electricity supplied to grid. CapPJ has been included in monitoring parameters. Hence the CAR is closed.
<p>CAR12</p> <p>Monitoring Frequency and Quality Test method indicated for metering devices in the B.7.2 not in agreement with the PPA Clause 4.7 and 4.8 The QA / QC procedures do not state the frequency of calibration and other monitoring parameters according to the guideline for completion of the PDD</p>		<p>The PPA clauses 4.7 and 4.8 deal respectively with the calibration frequency of meters and monthly joint meter readings (JMR). Thus, the metering device monitoring frequency and calibration is updated in the PDD in accordance with CDM monitoring methodology (ACM0002). The meters used for the calculation of net electricity supplied to grid will be calibrated annually.</p> <p>The net electricity supplied by the project activity to grid will be cross checked with the payment receipts from the power purchaser (UPPCL). The revised PDD thus now includes detailed QA/QC procedures as per the guidelines for PDD completion.</p>	The detail on calibration, frequency of calibration has been added in revised PDD. Information stated in B7.1 and B7.2 is in line with Guidelines for completing PDD. Hence the CAR is closed.
CAR13		At the investment decision in Nov, 2005,	

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<p>The implementation agreement [page number 1] dated 1998 implies that the project life is 50 years and the CERC 2004 order indicates a useful life of 35 years.</p> <p>Project participant should explain why the life of the project activity is considered as 30 years.</p>		<p>UPERC (2004) guidelines were applicable to the project activity and as per, the project life is 35 years. The CERC Tariff Regulations 2004 also recommend project life of 35 years for hydro power projects. Thus, the financial analysis is revised for 35 years.</p>	<p>Project life is taken as 35 years which is as per UPERC 2004 which is applicable at the time of decision and since it is a Government of India document, the same is accepted and CAR is closed.</p>
<p>CAR14</p> <p>PDD not clearly indicating the PLF for the project activity and the the PLF is not stated as per the guidelines (EB 48 annex -11)</p>		<p>The statutory clearance from CERC and UPERC for this project activity power plant which in turn refer to the design energy i.e. primary energy = 1397 GWh and secondary energy = 117 GWh. This is total energy of 1514 GWh arrived from detailed hydrology studies for installed capacity of 330 MW. This design energy is equivalent to a PLF of 52.37%. This design energy is stated in the PDD and used in the CER calculation and investment analysis. Further, this design energy is also subjected to a sensitivity analysis of $\pm 10\%$.</p>	<p>The project participant has clarified that Design energy (primary and secondary) approved by CEA is 1514 GWh which amounts to a PLF of 52.37%. Since it is approved by Government of India body i.e. UPERC and CEA for implementation approval, it is in line with EB 48 Annex 11 and same is accepted by validation team. The CAR is closed.</p>
<p>CAR15</p> <p>1} PDD not clear whether all the parameter which affect the project return is considered for sensitivity (Say PLF and secondary energy revenue)</p> <p>2] PDD Ver 3.1 incomplete on the sensitivity carried out for project cost</p> <p>3] Project IRR with 90 % capacity index indicate 12 % return How ever the financial working and the board resolution indicate appx 9.0% IRR, pls clarify.</p>		<p>The sensitivity analysis is considered to total energy generation, capital cost, tariff and O&M cost. No other parameter will affect costs and revenues by 20% and hence not studied for sensitivity as per EB 41, Annex 45.</p> <p>Sensitivity is also studied for the project cost.</p> <p>The financial model considered in the Board decision had considered IDC in the capital cost. However, IDC was not considered in the web hosted PDD inadvertently that resulted in higher IRR result. This resulted in</p>	<p>In revised PDD, sensitivity is carried out on energy generation, capital cost, tariff and O&M cost. The validation team is of the opinion that these are as per para 17 of EB 51 Annex 58 and same is accepted by validation team. The project participant has clarified that difference in IRR is due to change in time period from 30 to 35 years and change in interest rate as it is now taken as per EB 51 Annex 58. The IRR calculations have been checked by financial expert and</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
		<p>lower project cost and hence higher IRR during web hosting PDD.</p> <p>The approach is corrected now and the project IRR close to that referred in the Board resolution. The small difference in the IRR No.s is due to – (1) salvage value is considered now, (2) the analysis period is changed from 30 to 35 years, (3) interest rate is as per the Investment analysis Guidance, prevalent in the region</p>	<p>found to be correct. Hence the CAR is closed.</p>
<p>CAR16</p> <p>Project Initial approval by the CEA Techo economic committee indicate an cost of Rs.17000 Million which validity is extended till 14/06/2006, However the due diligence carried out by board before go ahead decision for the project with CDM revenue indicate an revised estimate of `Rs.20134 Million</p> <p>PP to provide the basis for the revised estimate (Comparison with `17000 Million vis-à-vis Rs. 20134 or justify Rs.20134),</p> <p>Pls note the revised cost estimate approved dated 07/06/2006 tentatively post board decision by the UPERC indicate a capital cost of Rs.19877 Million</p>		<p>This project cost (` 17,000 Million) was estimated in year 2000 by Duncans North Hydro Power Company Ltd. who owned the project company at that time (based on DPR prepared in March 2000). This was approved in the same year by CEA. Later DNHPCL sold its stake further to TPC due to internal reasons. The CEA-TEC of year 2000 had validity till 2006, however, the cost escalation was already initiated by later owners TPC (who had invited fresh EPC bids).</p> <p>The PP, during take-over of shares from TPC, had estimated project cost to ` 20,134 in 'Note of Project Cost and Financial Viability to Board of Directors, 13/11/2005'. The rates were escalated based on market conditions (for basic materials) and SSR rates of district Tehri (for materials like cement, sand, steel etc.). The project cost escalation basis is presented to DOE. The same was used for the financial viability study and the investment decision with CDM consideration. Thus, as per the Guidance EB</p>	<p>The cost is taken as INR 20134 million based on note of project and financial viability which was considered at the time of Board approval. The cot approved by UPERC is INR 199778.7 million which is 2% less than the cost considered at the time of decision. Sensitivity of $\pm 10\%$ is carried out on project cost which covers cost approved by UPERC. The actual cost as on date is INR 26977 million which is much higher than cost considered at the time of decision. Thus the cost considered at the time of decision is conservative and hence was accepted by the validation team.</p>

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		<p>51, Annex 58, Para 6, the same is used for the investment analysis.</p> <p>Further, it is to be noted that immediately after this investment decision, the PP approached the UPERC with revised project cost estimates (Petition No. 327/2006). The UPERC in June 2006 had approved cost 1.8% lower than the initial estimate by PP at the time of investment decision.</p> <p>Further, for the financial analysis, the project cost available at the investment decision is used and a sensitivity analysis is presented for $\pm 10\%$ on the capital cost (which covers the UPERC approved cost) to demonstrate the additionality. Thus, the approach may be considered conservative.</p>	
<p>CAR 17</p> <p>Web hosted PP Ver-03 dated 19/12/2008 indicate Cantor Fitzgerald as the PP, however the latest PDD Ver 3.1 submitted as response to the DVR not indicating the above said PP, Pls explain for the removal of PP from the project activity</p>		<p>As per the Guidance EB 50, Annex 48, para 8 'Project participants who are listed in the PDD submitted for global stakeholder consultation but who do not have a contractual relationship with the DOE for the purposes of the validation activity may be removed from the PDD which is submitted for registration.'</p> <p>The PP (AHPCL) had contract for CDM services with CantorCO2e, and thus Cantor Fitzgerald Europe (CFE) was also included as a PP in the web hosted PDD. Later in Nov. 2010, AHPCL has terminated contract with CFE (letter submitted to DOE) and hence removed this name. Also, CFE did not have contract with DOE for validation. Thus,</p>	<p>Project participant (AHPCL) has clarified that they no longer have contract with Cantor Fitzgerald. Earlier PP had contract with Cantor Fitzgerald and Cantor Fitzgerald was included as project participant in webhosted PDD. Now AHPCL no longer have contract with them so name of Cantor Fitzgerald is removed as Pp from revised PDD. DOE also has contract only with AHPCL thus as per EB 50 Annex 48, name of Cantor Fitzgerald is removed from PDD. Hence the CAR is closed.</p>

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		as per the Guidance EB 50, Annex 48, para 8, as the CFE does not have a contract with DOE, we request to accept removing this name as PP.	
<p>CL1 Under section A.2, the PDD states benefits like better roads, telecommunication facilities, reduction in NO_x / SO₂ emissions, etc.</p> <p>Project participant should explain how the project activity provides these to the local community.</p>		<p>The infrastructure developed by the project like roads, bridge across the river are to be made available to Government and electricity board as per the implementation agreement. Further, the PP has also allowed the locals to use the roads (that do not affect project security). Telecommunication lines have come to remote areas due to the project and that can be used by locals for personal connections.</p> <p>The reduction in NO_x / SO₂ emissions is compared to the grid fuel mix and is of benefit to the regions where interconnected fossil fuel based power plants otherwise would have been established.</p>	<p>The project participant has clarified that infrastructure developed are made available to Government as per implementation agreement. The project participant has also NO_x/SO₂ are reduced as compared to grid fuel mix which includes fossil fuel power plants. Hence the CL is closed.</p>
<p>CL2 The rated capacities of turbines and generators as stated in the supplier's [BHEL] technical manual are 84.5 MW and 82.5 MW respectively. This document also states that these equipment have a continuous overload capacity of 10%,</p> <p>These details are not stated in the project description nor accounted in the project activity baseline determination and additionality demonstration, etc.</p>		<p>The agreement between PP and BHEL dt. 31/05/2007 'Agreement for Generating Units and Auxiliaries' states capacity of turbines as 82.5 MW (please refer Pg. No. 171).</p> <p>The technical overload capacity is updated in the revised PDD, Section A.3.</p>	<p>The overload capacity is stated in revised PDD. Agreement between AHPCL and BHEL states capacity as 82.5 MW. Hence the CL is closed.</p>
<p>CL3 The location coordinates stated in the section A.4.1.4 of the PDD relate to a place NE of Pauri while the location is shown as SE of Pauri.</p>		<p>The project location is in NE of Pauri (towards Rudra Prayag) and is appropriately</p>	<p>It has been clarified that location is NE of Pauri. Hence the CL is</p>

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PDD should correctly identify the location and coordinates.		shown. The same has been stated in revised PDD, section A.4.1. The coordinates of the location are confirmed with the project site team.	closed.
<p>CL4</p> <p>The methodology has a predefined baseline scenario. Project participant should clarify why –</p> <p>1. baseline alternatives are identified?</p> <p>2. the identified alternatives are not considered in the investment analysis?</p> <p>3. some of the alternatives are eliminated only because they have higher emission factor?</p>		The applicable baseline methodology ACM 0002 prescribes baseline and as per para 105 of VVM ver 1.2, the alternatives discussion is only restricted to project activity not taken as CDM and the continuation of existing scenario.	ACM 0002 prescribes baseline and as per para 105 of VVM ver 1.2, no identification of alternatives is required. Hence the CL is closed.
<p>CL-5</p> <p>AHPCL project is implemented long ago before take over by present promotes viz. group and is the only activity of that company prior to acquisition. The decision to invest in AHPCL project therefore by the GVK promoters.</p> <p>Project participant should clarify how the decision of AHPCL board under GVK management as against the promoters themselves is relevant in terms of serious CDM consideration.</p>		Shrinagar Hydro Electric Project was renamed as AHPCL in April 2004. Till 12/11/2005 (share purchase agreement by present management), the company had completed some pre-project activities like DPR, EIA, some statutory clearances, invitation of bids for EPC contract and TEC from CEA etc. and none of these can be called investment decision as per the starting date definition of the CDM (Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project. EB 41, Meeting Report, para 67).	The project participant has clarified that there was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits which shows that carbon credit benefits were considered even prior to taking over of the company by current project participant. A agreement was also signed on 21st July 2007 between AHPCL and SHA regarding sharing of carbon credits. The Board resolution clearly documents that project has been implemented taking into account availability of carbon credits. These show that CDM was

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		<p>Thus, the investment decision on 13/11/2005 has only resulted in the implementation of the project activity and can be considered for serious CDM consideration.</p> <p>Further, even the earlier project developers (SHA and TPC) had duly considered CDM revenues while planning the project activity and this is duly reflected in the share purchase agreement. The TPC had acquired the project company from DNHPL in 2003. In the technical agreement between TPC, DNHPCL and SHA (dt. 03/10/2003) there is clear reference to sharing of 'Renewable Energy benefits including carbon credits' arising from the implementation of the project (copy submitted to DOE). This clearly substantiated the fact that CDM and carbon credits sharing has been a part of consideration of the process of acquisition and prior to the investment decision date. A similar agreement is signed by PP and SHA that also included negotiations on carbon credit sharing (copy submitted to DOE).</p>	<p>a decisive factor in the decision to proceed with the project activity. Hence the CL is closed.</p>
<p>CL6</p> <p>PDD does not demonstrate with evidence that the management of AHPCL was aware of CDM at the time of decision to implement the project activity.</p>		<p>The share purchase agreements of AHPCL from 2003 refer to carbon credit sharing. In the technical agreement between TPC, DNHPCL and SHA (dt. 03/10/2003) there is clear reference to sharing of 'Renewable Energy benefits including carbon credits' arising from the implementation of the project. This was made available to PP during the share purchase agreement negotiations (evidences submitted to the DOE). Further a similar agreement is also</p>	<p>The project participant has clarified that there was a Technical service agreement in 2003 between Tata Power Company Ltd, and SHA regarding sharing of renewable energy benefits like carbon credits which shows that carbon credit benefits were considered even prior to taking over of the company by current project participant. A agreement was also signed on 21st July 2007 between AHPCL and</p>

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		<p>signed by PP with SHA where carbon credit sharing was signed (evidences submitted to the DOE).</p> <p>GVK Group before investing into the project re-evaluated the CDM benefits viz-a-viz project viability in a meeting with CDM consultant (evidences submitted to the DOE). This shows prior awareness of PP before the investment decision.</p> <p>Further, on 13/11/2005, the Board of Directors of the PP considered CDM for financial viability to approve the investment in the project (original minutes of the meeting shared with DOE). Thus, Serious consideration of CDM is demonstrated. Thereon, within two years from the starting date of CDM project activity, a CDM consultant is appointed, a DOE was contracted for validation and local stakeholders' meeting was conducted. Further, the meeting with NCDMA for HCA was held and PDD was webhosted for the global stakeholder comments. Thus, as per the EB 49, Annex 22, clause No. 7 and 8 Guidance, project activity has taken real and continuous measures to secure CDM registration.</p>	<p>SHA regarding sharing of carbon credits. The Board resolution clearly documents that project has been implemented taking into account availability of carbon credits. These show that CDM was a decisive factor in the decision to proceed with the project activity. Hence the CL is closed.</p>
<p>CL 7</p> <p>Under CAPM Beta factor for Tata Power is taken for the Investment analysis. Project participant should clarify how the Beta factor selected is relevant to the type of the project activity</p>		<p>There is no other private IPP listed on the Stock markets that operates only hydro power plants of similar sizes. Thus, five power sector IPPs average beta is analysed for the benchmark calculation and average</p>	<p>Beta value have been taken from Bloomberg and Bloomberg snaps have been provided. The data has been taken for about 5 years which are applicable at the time of decision making. The beta has</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
		beta is used.	been taken for power generating companies and hence are accepted by validation team. Hence the CL is closed.
<p>CL8</p> <p>Under section B.6.3, only the primary energy is considered for CERs. Project participant should explain why the secondary energy is not considered for the CER estimate.</p>		<p>The Design energy including both Primary and Secondary energy is considered for the CER calculation (and revenue calculation in the financial analysis).</p> <p>[primary and secondary energy of 1397 MU and 117 MU per annum respectively = 1514 MU]</p> <p>Thus, the secondary energy is included in the CER estimate.</p>	<p>Secondary energy is also included in CER calculations. Hence the CL is closed.</p>
<p>CL9</p> <p>Real action date quoted is the date of financial closure of the project i.e. 03/08/2007</p> <p>Chronology of events reveals that some actions were taken before this, viz. construction of diversion tunnel, EPC contract dated 17/07/2007, etc.</p> <p>The start date of the project activity is not correctly stated.</p>		<p>The start date is corrected and justified in the revised PDD. The real action towards the implementation of the project is considered as the date of issuing Letter of Intent (letter No. SHEP/DT/Shring/01 dt. 26/04/2006) for the construction of diversion tunnel.</p> <p>As required by the EB guidance on the project start date (the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project. EB 41,</p>	<p>Start date has been corrected and it is taken as LOI for the construction of diversion tunnel. This start date as per CDM Glossary of terms. Hence the CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
		Meeting Report, para 67).	
<p>CL10</p> <p>PDD not state whether the EIA study conducted for the project is shared and discussed in the stake holder meeting</p>		<p>The EIA report was shared with the stakeholders. The EIA study was also discussed in the stakeholder meeting as the Minutes of the meeting record 'The deliberation also addressed the rehabilitation issues and other developmental issues which were a part of the plan of the project'. Thus, the EIA study was discussed with the stakeholders during the meeting.</p>	<p>The project participant has clarified that EIA was discussed in the stakeholder meeting. Hence the CL is closed.</p>
<p>CL 11</p> <p>The PDD states that the stakeholders were send invitations 15 days in advance of the meeting.</p> <p>However, the copies of the invitation letters provided to the validation team indicate that the letters were dated only 8 – 10 days in advance and not 15 days</p>		<p>The stakeholders' meeting was held on 31/07/2007. The invitations were sent in person and acknowledgements were signed on 14/07/2007 i.e. 15 days in advance. Some stakeholders who were not approachable by personal invitations, the invitation letters were sent subsequently. As the process of invitations of stakeholders' was initiated 15 days prior to the meeting (evident from the personal invitations receipt), hence PP gave 15 days prior notice for the meeting.</p>	<p>Project participant has clarified that invitations were sent in person to stakeholders 15 days in advance and stakeholders who could not be contacted were sent invitations later on. Hence the CL is closed.</p>