50 MW SIPANSIHAPORAS HYDRO POWER PLANT, NORTH SUMATRA.

South Asia

TÜV SÜD South Asia Private Limited

Carbon Management Service

Pune 411007 – India

Project Title	50 MW Sipansihaporas Hydro Power Plant, North Sumatra
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Work Carried Out By	**Verifier (V):** Supratik Dutta **Technical Reviewer:** Bratin Roy

Summary:

TÜV SÜD South Asia Pvt. Ltd. has performed the third periodic verification of the aforementioned Verified Carbon Standard (VCS) project activity. The verification is based on the currently valid documentation of the VCS version 3.3/ VCS Association (VCSA) Rules.

The project is fully implemented according to the description presented in the project description. The verifier confirms, through the visual inspection that all physical features of the proposed VCS project activity including data collecting and storage systems have been implemented in accordance with the monitoring plan indicated in the VCS project description (VCS PD). The project activity comprises one 17 MW and one 33 MW turbine generator and it is completely operational and implemented as described in the project description. The same has been confirmed during the on-site visit.

The management of PT. PLN (Persero) is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the project description document and the applied methodology. The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the project design document approved by the VCSA;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reduction data;
- the GHG emission reductions are calculated without material misstatements;
- the monitoring plan in Monitoring Report is as per the project description and monitoring plan approved by the VCSA;
- the monitoring plan in the approved project document is as per the applied methodology;
- There is an audit trail that contains the evidence and records that validate the stated figures.

The Methodology ACM 0002, Ver. 10: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" an approved methodology of the UNFCCC CDM program is applied.

A risk based approach has been followed to perform this verification. In the course of the verification Two (02) CR was raised and successfully closed out.

Based on the information we have seen and evaluated, we confirm that the project activity achieved the verified amount of reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the project activity.

Verified emission reductions in this monitoring period (01/04/2010 to 28/02/2013): 392 884 t CO_{2e}

Period: 01/04/2010 – 31/12/2010: 92 401 tCO_{2e}

Baseline: 92 406 tCO_{2e}

Project emissions: 5 tCO_{2e}

Leakage: 0 tCO_{2e}

Period: 01/01/2011 – 31/12/2011: 131,917 tCO_{2e}

Baseline: 131 931 tCO_{2e}

Project emissions: 14 tCO_{2e}

Leakage: 0 tCO_{2e}

Period: 01/01/2012 – 31/12/2012: 140,498 tCO_{2e}

Baseline: 140 511 tCO_{2e}

Project emissions: 13 tCO_{2e}

Leakage: 0 tCO_{2e}

Period: 01/01/2013 – 28/02/2013: 28,068 tCO_{2e}

Baseline: 28 068 tCO_{2e}

Project emissions: 0 tCO_{2e}

Leakage: 0 tCO_{2e}

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1 INTRODUCTION

1.1 Objective

TÜV SÜD has been commissioned by the aforementioned client to perform an independent verification assessment.

The objective of the verification work is to comply with the requirements of VCS. According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the registered project description document and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the MR and other supporting documents provided are complete, verifiable and in accordance with applicable VCS requirements,
- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology,
- evaluate the data recorded and stored as per the applicable requirements.

1.2 Scope and Criteria

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Designated Operational Entity. The verification is based on the submitted monitoring report, the validated project design documents including its monitoring plan and validation report, previous verification reports (if any), the applied monitoring methodology, relevant decisions, clarifications and guidance from the VCSA and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the VCS related rules and guidance.

Based on the requirements in the VCS, TÜV SÜD has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification considers both quantitative and qualitative information on emission reductions.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 Level of Assurance

The verification report is based on VCS PD (IRL# 1), Validation report (IRL# 6) and Monitoring report (IRL# 4) with supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. The verification opinion is assured provided the credibility of all above.

1.4 Summary Description of the Project

Project activity: *50 MW Sipansihaporas Hydro Power Plant, North Sumatra*

Applied Methodology: ACM 0002, Ver. 10: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

Project Participants: South Pole Carbon Asset Management Limited

PT. PLN (Persero)

Location of the project: North Sumatra Province, Indonesia

:

Power Station	North Latitude	East Longitude
Sipansihaporas #1 power station	1.74058 N	98.86711 E
Sipansihaporas #2 power station	1.72882 N	98.84018 E

The project is located in North Sumatra Province in Indonesia. It is implemented by PT. PLN (Persero). There are 2 sets of turbines of 33 MW and 17 MW turbines respectively, which generates electricity and supplies to Sumatra Grid. The project commissioned on the following date:

- Sipansihaporas Hydro Power Plant Unit 1: 14 December 2004
- Sipansihaporas Hydro Power Plant Unit 2: 21 October 2002

The above commissioning date can be verified from the commissioning certificate (IRL# 15).

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification process is based on the requirements depicted in VCS Standard, v3.3.

Standard auditing techniques have been adopted for the verification process. The verification team performs first a desk review, followed by an on-site visit, which results in the formation of a protocol that includes all the findings. The next step involves the evaluation of the findings through direct communication with the PPs and then finally the preparation of the verification report. This verification report and other supporting documents then undergo an internal quality control by the CB "Environment and Energy" before finalization.

The appointment of the verification team takes into account the technical area(s), sectoral scope(s) and relevant host country experience required amongst team members for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Verifier (V);
- Verifier Trainee (T);
- Technical Experts (TE);
- Country expert (CE);
- Technical reviewer (TR).

It is required that the sectoral scope(s) and the technical area(s) (TA) linked to the methodology/ies and project have to be covered by the assessment team. Appointment certificates of the selected team members are attached to this report as Annex.

Assessment Team:

Name	Qualification	Scope	Technical Area	Host country experience	Onsite visit
Supratik Dutta	ATL/V	☑	☑ (1.2)	☑	☑

Technical Reviewer (s):

Name	Qualification	Scope	Technical area
Bratin Roy	**TR**	**☑**	**☑ (1.2)**

2.2 Document Review

The Monitoring Report version 01 submitted by the PP was available before the verification activities started. The MR was assessed based on all the relevant documents. The aim of the assessment of the desk review was to:

- Verify the completeness of the data and the information presented in the MR;

- Check the compliance of the MR with respect to the monitoring plan depicted in the registered VCS-PD and verify that the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid;

- Evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of all documents reviewed is available in annex 2 of this report.

2.3 Interviews

On 01-08-2013 and 02-08-2013, TÜV SÜD performed interviews 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
Leonardo Sidabalok	South Pole Asset Management Ltd.
Pandu Samosir	PT. PLN (Persero)
Ronniko Silalahi	PT. PLN (Persero)
M Buchari	PT. PLN (Persero)
Kamia Handayani	PT. PLN (Persero)
Rahmat Dian A	PT. PLN (Persero)

2.4 Site Inspections

During on-site visit 01-08-2013 to 02-08-2013, TÜV SÜD performed a physical site inspection and interviewed project stakeholders to:

- Confirm the implementation and operation of the project,
- Review the data flow for generating, aggregating and reporting the monitoring parameters,
- Confirm the correct implementation of procedures for operations and data collection,
- Crosscheck the information provided in the MR documentation with other sources,
- Check the monitoring equipment against the requirements of the VCS-PD and the approved methodology, including calibrations, maintenance, etc.,
- Review the calculations and assumptions used to obtain the GHG data and ER,
- Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

2.5 Resolution of Findings

The objective of this phase of the verification process is to resolve any outstanding issues which require clarification for TÜV SÜD's positive conclusion of the achieved GHG emission reduction. Concerns rose in the desk review, the on-site audit assessments and the follow up interviews and the responses provided for the raised concerns are documented in Annex 1 (List of Findings) to guarantee the transparency of the verification process.

A Corrective Action Request is raised where TÜV SÜD identifies:

- Non-conformities in monitoring and/or reporting with the monitoring plan and/or methodology;
- That the evidence provided is not sufficient to prove conformity;
- Mistakes in assumptions, data or calculations that impair the ER;
- FARs stated during validation that are not solved until the on-site visit.

A Clarification Request is raised where TÜV SÜD does not have enough information or the information is not clear in order to confirm a statement or data.

Information or clarifications provided as a response to a CAR, CL or FAR could also lead to a new request.

2.5.1 Forward Action Requests

No FARs have been presented, neither in the validation report nor in the previous verification reports.

2.6 Eligibility for Validation Activities

This step is not required as this is a verification project activity.

3 VALIDATION FINDINGS

This step is not required as this is a verification project activity.

3.1 Participation under Other GHG Programs

Project activity is registered only under VCS program.

3.2 Methodology Deviations

There is no methodology deviation in the project activity during present project activity.

3.3 Project Description Deviations

There is no project description deviation in the project activity during present project activity.

3.4 Grouped Project

This step is not required as there is no inclusion of the new project activity in the existing project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

In the following sections, the results of the verification are stated. The verification results relate to the project performance as documented and described in the final VCS-PD and Monitoring Report. The verification findings for each verification subject are presented below.

- The project is fully implemented according to the description presented in the registered VCS-PD. The verifier confirms, through the visual inspection that all physical features of the proposed VCS project activity including data collecting and storage systems have been implemented in accordance with the registered VCS-PD. The project activity is completely operational and the same has been confirmed on-site.

- The monitoring has been carried out in accordance with the monitoring plan contained in the registered VCS-PD and approved monitoring plan. All parameters were monitored and determined as per the Monitoring Plan.

The verification of the parameters required by the monitoring plan is provided as follows:

Data / Parameter:	**$EG_{PJ,y}$**
Data unit:	kWh (kilo Watt hour)
Description:	Net electricity supplied to the grid by the project activity during the year 'y'
Source of data used:	Joint Meter Reading (IRL# 19). Net electricity supplied to the grid by the project activity i.e. export minus import which are monitored by the main meter (i.e. accuracy level 0.2s) and has a function as a bi-directional kWh meter. Also, main meter can calculate the net exports electricity (i.e. export electricity-import electricity) value automatically in the meter itself. The exported and imported electricity is monitored hourly and recorded monthly. The meter Reading has been taken on the 1st day of every month from the main meter and PP has generated invoices on the same reading. Further, there is generation and auxiliary meters are installed at plant, and same meter values will be considered for invoice purpose when main meter is not in operation. This can be checked with the single line diagram of the project activity (IRL# 11). The Location of the meters is the offloading point at the plant. According to the monitoring plan of the project activity mentioned in VCS-PD (IRL# 1), the energy meters will be calibrated according to the national regulation. The Ministry of Energy and Mineral Resource's regulation number 37 dated 27/11/2008 (IRL# 27) on the Grid Code Sumatra Electricity Power System mentioned that the calibration of kWh meter must be done every 5 (five) years, as stated in the Metering Code section, MC 4.1.1 (Test after metering code commissioning, page 138). The Calibration of the main meter is done at once in five years by Laboratorium Kalibrasi - PT. PLN (Persero) Penelitian dan Pengembangan Ketenagalistrikan (IRL# 9). The agency has authority for testing and calibration of the metering equipments and the same has been verified during site audit. In the project emission calculation, project proponent has taken the total diesel amount that was purchased during the monitoring period. In case purchase receipt is not available in any particular month, project proponent has taken the largest diesel purchase

	month amount during this monitoring period for that month. This seems to be a conservative approach with considering that total purchased diesel amount will be higher than the consumption amount of the present monitoring period therefore higher project emission has been considered in the project activity. The diesel amount considered in the project emission calculation can be verified from monthly bills provided by the diesel supplier (IRL# 8) Also, there is no change in the any main meters of the project activity during present monitoring period.
Means of verification/Comments:	The values in the CER spread sheet (IRL# 5) and monitoring report (IRL# 4) have been verified from the JMR (IRL# 19) which contains the values of export and import electricity. Further, values have also been verified by the plant log sheet (IRL# 20) of the power plant.
Cross-check	The values of the calculation sheet have been cross checked with sales electricity receipts (Monthly Electricity Protocol Report and Water Tax Payment Receipts) (IRL# 7).

No FARs has been presented in the final validation report and previous verification report.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

All data have been available and all the parameters have been monitored in accordance with the registered monitoring plan. The reported data have been cross-checked against other sources available as explained above in chapter 4.

The verifier confirms that the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate. The same has been done in accordance with the methods and formulae described in the registered monitoring plan and applicable methodology.

The verifier confirms that the monitoring report includes all parameters and the monitored data at the intervals required by the methodology and VCS-PD.
The verifier confirms that all the emission factors and default values (ex-ante values from VCS-PD) have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Proper data management inclusive of data acquisition and aggregation, data management system is being followed for the project activity.

All records needed for monitoring are archived in line with the requirements of the VCS PD. No significant, lack of evidence and missing data were detected during on-site verification.

It is evident from the monitoring data that the monitoring system ensures for continuous operation. All internal data are subjected to QA/QC measures and has proper procedures for data handling. Project proponents, themselves are conducting the annual maintenance hence responsible for data recording in log sheet and shut down maintenance of the project activity. The personnel from the project proponent daily check the data recorded by operators and providing for archiving purpose.

The monitoring personnel at site are well trained and follow reproducible routines. Thus, they are competent to carry out the relevant tasks with sufficient accuracy. All necessary monitored and measured raw data were checked during on-site verification.

Dedicated meters are calibrated once every five years according to the national regulation. The Ministry of Energy and Mineral Resource's regulation number 37 dated 27/11/2008 on the Grid Code Sumatra Electricity Power System mentioned that the calibration of kWh meter must be done every 5 (five) years, as stated in the Metering Code section, MC 4.1.1 (Test after metering code commissioning, page 138) (IRL# 9,23)

The calibration, accuracy class, make of dedicated meters for the reported monitoring period is summarized below:

Sr. No.	Meter Number	Make of meter	Accuracy Class	Calibration
1	36027177	Actaris SL7000	0.2s	28/07/2005 to 27/07/2010 10/04/2010 to 09/04/2015
2	36027137	Actaris SL7000	0.2s	28/07/2005 to 27/07/2010 10/04/2010 to 09/04/2015

The above information has been verified by the DOE with calibration certificate (IRL# 9)

4.4 Non-Permanence Risk Analysis

This step is not required as no non-permanence risk rating has been determined by the project proponent in the project activity.

5 VERIFICATION CONCLUSION

TÜV SÜD Industrie Service GmbH has performed the verification of the VCS project: "50 MW Sipansihaporas Hydro Power Plant, North Sumatra". The verification is based on the currently valid documentation of all VCS requirements. PT. PLN (Persero) is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the registered VCS-PD Version 3, dated 10-11-2009 and the applied methodology ACM0002, Version 10

The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the VCS-PD;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements;
- the monitoring plan in Monitoring Report is as per the VCS-PD and its monitoring plan;
- The monitoring plan in the approved VCS-PD is as per the applied methodology.

Our opinion is based on the project's GHG emissions and resulting GHG emission reductions reported, which have been both determined through the valid and registered project's baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated, we confirm the following statement:

Verification period: From 01-04-2010 to 28-02-2013

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2010 (01-04-2010 to 31-12-2010)	92 406	5.09	0	92 401
2011 (01-01-2011 to 31-12-2011)	131 931	13.24	0	131,917
2012 (01-01-2012 to 31-12-2012)	140 511	13.37	0	140,498
2013 (01-01-2013 to 28-02-2013)	28 069	0.39	0	28 068
Total	392 916	32.10	0	392,884

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Annex 1
List of Findings

List of Findings (Post-on site) - Compilation and Resolutions

Project Title: 50 MW Sipansihaporas Hydro Power Plant, North Sumatra

Compilation and Resolutions of CARs, CRs and FARs

Clarification Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	The electricity generation amount of the Unit 2 (17 MW) is more of its rated capacity	☑ (IRL# 16)
Requirement	Para 4.7 of the VCS- Standard, version.03.	
Clarification Request	**Clarification Request No. 1** It was observed that the electricity generation amount in the month of December 2011, November and December 2012 are higher from its rated capacity (17 MW) of the turbine. Clarify.	
Response	According to the technical specification of the turbine, the turbine can operate more than its rated capacity. The maximum output generation capacity of the turbine is 17.6 MW and it has been verified that no day gross generation in the month of December 2011, November and December 2012 has been crossed maximum generation capacity. Hence, the increase of generation within the specified limit of the maximum generation capacity of turbine.	
Assessment Means of verification	The project proponent response can be accepted as according to the submitted technical specification, the rated capacity of the turbine is 17 MW but it could operate maximum up to 17.6 MW, and no days in the present monitoring periods gross generation have been crossed maximum limit of the turbine. Hence this issue can be closed.	
Adjustment on project design OR Changes in the monitoring report or supporting annexes	There is no changes in the MR due to this CR.	

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Annex 2
Information Reference List

Project title: 50 MW Sipansihaporas Hydro Power Plant, North Sumatra.

Onsite TUV Assessment Team:

Name	Function	Company
Supratik Dutta	Verifier (V)	TÜV SÜD South Asia Pvt. Ltd.

Interviewed Persons during onsite assessment:

Name	Function	Company
Leonardo Sidabalok	VCS Consultant	South Pole Asset Management Ltd.
Pandu Samosir	Manager-VCS	PT. PLN (Persero)
Ronniko Silalahi	Sipansihaporas Hydro Power Plant Manager	PT. PLN (Persero)
M Buchari	ADM PLTA	PT. PLN (Persero)
Kamia Handyani	Head office Representative	PT. PLN (Persero)
Rahmat Dian A	Asst. Manager of Engineering	PT. PLN (Persero)

Other Interviewed Persons (not during on-site assessment):

Name	Function	Institution/Company	Date of Interview
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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
1.	VCS Webpage	"50 MW Sipansihaporas Hydro Power Plant, North Sumatra" https://vcsprojectdatabase2.apx.com/myModule/interactive.asp?Tab=Projects&a=2&i=486&lat=1.733333&lon=98.85	24/09/2010	PDD (version.06), date: 06/11/2009
2.	UNFCCC	ACM0002 – Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version. 10	11/06/2009	Applied methodology of the project activity
3.	South Pole Carbon Asset Management Ltd.	Monitoring Report dated 25/07/2013 for the reporting monitoring period, Version 1.0.	27/07/2013	
4.	South Pole Carbon Asset Management Ltd.	Monitoring Report dated 5/08/2013 for the reporting monitoring period, Version 2.0.	07/08/2013	
5.	South Pole Carbon Asset Management Ltd.	Final Emission Reduction Spread Sheet	Submitted on 07/08/2013	
6.	PT. PLN (Persero)	Validation Report of the project activity	24/09/2010	Validation report no. 2009 IQ ME 154
7.	PT. PLN (Persero)	Sales electricity receipts (Monthly Electricity Protocol Report issued by the PLN - Pandan Sector office and Water Tax Payment Receipts issued by North Sumatera Province Tax Office).	Submitted on 02/08/2013	
8.	PT. PLN	Diesel purchase reports and DG set operation hours logbook.	Submitted on	

Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
	(Persero)		02/08/2013	
9.	PT. PLN (Persero)	All Calibration / testing reports during the reported monitoring period	Submitted on 02/08/2013	
10.	PT. PLN (Persero)	Copy of commissioning reports of two 50 MW Hydro Turbine-Generators (1 X 17 MW and 1X33 MW = 50 MW).	Submitted on 02/08/2013	
11.	PT. PLN (Persero)	Single line electrical diagram of the project activity	Submitted on 02/08/2013	
12.	PT. PLN (Persero)	Copies of Standard Operation Procedures for calibration, monitoring, metering and emergency preparedness.	Submitted on 02/08/2013	
13.	PT. PLN (Persero)	Training records of O & M team during the reported monitoring period.	Submitted on 02/08/2013	
14.	PT. PLN (Persero)	Applicable statutory/regulatory/other clearances covering this monitoring period.	Submitted on 02/08/2013	
15.	PT. PLN (Persero)	Commissioning certificates	Submitted on 02/08/2013	
16.	PT. PLN (Persero)	Technical specification of the turbine and generator	Submitted on 02/08/2013	
17.	PT. PLN (Persero)	Operation and maintenance records of the power plant	Submitted on 02/08/2013	
18.	PT. PLN (Persero)	Organization chart specific to the project activity.	Submitted on 02/08/2013	
19.	PT. PLN	Joint Meter Reading of the project	Submitted on	

Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
	(Persero)		02/08/2013	
20.	PT. PLN (Persero)	Log sheet of the project activity	Submitted on 02/08/2013	
21.	PT. PLN (Persero)	Copy of ISO and OHSAS certificates along with VCS project activity management procedures.	Submitted on 02/08/2013	
22.	PT. PLN (Persero)	Procedure to monitor the implementation of verified carbon standard (VCS) at the Lau Renun HEPP unit	Submitted on 02/08/2013	
23.	PT. PLN (Persero)	Sumatra System Grid Code – Metering code, Minister Energy and Mineral Resources Number 37, 27/11/2008	Submitted on 02/08/2013	

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Annex 3
Appointment Certificates

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

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CERTIFICATE OF APPOINTMENT

Mr. Roy, Bratin fulfills the requirements of the Certification Body "Environment and Energy" of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	VER	Other
Date	22.11.12				

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		22.11.12	22.11.12	22.11.12	22.11.12	1.1, 1.2, 3.1, 4.10,13.1

Other qualification						
Country Expertise						
Region	1	2	3	4	5	Other
Date	22.11.12					
Further countries						
Financial Expertise						
Date	22.11.12					

Qualification in technical areas	
Technical Area	**Date**
1.1_4.10_Thermal energy generation	22.11.12 (Valid until 17.06.2013)
1.2_Energy generation from renewable energy source	22.11.12
3.1_Energy demand	22.11.12
13.1_Waste handling and disposal	22.11.12

This appointment is valid until 28.02.2014 and is bound by internal requirements of the Certification Body "Environment and Energy" of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0038/002.

Date	Signature
01.03.2013	

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ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

South Asia

CERTIFICATE OF APPOINTMENT

Mr. Dutta, Supratik fulfills the requirements of the Certification Body "Environment and Energy" of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	VER	Other
Date	07.04.12				

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		07.04.12	07.04.12			1.2

Other qualification						
Country Expertise						
Region	1	2	3	4	5	Other
Date	07.04.12					
Further countries						
Financial Expertise						
Date	07.04.12					

Qualification in technical areas	
Technical Area	**Date**
1.2_Energy generation from renewable energy source	07.04.12

This appointment is valid until 28.02.2013 and is bound by internal requirements of the Certification Body "Environment and Energy" of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0012/001.

Date	Signature
21.11.2012: Extension of Validity	