



Industrie Service

Choose certainty.
Add value.

Validation Report

VALIDATION OF THE CDM-PROJECT:
ABOHAR BRANCH CANAL BASED SMALL HYDRO
PROJECT IN PUNJAB, INDIA.

Report No. 1382790

28 December 2011

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich – GERMANY

Report No.	Date of first issue	Revision No.	Revision Date	Certificate No.
1382790	18-01-2011	05	28-12-2011	-

Subject: Validation of the CDM Project "Abohar Branch Canal Based Small Hydro Project in Punjab, India"

Accredited TÜV SÜD Unit: TÜV SÜD Industrie Service GmbH Certification Body “climate and energy” Westendstr. 199 80686 Munich Germany	TÜV SÜD Contract Partner: TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 80686 Munich Germany					
Project Participants: Abohar Power Generation Private Limited B – 37, Sector – 1, NOIDA, 201 301, Uttar Pradesh, India	Project Site(s): The project is located at Abohar branch canal at Khanpur (I), Sudhar (II), Akhara (III), Gholian (IV) and Channowal (V) villages in the state of Punjab					
	Geo-coordinates :					
	Location	I	II	III	IV	V
	Latitude:	30.7859°	30.7675°	30.7612°	30.6608°	30.6439°
	Longitude:	75.9073°	75.6469°	75.4931°	75.2147°	75.1055°
Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India						
Applied Methodology / Version: AMS.I.D / Version 16				Scope(s): 1 Technical Area: 1.2		
First PDD Version:		Final PDD version:				
Date of issuance:	21-04-2009	Date of issuance:		01-07-2011		
Version No.:	01	Version No.:		06		
Starting Date of GSP	22-09-2009					
Estimated Annual Emission Reduction: 23,527 tCO ₂ e						
Assessment Team Leader: Nikunj Agarwal		Technical Reviewer: Caiyang Wu, Rachel Zhang				
Assessment Team Members: Bratin Roy, Vijayanand, Madhuri Nanda,		Responsible Certification Body Members: Thomas Kleiser				

Summary of the Validation Opinion:

- ☒ The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence for the determination of the project's fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Therefore, TÜV SÜD recommends the project for registration by the CDM Executive Board if the letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.
- ☐ The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence for the determination of the project's fulfilment of all stated criteria. Therefore, TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board of this decision.

Abbreviations

ACM	Approved Consolidated Methodology
AM	Approved Methodology
AMS	Approved Methodology Small scale
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Green House Gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
IRR	Internal Rate of Return
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

Table of Contents	Page
1 INTRODUCTION	5
1.1 Objective.....	5
1.2 Scope	5
2 METHODOLOGY	7
2.1 Appointment of the Assessment Team.....	8
2.2 Review of Documents.....	9
2.3 Follow-up Interviews.....	9
2.4 Cross-check.....	9
2.5 Resolution of Clarification and Corrective Action Requests	10
2.6 Internal Quality Control	10
3 SUMMARY	11
3.1 Approval	11
3.2 Participation.....	11
3.3 Project design document.....	11
3.4 Project description	13
3.5 Baseline and monitoring methodology	14
3.6 Additionality	20
3.7 Monitoring plan	30
3.8 Sustainable development	31
3.9 Local stakeholder consultation	31
3.10 Environmental impacts	31
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	32
5 VALIDATION OPINION	33

Annex 1: Validation Protocol

Annex 2: Information Reference List

Annex 3: Appointment Certificates

1 INTRODUCTION

1.1 Objective

The objective of the validation process is to provide an independent assessment by a third party, a Designated Operational Entity (DOE), of a proposed project activity. The assessment involves the evaluation of the project basis and design identified in the Project Design Document (PDD) using the defined criteria outlined by the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and results in a conclusion by the executing DOE on whether or not a project activity is valid to be submitted for registration to the CDM Executive Board (CDM-EB). The ultimate decision on the registration of a proposed project activity rests with the CDM-EB and the Parties involved.

The project addressed in this validation report has been submitted under the following project title:
Abohar Branch Canal Based Small Hydro Project in Punjab, India

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities, the scope is set by:

- The Kyoto Protocol, in particular § 12 and modalities and procedures for the CDM
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions and specific guidance outlined by the EB which are published under <http://cdm.unfccc.int>
- Guidelines for Completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodology (CDM-NM)
- Baselines and monitoring methodologies (including GHG inventories)
- Management systems and auditing methods
- Environmental issues relevant to the applicable sectoral scope
- Applicable environmental and social impacts and aspects of CDM project activity
- Sector specific technologies and their applications
- Current technical and operational knowledge of the specific sectoral scope and information on best practice

The validation process is not meant to provide any form of consulting for the project participant (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the project design.

Once TÜV SÜD receives the PDD, it is made publicly available on the UNFCCC website and on TÜV SÜD's website, which initiates a 30 day global stakeholder consultation process (GSP). In special circumstances, such as when a project design changes, the GSP may need to be repeated. Information on the PDDs is presented on page 1 of this report.

The purpose of a validation is to demonstrate compliance or non-compliance of the project with all stated and valid CDM requirements. Additionally, the purpose of validation is to enable the registration of CDM projects, which is only a part of the total CDM project cycle.

2 METHODOLOGY

The project assessment is based on the “Clean Development Mechanism Validation and Verification Manual” version 1.2 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the CDM project activity are appointed. Once the project is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up actions, resolution of issues identified, and the preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB “climate and energy” before being submitted to the CDM-EB.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. TÜV SÜD has developed a methodology-specific protocol customized for the project. The protocol demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

The validation protocol serves the following purposes:

- To organize the details and provision of clarifications on the requirements of which a CDM project is expected to meet
- To elucidate how a particular requirement has been validated as well as to document the results of the validation and any adjustments made to the project design document.

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

Validation Protocol Table 1: Conformity of Project Activity and PDD				
Checklist Topic / Question	Reference	Comments	PDD in GSP	Final PDD
<i>The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then sub-divided. The lowest level constitutes a checklist question / criterion.</i>	<i>The section gives reference to documents in which the answer to the checklist question or item is found in case the comment refers to documents other than</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is used to explain the conclusions reached. In some cases sub-checklists are applied indicating yes/no decisions on the compliance with the stated criterion. Any Request has to be substantiated</i>	<i>The section is used to present conclusions based on the assessment of the first PDD version. The PDD is either acceptable based on evidence provided (<input checked="" type="checkbox"/>) or a Corrective Action Request (CAR) is issued due to non-compliance with the checklist question (See below). Clarification Request (CR) is used when the validation team has identified a need for further clarification. Forward Action Request is issued to highlight issues related to project implementation that</i>	<i>Conclusions are presented in the same manner based on the assessment of the final PDD version and further documents including assumptions presented in the documentation.</i>

	<i>the PDD.</i>	<i>within this column.</i>	<i>require review during the first verification.</i>	
--	-----------------	----------------------------	--	--

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
<i>Corrective Action, Clarification or Forward Action Requests.</i>	<i>Reference to the checklist question number in Table 1</i>	<i>The responses given by the client or other project participants during communication with the validation team.</i>	<i>Summary of the discussion and revision of project documentation together with the validation team's responses Final conclusions and relevant references.</i>

In case of a denial of the project activity more detailed information on this decision will be presented in Table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	Id. of CAR/CR	Explanation of the Conclusion for Denial
<i>Referenced request if final conclusions from table 2 resulted in a denial.</i>	<i>Identifier of the Request.</i>	<i>Detailed explanation of why the project is considered non-compliant with a criterion and a clear reference to the criterion</i>

The completed validation protocol is enclosed in Annex 1.

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy".

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB TÜV SÜD operates four qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Validator (V)
- Validator Trainee (T)
- Expert (E)

It is required that the sectoral scope(s) and the technical area(s) linked to the methodology and project have to be covered by the assessment team.

Assessment Team:

Name	Qualification	Coverage of sectoral scope	Coverage of technical area	Host country experience	Coverage of Financial Aspect
Nikunj Agarwal	ATL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vijayanand	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Madhuri Nanda	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bratin Roy	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Technical Reviewer:

Caiyang Wu & Rachel Zhang

2.2 Review of Documents

A first version of the PDD was submitted to the DOE in September 2009. The first PDD version – 01, dated 21-04-2009 submitted by the PP and additional background documents related to the project design and baseline were reviewed to verify the correctness, credibility and interpretation of the presented information, furthermore a cross check between information provided and information from other sources (Calculation sheet) have been done as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as annex 2 to this report.

2.3 Follow-up Interviews

During 01-10-2009 and 03-10-2009, TÜV SÜD performed interviews and physical site inspections with project stakeholders to confirm relevant information, and to resolve issues identified in the first document review. The following table provides a list of all persons interviewed in this process.

Persons Interviewed:

Name	Organisation
Mr. Rajesh Kumar Jindal	Director, Abohar Power Generation Pvt. Ltd. (APGPL)
Mr. Pramod Kumar Arora	Head Project, APGPL
Mr. Amit Kumar Agarwal	Manager, F & A, APGPL
Mr. Sachin Pahuja	Manager, F & A, APGPL
Mr. Manpreet Singh	Senior Consultant, E & Y
Ms. Apurba Mitra	Consultant, E & Y

2.4 Cross-check

During the validation process the team has made reference to available information related to similar projects or technologies as the CDM project activity. Project documentation has also been reviewed against the approved methodology/ies applied to confirm the appropriateness of formulae and correctness of calculations.

2.5 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which need to be clarified for TÜV SÜD's conclusion on the project design. The CARs and CRs raised by TÜV SÜD are resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in the validation protocol in Annex 1.

The final PDD version 06 submitted on date 01-07-2011 serves as the basis for the final assessment presented. Additional changes to the project during the validation process are not considered to be significant with respect to the main CDM objectives. The two CDM main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

2.6 Internal Quality Control

Internal quality control is the final step of the validation process and is conducted by the CB "climate and energy" who checks the final documentation, which includes the validation report and annexes. The completion of the quality control indicates that each report submitted has been approved either by the head of the CB or the deputy (a veto person is used if necessary). In projects where either the Head of the CB or his/her deputy is part of the assessment team, the approval is given by the one not serving on the project team.

After confirmation by the PP, the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

3 SUMMARY

The assessment work and the main results are described below in accordance with the VVM reporting requirements. The reference documents indicated in this section and Annex 1 are stated in Annex 2.

3.1 Approval

The project participant is Abohar Power Generation Pvt. Ltd. (APGPL), from India (host country). The host party, India meet the requirements to participate in the CDM.

The DNA of the India issued a LoA (IRL 45) on 12-01-2010 authorizing APGPL as a project participant. TÜV SÜD received this letter (referenced as No.4/10/2009-CCC) from the project participants directly and considers the provided letters as authentic.

Furthermore, after checking the provided LoA, TÜV SÜD confirms that the letter refers to the precise proposed CDM project activity and the title is in-line with the title in the PDD "**Abohar Branch Canal Based Small Hydro Project in Punjab, India**".

The letter also indicates that each participating Party is a Party to the Kyoto Protocol, and that the participation in the **Abohar Branch Canal Based Small Hydro Project in Punjab, India**. project is voluntary. The Indian LoA also confirms that the proposed CDM project activity contributes to the sustainable development of India (host country). Based on the information given in this letters, TÜV SÜD considers the approval as unconditional with respect to these items.

The LoA has been issued by the DNA, "National Clean Development Mechanism (CDM) Authority (Ministry of Environment and Forests)", India. The LoA does not refer to a specific version of the PDD or validation report.

TÜV SÜD considers that the requirements of VVM (§§ 45-48) have been met.

3.2 Participation

The participants of the project activity have been approved by the corresponding Party, which is confirmed by the issued LoA.

The means of validation used are similar to the ones described in Section 3.1, specifically in regard to the approval process of the project activity.

3.3 Project design document

The PDD is compliant with relevant form and guidance as provided by UNFCCC.

The most recent version of the PDD form was used.

TÜV SÜD considers that the guidelines for the completion of the PDD in their most recent version have been followed. Relevant information was provided by the participants in the applicable PDD sections. Completeness was assessed through the protocol included in Annex 1.

Major changes in the PDD are as follows –

Section A.2 –

Dates of commissioning added in description of project

Section A.4.1.4 –

GPS coordinates revised based on Google Earth screenshots

Section A.4.2 –

Additional technical details of the project i.e. rated discharge and Runner Discharge Diameter based on technical specifications in purchase orders were included

Section A.4.3 –

Revision in emission reductions due to correction in calculation of emission factor

Section A.4.5 –

Confirmation that the project activity is not a debundled component of a large scale project activity using the “Compendium of guidance on the debundling for SSC project activities” Version 03 (EB 54, Annex 13)

Section B.1 –

Change in version of methodology AMS I.D from version 14 to version 16

Use of emission factor as per recent “Tool to calculate the emission factor for an electricity system”, Version number 02

Section B.2 - Revision in applicability criteria as per AMS I.D version 16

Section B.4 - Revision in the definition of baseline as per AMS I.D version 16 & Inclusion of Plant Load Factor in accordance with the “Guidelines for the reporting and Validation of Plant Load Factors”

Section B.5 –

Inclusion of prior awareness of CDM through registration of other CDM projects by company, Inclusion of following events in timeline: Feasibility Report preparation, meeting of Board of Directors, Communications/ Negotiations with CDM consultants,

Demonstration of serious consideration of CDM in accordance with the “Guidelines on the demonstration and assessment of prior consideration of the CDM”, Version 03 (EB49, Annex 22),

Revision of Investment barrier as per “Guidance on the Assessment of Investment Analysis” (EB 51, Annex 58) Paragraph 14,

Inclusion of detailed benchmark i.e. cost of equity calculation using the CAPM Model,

Inclusion of assumptions for Equity IRR calculation & Inclusion of sensitivity analysis in IRR

Section B.6.1

Demonstration of the calculation of emission factor as per recent “Tool to calculate the emission factor for an electricity system”, Version number 02

Section B.7.1

Inclusion of reading and recording frequency for all monitoring parameters. Inclusion of QA/QC procedures for each parameter.

Section B.7.2

Inclusion of cross-check measurements of electricity generation using gross electricity generation and auxiliary consumption.

Section E.2

Inclusion of attendance record of the stakeholders present in stakeholder meeting in Appendix 1 of the PDD.

3.4 Project description

The CDM project is a green-field low-head canal drop based mini hydel schemes with a combined installed capacity of 5.30 MW located on the Abohar branch canal at Khanpur (I), Sudhar (II), Akhara (III), Gholian (IV) and Channowal (V) villages in the state of Punjab developed by APGPL. The Project is located on the Abohar Branch Canal at Moga and Ludhiana districts of Punjab. The respective capacity & geographical coordinates of project site are

Location	Khanpur (I)	Sudhar (II)	Akhara (III)	Gholian (IV)	Channowal (V)
Capacity	2 x 550 kW	2 x 700 kW	2 x 550 kW	1 x 800 kW	1 x 900 kW
Latitude:	30.7859°	30.7675°	30.7612°	30.6608°	30.6439°
Longitude:	75.9073°	75.6469°	75.4931°	75.2147°	75.1055°

The Project has a power generation capacity of 5.3 MW and it would augment the power generation capacity in the state of Punjab. The design criteria and preliminary design of the project activity has been carried out based on relevant IS codes and manuals on Small Hydro Power Projects Vertical axis Semi and full Kaplan turbines has been utilized in the project activity. The technology used in the project is available in India and no transfer of technology is involved. The characteristics of the proposed project design have been verified from the Feasibility Report [IRL 20]. The project will result in an estimated reduction of **235,270** tCO₂e over its entire crediting period of 10 years. The added advantage of the project will be in terms of additional jobs generated and the environmental well being. The technology applied is deemed current good practice and is not expected to be replaced within the crediting period.

As per the information provided by PP and assessment of audit team based on available documents such as DPR, feasibility report [20, 59] etc., the projects can be operated independently without any technical difficulty, but at the same time:

- Bundling is an option and not a mandate provided to the PP for reducing their validation cost for individual projects
- The projects were considered together by the project developer (M/S Abohar Power Generation Private Limited) for determining the decision to go ahead with the investment on the projects [IRL 22].
- The projects are being developed by a single project developer where the projects were considered in their entirety rather than on individual basis [IRL 22 & 61].
- The financing of the project by commercial banks was provided on consideration of all the five projects together rather than on an individual basis [IRL 30].

Hence considering the all points, DOE confirms that the approach adopted by PP is correct and acceptable.

The expected operational lifetime of the project is 35 years and a fixed crediting period of 10 years has been chosen.

The information presented in the PDD on the technical design is consistent with the actual planning and implementation of the project activity confirmed in the following ways:

- A review of data and information, Feasibility Report, Supply Contracts etc. [IRL 20, 7, 8, 17, 19] (see annex 2).

- An on-site visit with relevant stakeholder and personnel with knowledge of the project in attendance.
- A review of information related to similar projects or technologies which have been used to validate the accuracy and completeness of the project description.

In conclusion, TÜV SÜD confirms the accuracy and completeness of the project description as per VVM v1.2 paragraph 64(b) as included in the PDD, is sufficiently accurate and complete in order to comply with the requirements of the CDM.

3.5 Baseline and monitoring methodology

3.5.1 Applicability of the selected methodology

Compliance with each applicability condition as listed in the chosen baseline and monitoring methodology AMS-I.D Version 16 has been demonstrated below:

Applicability criteria	Project case (as per PDD)	Auditor's Conclusion
This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to a national or a regional grid. Project activities that displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit shall apply AMS-I.F	The project is hydro power project.	The project is a grid connected hydro power project hence applicable to this category. <input checked="" type="checkbox"/> Applicability is justified. [IRL 7,8,9,10,11, 17,20]
This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition ¹ ; (c) involve a retrofit ² of (an) existing plant(s); or (d) involve a replacement ³ of (an) existing plant(s)" as the project is a new installation of a hydroelectric power project	The project is a new installation of a hydroelectric power project.	Project is a new installation of a hydroelectric power project. <input checked="" type="checkbox"/> Applicability is justified. [IRL 7,8,9,10,11, 17,20]
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir;	The project activity is a canal drop based hydro power plant and does not have a reservoir. Hence this criterion is not applicable to the project activity.	As the project activity is a run-of-the-river hydro power plant this criterion does not apply in this case. <input checked="" type="checkbox"/>

<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; • 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>Applicability is justified.</p> <p>[IRL 7,8,9,10,11,17,20]</p>
In the case of biomass power plants, no other biomass types than renewable biomass are to be used in the project plant.	The project activity is not a biomass power plant. Hence, this criterion is not applicable.	<p>As the project activity is a hydro power plant this criterion does not apply in this case.</p> <p><input checked="" type="checkbox"/></p> <p>Applicability is justified.</p> <p>[IRL 7,8,9,10,11,17,20]</p>
If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	Not applicable	<p>As the project activity is a run-of-the-river hydro power plant with total capacity of 5 components is below 15 MW, hence this criterion does not apply in project case.</p> <p><input checked="" type="checkbox"/></p> <p>Applicability is justified.</p> <p>[IRL 7,8,9,10,11,17,20]</p>
Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is not a biomass power plant. Hence, this criterion is not applicable.	<p>As the project activity is a hydro power plant and not a combined heat and power this criterion does not apply in project case.</p> <p><input checked="" type="checkbox"/></p> <p>Applicability is justified.</p>

		[IRL 7,8,9,10,11,17,20]
In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Project is a new installation, hence not applicable.	As the project activity is a new installation and not a capacity expansion or an up gradation project. This criterion does not apply in project case. <input checked="" type="checkbox"/> Applicability is justified. [IRL 7,8,9,10,11,17,20]
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	No applicable as there is no retrofit or replacement.	<input checked="" type="checkbox"/> As the project activity is a new installation and not a retrofit or replacement project. This criterion does not apply in project case. <input checked="" type="checkbox"/> Applicability is justified. [IRL 7,8,9,10,11,17,20]

The assessment was carried out for each applicability criterion and included, among other checks, a compliance check of the local project setting with the applicability conditions in regard to baseline setting and eligible project measures. This assessment also included the review of secondary sources to demonstrate the compliance with applicability conditions.

The methodology-specific protocol, included in Annex 1, documents the assessment process. The results of the compliance check as well as relevant evidences are detailed in the protocol and the information reference list.

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

Emission sources, not addressed by the applied methodology and expected to contribute more than 1% of the overall expected average annual emission reductions, have not been identified.

3.5.2 Project boundary

The project boundary was assessed in the context of physical site inspection, interviews and based on the secondary evidence received on the design of the project.

The Project boundary includes the physical and geographical site of all power plants connected physically to the NEWNE (North, East, West, North-East) grid. The project boundary is as per the methodology and the same has been validated based on the document review and on-site visit.

The most relevant documentation assessed in order to confirm the project boundary are following:

- Implementation Agreement with Government of Punjab. [IRL 8]
- Novation of Implementation Agreement with Government of Punjab. [IRL 9]
- Land deeds signed for the project activity. [IRL 14]
- Memorandum of understanding with Punjab Energy Development Agency. [IRL 10]
- Forest Clearance certificate for project activity. [IRL 13]
- Consent to Establish from Punjab Pollution Control Board, dated 19.09.2006. [IRL 15]
- Power Purchase Agreement for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal [IRL 17]

Therefore, TÜV SÜD confirms that the identified boundary, the selected sources, and gases as documented in the PDD are justified for the project activity and are fully in line with the requirements set by the applied methodology.

3.5.3 Baseline identification

The PDD defines the following baseline scenario:

The project applies the approved simplified baseline methodology for selected small-scale CDM project activity categories, category I.D – Grid connected renewable electricity generation --- Version 16.0. The installed capacity of the proposed project is 5.3 MW which is well below the qualifying limit of 15 MW for type I small scale projects. The selected baseline methodology, AMS-I.D, version 16, is applicable to the proposed project as the project generates electricity in hydroelectric plant and it displaces the grid electricity. The identified baseline scenario, in line with the methodology AMS-I.D version 16, is the equivalent electricity that would in absence of the project activity, have been generated by the operation of the grid-connected thermal power plants belonging to the NEWNE regional electricity grid. As the project activity displaces and supplies electricity to the NEWNE grid, the baseline for this project activity is a function of the generation mix of the NEWNE grid. The selection of the NEWNE region grid as the grid system boundary for the project activity is in line with requirement.

The information presented in the PDD has been validated by an initial document review of all data. Further confirmation has been made based on the on-site visit and a review of information from similar projects and/or technologies. The sources referenced in the PDD have been quoted correctly. Furthermore the grid emission factor was verified against the database provided by CEA on their official website:

http://cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm

TÜV SÜD has determined that no reasonable alternative scenario has been excluded.

Based on the validated assumptions used for project activity calculations, TÜV SÜD considers that the identified baseline scenario is reasonable.

Taking the definition of the baseline scenario into account, TÜV SÜD confirms that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly in the project PDD.

A verifiable description of the baseline scenario has been included in the PDD.

In regard to item 87 of VVM, TÜV SÜD confirms the following statements:

- (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) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- (e) 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.

3.5.4 Algorithm and/or formulae used to determine emission reductions

TÜV SÜD has assessed the calculations of project emissions, baseline emissions, leakage, and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheets. The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and respective tools. An equation comparison has been made to ensure consistency between all the formulae presented in the calculation files and in the PDD, methodology, and tools.

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked.

Based on the information reviewed it is confirmed that the sources used are correctly quoted and interpreted in the PDD.

The values presented in the PDD are considered reasonable based on the documentation and references reviewed and the results of the interviews.

The baseline methodology has been applied correctly according to requirements.

The estimate of the baseline emissions are considered correct as the calculations have been reproduced by the audit team with the attainment of the same results.

Detailed information on the verification of the parameters used in the equations is found in Annex 1. The algorithms for the determination of the baseline, project, and leakage are discussed in the following sections.

3.5.4.1 Baseline Emissions

TÜV SÜD has assessed the calculations of project emissions, baseline emissions and leakage and emission reductions presented in the spread sheet and compared it the values provided in the PDD. The parameters and formulae presented in the spread sheet and the PDD were cross checked and verified with approved methodology and the respective tools.

For the calculation of the Baseline Emission Factor, option (a) – A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the “Tool to calculate the emission factor for an electricity system (Version 2.0)” – is chosen. The project activity would be synchronized with the NEWNE Regional Grid, for supply of power hence, the NEWNE Regional Grid has been considered as the baseline, where the

project activity would replace use of fossil fuel in existing power plants. The Central Electricity Authority (CEA), under the Ministry of Power, Government of India, has estimated the Operating & Build Margin for the grid, which is publically available.

In line with the methodology, the combined margin emission factor for the NEWNE grid of India has been calculated *ex ante* to be 0.8031 tCO₂e/MWh, the emission factor has been sourced from Central Electricity Authority Database "CO₂ Baseline Database for the Indian Power Sector User Guide - Version 4.0", using a combined margin approach consisting 50% operating margin and 50% build margin approach. The operating margin has been determined to be 1.0086 tCO₂e/MWh and the build margin to be 0.5977 tCO₂e/MWh. In the GSP version of PDD wrong value of EF_{OM} was used which was corrected later.

DOE confirms that the CEA database is an official publication of the Government of India for the purpose of CDM baselines and the OM in the CEA database is calculated using the simple OM approach based on the generation weighted average emissions per electricity unit of all fossil-fuelled generating sources serving the system over a three year period of 2005-2006, 2006-2007 and 2007-2008, BM is calculated ex-ante based on the 20% most recent capacity additions in the grid based on net generation for the year 2007-2008 as described in the "Tool to calculate the emission factor for an electricity system (Version 2.0)". The input values to calculate emission factor as indicated in the PDD have been validated and found to be supported reasonably by evidences. Furthermore the grid emission factor has been cross-checked with the data base provided by CEA:

(http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

All documentation is correctly quoted and data is consistently transferred to the calculations. The sectoral/national circumstances are considered reasonable and the baseline methodology has been correctly applied.

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked and confirmed.

Based on the information reviewed it can be confirmed that the sources used are correctly quoted and interpreted in the PDD.

The values presented in the PDD are considered reasonable based on the documentation reviewed, further references and the result of the interviews.

The baseline methodology has been correctly applied following the requirements.

The estimated of the baseline emissions can be confirmed as the same have been replicated by the audit team using the information provided.

Detailed information on the verification of the parameters used in the equations can be found in the annex 1.

3.5.5 Project emissions

The project activity is electrical energy generation from hydro power. There is no fossil fuel consumption envisaged in the project activity. In addition, project activity does not have a reservoir which has been verified during site audit by the audit team in addition to the review of technical specification documents for this project. Hence there are no obvious project emission sources. Therefore, as per paragraph 19 of chosen baseline methodology AMS I.D / Version 16, project emissions are nil.

3.5.6 Leakage

Since the project activity is a hydro power project and there are no energy generating equipment transfer involved from another activity, hence, in line with the applied methodology AMS I.D / Ver-

sion 16, no leakage has been considered from the Project activity. This has been verified during site audit by the audit team in addition to the review of technical specification documents for this project.

3.5.7 Emission Reductions

In summary, as there are no leakage and project emission therefore no calculation has been conducted for the same. Only the baseline and the emission reduction calculations have been presented in the final PDD which are in line with the methodology and are considered correct. There is a minor change in the emission reduction value, which occurred due to a calculation mistake in value of EF_{OM} used in GSP PDD by PP. The final PDD has been presented with correct and verified value.

3.6 Additionality

The additionality of the project has been presented in the PDD using following approach:

The additionality of the project activity has been demonstrated as per the Attachment A to Appendix B of simplified modalities and procedures for small-scale CDM project activities. "Non-binding best practice examples to demonstrate additionality for SSC project activities" has also been referred. The approach use in the PDD has been assessed first based on a document review, where following relevant documents have been revised:

- Early consideration of CDM (Minutes of Board meeting), [IRL 22]
- Feasibility Report of the Project considering CDM, [IRL 20]

On site the additionality has been discussed principally with Mr. Amit Agarwal, Manager F&A and documents have been reviewed on-site (for details see annex 2).

Finally the data, rationales, assumptions, justifications and documentation provided have been checked using local knowledge and sectoral and financial expertise. This information was also confirmed through the following documentation:

- Feasibility Report [IRL 20]
- Implementation Agreement [IRL 08]
- Novation of Implementation Agreement [IRL 9]
- Loan Sanction letter from Axis Bank [IRL 30]

Based on the aforementioned approach, TÜV SÜD confirms that the documentation provided is appropriate for this project.

3.6.1 Prior consideration of the clean development mechanism

The starting date of the project activity is determined by the earliest date at which either the implementation or construction or real action of a project activity begins. 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. In order to corroborate this information, the assessment team has reviewed the Minutes of Meeting of the Board of Directors approving investment in the project (considering CDM revenues) on date 03.02.2006 [IRL 22] and Feasibility report prepared for all sub projects [IRL 20].

The starting date of the project has been determined to be 21-12-2007 [IRL 7], which is before 02 August 2008 and also before the GSP. The originals of the documentation presented has been reviewed and cross checked based on interviews with Mr. Rajesh Kumar Jindal, hence the document can be considered appropriate to confirm the prior consideration. The submitted Feasibility Report [IRL 20] has also referred the CER revenue in the financial consideration of the project activity. Since the start date was before the validation, information on the delay and early consideration of CDM was questioned and the response by the PP has been validated in accordance with EB-49, Annex-22, Para-6. Additionally, in order to confirm that the PPs have taken real actions to continue the activity as CDM, activities have been reviewed against the documents provided to the DOE and a timeline of events is shown in the table below:

Timeline of Project Activity

Activity	Document	Auditor conclusion
Date: January 2006 Preparation of Feasibility Report considering CDM benefits	Feasibility report, which mentions CDM benefit available to the project activity. [IRL 20]	<input checked="" type="checkbox"/> Verified, Early & serious consideration of CDM before inception of the project activity.
Date : 03-02-2006 Meeting of the Board of Directors approving investment in the said project considering the CDM revenue	Minutes of board meeting dated 03-02-2006. [IRL 22]	<input checked="" type="checkbox"/> Verified, Early & serious consideration of CDM before inception of the project activity.
Date: 15-03-2007 Communications/ Negotiations with CDM consultants	Mails communication between CDM consultant and APGPL negotiating the terms of service. [IRL 24]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 27-04-2007 Novation of Implementation Agreement in favour of APGPL.	Agreement copy between govt. of Punjab and APGPL [IRL 9]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 26-11-2007 Letter of Acceptance (LOA) for Electro Mechanical Contract	Letter of acceptance dated 26-11-2007 [IRL 23]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 15-01-2008 Novation of Tripartite Agreement in favour of APGPL	Agreement copy [IRL 12]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 21-12-2007 Supply Contract for E&M work	Letter of acceptance for Supply contract of E&M work dated 06-12-2007 [IRL 52]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity and start date of project activity.
Date: 13-03-2008 Loan rejection from IREDA	Document Ref No.:PTS/SHP/2007-08/IREDA/5564	<input checked="" type="checkbox"/> Verified PP's serious ac-

	[IRL 27]	tion on project activity.
Date: March 2008 Lease seed between PEDDA & APGPL	Lease deed agreements dated 3 rd , 4 th and 26 th of March 2008 [IRL 29]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 05-04-2008 Loan Sanction from Axis bank	Loan sanction letter from Axis Bank for project activity Sanction Letter Ref. No. AXISB/CB-MC/DEL/VB3 [IRL 30]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 28-07-2008 Appointment of CDM consultant	Appointment letter dated 28-07-2008 [IRL 31]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 05-08-2008 Civil work letter of approval	Approval letter [IRL 32]	<input checked="" type="checkbox"/> Verified PP's serious action on project activity.
Date: 18-12-2008 Invitation of quotations from DOE	Invitation mail to TUV SUD [IRL 33]	<input checked="" type="checkbox"/> Verified. The evidence considered as proof for on-going, CDM related activity.
Date: 16-01-2009 Stakeholder consultation meeting	Invitation Letter & feedback questionnaire [IRL 38, 39]	<input checked="" type="checkbox"/> Verified. The evidence considered as proof for on-going, CDM related activity.
Date: 21-04-2009 Submission of documents for Host Country Approval	Letter dated 21.04.2009 [IRL 34]	<input checked="" type="checkbox"/> Verified for the evidence of serious consideration CDM for project activity.
Date: 09-06-2009 Appointment of DOE for validation	Appointment of TUV SUD	<input checked="" type="checkbox"/> Verified. The evidence considered as proof for on-going, CDM related activity.

This confirms that the project complies with the requirements to demonstrate the prior consideration of the CDM.

3.6.2 Identifications of alternatives

The additionality of the project activity has been demonstrated as per the Attachment A to Appendix B of simplified modalities and procedures for small-scale CDM project activities. Baseline scenario has been prescribed in the applied methodology.

3.6.3 Investment analysis

Investment analysis is not applicable as this is a small scale project activity and the additionality of the project activity has been demonstrated as per the Attachment A to Appendix B of simplified modalities and procedures for small-scale CDM project activities.

3.6.4 Barrier analysis

The project participants have used the barrier analysis in order to demonstrate the additionality of the project. The presented barriers are as follows:

➤ Investment Barrier

Investment Barrier:

The total cost of project is 568.5 million INR i.e 107.27 million INR/MW which according to PP is higher than the normal hydro power project activity which is verified by review of the rejection of the loan by some banks. The loan request for the project activity was denied by the Indian Renewable Energy Development Authority (IREDA) [IRL 27]. DOE has verified that IREDA had provided loan for other similar projects by investors which are registered CDM project activity (ref no. 0327 and 0328). Later on the loan was provided by Axis bank for the project activity after submission from PP that the project is liable for CDM benefits and same has been considered in the feasibility report of the project [IRL 30].

The project proponent has carried out an investment analysis based on the equity part of investment cost, tariff structure, and cost of production. For this purpose, the post-tax Equity IRR has been chosen as the financial indicator and the Cost of Equity as the benchmark. PP has calculated cost of equity with **Capital Asset Pricing Model (CAPM)** as **16.70%** considering the risk premium associated with a power project. As per para 12 of “Guidance on the Assessment of Investment Analysis” (EB 51, Annex 58), Cost of equity is considered to be an appropriate benchmark for equity IRR. In order to evaluate the financial viability of the project, the project developer is required to assess the expected minimum returns on debt as well as equity components of the total investment. It is reasonable to assume that no investment would have been done in this type of project if the rate of return was lower than this benchmark.

TUV-SUD was convinced of the appropriateness of the calculated benchmark. The PP has demonstrated the calculation of the benchmark by adopting **CAPM** for calculation of cost of equity. As per para 14 of the “Guidance on the Assessment of Investment Analysis” (EB 51, Annex 58), the company’s internal benchmark or expected return for the calculation of return on equity for the WACC calculation can only be used if the project proponent is the only credible project developer. As this project activity could have been developed by other developer or investor simultaneously bidding for the project site, the project proponent has calculated the return on equity or cost of equity as per the CAPM model, considering risk free rate (as per Reserve Bank of India) the historical market return rate of BSE (Bombay Stock Exchange) – 30 (since 1979) and the beta value for power companies listed at the Bombay Stock Exchange, which are applicable to any investor investing in the Indian power sector.

Beta value for the project activity has been derived using Beta values of listed companies, whose operations and risk profiles are similar to the project activity (i.e. Power Sector) and are listed in BSE 30, using 5 years of available data, or in some cases, the data since incorporation of the company. The group of companies selected for beta assesment is deemed to be correct as these companies invest in power generation from renewable source of power. The beta value has been calculated using arithmetic mean of betas of identified companies as 1.108. Beta value of the representative companies has been taken from Bloomberg Terminal (A computer system provided by Bloomberg

L.P. that enables its subscribers to access the Bloomberg Professional service through which one can monitor and analyze real-time financial market data movements and place trades) [IRL 57]. The value of beta has been checked and considered appropriate with the help of screen shots provided by PP from "BSE 30" via Bloomberg L.P [IRL 57]. BSE Sensex Stock Index has been used to represent the market return while calculating the benchmark. The BSE SENSEX (Sensitive index), also called the "BSE 30", is a widely used market index in India and Asia. It consists of the largest and most actively traded stocks, representative of various sectors of the Indian economy and has the base value of 100 as on April 1, 1979. The Bombay Stock Exchange (BSE) authorities review and modify its composition to make sure it reflects current market conditions. The historical returns generated by BSE Sensex since its base value in April 1979 and upto the time of investment decision have been studied and used for the calculation of the benchmark and hence assumed to be correct to use for calculation of Beta.

Based on the data in the Feasibility Report [IRL 20], the equity IRR without CDM revenue has been estimated to be 10.25 %; which shows that the proposed project is financially not viable without CDM revenue. The investment analysis has been performed for 20 years considering annual operational costs, taxes and incentives, total investments and revenue from the power generation with inclusion of fair value of its assets at the end of the assessment period. All the taxes and tax incentives are confirmed to be applied correctly and as per the Indian Income Tax Act.

The project developer has adopted straight line depreciation for computing book profit, which is an established accounting method. TUV-SUD was able to verify that all the key inputs used from the Detailed Project Report for the financial analysis according to Para 109 and 111 of the VVM, version 1.2 in following manner. As per para 111 of the VVM, version 1.2, it was confirmed that the Feasibility Report was the basis of the decision to proceed with the investment in the project. The Feasibility Report was finalized on January 2006 and investment decision was taken in February 2006 [IRL 22]. Since there was no significant gap in the events the values are considered to be applicable at the time of investment decision.

All the assumptions in the financial analysis are referred from the Feasibility Report. Only tariff rate has been considered according to the new tariff structure (as per New & Renewable Sources of Energy (NRSE) policy of 2006). The tariff applicable to the project proponent was Rs. 3.49 per unit with no escalation (as per the old NRSE Policy of 2001) at the time of Feasibility Report prepared by Pentaflo Hydro Engineers, which was the basis for investment decision. However, the new tariff structure (as per NRSE policy 2006) has been taken into consideration while calculating IRR so as to result in a more conservative estimate. Hence, the results of the DPR is assumed to be relevant and applicable. The equipment cost and operation and maintenance cost used have been verified against the Feasibility Report and loan document and found to be inline. The tariff considered has been verified against the NRSE policy of 2006 [IRL 53].

The gross energy generation figure of 29.29 million units i.e GWh taken in the financial analysis corresponds to 5.30 MW power generation. Refer to IRL 20 – Feasibility Report that shows the results of Power Potential studies carried out and hence found appropriate.

Following the guidance on the assessment of investment analysis (EB51, Annex 58), the input values for the investment and benchmark analysis have been validated as follows:

Description	Source / Cross-check	Auditor Conclusion
Total investment of 568.5 million Indian national Rupee (INR)	Feasibility Report [IRL 20] The investment cost has been cross-checked with Loan Sanction letter and purchase orders [IRL7, 30, 32]	<input checked="" type="checkbox"/> Verified from DPR chapter-05, 'cost estimate' and loan sanction letter. This has been further corss-checked

Description	Source / Cross-check	Auditor Conclusion
		with Certificate from Chartered Accountants firm, Om & Jaswani, Chartered Accountants dated 26 Oct 2010 which states that the cost incurred for the project is INR 5700 lacs* [IRL 64].
Annual Generation (29.29 GWh)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> This is as per the "Guidelines for the reporting and validation of plant load factors", since the Feasibility Report has been prepared by a third party engineering consultancy 'PentaFlo Hydro Engineers' contracted by the PP and this report has been approved by the state government for implementation approval.
Auxiliary consumption (10%)	Capacity Index of 90% was considered as per the Feasibility Report dated Jan 2006. This includes auxiliary consumption as well as plant availability factor [IRL 20].	<input checked="" type="checkbox"/> Cross -Checked and verified with the UERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2004 (http://www.uerc.gov.in/Rules%20and%20regulation/UERCRegulations/Regulations2004/English%20Regulation%202004/UERC%20(Terms%20&%20Condition%20for%20determination%20of%20Hydro%20generation%20Tariff)%20Regulation,%202004..pdf) has considered capacity Index of 85% for first year and 90% thereafter. Therefore, capacity Index of 90% considered in IRR computations is conservative
Loan interest rate (12.25 %)	Feasibility Report, IREDA Booklet [IRL 20]	<input checked="" type="checkbox"/> Checked and verified with feasibility report & IREDA booklet.
Interest on Working Capital (13.25 %)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Cross-Checked and verified with CERC Tariff Order (http://www.ireda.gov.in/Trifforder/Proceedings/Summary/SHP.pdf). It refers that interest on working capital should be 100-200 bps above the

* 1 million = 10 Lacs

Description	Source / Cross-check	Auditor Conclusion
		Short term PLR of SBI. [IRL 67]. Rate during 05-06 is 10.5% PLR. Short term will be usually 100 bps higher than PLR (http://in.reuters.com/article/2010/01/04/india-plr-idINSGE6030BH20100104)
Moratorium on Loan (2 Year)	Bank Loan Sanction Letter [IRL 30]	☑ Checked and verified.
Repayment of Loan (9 Years)	Bank Loan Sanction Letter [IRL 30]	☑ Checked and verified.
Benchmark (16.70%)	Cost of Equity [IRL43 & 44]	☑ Cost of equity calculations are based on publicly available data sources with risk premium specific to the risk profile of the project. http://www.investopedia.com/articles/06/CAPM.asp?viewed=1
Debt Equity Ratio : 75%:25%	IRR spread sheet, Bank Loan Sanction Letter [IRL 43, 30]	☑ Checked and verified.
Cost of debt (11.25%)	Average Prime Lending Rate in March 2007 http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/76620.pdf [IRL 56]	☑ Checked and verified.
Market Return (18.69%)	BSE Sensex of India http://www.bseindia.com/histdata/hindices.asp [IRL 55]	☑ Checked and verified with BSE Sensex data.
Risk Free Rate (7.15%)	table 123 : Interest rates on central and state government dated securities. http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/80303.pdf [IRL 54]	☑ Checked and verified.
Beta (1.159)	Bloomberg L.P [IRL 57]	☑ Beta value for the project activity has been derived using Beta values of listed companies, whose operations and risk profiles are as similar to the project activity (i.e. Power Sector), using 5 years of available data, or in some cases, the data since incorporation of the company. Beta value of the representative

Description	Source / Cross-check	Auditor Conclusion
		companies has been taken from Bloomberg Terminal (A computer system provided by Bloomberg L.P. that enables its subscribers to access the Bloomberg Professional service through which one can monitor and analyze real-time financial market data movements and place trades) [IRL #57].
Tariff at INR 3.92 per kWh(2010-11) and INR 4.04 from 2011-12 onwards.	PSERC directive relating to NRSE Policy 2006 (http://www.pserc.nic.in/pages/NRSE_orders.html) [IRL #53]	<input checked="" type="checkbox"/> Checked and verified.
O&M Expenses (4% of project Cost)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> O&M expenses are conservative as compared to 5% of project cost considered in the UERC Tariff Regulations, 2008
Escalation in O& M (5%)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Cross-checked with UERC Tariff Order Escalation of 4% to be referred from tariff order [IRL 65]. Considering the multiple site involved in the project assumption of 5% as escalation in feasibility report looks reasonable and can be accepted.
Insurance expenses (0.75% of project cost)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Checked and verified.
Annual mill channel compensation (INR 10.35 lacs)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Cross-checked with actual Mill Channel demand from PEDDA & PEDDA demand letter [IRL 66]
Cess on water (INR 0.01/kWh)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Cross-checked with PEDDA Policy http://peda.gov.in/eng/Data/pdfs/policies_acts.pdf & Cess payment receipt letter [IRL 68]
Depreciation rate (Book – 3.40% , IT – 3.70%)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Cross-checked with Book Depreciation: Appendix IA of Income-Tax Rules (http://law.incometaxindia.gov.in/DIT/

Description	Source / Cross-check	Auditor Conclusion
		File_opener.aspx?page=ITRU&schT=rul&csId=2f13c0bd-dec4-4df6-a273-431e3b91a01b&rNo=&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws . Depreciation rate of 3.70 has been calculated as weighted average using Depreciation Schedule of IT Act [IRL 69, 70]
Insurance rate (0.75%)	Feasibility Report [IRL 20]	<input checked="" type="checkbox"/> Cross-checked with insurance quotation for the project activity.

The consideration of Tax and Depreciation has been considered as applicable and details have been provided in table underneath.

Income Tax (Regular) 2006-07	The investment decision was taken on 03/02/2006, which falls under the FY 2006-07. The applicable rate during this financial year was 30% along with 10% Surcharge and 2% Cess. Hence those were the rates available to the PP at the time of decision making and are considered appropriate and valid [IRL 62]..
Tax holiday (Section 80 IA)	As per Sec. 80IA of the Income Tax Act, infrastructure companies (under which the project activity falls) are entitled to claim tax holiday for any 10 consecutive years in the first 15 years of operation [IRL 62].
Minimum Alternative Tax (MAT)	As per Sec. 115JB of the Income Tax Act, each company is required to pay at least, the Minimum Alternative Tax (MAT) along with Surcharge and education cess in a financial year in case its corporate tax is computed to be a lower amount. The MAT Rate has been correctly applied as 7.5% along with 10% Surcharge and 2% cess. Hence, the assumption and computation of tax liability are correct and appropriate [IRL 63].
Fringe Benefit Tax (FBT)	The Fringe Benefit Tax was applied on 10% of the O&M expenses. The tax rate has been applied as per Finance Act 2005 (http://finance.indiamart.com/taxation/tax_rebates/fringe-benefit-tax.html). Further, as per the act, a FBT of 30% plus applicable surcharge and education cess is levied on 20% of the fringe benefit expense. Hence, the fringe benefit tax calculation is considered correct, appropriate and valid at the time of investment decision.
Depreciation (Book)	Depreciation provided for computation of book profit is based on the rates prescribed by Appendix IA of Income-Tax Rules. The rate has been verified and found to be correct (http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=ITRU&schT=rul&csId=2f13c0bd-dec4-4df6-a273-431e3b91a01b&rNo=&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws)
Depreciation (IT)	Depreciation provided for computation of IT liability is based on the Appendix I of Income-Tax rules. This rate has been applied to project. The rate has been verified and found to be correct.

The procedure and the data used for the calculation of equity IRR of 10.25 % has been verified by the DOE. All mistakes in calculation has been corrected and calculation are as per the requirement and guidance. The GSP version of PDD has not used the investment analysis but rather on investment barrier. The changes have been done in accordance to the "Guidance on the Assessment of Investment Analysis".

Sensitivity analysis: The Guidance on assessment of investment analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation ($\pm 10\%$). The project developer has identified power generation (PLF), Change in capital cost, Tariff rate and O&M cost as the most critical assumptions.

Base case	10.25%		
Benchmark	16.70%		
	Decrease	Increase	
Variable Parameter	10%	10%	Comments
Energy Generation	6.42%	14.44 %	<p>This is as per the PDD and the DPR the gross energy generation has been fixed based on the analysis of the available hydrological data with a 75% dependable flow.</p> <p>However, an extreme case of an increase of 10% in PLF has also been considered for the analysis. But the sensitivity analysis demonstrates that the equity IRR is still below the benchmark of 16.56%.</p> <p>DOE agrees with the argument put forth by the project proponent.</p>
Capital Cost	14.71%	6.91%	<p>As per PP’s argument, the capital cost primarily comprises of the cost of building, civil works and plant and machinery. The cost of plant and machinery is unlikely to experience a downward trend owing to the increasing trend in prices of iron, steel, cement as well as labour. Further, the cost of land and buildings is also only expected to increase due to the rising inflation in the country. Thus, taking these factors into consideration, a decrease in capital cost is not envisaged.</p> <p>However, an extreme case of a de-</p>

			crease in capital cost in tune of 10% has been considered for the analysis. DOE agrees with the argument put forth by the project proponent.
Tariff rate	6.36%	14.43%	The equity IRR does not cross the benchmark of 16.56% even with 10% increase in tariff rate.
O&M Cost	11.36%	09.13%	The variation in the cost of Operations and Maintenance does not affect the equity IRR by a significant margin due to its low value.

The DOE confirms the accuracy of the financial calculations carried out for the investment analysis as per VVM v 1.2 paragraph 114 (c). The DOE also confirms that the financial calculations have been verified and no mistakes have been found.

3.6.5 Common practice analysis

As this is a small scale project activity, the additionality of the project activity has been demonstrated as per the 'Attachment A to Appendix B of simplified modalities and procedures for small-scale CDM project activities' wherein common practice analysis is not mandatory. PP chose not to do a common practice analysis, which is justified.

3.7 Monitoring plan

The monitoring plan presented in the PDD complies with the requirements of the applicable methodology AMS I.D/ Version 16. The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found.

The procedures have been reviewed by the assessment team through document review and interviews with the relevant personnel. The information provided and a physical inspection has allowed the assessment team to confirm that the proposed monitoring plan is feasible within the project design. The relevant points of monitoring plan have been discussed with the PPs. Specifically; these points include the location of meters, data management, and the quality assurance and quality control procedures to be implemented in the context of the project.

The baseline emission is being calculated as the product of the net electricity generated from the project activity and the combined margin grid emission factor of the NEWNE regional grid, which has been calculated ex-ante and would remain fixed for the entire crediting period.

The electricity exported and imported from the grid by all power generation units connected to the substation/ interconnection point would be monitored using main and check meters installed at the interconnection point. For each project individually (including APGPL), an electricity meter has been installed right before the transmission lines of units in the unit premise. Joint meter readings will be taken on monthly basis at both (main and check meter) at the interconnection point. Based on this monitored data, monthly bills would be raised for payments to the state electricity utility/Licensee. The plant in-charge would maintain records of joint meter readings. The monthly bills raised for payments against net saleable electricity to the grid would be archived and used for calculation of emission reductions.

Information on accuracy levels of measurement instruments is included in the revised PDD. Recording frequency and archiving methods are considered reasonable and appropriate. As the monitoring

of the main parameter is a key for invoicing of power supplied to the grid, delivery of high quality data is ensured.

No leakage and project activity emissions are evident in the project activity as per the applied methodology.

The individual sub-projects i.e. MHP Khanpur, Sudhar, Akhara, Gholian and Channowal were placed for investment approval in the meeting of the Board of Directors of APGPL on 03 Feb 2006 based on the results of the feasibility study prepared by PentaFlo Hydro Engineers. On analysis of the feasibility study, the DOE can justifiably conclude that all 5 sub-projects were analysed together as a single investment and hence it has been presented in a similar fashion in the PDD.

Further, all the contracts (e.g. contracts for electro-mechanical works, hydro-mechanical works etc.) were signed together on the same date. The financial appraisal by Axis Bank has also been done for the sub-projects clubbed together as a single investment.

Hence, the DOE confirms that the IRR computation presented in the PDD is acceptable and more appropriate the context of the project activity

TÜV SÜD confirms that the monitoring plan described in the PDD is in compliance with the requirements in the applied methodology. Furthermore, TÜV SÜD considers the described monitoring procedures as feasible and is confident that the project participants are capable of implementing this plan. Therefore, the PPs will be able to implement the monitoring plan and the achieved emission reductions can be reported ex-post and verified.

3.8 Sustainable development

The LoA of the host country presented a statement that the project contributes to the sustainable development of the host party [IRL#31].

3.9 Local stakeholder consultation

The relevant stakeholders have been consulted for the project. Appropriate media, i.e., invitation letter has been used to invite the local stakeholders for a meeting. There were no adverse comments received for the project. The stated information in the PDD has been validated based on the submitted documents as follows:

1. Invitation for stakeholder consultation meeting [IRL # 38]
2. Photographs, filled questionnaire, attendance sheet and Minutes of meeting of the stakeholder consultation meeting [IRL # 39, 40, 41, 42]

As a result, TÜV SÜD considers the local stakeholder consultation has been performed adequately according to the CDM requirements

3.10 Environmental impacts

The project participants have not undertaken an environmental impact assessment as it is not required as per the EIA notification of the Ministry of Environment and Forests, India [IRL 37]. But as per the regulatory requirement the project activity has been accorded with consent to establish [IRL15] and forest clearance [IRL 13]. Further since the project activity is a run-of-river hydro energy generation; it does not have any significant environmental impacts.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on the UNFCCC website and invited comments by affected Parties, stakeholders, and non-governmental organisations during a 30 day period.

All key information gathered is presented in the table bellow:

GSP Comments

website: http://cdm.unfccc.int/Projects/Validation/DB/J7VSWAYIRNTFQA6UGFUAYVZAGK5MX4/view.html	
Starting date of the global stakeholder consultation process: 2009-09-22	
Comment submitted by: None	Issues raised: -
Response by TÜV SÜD: -	

5 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed CDM project activity:

Abohar Branch Canal Based Small Hydro Project in Punjab, India

Standard auditing techniques have been used for the validation of the project. A methodology-specific protocol for the project has been prepared to conduct the audit in a transparent and comprehensive manner.

The review of the project design documentation, subsequent follow-up interviews, and further verification of references have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria in the protocol. In the opinion of TÜV SÜD, the project meets all relevant UNFCCC requirements for the CDM if the underlying assumptions do not change. TÜV SÜD recommends the project for registration by the CDM Executive Board.

An analysis, as provided by the applied methodology, demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are additional to any that would occur in the absence of the project activity. Considering that the project will be implemented as designed, the project is likely to achieve the estimated amount of emission reductions of 23,527 (annually) tCO₂e and a total estimated of 235,270 tCO₂e as specified within the final PDD version.

The validation has been performed following the requirements of the latest version of the CDM VVM and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM project cycle. Based on the work described in this report, nothing has come to our attention that causes us to believe that any project component or issue has not been covered by the validation process.

Munich, 2011-12-28



Certification Body

“climate and energy” TÜV
SÜD Industrie Service GmbH

Munich, 2011-12-28



Nikunj Agarwal

Assessment Team Leader

Validation of the CDM Project:
Abohar Branch Canal Based Small Hydro Project in Punjab, India



Industrie Service

Annex 1: Validation Protocol

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
A. General description of small-scale project activity				
A.1. Title of the small-scale project activity				
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	2,58	Yes, project title clearly enables to identify the project activity. The project activity is a Canal based hydro power project on Abohar branch in state of Punjab, India.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.2. Are there any indication concerning the revision number and the date of the revision?	2	PDD submitted is version 01 and is dated 21/04/2009 as specified in section A.1.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.3. Is this consistent with the time line of the project's history?	2	See CR1.	CR	<input checked="" type="checkbox"/>
A.2. Description of the small-scale project activity				
A.2.1. Is the description delivering a transparent overview of the project activities?	2,20,58	Yes, the project will generate the electricity using the hydro potential from the Low head canal water and supply it to grid. The main equipment used are 5 turbo generators of cumulative capacity of 5.30 MW.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.2. What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	2	<u>Clarification Request No. 1.</u> The following documents needs to be submitted to the audit team: <ul style="list-style-type: none"> - Detailed Project Report - Equipment purchase agreement - Implementation Agreement - MoU with PEDDA - TPA agreement 	CR	<input checked="" type="checkbox"/>
A.2.3. Is the information provided by these proofs consistent with the information provided by the PDD?	2	See section A.2.2.	CR	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
A.2.4. Is all information presented consistent with details provided by further chapters of the PDD?	2,58	Information within the PDD is consistent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.5. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance?	2,20, 7,8, 58	Yes, the project activity is canal based hydro power project, which would supply electricity to the NEWNE grid of India. The grid is dominated by fossil fuel powered plants.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.6. Is the brief explanation how the project will reduce greenhouse gas emission transparent and suitable?	2,58	Yes, same is stated in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3. Project participants				
A.3.1. Is the form required for the indication of project participants correctly applied?	2,58	The form is correctly applied. Abohar Power Generation Private Limited (Private) is considered as project participant.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.2. Is the participation of the listed entities or Parties confirmed by each one of them?	6	Modalities of communication have been submitted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.3. Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4. Technical description of the small-scale project activity				
A.4.1. Location of the small-scale project activity				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	2,58	Yes, location of the project is correctly mentioned in the PDD. <u>Corrective Action Request No.1.</u> Please provide the correct GSP coordinates of each of the 5 sites of the project activity.	CAR	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
A.4.1.2. How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	20	<u>Clarification Request No. 2.</u> The documents related to clearance from related authorities needs to be submitted such as - -Forest clearance certificate -Land clearance certificate -Implementation Schedule -Consent to establish -consent to operate for commissioned units	CR	<input checked="" type="checkbox"/>
A.4.2. Type and category(ies) and technology/measure of the small-scale project activity				
A.4.2.1. To which type(s) does the project activity belong to? Is the type correctly identified and indicated?	2,3, 58	The type is correctly identified and indicated in the PDD (chapter A.4.2). The project is Type I-renewable energy project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2.2. To which category (ies) does the project activity belong to? Is the category correctly identified and indicated?	2,3, 58	The category is correctly identified and indicated in the PDD (chapter A.4.2). The projects uses AMS I.D, which is appropriate considering that project is a hydro power project and will supply electricity to grid.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2.3. Does the technical design of the project activity reflect current good practices?	2,58	The project uses Vertical axis Semi Kaplan turbines along with suitable generators. <u>Corrective Action Request No.2.</u> Please provide in the PDD, description of other project components viz. diversion weir, power tunnel, penstocks, de-silting chamber etc. Also include details on design discharge for the project activity.	CAR	<input checked="" type="checkbox"/>
A.4.2.4. Does the implementation of the project activity require any technology transfer from Annex-I-countries to the host country (ies)	2,58	No.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
A.4.2.5. Is the technology implemented by the project activity environmentally safe?	2,58	Yes, it is expected that the technology implemented will be environmentally safe.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2.6. Is the information provided in compliance with actual situation or planning?	2,15, 58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2.7. Does the project use state of the art technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country?	2,20, 18	The project uses Vertical axis Semi Kaplan turbines along with suitable generators. It is well established technology for such projects in India.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2.8. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	2,58	It is not likely that the key technology applied will be substituted by other or more efficient technologies.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2.9. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	2,58	<u>Clarification Request No. 3.</u> PP needs to submit the training or competency related documents of the plant personnel involved.	CR	<input checked="" type="checkbox"/>
A.4.2.10. Is information available on the demand and requirements for training and maintenance?	2,58	Please see A.4.2.9.	CR	<input checked="" type="checkbox"/>
A.4.2.11. Is a schedule available for the implementation of the project and are there any risks for delays?	2,58	<u>Corrective Action Request No.3.</u> PP needs to submit the implementation schedule and also mention the expected commissioning date in PDD.	CAR	<input checked="" type="checkbox"/>
A.4.3. Estimated amount of emission reductions over the chosen crediting period				
A.4.3.1. Is the form required for the indication of projected emission reductions correctly applied?	2,58	Yes, it has been correctly applied. <u>Clarification Request No. 4.</u> Provide the spread sheet of emission reduction calculation sheet	CR	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD								
		of the project activity.										
A.4.3.2. Are the figures provided consistent with other data presented in the PDD?	2,58	Yes, the figures are consistent within the PDD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
A.4.3.3. Are the figures consistent with the small-scale criteria for the used Type?	2,3, 58	The project is Type I and is eligible to use this type since installed capacity is less than 15 MW.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
A.4.4. Public funding of the small-scale project activity												
A.4.4.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	2,58	Clarification Request No. 5. Please submit the declaration regarding public funding, whether it has been used or not.	CR	<input checked="" type="checkbox"/>								
A.4.4.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity												
A.4.5.1. Is there a registered small-scale CDM project activity or an application to register another small-scale CDM project activity: with the following characteristics:	2,58	No, the proposed project is not a debundled component of any large scale CDM project activity. This has been checked as per EB 54, Annex 13. <table><tr><td>Debundling checklist</td><td>Yes / No</td></tr><tr><td>The same project participants?</td><td>No</td></tr><tr><td>In the same project category and technology/measure?</td><td>No</td></tr><tr><td>Registered within previous two years? Or in registration process?</td><td>No</td></tr></table>	Debundling checklist	Yes / No	The same project participants?	No	In the same project category and technology/measure?	No	Registered within previous two years? Or in registration process?	No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Debundling checklist	Yes / No											
The same project participants?	No											
In the same project category and technology/measure?	No											
Registered within previous two years? Or in registration process?	No											

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
		Whose boundary is within 1 km of the project boundary of the small scale project activity under consideration?	No	
A.4.5.2. If the answer to all the above question is 'Yes' then does the total size of the small scale project activity combined with previously registered small scale CDM project activity exceeds the limits of small scale CDM project activities?	2,58	Please see section A.4.5.1		<input checked="" type="checkbox"/>
B. Application of a baseline and monitoring methodology				
B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity				
B.1.1.1.Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	2,3, 58	Yes, AMS I.D (version 14) has been applied and reference is clearly indicated in section B.1. <u>Corrective Action Request No.4.</u> Please mention the title of the methodology and version of tool used to calculate the grid emission factor in section B.1. PP is also requested to use the latest version of the methodology	CAR	<input checked="" type="checkbox"/>
B.1.1.2.Is the applied version the most recent one and / or is this version still applicable?	2,3, 58	No., version 16 of AMS I.D is the latest version however version 14 has been used. Refer Section B1.1.1.	CAR	<input checked="" type="checkbox"/>
B.2. Justification of the choice of the project category				
B.2.1. Is the applied methodology considered the most appropriate one?	2,3, 58	Yes, applied methodology AMS.ID "Grid connected electricity generation" is appropriate for this project. The project activity is Canal based hydro power project of 5.30 MW capacity supplying electricity to fossil fuel dominated NEWNE grid. However version needs to be updated. Please refer section B.1.1.1.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.1.1. Criterion 1: This category comprises	2,3,			<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		PPD in GSP	Final PDD								
renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable bio-mass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.	58	<table><tr><td>Applicability checklist</td><td>Yes / No / NA</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> Please see B.2.1		Applicability checklist	Yes / No / NA	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Compliance verified?	Yes		
Applicability checklist	Yes / No / NA												
Criterion discussed in the PDD?	Yes												
Compliance provable?	Yes												
Compliance verified?	Yes												
B.2.1.2.Criterion 2: If the unit added has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	2,20, 58	<table><tr><td>Applicability checklist</td><td>Yes / No / NA</td></tr><tr><td>Criterion discussed in the PDD?</td><td>(NA)</td></tr><tr><td>Compliance provable?</td><td>(NA)</td></tr><tr><td>Compliance verified?</td><td>(NA)</td></tr></table> This criteria is not applicable since the project does not involve any non-renewable component.		Applicability checklist	Yes / No / NA	Criterion discussed in the PDD?	(NA)	Compliance provable?	(NA)	Compliance verified?	(NA)	☑	☑
Applicability checklist	Yes / No / NA												
Criterion discussed in the PDD?	(NA)												
Compliance provable?	(NA)												
Compliance verified?	(NA)												
B.2.1.3. Criterion 3: Combined heat and power (co-generation) are not eligible under this category.	2,20, 58	<table><tr><td>Applicability checklist</td><td>Yes / No / NA</td></tr><tr><td>Criterion discussed in the PDD?</td><td>(NA)</td></tr><tr><td>Compliance provable?</td><td>(NA)</td></tr><tr><td>Compliance verified?</td><td>(NA)</td></tr></table> The project activity is hydro power based electricity generation system hence this is not applicable.		Applicability checklist	Yes / No / NA	Criterion discussed in the PDD?	(NA)	Compliance provable?	(NA)	Compliance verified?	(NA)	☑	☑
Applicability checklist	Yes / No / NA												
Criterion discussed in the PDD?	(NA)												
Compliance provable?	(NA)												
Compliance verified?	(NA)												
B.2.1.4. Criterion 4: In the case of project activities that involve the addition of renewable energy generation units at an	2,20, 58	<table><tr><td>Applicability checklist</td><td>Yes / No / NA</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr></table>		Applicability checklist	Yes / No / NA	Criterion discussed in the PDD?	Yes	CAR	☑				
Applicability checklist	Yes / No / NA												
Criterion discussed in the PDD?	Yes												

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		PPD in GSP	Final PDD								
existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.		<table><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> <p><u>Corrective Action Request No.5.</u></p> <p>Please clarify in the PDD if the project activity involves addition of hydro power generation units at an existing hydro power plant.</p>	Compliance provable?	Yes	Compliance verified?	Yes							
Compliance provable?	Yes												
Compliance verified?	Yes												
B.2.1.5. Criterion 5: Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.	2,20, 58	<table><tr><td>Applicability checklist</td><td>Yes / No / NA</td></tr><tr><td>Criterion discussed in the PDD?</td><td>NA</td></tr><tr><td>Compliance provable?</td><td>NA</td></tr><tr><td>Compliance verified?</td><td>NA</td></tr></table> <p>As project activity is green field project of this criterion is not applicable to this project activity.</p>	Applicability checklist	Yes / No / NA	Criterion discussed in the PDD?	NA	Compliance provable?	NA	Compliance verified?	NA		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No / NA												
Criterion discussed in the PDD?	NA												
Compliance provable?	NA												
Compliance verified?	NA												
B.3. Description of the project boundary													
B.3.1. Does the project boundary include physical, geographical site where the project activity takes place?	2,20, 58	Yes, the physical site of the project activity is included in the project boundary.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
B.3.2. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by / indication included to the PDD?	2,20, 58	Yes.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
B.4. Description of baseline and its development													
B.4.1. Have all technically feasible baseline scenario alternatives to the project activity been identified and discussed by the PDD? Why can this list be considered as	2,58	Generation of electricity at grid has been considered as the applicable baseline scenario, in line with the methodology. <u>Clarification Request No. 6.</u> Please provide the excel sheet for grid emission factor calculation,		CR	<input checked="" type="checkbox"/>								

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD
being complete?		which includes the list of power plants, energy generation and fuel consumption data that is used to calculate the OM and BM factors.		
B.4.2. Does the project identify correctly and excludes those options not in line with regulatory or legal requirements?	2,58	The only baseline scenario discussed is generation of equivalent electricity at grid, in absence of project activity. This scenario is in line with regulatory and legal requirements.		<input checked="" type="checkbox"/>
B.4.3. Have applicable regulatory or legal requirements been identified?	2,8, 13, 14, 15, 58	Yes, all applicable regulatory and legal requirements for the project activity has been identified and taken from state government by project proponent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.4. Does the PDD identify the most likely baseline scenario in absence of the project activity?	2,58	Yes. Fossils fuel dominated grid electricity is considered baseline scenario for this project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.5. Is this identification supported by official and/or verifiable documents (e.g. studies, web pages, certificates, etc)?	2,58	See CR1.	CR	<input checked="" type="checkbox"/>
B.4.6. Is the identified baseline scenario in line with regulatory or legal requirements?	2,58	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:				
B.5.1. Has CDM been considered before the starting date of the project activity? What kind of evidences are available?	2,58	<u>Clarification Request No. 7.</u> Please submit following documents – 1. DPR 2. All supporting document to the each step of timeline provided in PDD including CDM consideration 3. Financial calculation sheet	CR	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PPD in GSP	Final PDD
			4. Loan documents 5. Evidence for equity investment 6. Various clearances 7. Purchase order for major equipments 8. Land documents 9. Technical specification of equipments 10. Power purchase agreement		
B.5.2.	In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	2,3, 58	Barrier analysis has been conducted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.3.	In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?	2,3, 58	Barrier analysis has been conducted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.4.	In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	2,3, 58	Barrier analysis has been conducted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.5.	In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	2,3, 58	Barrier analysis has been conducted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.6.	In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	2,3, 58	Barrier analysis has been conducted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.7.	In case of Option II or Option III: Is the	2,3,	Barrier analysis has been conducted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PPD in GSP	Final PDD
	analysis presented in a transparent manner including publicly available proofs for the utilized data?	58			
B.5.8.	In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	2,58	<p><u>Corrective Action Request No.6.</u></p> <p>Please include all financial details and source in the PDD in transparent manner. Please submit the excel calculation sheet for IRR calculations.</p> <p>It has been mentioned that IRR analysis has been done and compared with WACC, and neither has been presented in PDD.</p> <p><u>Corrective Action Request No.7.</u></p> <p>Please clarify in the PDD if project IRR or equity is calculated. Justify the choice. Benchmark should be chosen according to choice of project or equity IRR.</p>	CAR	<input checked="" type="checkbox"/>
B.5.9.	In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	2,58	Please see below B.5.15		<input checked="" type="checkbox"/>
B.5.10.	In case of applying step 3 (barrier analysis): Is it transparently shown that the execution of at least one of the alternatives is not prevented by the identified barriers?	2,58	The alternative to the project is equivalent electricity at grid. The barriers discussed are specific to the project. See CR7.	CR	<input checked="" type="checkbox"/>
B.5.11.	Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?	2,58	NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.12.	If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be	2,58	Please see above B.5.10	CR	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD															
implemented without the CDM component (step 4b)?																			
B.5.13. Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers (step 5)?	2,58	See CR7.	CR	☑															
If the additionality tool has not been used please answer B.5.13 to B.5.18																			
B.5.14. If the starting date of the project activity is before the date of validation, is evidence available to prove that incentive from the CDM was seriously considered in the decision to proceed with the project activity?	2,58	See CR7. Please see A.1.3.	CR	☑															
B.5.15. Is a complete list of barriers developed that prevents the project activity to occur?	2,58	List of barriers has been given in the PDD.	☑	☑															
B.5.16. Does this list include at least one of the following barriers?	2,58	<table><tr><th>Barrier</th><th>Discussed?</th><th>Verifiable?</th></tr><tr><td>Investment</td><td>Yes</td><td>No</td></tr><tr><td>Technological</td><td>-</td><td>-</td></tr><tr><td>Due to prevailing practice</td><td>-</td><td>-</td></tr><tr><td>Other</td><td>Yes</td><td>No</td></tr></table> See CR7.	Barrier	Discussed?	Verifiable?	Investment	Yes	No	Technological	-	-	Due to prevailing practice	-	-	Other	Yes	No	CR	☑
Barrier	Discussed?	Verifiable?																	
Investment	Yes	No																	
Technological	-	-																	
Due to prevailing practice	-	-																	
Other	Yes	No																	
B.5.17. Does the discussion sufficiently take into account relevant national and/or sectoral policies?	2,58	See CR7.	CR	☑															
B.5.18. Is transparent and documented evidence provided on the existence and significance of these barriers?	2,58	See CR7.	CR	☑															

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD						
B.5.19. Is it appropriately explained how the approval of the project activity will help to overcome the identified barriers?	2,58	See CR7.	CR	<input checked="" type="checkbox"/>						
B.6. Emissions reductions										
B.6.1. Explanation of methodological choices										
B.6.1.1.Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	2,3, 58	Yes, the emission reductions are based on product of net electricity supplied to grid and grid emission factor.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
B.6.1.2.Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	2,3, 58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
B.6.1.3.Determination of project emissions (Comment on any line answered “No”)										
a. Component 1: emissions from use of fossil fuel	2,3, 58	<div>It has been verified that the project activity would be generating electricity by utilising hydro potential from canal water. Fossil fuels would not be used in the project activity.</div> <table><tr><td>Project emission checklist</td><td>Yes / No</td></tr><tr><td>Component discussed in the PDD?</td><td>NA</td></tr><tr><td>Formulae correctly applied?</td><td>NA</td></tr></table>	Project emission checklist	Yes / No	Component discussed in the PDD?	NA	Formulae correctly applied?	NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Project emission checklist	Yes / No									
Component discussed in the PDD?	NA									
Formulae correctly applied?	NA									
B.6.1.4.Are the formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameters to be used and / or monitored?	2,3, 58	Yes, the baseline emissions are based on product of net electricity supplied to grid and grid emission factor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
B.6.1.5.Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete	2,3, 58	Leakage is not being considered in the emission reduction and is taken as zero.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD																		
identification of parameter to be used and / or monitored?																						
B.6.1.6.Are the formulae required for the determination of emission reductions correctly presented?	2,3, 58	Yes, the emission reductions are based on product of net electricity supplied to grid and grid emission factor.	☑	☑																		
B.6.2. Data and parameters that are available at validation																						
B.6.2.1.Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?	2,58	<u>Corrective Action Request No.8.</u> In the list of parameter and ACM 0002 has been referred for OM, BM and CM. Instead “Tool to calculate the emission factor for an electricity system” shall be used. Parameter for CM shall also be included.	CAR	☑																		
Comment on any line answered with “No”																						
B.6.2.2.Parameter Title: Annual electricity supplied to the grid prior to retrofit (applicable only for retrofit and modification activities)	2,58	As project activity is Greenfield project. This parameter is not applicable <table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>(NA)</td></tr><tr><td>Data unit correctly expressed?</td><td>(NA)</td></tr><tr><td>Appropriate description of parameter?</td><td>(NA)</td></tr><tr><td>Source clearly referenced?</td><td>(NA)</td></tr><tr><td>Correct value provided?</td><td>(NA)</td></tr><tr><td>Has this value been verified?</td><td>(NA)</td></tr><tr><td>Choice of data correctly justified?</td><td>(NA)</td></tr><tr><td>Measurement method correctly described?</td><td>(NA)</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	(NA)	Data unit correctly expressed?	(NA)	Appropriate description of parameter?	(NA)	Source clearly referenced?	(NA)	Correct value provided?	(NA)	Has this value been verified?	(NA)	Choice of data correctly justified?	(NA)	Measurement method correctly described?	(NA)	☑	☑
Data Checklist	Yes / No																					
Title in line with methodology?	(NA)																					
Data unit correctly expressed?	(NA)																					
Appropriate description of parameter?	(NA)																					
Source clearly referenced?	(NA)																					
Correct value provided?	(NA)																					
Has this value been verified?	(NA)																					
Choice of data correctly justified?	(NA)																					
Measurement method correctly described?	(NA)																					

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PPD in GSP	Final PDD																		
B.6.2.3. Parameter Title: Emission factor of the grid (CM)	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description of parameter?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>To be verified</td></tr><tr><td>Has this value been verified?</td><td>To be verified</td></tr><tr><td>Choice of data correctly justified?</td><td>To be verified</td></tr><tr><td>Measurement method correctly described?</td><td>To be verified</td></tr></table> <p>See CR 4 and CAR 7 Please see B.6.2.1</p>	Data Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	No	Appropriate description of parameter?	No	Source clearly referenced?	No	Correct value provided?	To be verified	Has this value been verified?	To be verified	Choice of data correctly justified?	To be verified	Measurement method correctly described?	To be verified	CR & CAR	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																					
Title in line with methodology?	No																					
Data unit correctly expressed?	No																					
Appropriate description of parameter?	No																					
Source clearly referenced?	No																					
Correct value provided?	To be verified																					
Has this value been verified?	To be verified																					
Choice of data correctly justified?	To be verified																					
Measurement method correctly described?	To be verified																					
B.6.2.4. Parameter Title: Operating margin (OM) emission factor of the grid	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	CR	<input checked="" type="checkbox"/>												
Data Checklist	Yes / No																					
Title in line with methodology?	Yes																					
Data unit correctly expressed?	Yes																					

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		PPD in GSP	Final PDD																
		Appropriate description?	Yes																		
		Source clearly referenced?	No																		
		Correct value provided?	To be verified																		
		Has this value been verified?	To be verified																		
		Choice of data correctly justified?	To be verified																		
		Measurement method correctly described?	No																		
		See CR4 & CAR7 Please see B.6.2.3																			
B.6.2.5. Parameter Title: Build margin (BM) emission factor of the grid	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>To be verified</td></tr><tr><td>Has this value been verified?</td><td>To be verified</td></tr><tr><td>Choice of data correctly justified?</td><td>To be verified</td></tr></table>		Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	No	Correct value provided?	To be verified	Has this value been verified?	To be verified	Choice of data correctly justified?	To be verified	CR CAR	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																				
Title in line with methodology?	Yes																				
Data unit correctly expressed?	Yes																				
Appropriate description of parameter?	Yes																				
Source clearly referenced?	No																				
Correct value provided?	To be verified																				
Has this value been verified?	To be verified																				
Choice of data correctly justified?	To be verified																				

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS			PPD in GSP	Final PDD																		
		<table><tr><td>Measurement method correctly described?</td><td>No</td></tr></table> See CR4 & CAR7 Please see B.6.2.3			Measurement method correctly described?	No																		
Measurement method correctly described?	No																							
B.6.2.6. Parameter Title: fuel consumption of each power source	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Choice of data correctly justified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr></table>			Data Checklist	Yes / No	Title in line with methodology?	NA	Data unit correctly expressed?	NA	Appropriate description of parameter?	NA	Source clearly referenced?	NA	Correct value provided?	NA	Has this value been verified?	NA	Choice of data correctly justified?	NA	Measurement method correctly described?	NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																							
Title in line with methodology?	NA																							
Data unit correctly expressed?	NA																							
Appropriate description of parameter?	NA																							
Source clearly referenced?	NA																							
Correct value provided?	NA																							
Has this value been verified?	NA																							
Choice of data correctly justified?	NA																							
Measurement method correctly described?	NA																							
B.6.2.7. Parameter Title: emission coefficient of each fuel	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr></table>			Data Checklist	Yes / No	Title in line with methodology?	NA	Data unit correctly expressed?	NA	Appropriate description of parameter?	NA	Source clearly referenced?	NA	Correct value provided?	NA	Has this value been verified?	NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Data Checklist	Yes / No																							
Title in line with methodology?	NA																							
Data unit correctly expressed?	NA																							
Appropriate description of parameter?	NA																							
Source clearly referenced?	NA																							
Correct value provided?	NA																							
Has this value been verified?	NA																							

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS			PPD in GSP	Final PDD																		
		Choice of data correctly justified?	NA																					
		Measurement method correctly described?	NA																					
B.6.2.8. Parameter Title: electricity generation of each power source	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>NA</td></tr><tr><td>Data unit correctly expressed?</td><td>NA</td></tr><tr><td>Appropriate description of parameter?</td><td>NA</td></tr><tr><td>Source clearly referenced?</td><td>NA</td></tr><tr><td>Correct value provided?</td><td>NA</td></tr><tr><td>Has this value been verified?</td><td>NA</td></tr><tr><td>Choice of data correctly justified?</td><td>NA</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr></table>			Data Checklist	Yes / No	Title in line with methodology?	NA	Data unit correctly expressed?	NA	Appropriate description of parameter?	NA	Source clearly referenced?	NA	Correct value provided?	NA	Has this value been verified?	NA	Choice of data correctly justified?	NA	Measurement method correctly described?	NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																							
Title in line with methodology?	NA																							
Data unit correctly expressed?	NA																							
Appropriate description of parameter?	NA																							
Source clearly referenced?	NA																							
Correct value provided?	NA																							
Has this value been verified?	NA																							
Choice of data correctly justified?	NA																							
Measurement method correctly described?	NA																							
B.6.2.9. Parameter Title: surface area of full reservoir level (for new hydroelectric activities only)	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>(NA)</td></tr><tr><td>Data unit correctly expressed?</td><td>(NA)</td></tr><tr><td>Appropriate description of parameter?</td><td>(NA)</td></tr><tr><td>Source clearly referenced?</td><td>(NA)</td></tr><tr><td>Correct value provided?</td><td>(NA)</td></tr><tr><td>Has this value been verified?</td><td>(NA)</td></tr><tr><td>Choice of data correctly justified?</td><td>(NA)</td></tr></table>			Data Checklist	Yes / No	Title in line with methodology?	(NA)	Data unit correctly expressed?	(NA)	Appropriate description of parameter?	(NA)	Source clearly referenced?	(NA)	Correct value provided?	(NA)	Has this value been verified?	(NA)	Choice of data correctly justified?	(NA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Data Checklist	Yes / No																							
Title in line with methodology?	(NA)																							
Data unit correctly expressed?	(NA)																							
Appropriate description of parameter?	(NA)																							
Source clearly referenced?	(NA)																							
Correct value provided?	(NA)																							
Has this value been verified?	(NA)																							
Choice of data correctly justified?	(NA)																							

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		PPD in GSP	Final PDD																		
		<table><tr><td>Measurement method correctly described?</td><td>(NA)</td></tr></table> The project activity is canal hydro power project.		Measurement method correctly described?	(NA)																		
Measurement method correctly described?	(NA)																						
B.6.2.10. Parameter Title: fraction of time with low costs /must run plant at the margin (for simple adjusted OM only)	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>(NA)</td></tr><tr><td>Data unit correctly expressed?</td><td>(NA)</td></tr><tr><td>Appropriate description of parameter?</td><td>(NA)</td></tr><tr><td>Source clearly referenced?</td><td>(NA)</td></tr><tr><td>Correct value provided?</td><td>(NA)</td></tr><tr><td>Has this value been verified?</td><td>(NA)</td></tr><tr><td>Choice of data correctly justified?</td><td>(NA)</td></tr><tr><td>Measurement method correctly described?</td><td>(NA)</td></tr></table> Simple OM has been calculated.		Data Checklist	Yes / No	Title in line with methodology?	(NA)	Data unit correctly expressed?	(NA)	Appropriate description of parameter?	(NA)	Source clearly referenced?	(NA)	Correct value provided?	(NA)	Has this value been verified?	(NA)	Choice of data correctly justified?	(NA)	Measurement method correctly described?	(NA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																						
Title in line with methodology?	(NA)																						
Data unit correctly expressed?	(NA)																						
Appropriate description of parameter?	(NA)																						
Source clearly referenced?	(NA)																						
Correct value provided?	(NA)																						
Has this value been verified?	(NA)																						
Choice of data correctly justified?	(NA)																						
Measurement method correctly described?	(NA)																						
B.6.2.11. Parameter Title: electricity imports	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>(NA)</td></tr><tr><td>Data unit correctly expressed?</td><td>(NA)</td></tr><tr><td>Appropriate description of parameter?</td><td>(NA)</td></tr><tr><td>Source clearly referenced?</td><td>(NA)</td></tr><tr><td>Correct value provided?</td><td>(NA)</td></tr></table>		Data Checklist	Yes / No	Title in line with methodology?	(NA)	Data unit correctly expressed?	(NA)	Appropriate description of parameter?	(NA)	Source clearly referenced?	(NA)	Correct value provided?	(NA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
Data Checklist	Yes / No																						
Title in line with methodology?	(NA)																						
Data unit correctly expressed?	(NA)																						
Appropriate description of parameter?	(NA)																						
Source clearly referenced?	(NA)																						
Correct value provided?	(NA)																						

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		PPD in GSP	Final PDD																		
		<table><tr><td>Has this value been verified?</td><td>(NA)</td></tr><tr><td>Choice of data correctly justified?</td><td>(NA)</td></tr><tr><td>Measurement method correctly described?</td><td>(NA)</td></tr></table>	Has this value been verified?	(NA)	Choice of data correctly justified?	(NA)	Measurement method correctly described?	(NA)															
Has this value been verified?	(NA)																						
Choice of data correctly justified?	(NA)																						
Measurement method correctly described?	(NA)																						
		The emission factor of grids from where electricity is imported has been used directly from published data.																					
B.6.2.12. Parameter Title: CO ₂ emission coefficient of fuels used in connected grids	2,58	<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>(NA)</td></tr><tr><td>Data unit correctly expressed?</td><td>(NA)</td></tr><tr><td>Appropriate description of parameter?</td><td>(NA)</td></tr><tr><td>Source clearly referenced?</td><td>(NA)</td></tr><tr><td>Correct value provided?</td><td>(NA)</td></tr><tr><td>Has this value been verified?</td><td>(NA)</td></tr><tr><td>Choice of data correctly justified?</td><td>(NA)</td></tr><tr><td>Measurement method correctly described?</td><td>(NA)</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	(NA)	Data unit correctly expressed?	(NA)	Appropriate description of parameter?	(NA)	Source clearly referenced?	(NA)	Correct value provided?	(NA)	Has this value been verified?	(NA)	Choice of data correctly justified?	(NA)	Measurement method correctly described?	(NA)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																						
Title in line with methodology?	(NA)																						
Data unit correctly expressed?	(NA)																						
Appropriate description of parameter?	(NA)																						
Source clearly referenced?	(NA)																						
Correct value provided?	(NA)																						
Has this value been verified?	(NA)																						
Choice of data correctly justified?	(NA)																						
Measurement method correctly described?	(NA)																						
		The emission factor of grids from where electricity is imported has been used directly from published data.																					

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

B.6.3. <i>Ex-ante calculation of emission reductions</i>				
B.6.3.1. Is the projection based on the same procedures as used for future monitoring?	2,58	<u>Corrective Action Request No.9.</u> Please correct the baseline emissions calculation based on the net electricity generation, instead of gross electricity (29,014 MWh) currently given in the PDD.	CAR	<input checked="" type="checkbox"/>
B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?	2,58	See CR4	CR	<input checked="" type="checkbox"/>
B.6.3.3. If there is more than one component of the project activity, then, are emission reduction calculations provided separately for each component?	2,58	No, only one component is there in project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.3.4. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4. <i>Summary of the ex-ante estimation of emission reductions</i>				
B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	2,58	The project activity does not lead to any GHG emissions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.2. Is the form/table required for the indication of projected emission reductions correctly applied?	2,58	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.3. If the project activity involves more than one component, is separate table included for each of the component.	2,58	Project activity involves only one component.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.4. Do these values comply with small-scale criteria for every year?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.5. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated credit-	2,58	See CR2.	CR	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

ing period?																												
B.6.4.6.Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																								
B.7. Application of the monitoring methodology and description of the monitoring plan																												
B.7.1. Data and parameters monitored																												
B.7.1.1.Is the list of parameters presented in chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?	2,58	The list is not complete. Please see below.	CAR CR	<input checked="" type="checkbox"/>																								
B.7.1.2.Comment on any line answered with “No”																												
Parameter Title: Electricity generated by the renewable technology	2,58	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided for estimation?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr><tr><td>Correct reference to standards?</td><td>No</td></tr><tr><td>Indication of accuracy provided?</td><td>No</td></tr><tr><td>QA/QC procedures described?</td><td>No</td></tr><tr><td>QA/QC procedures appropriate?</td><td>No</td></tr></table> <p><u>Clarification Request No. 8.</u></p> <p>Please clarify if the parameter indicated in the PDD is gross export or net export after deducting import. If import is deducted then the same should be included as monitoring parameter in the monitoring plan.</p> <p><u>Corrective Action Request No.10.</u></p>	Monitoring Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	Yes	Appropriate description of parameter?	No	Source clearly referenced?	No	Correct value provided for estimation?	No	Has this value been verified?	No	Measurement method correctly described?	No	Correct reference to standards?	No	Indication of accuracy provided?	No	QA/QC procedures described?	No	QA/QC procedures appropriate?	No	CAR CR	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	No																											
Data unit correctly expressed?	Yes																											
Appropriate description of parameter?	No																											
Source clearly referenced?	No																											
Correct value provided for estimation?	No																											
Has this value been verified?	No																											
Measurement method correctly described?	No																											
Correct reference to standards?	No																											
Indication of accuracy provided?	No																											
QA/QC procedures described?	No																											
QA/QC procedures appropriate?	No																											

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

		<p>Please provide justification for value of electricity generation used in the PDD. Also mention the frequency of monitoring the same. Reference to project emissions should be removed from section B.7.1 of the PDD.</p> <p><u>Clarification Request No. 9.</u></p> <p>Please provide the supporting document for the technical details of the energy meter.</p> <p><u>Clarification Request No. 10.</u></p> <p>Please clarify how the joint metering data can be cross-checked with control room data. Include the required parameters in the monitoring plan.</p>																										
Parameter Title: Amount of biomass input (if applicable)	2,58	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>(NA)</td></tr><tr><td>Data unit correctly expressed?</td><td>(NA)</td></tr><tr><td>Appropriate description of parameter?</td><td>(NA)</td></tr><tr><td>Source clearly referenced?</td><td>(NA)</td></tr><tr><td>Correct value provided for estimation?</td><td>(NA)</td></tr><tr><td>Has this value been verified?</td><td>(NA)</td></tr><tr><td>Measurement method correctly described?</td><td>(NA)</td></tr><tr><td>Correct reference to standards?</td><td>(NA)</td></tr><tr><td>Indication of accuracy provided?</td><td>(NA)</td></tr><tr><td>QA/QC procedures described?</td><td>(NA)</td></tr><tr><td>QA/QC procedures appropriate?</td><td>(NA)</td></tr></table> <p>No biomass would be used. Project activity would generate power from hydro potential available in canal.</p>	Monitoring Checklist	Yes / No	Title in line with methodology?	(NA)	Data unit correctly expressed?	(NA)	Appropriate description of parameter?	(NA)	Source clearly referenced?	(NA)	Correct value provided for estimation?	(NA)	Has this value been verified?	(NA)	Measurement method correctly described?	(NA)	Correct reference to standards?	(NA)	Indication of accuracy provided?	(NA)	QA/QC procedures described?	(NA)	QA/QC procedures appropriate?	(NA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	(NA)																											
Data unit correctly expressed?	(NA)																											
Appropriate description of parameter?	(NA)																											
Source clearly referenced?	(NA)																											
Correct value provided for estimation?	(NA)																											
Has this value been verified?	(NA)																											
Measurement method correctly described?	(NA)																											
Correct reference to standards?	(NA)																											
Indication of accuracy provided?	(NA)																											
QA/QC procedures described?	(NA)																											
QA/QC procedures appropriate?	(NA)																											
Parameter Title: Amount of fossil fuel (if applicable)	2,58	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr></table>	Monitoring Checklist	Yes / No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																						
Monitoring Checklist	Yes / No																											

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

		Title in line with methodology?	(NA)		
		Data unit correctly expressed?	(NA)		
		Appropriate description of parameter?	(NA)		
		Source clearly referenced?	(NA)		
		Correct value provided for estimation?	(NA)		
		Has this value been verified?	(NA)		
		Measurement method correctly described?	(NA)		
		Correct reference to standards?	(NA)		
		Indication of accuracy provided?	(NA)		
		QA/QC procedures described?	(NA)		
		QA/QC procedures appropriate?	(NA)		
		Project activity is hydro power plant.			
		B.7.2. Description of the monitoring plan			
B.7.2.1.Is the operational and management structure clearly described and in compliance with the envisioned situation?	2,58	<u>Clarification Request No. 11.</u> A documented procedure defining roles and responsibilities for ensuring accurate data monitoring, collection, transfer, and reporting needs to be developed. The procedure should also have the process of calibration of measuring equipments, data adjustments, internal audits & emergency preparedness leading to data losses.	CR	<input checked="" type="checkbox"/>	
B.7.2.2.Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	2,58	Please see B.7.2.1	CR	<input checked="" type="checkbox"/>	
B.7.2.3.Does the monitoring plan provide current good monitoring practice?	2,58	Please see B.7.2.1	CR	<input checked="" type="checkbox"/>	
B.7.2.4.If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	2,58	Please see B.7.2.1	CR	<input checked="" type="checkbox"/>	
B.8. Date of completion of the application of the baseline study and monitoring methodology an the name of the responsible					

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

person(s)/entity(ies)				
B.8.1.1. Is there any indication of a date when the baseline was determined?	2,58	Yes, date has been mentioned in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.2. Has dd/mm/yyyy format been used to indicate the date.	2,58	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.3. Is this consistent with the time line of the PDD history?	2,58	Yes the consistency is evident with PDD history.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.4. Is the information on the person(s) / entity (ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	2,58	Yes, Abohar Power Generation Private Limited has determined the baseline and monitoring plan. The entity is the project participant.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.5. Is information provided whether this person / entity is also considered a project participant?	2,58	Yes, the entity is the project participant as mentioned in section B.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C. Duration of the project activity / crediting period				
C.1. Duration of the project activity				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	2,58	<p>According to the PDD, the operational lifetime is expected to be 35 yrs and the starting date of project activity, 05/08/2008.</p> <p><u>Corrective Action Request No.11.</u></p> <p>Please submit the supportive document for the project starting date mentioned in the section C.1</p> <p><u>Clarification Request No. 12.</u></p> <p>Please submit the supportive document for the lifetime of the project activity.</p>	CAR CR	<input checked="" type="checkbox"/>
C.2. Choice of the crediting period and related information				
C.2.1. Is the assumed crediting time clearly defined and reasonable (renewable crediting	2,58	Yes, a fixed 10 years crediting period has been chosen and defined in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

period of max 7 years with potential for 2 re-novels or fixed crediting period of max. 10 years)?				
C.2.2. Has dd/mm/yyyy format been used to indicate the start date of the crediting period?	2,58	<u>Corrective Action Request No.12.</u> The PDD mentions that commissioning (01/01/2010). Provide the expected date of commissioning Please note that only precise date needs to be mentioned in this section.	CAR	<input checked="" type="checkbox"/>
D. Environmental impacts				
D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved? If yes answer also D.1.2 to D.1.4	2,58	No, as per the guidelines of Ministry of environment and forest (MoEF), any project which cost is less then Rs 100 crores (1000 million) EIA is not required to be conducted. <u>Corrective Action Request No.13.</u> Please mention the reference link for the MoEF guidelines for the Environment Impact Assessment (EIA) in the PDD.	CAR	<input checked="" type="checkbox"/>
D.1.2. Has the analysis of the environmental impacts of the project activity been sufficiently described?	2,58	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.3. Will the project create any adverse environmental effects?	2,13,15,58	Project is not expect to create any adverse environmental effects	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.4. Were transboundary environmental impacts identified in the analysis?	2,58	No trans boundary environment impacts are anticipated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party				
D.2.1. Have the identified environmental impacts been addressed in the project design	2,58	Yes, the impacts in project scenarios have been considered.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

sufficiently?				
D.2.2. Does the project comply with environmental legislation in the host country?	2,13,15,58	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E. Stakeholders' comments				
E.1. Brief description how comments by local stakeholders have been invited and compiled				
E.1.1. Have relevant stakeholders been consulted?	2,58	A meeting with stakeholder representative was conducted on 16 th January 2009 where project proponent described the various aspects of CDM project activity. However <u>Corrective Action Request No.14.</u> Please include in the PDD stakeholders' name and date of meeting. Also provide the stakeholder letters, photos, video recording and attendance sheet.	CAR	<input checked="" type="checkbox"/>
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	2,58	See E.1.1.	CAR	<input checked="" type="checkbox"/>
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	2,58	See E.1.1	CAR	<input checked="" type="checkbox"/>
E.1.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	2,58	Please see above in E.1.1	CAR	<input checked="" type="checkbox"/>
E.2. Summary of the comments received				
E.2.1. Is a summary of the received stakeholder comments provided?	2,58	Summary and comments of stakeholder meeting has been included.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3. Report on how due account was taken of any comments received				
E.3.1. Has due account been taken of any	2,58	Since there is no negative comment from stakeholders, no action	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

stakeholder comments received?		was required.		
F. Annexes 1 – 4				
F.1. Annex 1: Contact Information				
F.1.1. Is the information provided consistent with the one given under section A.3?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.2. Is the information on all private participants and directly involved Parties presented?	2,58	Yes, all information has been presented	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.2. Annex 2: Information regarding public funding				
F.2.1. Is the information provided on the inclusion of public funding (if any) in consistency with the actual situation presented by the project participants?	2,58	No public funding from any Annex I country is involved in the project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.2.2. If necessary: Is an affirmation available that any such funding from Annex-I countries does not result in a diversion of ODA?	2,58	Please see above F.2.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.3. Annex 3: Baseline information				
F.3.1. If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?	2,58	Yes additional information has been provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.3.2. Is the data provided verifiable? Has sufficient evidence been provided to the validation team?	2,58	Please see above F.3.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.3.3. Does the additional information substantiate / support statements given in other sections of the PDD?	2,58	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

F.4. Annex 4: Monitoring information				
F.4.1. If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?	2,58	No additional information is provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.4.2. Is the information provided verifiable? Has sufficient evidence been provided to the validation team?	2,58	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.4.3. Do the additional information and / or documented procedures substantiate / support statements given in other sections of the PDD?	2,58	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
<p><u>Clarification Request No. 1.</u></p> <p>The following documents needs to be submitted to the audit team:</p> <ul style="list-style-type: none"> - Detailed Project Report - Equipment purchase agreement - Implementation Agreement - MoU with PEDDA - TPA agreement 	A.2.2	<p>The following documents are being submitted to DOE as attachments:</p> <ul style="list-style-type: none"> • Feasibility Report • Equipment purchase agreement • Implementation Agreement • MoU with PEDDA • TPA agreement <p><u>PP Response:</u></p> <ol style="list-style-type: none"> 1. DPR for four of the sub-projects were prepared in August 2000 and for one was prepared in July 2001. Hence, the project costs considered in the DPRs were no longer valid at the time when the decision to invest in the project activity was taken by APGPL. Therefore APGPL appointed Pentaflo Hydro Engineers to prepare an updated Feasibility Report on the project activity. The same was completed in January 2006 and was used by APGPL at the time of investment decision making. 2. The five Mini Hydro Power Projects on Abohar Branch Canal were allocated in the name of Triveni Engineering & Industries Ltd. (TEIL) in November 1997 and accordingly TEIL was a party to the Implementation Agreement and Tripartite Agreement. 	<ol style="list-style-type: none"> 1. What was the basis of decision to invest in the project activity DPR or feasibility report? 2. In the Novation of Implementation Agreement and Tripartite agreement the Triveni Engineering & industries ltd. is till shown as a party.[IRL 8,11] Please clarify. 3. PP needs to explain, why the project would not have occurred anyway by the existing promoter without considering CDM benefits? <p><u>DOE Response</u></p> <ol style="list-style-type: none"> 1. OK. Feasibility report has been checked and verified. [IRL 20] 2. OK. Adequate justification has been provided. 3. OK. Relevance of CDM benefits has been mentioned clearly in the Feasibility Report and decision to invest by the board of PP [IRL 20,21]. <p>Hence, issue is closed.</p> <p style="text-align: right;">☑</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		<p>Subsequently, TEIL proposed to implement these Projects under a Special Purpose Vehicle "Abohar Power Generation Private Limited". Since APGPL required approval from PEDDA, the original agreements entered into by TEIL had to be novated in favour of APGPL. Hence, the name of Triveni Engineering & Industries Limited continued to appear in the novation of Implementation Agreement and Tripartite Agreement.</p> <p>3. Chapter 6 of the feasibility report clearly states that the sub-projects were viable only in light of the benefits available under the Clean Development Mechanism program of the United Nations Framework Convention on Climate Change. Further, the minutes of meeting of the Board of Directors of APGPL also indicate that CDM benefits were critical in the decision taken by APGPL to invest in the project activity.</p>	
<p><u>Open issue</u></p> <p>Modalities of communication need to be submitted.</p>	A.3.2	The Modalities of communication is being submitted.	<p>The MoC as per the latest template has been received hence issue is closed. [IRL 6]</p> <p style="text-align: center;">☑</p>
<p><u>Corrective Action Request No.1.</u></p> <p>Please provide the correct GPS coordinates of each of the 5 sites of the project activity.</p>	A.4.1.1	The GPS coordinates have been updated in the revised PDD version 2 in section A.4.1.4.	The GPS coordinates has been revised as per the requirement. Hence, issue is closed.

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		MHP Sudhar: 30.76767 N, 75.6473 E MHP Akhara: 30.7613 N, 75.4929 E MHP Khanpur: 30.7864 N, 75.9073 E MHP Gholian : 35.9500 N, 75.9333 E MHP Channowal: 35.9500 N, 75.9333 E	☑
<p><u>Clarification Request No. 2.</u></p> <p>The documents related to clearance from related authorities needs to be submitted such as -</p> <ul style="list-style-type: none"> -Forest clearance certificate -Land clearance certificate -Implementation Schedule -Consent to establish -consent to operate for commissioned units 	A.4.1.2	<p>The following documents are being submitted to DOE as attachments:</p> <ul style="list-style-type: none"> • Forest clearance certificate • Land clearance certificate • Consent to Establish • Consent to operate <p><u>PP Response:</u></p> <p>Applications for the Consent to Operate have been submitted to the Punjab Pollution Control Board. The same are also being provided.</p>	<ol style="list-style-type: none"> 1. The forest land clearance letters has been received. [IRL 13] 2. Land deeds have been received [IRL 14]. 3. Consent to establish all 5 units have been received [IRL 15]. 4. As per the information provided in revised PDD, all units as been commissioned. Please provide the consent to operate for all commissioned units. <p><u>DOE Further response</u></p> <p>Application for consent to establish has been received [IRL 50]. Hence issue is closed.</p> <p>☑</p>
<p><u>Corrective Action Request No.2.</u></p> <p>Please provide in the PDD, description of other project components viz. diversion weir, power tunnel, penstocks, de-silting chamber etc. Also include details on design discharge for the project activity.</p>	A.4.2.3	<p>The major project components for canal drop based mini hydel schemes are forebay, intake, power house and tail race. They do not have weirs, penstocks or de-silting chambers.</p> <p>The details for these components have been included in the revised PDD version 2 in section A.4.2 along with the design discharge for</p>	<p>Further details of the major project components have been incorporate in the revised PDD. The same have been verified and crosschecked with the specification provided in purchase orders of different components [IRL 18].</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		each of the schemes.	Hence, issue is closed. ☑
<u>Clarification Request No. 3.</u> PP needs to submit the training or competency related documents of the plant personnel involved.	A.4.2.9	An undertaking from the Human Resources department of APGPL is being submitted which declares the competency of the plant personnel and their training in monitoring of project related parameters.	The referred document has been received [IRL 46]. Hence issue is closed. ☑
<u>Corrective Action Request No.3.</u> PP needs to submit the implementation schedule and also mention the expected commissioning date in PDD.	A.4.2.11	The dates of commissioning for all sub-projects have been included in the PDD. <u>PP Response:</u> All the units have now been commissioned hence the implementation schedule no longer seems relevant. The commissioning certificate (consent to synchronize with the grid) for each unit is being provided.	Please submit the implementation schedule and commissioning certificate of each unit. <u>DOE Response</u> Synchronization certificate for each site has been submitted [IRL 47]. Hence issue is closed now. ☑
<u>Clarification Request No. 4.</u> Provide the spread sheet of emission reduction calculation sheet of the project activity.	A.4.3.1	The excel spreadsheet including the detailed calculation of emission reductions is being provided.	The excel spreadsheet for the calculation of emission reductions have been provided. The calculation of Emission reduction is in line with the other information provided in PDD and correct [IRL 36]. Hence, issue is closed. ☑
<u>Clarification Request No. 5.</u> Please submit the declaration regarding public funding, whether it has been used or not.	A.4.4.1	The declaration regarding no recourse to public funding is being provided.	The declaration regarding no recourse to public funding has been provided [IRL 16].

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
			Hence, issue is closed. ☑
<u>Corrective Action Request No.4.</u> Please mention the title of the methodology and version of tool used to calculate the grid emission factor in section B.1. PP is also requested to use the latest version of methodology.	B.1.1.1	The title and version of the methodological and methodological tool used to calculate the emission factor for the electricity system has been incorporated in the revised PDD version 2 in section B.1.	The title and version of methodology and all tools used has been mentioned in the B.1 of the revised PDD. Hence, issue is closed. ☑
<u>Corrective Action Request No.5.</u> Please clarify in the PDD if the project activity involves addition of hydro power generation units at an existing hydro power plant.	B.2.1.4	The project activity consists of Greenfield hydro power generation facilities and does not involve addition of any hydro power generation unit at an existing hydro power generation facility. The same has been stated in the PDD in section B.2 under Justification of the choice of methodology.	The required clarification has been provided in the revise PDD. Hence, issue is closed. ☑
<u>Clarification Request No. 6.</u> Please provide the excel sheet for grid emission factor calculation, which includes the list of power plants, energy generation and fuel consumption data that is used to calculate the OM and BM factors.	B.4.1	The excel sheet for calculation of grid emission factor that includes the list of power plants, energy generation and fuel consumption data that is used to calculate the OM and BM factors is being provided.	The detailed excel calculation sheet for emission factor with list of power plants, energy generation and fuel consumption data have been submitted [IRL 36]. Hence, issue is closed. ☑
<u>Clarification Request No. 7.</u> Please submit following documents – 1. DPR 2. All supporting document to the each step of timeline provided in PDD including CDM consideration	B.5.1	The following documents are being submitted: <ul style="list-style-type: none"> • Detailed Project Report • Supporting documents for timeline and CDM consideration • Financial calculation Sheet • Loan documents 	Following document yet to be submitted – 1. Detailed project report 2. Evidence for equity investment <u>DOE Response</u>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
3. Financial calculation sheet 4. Loan documents 5. Evidence for equity investment 6. Various clearances 7. Purchase order for major equipments 8. Land documents 9. Technical specification of equipments 10. Power purchase agreement		<ul style="list-style-type: none"> Evidence for equity investment Project activity clearances Erection & Supply Contracts Land documents Technical specifications of equipment Power Purchase Agreement <p><u>PP Response:</u> The Detailed Project Reports are being provided. A certificate from the Chartered Accountant is being provided as evidence for equity investment in the project activity.</p>	Both documents has been submitted [IRL 59, 48], hence issue is closed. <input checked="" type="checkbox"/>
<p><u>Corrective Action Request No.6.</u></p> <p>Please include all financial details and source in the PDD in transparent manner. Please submit the excel calculation sheet for IRR calculations. It has been mentioned that IRR analysis has been done and compared with WACC, and neither has been presented in PDD.</p>	B.5.8	<p>Equity IRR has been selected as the financial indicator and cost of equity as the benchmark. The calculations have been done as per the Guidance on the Assessment of Investment Analysis and the details of the same have been included in the PDD.</p> <p>The excel calculation sheet for IRR and benchmark calculations is being provided.</p> <p><u>PP Response:</u></p> <ol style="list-style-type: none"> The project required a higher debt funding component primarily because the project cost was high making it difficult for APGPL to arrange for the required equity investment. This can also be verified from a subsequent line in the letter which says that the project cost is on a higher side. Hence, 	<ol style="list-style-type: none"> The letter from IREDA asserts that Loan request was turned down on the basis of requirement of more debt portion. How it can be termed as rejection for the project activity? DPR for entire project needs to be submitted. Is the feasibility study report has been approved by related govt. agency? <p><u>DOE Response</u></p> <ol style="list-style-type: none"> Justification is adequate but cannot be considered conclusive evidence for non availability of debt for project activity. However PP

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		<p>debt was necessary to the extent of 75% to be able to undertake the project. The bank rejection was indicative of the fact that banks are unwilling to finance projects with a high cost which require a larger debt funding component. However, the same was necessary in order to successfully implement the project activity.</p> <p>Although the letter has not gone into the details of rejecting the proposal, an investment analysis has been presented in the revised PDD that demonstrates the high capital cost of the project resulting in lower returns and financial unattractiveness.</p> <p>It may also be note that two other hydro power projects by the same proponent have been funded by IREDA, however for this particular project activity, IREDA as well as other lending institutions had rejected the loan applications on account of high project cost.</p> <ol style="list-style-type: none"> The Detailed Project Reports are being provided. APGPL had appointed Pentafllo Hydro Engineers to prepare an updated Feasibility Report on the project activity in January 2006. Based on the results of the Feasibility Report, APGPL prepared and submitted addendums to the DPRs of MHPs Khan- 	<p>has done a investment analysis selecting equity IRR as benchmark.</p> <ol style="list-style-type: none"> DPR has been submitted. [IRL 59] Approval letter for Feasibility Report has been provided. <p>Hence issue is closed.</p> <p style="text-align: center;">☑</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		pur, Sudhar Gholian and Channowal to Punjab Energy Development Agency (PEDA). The same have recently been approved and a letter regarding the same is being provided.	
<p><u>Corrective Action Request No.7.</u></p> <p>Please clarify in the PDD if project IRR or equity is calculated. Justify the choice. Benchmark should be chosen according to choice of project or equity IRR.</p>	B.5.8	<p>Equity IRR has been selected as the financial indicator and cost of equity as the benchmark. This is in accordance with the Guidance on the Assessment of Investment Analysis.</p> <p><u>PP Second response –</u></p> <p>Equity beta for a particular firm relates to the unique capital structure of that firm and that a change in the capital structure will change the degree of financial risk borne by the equity holders and hence the equity beta. Since financial leverage can vary across industries, countries and firms, and, furthermore, financial leverage is a determinant of beta, it is common to de-lever (i.e. stripping out the gearing component) comparable betas to arrive at an un-levered beta then to re-lever at the target financial leverage considered appropriate for the business in question. The asset beta (which is the equity beta that would apply if the assets were financed entirely with equity) has been obtained with the Modigliani - Miller Formula and has been used for calculation of the Cost of Equity benchmark.</p> <p>BSE Sensex Stock Index has been used to</p>	<p>Please identify the difference between equity beta and asset beta. Describe how it has been assessed with the index of BSE 30 while the model is fixed with S&P 500. Moreover, PP should clarify how realistic that raw beta is applied instead of adjusted beta.</p> <p><u>DOE Final Response</u></p> <p>The Benchmark analysis sheet and Equity IRR calculation sheet has been submitted along with satisfactory justification on selection of index and beta. Evidence for all assumption and values has been provided correctly [IRL 20, 21, 44, 45, 48, 53, 54, 55, 56, 57]. Hence issue is closed now.</p> <p style="text-align: right;">☑</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		<p>represent the market return while calculating the benchmark. The BSE SENSEX (SENSitive indEX), also called the "BSE 30", is a widely used market index in India and Asia. It consists of the largest and most actively traded stocks, representative of various sectors of the Indian economy and has the base value of 100 as on April 1, 1979. The Bombay Stock Exchange (BSE) authorities review and modify its composition to make sure it reflects current market conditions. The historical returns generated by BSE Sensex since its base value in April 1979 and upto the time of investment decision have been studied and used for the calculation of the benchmark. The S&P CNX Nifty Index has not been used anywhere in the model for calculation of the benchmark.</p> <p>Raw beta is an index of systematic risk and measures the sensitivity of a stock's returns to changes in returns of the market index. Adjusted beta modifies the stock's measured beta with the assumption that there is a tendency on the part of betas of all companies to move towards one. Bloomberg estimates these adjusted betas by considering weights of 0.67 for the regression beta and 0.33 for 1.00.</p> <p>Adjusted Beta = Regression Beta * (0.67) + 1.00 * (0.33)</p>	

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		<p>However, the rationale for this is not accurate since firms that tend to diversify more would see their betas converge on one far faster than firms which stay focused in one business. Therefore, there is no need to adjust regression betas towards one to reflect this tendency. The same has also been pointed out in the book "Estimating Risk Parameters" by Aswath Damodaran (http://pages.stern.nyu.edu/~adamodar/pdfiles/papers/beta.pdf, Page 12). Hence, the raw beta values of companies with significant investment in power projects that are listed on the Bombay Stock Exchange have been used to measure the sensitivity of the stock's returns to changes in returns of the market index and compute the Cost of Equity benchmark</p>	
<p><u>Corrective Action Request No.8.</u></p> <p>In the list of parameter and ACM 0002 has been referred for OM, BM and CM. Instead "Tool to calculate the emission factor for an electricity system" shall be used.</p> <p>Parameter for CM shall also be included.</p>	B.6.2.1	<p>The "Tool to calculate the emission factor for an electricity system" Version 2.0 has been used for calculation of Operating Margin, Build Margin and Combined Margin.</p> <p>The parameter EF_{grid} which is the ex-ante emission factor calculated as combined margin has already been included in the PDD.</p>	<p>The required correction has been done in the revised PDD.</p> <p>Hence, issue is closed.</p> <p style="text-align: center;">☑</p>
<p><u>Corrective Action Request No.9.</u></p> <p>Please correct the baseline emissions calculation based on the net electricity generation, instead of gross electricity (29,014 MWh) currently given in the PDD.</p>	B.6.3.1	<p>The gross electricity generation from all the projects = 32550 MWh</p> <p>The net electricity delivered to grid from all the projects = 29295 MWh</p> <p>The baseline emission calculation has been</p>	<p>The calculation in Emission reduction calculation sheet has been checked and same has been corrected in revised PDD.</p> <p>Hence, issue is closed.</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		corrected in the revised PDD.	☑
<p><u>Clarification Request No. 8.</u></p> <p>Please clarify if the parameter indicated in the PDD is gross export or net export after deducting import. If import is deducted then the same should be included as monitoring parameter in the monitoring plan.</p>	B.7.1.2	<p>The following three parameters have been included in the PDD:</p> <p>EG_{export,y} which is the Electricity exported by the project activity in year y;</p> <p>EG_{import,y} which is the Electricity imported by the project activity in year y; and</p> <p>EG_{Net,y} which is the Net electricity exported to the Grid/Licencee in year y and is calculated as the difference between the Energy exported (EG_{export,y}) and Energy imported (EG_{import,y}) from the Grid.</p> <p><u>PP Response:</u></p> <p>EG_{Gross,y} represents the gross electricity generation by the project activity in year y. This parameter is not used for the purpose of calculation of emission reductions but is used for the purpose of cross verification of metered electricity export data. It is different from EG_{export,y} which is the Electricity exported by the project activity in year y and takes into consideration the auxiliary consumption and losses such as those from transformation or transmission.</p>	<p>Apart from these parameters, PDD talks about EG_{gross}. Please explain how it is different from EG_{export, y} and what is the importance of this parameter in calculation of emission reduction.</p> <p><u>DOE Response</u></p> <p>Justification has been provided and considered adequate. Hence issue is closed.</p> <p>☑</p>
<p><u>Corrective Action Request No.10.</u></p> <p>Please provide justification for value of electricity generation used in the PDD. Also mention the frequency of monitoring the same.</p>	B.7.1.2	<p>The value of electricity generation used in the PDD has been drawn from the feasibility report.</p> <p>The frequency of monitoring of all electrical energy parameters has been mentioned in the</p>	<p>The required and adequate information has been provided.</p> <p>Hence, issue is closed.</p> <p>☑</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		PDD.	
<p><u>Clarification Request No. 9.</u></p> <p>Please provide the supporting document for the technical details of the energy meter.</p>	B.7.1.2	<p>The technical details of the electricity meters installed in the sub-projects are being provided.</p> <p><u>PP Response:</u></p> <p>The Model no., measurement principle and measurement range of all the installed Main and Check meters are as follows:</p> <p>Model Number: ER 300P</p> <p>Measurement Principle: 4 quadrant Bi-directional Energy Meter</p> <p>Measurement Range: 0.00 to 999,999.99</p>	<p>Model no., measurement principal and measurement range of installed meter needs to be provided.</p> <p><u>DOE Response</u></p> <p>All required information has been provided. Hence issue is closed.</p> <p style="text-align: center;">☑</p>
<p><u>Clarification Request No. 10.</u></p> <p>Please clarify how the joint metering data can be cross-checked with control room data. Include the required parameters in the monitoring plan.</p>	B.7.1.2	<p>The difference of the gross electricity generation and auxiliary consumption monitored in the control room would be comparable with the net electricity exported after considering the transformation and transmission losses.</p> <p>The gross electricity generation, auxiliary consumption, electricity exported to and imported from the grid/licensee along with the net electricity exported have already been included as monitoring parameters in the monitoring plan.</p> <p><u>PP Response:</u></p> <p>Electricity imported is primarily used to meet the auxiliary needs of the power plant (for example in times of shutdown). Hence, electricity imported is not independent of auxiliary con-</p>	<p>In auditor's view the difference of the gross electricity generation and auxiliary consumption monitored in the control room would be comparable with the gross electricity exported not with the net electricity exported.</p> <p>If we will deduct total imports from gross export further, it will provide us net export.</p> <p>Please clarify and correct accordingly.</p> <p><u>DOE Response</u></p> <p>Adequate justification has been provided. Hence issue is closed now.</p> <p style="text-align: center;">☑</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		sumption. The difference in gross and auxiliary electricity is actually comparable to net export instead of the gross electricity exported.	
<p><u>Clarification Request No. 11.</u></p> <p>A documented procedure defining roles and responsibilities for ensuring accurate data monitoring, collection, transfer, and reporting needs to be developed. The procedure should also have the process of calibration of measuring equipments, data adjustments, internal audits & emergency preparedness leading to data losses.</p>	B.7.2.1	<p>A CDM Manual developed for the project activity that defines the roles and responsibilities for ensuring accurate data monitoring, collection, transfer, and reporting along with the procedure for calibration of measuring equipments, data adjustments, internal audits & emergency preparedness leading to data losses is being provided.</p>	<p>Referred CDM manual has been submitted.</p> <p>Hence issue is closed.</p> <p style="text-align: center;">☑</p>
<p><u>Corrective Action Request No.11.</u></p> <p>Please submit the supportive document for the project starting date mentioned in the section C.1</p>	C.1.1	<p>The supporting document for the start date of the project activity mentioned in the PDD section C.1 is being provided.</p> <p><u>PP Response:</u></p> <p>The start date of the project activity is being revised to the date of execution of contract for Supply of Electromechanical Works i.e. 21.12.2007. This is in accordance with EB 41 Para 67, <i>“the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity”</i>. Since the supply contract for E&M works represents the earliest action taken by APGPL with firm commitment of expenditures for the project activity, it has been taken as the start date of the project.</p>	<p>The supporting evidence has been provided and is in line with the time line of the project activity. Over and above a detailed time line has been presented in the PDD and evidence against each entry has been submitted [IRL 7]. Hence issue is closed.</p> <p style="text-align: center;">☑</p>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Industrie Service

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team Conclusion
		Evidence for the same is being provided.	
<u>Clarification Request No. 12.</u> Please submit the supportive document for the lifetime of the project activity.	C.1.1	Clause 4.3 of the Implementation Agreements for the five sub-projects i.e. MHP Khanpur, Sudhar, Akhara, Gholian and Channowal state the project activity lifetime as 30 years.	The supporting evidence has been provided and checked. Hence, issue is closed. <input checked="" type="checkbox"/>
<u>Corrective Action Request No.12.</u> The PDD mentions that commissioning (01/01/2010). Provide the expected date of commissioning Please note that only precise date needs to be mentioned in this section.	C.2.2	The commissioning dates of all sub-projects have been included in the PDD.	See response to CAR 3. <u>DOE Response</u> Synchronization certificate for each site has been submitted [IRL 47]. Hence issue is closed now. <input checked="" type="checkbox"/>
<u>Corrective Action Request No.13.</u> Please mention the reference link for the MoEF guidelines for the Environment Impact Assessment (EIA) in the PDD.	D.1.1	The reference link for the recent notification dated 14th September, 2006 of the Ministry of Environment and Forests (MoEF), Government of India regarding the requirement of Environmental Impact assessment (EIA) has been provided in the PDD in section D.1. http://envfor.nic.in/legis/eia/so1533.pdf	Required information has been provided. Hence issue is closed. <input checked="" type="checkbox"/>
<u>Corrective Action Request No.14.</u> Please include in the PDD stakeholders' name and date of meeting. Also provide the stakeholder letters, photos, video recording and attendance sheet.	E.1.1	The stakeholder meeting date has already been provided in the PDD in section E.1. The attendance record of stakeholders has been provided in Appendix 1 of the PDD. The invitation letter, questionnaires, photos and video coverage of the meeting are being provided.	Require changes in the PDD has been done and supporting evidences have been submitted. Hence issue is closed. <input checked="" type="checkbox"/>

Validation Protocol

Project Title: Abohar Branch Canal Based Small Hydro Project in Punjab, India.

Date of Completion: 27-12-2011

Number of Pages: 42



Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)


Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-

Validation of the CDM Project:
Abohar Branch Canal Based Small Hydro Project in Punjab, India




Industrie Service


Annex 2: Information Reference List

Final Report: 27-12-2011	Validation of the CDM Project: Abohar Branch Canal Based Small Hydro Project in Punjab, India Information Reference List	Page 1 of 5	 Industrie Service
-----------------------------	--	----------------	--


Reference No.	Document or Type of Information	Date
1.	<p>On-site interviews at the project site in Ludiana, Punjab from 01-10-2009 to 03-10-2009 by the auditing team of TÜV SÜD:</p> <p>Verification team: Vijayanand TÜV SÜD South Asia, India Madhuri Nanda TÜV SÜD Industrie Service, Munich</p> <p>Interviewed persons: Mr. Rajesh Kumar Jindal Director, Abohar Power Generation Pvt. Ltd. (APGPL) Mr. Pramod Kumar Arora Head Project, APGPL Mr. Amit Kumar Agarwal Manager, F & A, APGPL Mr. Sachin Pahuja Manager, F & A, APGPL Mr. Manpreet Singh Senior Consultant, E & Y Ms. Apurba Mitra Consultant, E & Y</p>	01-10-2009 to 03-10-2009
2.	<p>Published Project Design Document for CDM project activity titled "Abohar Branch Canal Based Small Hydro Project in Punjab, India", Version 1, and Date: 21/04/2009 for period 22.09.2009 to 21.10.2010.</p> <p>http://cdm.unfccc.int/Projects/Validation/DB/J7VSWAYIRNTFQA6UGFUAYVZAGK5MX4/view.html</p>	-
3.	<p>AMS I.D/Version 16, Sectoral Scope: 01, EB54, Grid connected renewable electricity generation."</p> <p>http://cdm.unfccc.int/UserManagement/FileStorage/SJI52M6QXGKFNOZABTHDYP789EV3C</p>	-
4.	UNFCCC homepage www.unfccc.int	-
5.	Site and plant layout	-
6.	Modalities of Communication for project activity	20.11.2009
7.	Erection and Supply Contracts for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	21.12.2007
8.	Implementation Agreement for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	30.08.2001 02.11.2001 30.08.2001 30.08.2001 02.11.2001
9.	Novation of Implementation Agreement in favour of APGPL for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and	27.04.2007

Final Report: 27-12-2011	Validation of the CDM Project: Abohar Branch Canal Based Small Hydro Project in Punjab, India Information Reference List	Page 2 of 5	 Industrie Service
--------------------------------	--	----------------	--


Reference No.	Document or Type of Information	Date
	MHP Channowal	
10.	Memorandum of Understanding with Punjab Energy Development Agency (PEDA) for project activity	20.07.1999
11.	Tripartite Agreement for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	25.06.2003
12.	Novation of Tripartite Agreement for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	15.01.2008
13.	Forest Clearance Certificate for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	21.04.2008 26.02.2008 04.01.2005 01.08.008 04.08.2008
14.	Land clearance certificate for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	04.03.2008 26.03.2008 04.03.2008 03.03.2008 03.03.2008
15.	Consent to Establish for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	12.02.2008 12.02.2008 12.02.2008 26.02.2008 26.02.2008
16.	Declaration regarding no recourse to public funding for the project activity	20.11.2009
17.	Power Purchase Agreement for MHP Khanpur, MHP Sudhar, MHP Akhara, MHP Gholian and MHP Channowal	20.11.2008
18.	Technical specifications of electro-mechanical equipment	Dec 2007
19.	Meter details for electricity meters installed in sub-projects	-
20.	Feasibility Report prepared by Pentaflo Hydro Engineers for sub-projects	Jan 2006
21.	Extracts of Punjab State Grid Code (http://pserc.nic.in/pages/state_grid_code.html#section_17)	28.07.2010
22.	Extracts of Minutes of Meeting of the Board of Directors approving investment in the project (considering CDM revenues)	03.02.2006

Final Report: 27-12-2011	Validation of the CDM Project: Abohar Branch Canal Based Small Hydro Project in Punjab, India Information Reference List	Page 3 of 5	 Industrie Service
--------------------------------	--	----------------	--

Reference No.	Document or Type of Information	Date
23.	Letter of Acceptance (LOA) for E&M Contract	26.11.2007
24.	Communications/ Negotiations with CDM consultants	15.03.2007
25.	Letter of Acceptance for H&M Contract	05.08.2008
26.	IEM approvals for sub-projects	07.03.2008
27.	Loan rejection from IREDA	13.03.2008
28.	Lease deed between Governor of Punjab / PEDDA	04.03.2008 26.03.2008 03.03.2008
29.	Lease deed between PEDDA / APGPL	04.03.2008 26.03.2008 03.03.2008
30.	Loan Sanction Letter from Axis Bank	05.04.2008
31.	Appointment of CDM consultant	28.07.2008
32.	Civil works order	05.08.2008
33.	Invitation of quotations from DOE for validation of project activity	18.12.2008
34.	Submission of Documents to National CDM Authority (DNA) for Host Country Approval	21.04.2009
35.	Letter from National CDM Authority (DNA) regarding meeting for HCA	19.06.2009
36.	Spreadsheet for estimation of ex-ante emission reductions	-
37.	Environment Impact Assessment (EIA) notification S.O. 1533 (E) of the Ministry of Environment and Forests, Government of India (http://envfor.nic.in/legis/eia/so1533.pdf)	14.09.2006
38.	Invitation letter and feedback questionnaires for Local Stakeholder Consultation Process	Jan 2009
39.	Minutes of Local Stakeholder Consultation Meeting	16.01.2009
40.	Filled out questionnaires received from local stakeholders	16.01.2009

Final Report: 27-12-2011	Validation of the CDM Project: Abohar Branch Canal Based Small Hydro Project in Punjab, India Information Reference List	Page 4 of 5	 Industrie Service
-----------------------------	--	----------------	--

Reference No.	Document or Type of Information	Date
41.	Attendance sheet for participants in Local Stakeholder Consultation Process	16.01.2009
42.	Photographs of Local Stakeholder Consultation Meeting	16.01.2009
43.	Spreadsheet for calculation of IRR for project activity	-
44.	Spreadsheet for calculation of benchmark for project activity	-
45.	Host Country Approval from National CDM Authority (DNA)	12.01.2010
46.	Undertaking regarding qualification and training of plant personnel	20.09.2009
47.	Synchronization certificates for each unit of project activity	05.04.2010 30.04.2010 22.03.2010 25.09.2009
48.	CA certificate as evidence for equity investment	26.10.2010
49.	CDM Manual for project activity	-
50.	Applications to Punjab Pollution Control Board for Consent to Operate	31.07.2010 06.09.2010
51.	Approval from Punjab Energy Development Agency (PEDA) for the project activity	25.08.2010
52.	Contract for supply of electromechanical works	21.12.2007
53.	NRSE policy of 2006 {PSERC directive relating to NRSE Policy 2006 (http://www.pserc.nic.in/pages/NRSE_orders.html)}	08.12.2006
54.	Table 123 : Interest rates on central and state government dated securities http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/80303.pdf	-
55.	BSE Sensex of India http://www.bseindia.com/histdata/hindices.asp	-
56.	Average Prime Lending Rate in March 2007 http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/76620.pdf	-
57.	Bloomberg L.P	-

Final Report: 27-12-2011	Validation of the CDM Project: Abohar Branch Canal Based Small Hydro Project in Punjab, India Information Reference List	Page 5 of 5	 Industrie Service
-----------------------------	--	----------------	--

Reference No.	Document or Type of Information	Date
58.	Project Design Document for CDM project activity titled "Abohar Branch Canal Based Small Hydro Project in Punjab, India", Version 6, and Date: 01/07/2011	-
59.	Detailed project report prepared by Triveni Engineering and Industries Ltd.	July 2001
60.	Signed order form from PP for validation of the project activity.	09.06.2009
61.	Certificate of incorporation of APGPL	
62.	http://law.incometaxindia.gov.in/DIT/HtmlFileProcess.aspx?FooterPath=D:%5CWebSites%5CDITTaxmann%5CAct2010%5CDir ectTaxLaws%5CITACT%5CHTMLFiles%5C2010&DFile=section80ia.htm&tar=top#	
63.	http://law.incometaxindia.gov.in/DIT/File_opener.aspx?page=ITAC&schT=&csId=7177bb87-b8e7-484f-bc6f-710c6c2e74d0&rdb=sec&yr=f7421411-ac23-431f-aa3e-383325a85096&sec=115&sch=&title=Taxmann%20-%20Direct%20Tax%20Laws	
64.	Certificate from Chartered Accountants firm, Om & Jaswani, Chartered Accountants dated 26 Oct 2010 which states that the cost incurred for the project is INR 5700 lacs	
65.	http://www.uerc.gov.in/Rules%20and%20regulation/UERCRegulations/Regulations2004/English%20Regulation%202004/UERC%20(Terms%20&%20Condition%20for%20determination%20of%20Hydro%20generation%20Tariff)%20Regulation,%202004..pdf	
66.	PEDA demand letter	
67.	http://www.ireda.gov.in/Trifforder/Proceedings/Summary/SHP.pdf	
68.	Water cess payment receipt	
69.	Depreciation Schedule – IT Act	
70.	Calculation of Weighted Average Rate of Depreciation using Depreciation Schedule of IT Act.	

Validation of the CDM Project:

Abohar Branch Canal Based Small Hydro Project in Punjab, India



Industrie Service

Annex 3: Appointment Certificates



Industrie Service

CERTIFICATE OF APPOINTMENT

Mr Agarwal, Nikunj, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	22.03.11					

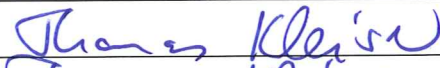

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		22.03.11	22.03.11	22.03.11	22.03.11	

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	22.03.11				
Financial Expertise					
Date	29.03.11				

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	22.03.11
13.1_Waste handling and disposal	12.04.11
3.1_Energy demand	27.04.11
13.2_15.2_Animal waste management	21.07.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH. In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0001/05.

Date	Signature
27.04.11	
21.07.11	



Industrie Service

CERTIFICATE OF APPOINTMENT

Ms Wu, Caiyang, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	23.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		23.03.11	23.03.11	23.03.11	23.03.11	

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	23.03.11				23.03.11
Financial Expertise					
Date	23.03.11				

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	23.03.11
2.2_Heat distribution	23.03.11
3.1_Energy demand	23.03.11
13.1_Waste handling and disposal	23.03.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0016/01.

Date	Signature
23.03.11	<i>Thomas Klein</i>



Industrie Service

CERTIFICATE OF APPOINTMENT

Mr V. Vijayanand, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	12.04.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		12.04.11	12.04.11			

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	12.04.11				
Financial Expertise					
Date					

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	12.04.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0042/01.

Date	Signature
12.04.11	<i>Thomas Klein</i>



Industrie Service

CERTIFICATE OF APPOINTMENT

Mr Roy, Bratin, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	29.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		29.03.11	29.03.11			

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	29.03.11				
Financial Expertise					
Date	29.03.11				

Qualification in technical areas	
Technical Area	Date
13.1_Waste handling and disposal	29.03.11
1.2_Energy generation from renewable energy source	29.03.11
3.1_Energy demand	29.03.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0028/00.

Date	Signature
29.03.11	



Industrie Service

CERTIFICATE OF APPOINTMENT

Ms Nanda, Madhuri, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	30.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		30.03.11	30.03.11	30.03.11	18.04.11	

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	30.03.11				
Financial Expertise					
Date	30.03.11				

Qualification in technical areas	
Technical Area	Date
13.1_Waste handling and disposal	12.04.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0035/00.

Date	Signature
12.04.11	Thomas Kleis
18.04.11	Christoph



Industrie Service

CERTIFICATE OF APPOINTMENT

Ms Zhang, Cuiyun (Rachel), fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	30.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		30.03.11	30.03.11	30.03.11	30.03.11	

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	30.03.11				30.03.11
Financial Expertise					
Date					

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	30.03.11
13.1_Waste handling and disposal	30.03.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0033/02.

Date	Signature
30.03.11	
14.09.11	