



Verification Report

- 1ST PERIODIC –

**YUNNAN HONGTA DIANXI CEMENT CO.,
LTD.**

**YUNNAN HONGTA CEMENT WASTE HEAT RECOVERY
POWER GENERATION PROJECT**

UNFCCC REF. No. : 3674

Monitoring Period: 2010-10-08 to 2011-10-17
(incl. both days)

Report No: 8000404662 – 11/591

Date: 2012-07-10

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Project:	Title: Yunnan Hongta Cement Waste Heat Recovery Power Generation Project	Registration date: 2010-10-08		UNFCCC-No.: 3674
	Host Country: China	Verification No.: 1 st periodic verification		
	Crediting period: <input type="checkbox"/> Renewable (7y) <input checked="" type="checkbox"/> Fixed (10y)	From: 2010-10-08	To.: 2020-10-07	
	Project Scale: <input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale			
	Host Party: Yunnan Hongta Dianxi Cement Co., Ltd.	Other involved Parties: British Gas Trading Limited		
	Client: British Gas Trading Limited	Project Owner: Yunnan Hongta Dianxi Cement Co., Ltd.		
	Applied methodology/ies:	Title: Type III: Other project activities Category Q: "Waste Energy Recovery (gas/heat/pressure) Projects" (Version 02).	No.: AMS-III.Q ver. 02	Scope(s) / TA(s) 04 / 1.1, 4.5
Monitoring:	Monitoring period (MP): 2010-10-08 to 2011-10-17 (both days included)	No. of days: 374	MP No. 1 st	
Monitoring report:	Title: Yunnan Hongta Cement Waste Heat Recovery Power Generation Project	Draft version: 2011-11-15	Final version: 2012-06-27	
Verification team / Technical Review and Final Approval	Verification Team: Mr. Li Yongjun (TL) Ms. Li Xuemei (TM) Mr. Wu Jianmin (TE)	Technical review: R. Winter, B. Grünenwald	Final approval: S. Winter	
Emission reductions: [t CO_{2e}]	Verified amount 28,611 t	As per draft MR: 28,611 t	As per PDD: 28,611 t/a	
Summary of Verification Opinion:	<p>British Gas Trading Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "Yunnan Hongta Cement Waste Heat Recovery Power Generation Project", with regard to the relevant requirements for CDM project activities.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> all operations of the project are implemented and installed as planned and described in the validated project design document, <input checked="" type="checkbox"/> the monitoring plan is in accordance with the applied approved CDM methodology, <input checked="" type="checkbox"/> the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately, <input checked="" type="checkbox"/> the monitoring system is in place and functional. The project has generated GHG emission reductions, and <input checked="" type="checkbox"/> the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. <p>TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:</p>			



	Emission reductions: 28,611 t CO _{2e}	
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Abbreviations:

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CL	Clarification Request
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
XLS	Emission Reduction Calculation Spread Sheet

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1. INTRODUCTION

British Gas Trading Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 1st periodic verification of the project

“Yunnan Hongta Cement Waste Heat Recovery Power Generation Project”

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project.

GHG data for the monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Manual ^{/VVM/} of the UNFCCC.

This report summarizes the findings and conclusions of this 1st periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved methodology and the provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document ^{/PDD/}, the monitoring report ^{/MR/}, emission reduction calculation spreadsheet ^{/XLS/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol ^{/KP/},
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/}, and subsequent decisions made by the Executive Board and COP/MOP,



- other relevant rules, including the host country legislation,
- CDM Validation and Verification Manual ^{/VVM/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Approved CDM Methodology.

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description

The project utilizes waste heat at existing facilities as an energy source for the generation of electricity. The technology used is low-temperature waste heat recovery for power generation technology. The waste heat recovery system consists of two heat recovery boilers (also called heat recovery steam generators, or HRSG) and a single power generator (also called a turbine). The waste heat is transferred to the two HRSGs on the suspension preheater (SP) and on the air quenching cooler (AQC). Steam from the SP and the AQC boilers is meant to power a turbine to produce electricity. There's no technology transfer involved in the project activity.

The key parameters for the steam turbine (BN6.0—2.29/0.20) are given in Table 2-1-1:

Table 2-1-1: Technical data of the steam turbine

Parameter	Unit	Value
Rated Power	MW	6
Rated Rotation Speed	r/min	3,000
Rated Inlet Steam Pressure	MPa	2.29
Rated Inlet Steam Temperature	°C	370
Rated Second Inlet Steam Pressure	MPa	0.20
Rated Second Inlet Steam Temperature	°C	150
Exhaust Pressure	MPa	0.007
Designed life time	Years	>30
Manufacturer	-	Qingdao Jieneng Steam turbine Group Co., Ltd.

The key parameters for the generator (QF₁—6—2) are given in Table 2-1-2:

Table 2-1-2: Technical data of the generator

Parameter	Unit	Value
Rated Power	MW	6
Rated Rotation Speed	r/m	3,000
Designed Life Time	years	>30
Manufacturer	-	Sichuan Dongfeng Electric Factory Co., Ltd

The key parameters for the AQC boiler (QC148/380-15.5(2.5)-2.3(0.3)/(160)) are given in Table 2-1-3:

Table 2-1-3: Technical data of the AQC boiler

Parameter	Unit	Value
Inlet Gas Flow	M ³ /h	148,000
Inlet Gas Temperature	°C	380
Rated Steam Flow	t/h	15.5/2.5
Rated Steam Pressure	MPa	2.3/0.3
Feed Water Temperature	°C	100/30
Designed Life Time	years	>20
Manufacturer	-	Sichuan Chuanrun Dynamical Equipment Co., Ltd

The key parameters for the SP boiler (QC241/365-22(5.4)-2.3(0.2)/235(160)) are given in Table 2-1-4:

Table 2-1-4: **Technical data of the SP boiler**

Parameter	Unit	Value
Inlet Gas Flow	m ³ /h	241,000
Inlet Gas Temperature	°C	365
Rated Steam Flow	t/h	22/5.4
Rated Steam Pressure	MPa	2.3/0.2
Rated Steam Temperature	°C	235/160
Feed Water Temperature	°C	100/30
Designed Life Time	years	>20
Manufacturer	-	Sichuan Chuanrun Dynamical Equipment Co., Ltd

The key parameters for the ASH boiler (QC50/526-38-2.3/380) are given in Table 2-1-5:

Table 2-1-5: **Technical data of the ASH boiler**

Parameter	Unit	Value
Inlet Gas Flow	m ³ /h	50,000
Inlet Gas Temperature	°C	526
Rated Steam Flow	t/h	38
Rated Steam Pressure	MPa	2.3
Rated Steam Temperature	°C	380
Inlet Steam Temperature	°C	220
Designed Life Time	years	>20
Manufacturer	-	Sichuan Chuanrun Dynamical Equipment Co., Ltd

The technical specification in the purchase agreement for the boiler, the steam turbine and the generator signed between the project owner and the equipments

supplier has been provided to the verification team. The components and the working condition of the equipments have been specified in the technical specification. The name cards pasted on the steam turbine and the generator have been checked. The parameters mentioned are the same as the ones in the monitoring report.

2.2. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-1.

Table 2-1: Project verification history

#	Item	Time	Status
1	Date of registration	2010-10-08	-
2	Start of crediting period	2010-10-08	-
3	1 st Monitoring period	2010-10-08 to 2011-10-17	Ongoing

2.3. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	China	Yunnan Hongta Dianxi Cement Co., Ltd.
Other involved party/ies	United Kingdom	British Gas Trading Limited

2.4. Project Location

The details of the project location are given in Table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	China
Region:	Yunnan Province
Project location address:	Shangdeng Industrial area, Dali Economic Development Zone, Dali Prefecture
Latitude:	N25°40'55''~N25°41'11''
Longitude:	E100°20'32''~E100°20'45''

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report^{/MR/} submitted by the client and additional supporting documents with the use of customised verification protocol^{/CPM/} according to the Validation and Verification Manual^{/VVM/},
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the Table 3-1 below:

Table 3-1: Verification sequenceTable

Topic	Time
Assignment of verification	2011-09-08
Publication of Monitoring Report	2011-11-25
On-site visit	2011-12-14
Draft reporting finalised	2011-12-22
Final reporting finalised	2012-05-08
Technical review finalised	2012-05-08

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,

- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader and one additional team member, was appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the Table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence ⁵⁾	Host country Competence	On-site visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	LI, Yong Jun	TN China	TL	SA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	LI, Xue Mei	TN China	TM ^{A)}	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	WU, Jian Min	TN China	-	ETE	<input checked="" type="checkbox"/>	1.1&4.5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Winter, Rainer	TN Cert	TR ^{B)}	SA	<input checked="" type="checkbox"/>	1.1&4.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Grünenwald, Bösran	TN Cert	TR ^{B)}	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Winter, Stefan	TN Cert	FA ^{B)}	SA	<input checked="" type="checkbox"/>	1.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ GHG auditor status (at least Assessor)

⁴⁾ As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

⁵⁾ In case of verification projects

^{A)} Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

^{B)} No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. Comments received are taken into account in the course of the verification, if applicable.

3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-3 below.

Table 3-3: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
<i>The following potential risks were identified and divided and structured according to the possible areas of occurrence.</i>	<i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and</i>	<i>The additional verification testing performed is described. Testing may include:</i> - Sample cross checking of manual transfers of data - Recalculation	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
	<p><i>minimize the corresponding risks.</i></p> <p><i>The following measures are implemented:</i></p>	<p><i>have to be addressed in the course of every verification.</i></p>	<ul style="list-style-type: none"> - Spreadsheet 'walk throughs' to check links and equations - Inspection of calibration and maintenance records for key equipment - Check sampling analysis results - Discussions with process engineers who have detailed knowledge of process uncertainty/error bands. 	

The completed table A-1 is enclosed in the Annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-4.

Table 3-4: Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist

Checklist Item	Reference	Verification Team Comments	Draft Conclusion	Final Conclusion
<i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in the annex (table A-2) to this report.

3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the monitoring report, including the claimed emission reductions for the project^{/MR/},
- the emission reduction calculation spreadsheet^{/XLS/}.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of British Gas Trading Limited and <Consultant> (project consultant) including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-5.

Table 3-5: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
<ol style="list-style-type: none"> 1. Projects & Operations Personnel, British Gas Trading Limited; Yunnan Hongta Dianxi Cement Co., Ltd.; British Gas Trading Limited/IM01/ 2. Consultant, Hangzhou Carbon Trade Environment Engineering Co., Ltd. /IM02/ 	<ul style="list-style-type: none"> - General aspects of the project - Technical equipment and operation - Changes since validation / previous verification - Monitoring and measurement equipment - Remaining issues from validation/ previous verification - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Maintenance - Environmental aspects

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.10. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.12. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report^{/MR/}, the calculation spreadsheet^{/XLS/}, PDD^{/PDD/}, the Validation Report^{/VAL/} and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – General description of the project activity	1	1	0
B – Implementation of the project activity	1	0	0
C – Description of the monitoring system	4	0	0
D – Data and parameters monitored	2	2	0
E - Emission Reductions Calculation	1	0	0
SUM	9	3	0

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

Finding:	A1		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please provide the evidences for the dates of construction and of commissioning.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The construction contract and the construction completion acceptance are provided for verification.		



Finding:	A1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK.</p> <p>The construction contract with Dalian EAST Energy Engineering Co., Ltd, signed on Aug. 22, 2008^{/CC/} and The construction completion acceptance^{/CCA/} issued by Yunnan Industry and Information Commission on June 7, 2011 have been verified by the audit team.</p> <p>So CL A1 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	A2
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to the guideline, the detailed technical process including diagrams should be indicated in A.4 of the MR.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The technical process diagram of the Project is added in the MR version 02.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK.</p> <p>The technical process diagram of the project has been verified in the updated MR version 02 which is consistent with the one verified on-site by the audit team.</p> <p>So CAR A2 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding:	B1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR

Finding:	B1
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to the guideline, the information regarding the actual operation of the project activity including information on special events, for example overhaul times, downtimes of equipment, exchange of equipment should be mentioned and it is to be confirmed, if any events or situation occurred impacting the applicability of the methodology. In the MR, it is mentioned that no overhaul or equipment exchange took place which is inconsistent with the actual situation as verified on-site. An update of the monitoring report is requested.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The maintenance and overhaul records are added in the MR version 02 as follows: During this monitoring period (08/10/2010-17/10/2011), the turbine generator, the SP boiler and the AQC boiler of the Project were under maintenance and overhaul for about 11 days in July 2011, the detailed records are provided for verification.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. As verified in the updated MR version 02, the maintenance and overhaul records have been described which has been checked in the Project Operation and Maintenance Records/Equipments Check & maintenance log of boiler, turbine and generator^{/Q&M/}. So CAR B1 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	C1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> 1. The simplified diagram of the ammeter installation is inconsistent with the connection grid verified on-site, revision requested. 2. M2 and M3 (B) are indicated in the diagram, but missing in the description of data collection. 3. The function of M1 and M3 (B) is different from the related description in the PDD. 4. Please clarify which meter the data is from used for the emission reduction calculation. 5. Further clarify the change of source of the $Q_{OE,y}$ from M3 in the registered PDD to M1 in the Monitoring Report for the calculation of f_{cap}.

Finding:	C1
<p>Corrective Action #1</p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> 1. The diagram of meter installation is revised in MR version02. The meter M3 (B) (serial number 000080) with the accuracy of 0.5S will monitor the electricity supplied to the cement production plant. As M3 (B) is a backup meter of meter M3 as per the registered PDD, thus the position of meter M3 (B) should be series circuit which is also in compliance with the real monitoring system, but not parallel in PDD. The meter M3 (B) is just the backup meter and will be used only if the meter M3 is in fault/emergency. 2. The self-consumed electricity (M2) is added in data collection of MR version02. The electricity quantity supplied to the Project from the grid ($EG_{grid\ to\ pj,y}$) and the quantity of actual output energy recovered by the Project ($Q_{OE,y}$) of data collection in MR Version 01 are also measured by M3 (B) because M3 (B) is the backup meter of M3, so the description of M3 (B) is already included in the data collection. 3. M1 in the registered PDD will measure the total electricity of the project which is same with the MR version01. M3 (B) in the registered PDD will measure the electricity supplied to the cement production plant and measure the electricity connected to the grid by the Project in MR version01. As the electricity generated by the project will not delivered to the grid, but just connected to the grid and self consumed, so the meaning in the PDD and the MR version01 is the same. 4. Readings of meter M4 will be used for the emission reduction calculation; it is revised in MR version02. 5. As per the registered PDD on page 31, in the Data and Parameters monitored table, the parameter $Q_{OE,y}$ was defined as annual electricity generation by the Project Activity in year y, which is in line with the Methodology AMS III.Q, however, on page 33 of registered PDD, the parameter $Q_{OE,y}$ was wrote by mistake that was the electricity supplied to the cement production plant. Thus, the MR version 05 uses both the definition in data and parameter monitored table of registered PDD and the Methodology AMS III.Q, but not the descriptions in MP of registered PDD.

Finding:	C1
<p>DOE Assessment #1</p> <p><i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK.</p> <ol style="list-style-type: none"> 1. The revised diagram of meter installation has been verified in the updated MR Version 02. Although the revised diagram is a little different from the one in the registered PDD, it will not influence the emission reduction calculation of the project which is derived from the readings of M4. The readings of meter M3 is only used for crosschecks of the readings of meter M4. M3(B) is the backup meter for M3. The meter M3 (B) will monitor both the electricity connected to the grid by the Project ($EG_{pj \text{ to grid},y}$) and the electricity supplied to the Project from the grid ($EG_{grid \text{ to pj},y}$) in the MR version 04, while it will monitor the electricity supplied to the cement production plant in the registered PDD, as the net electricity generated by the Project will be just connected to the grid and will be used on-site for the cement production. Thus the records of both the electricity supplied to the cement production and $EG_{pj \text{ to grid},y}$ are the same. Since meter M3 (B) is the backup meter of meter M3 as per the registered PDD, the monitoring function of both two meters is the same. The power wiring diagram ^{/PWD/} has been verified. As verified, the corresponding part has been revised in the MR version 05. 2. M2 and M3 (B) indicated in the diagram have been clearly described in data collection. The functions of M2, M3 and M3 (B) are clearly indicated and consistent with the facts. 3. The function of M1 and M3 (B) has been clearly clarified in the updated MR Version 02. 4. The data from M4 will be used for emission reduction calculation which has been clearly mentioned in the updated MR version 02. 5. The audit team has checked the registered PDD and the methodology confirming that the definition of the parameter $Q_{OE,y}$ in the table of B.7.1 data and parameters monitored on page 31 of the registered PDD is consistent with the description in the methodology. But the description of $Q_{OE,y}$ on page 33 of the registered PDD is mentioned by mistake. The mistake has been avoided in the MR. <p>So CAR C1 is closed.</p>
<p>Conclusion</p> <p><i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	C2		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding:	C2
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The monitoring structure and related responsibilities in the MR are different from the actual monitoring organization and responsibilities as verified on-site. Update requested.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The monitoring structure and related responsibilities are revised in the MR version 02.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK.</p> <p>The revised monitoring structure and related responsibilities have been verified in the updated MR version 02.</p> <p>So CAR C2 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	C3
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>1. How the emission reductions are defined in case of emergencies is missing.</p> <p>2. In fact, there is not recorded data for M3(B) available on-site. Clarification requested.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>1. The calculation of emission reduction in case of emergencies is revised in MR Version 02. During this monitoring period, no emergency situation/failure of meters is experienced.</p> <p>2. Meter M3 will be used for cross-checking the readings of meter M4. M3 (B) is the back-up meter of M3. M3 (B) will be recorded, if the meter M3 and M4 are both in fault/emergency.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK.</p> <p>1. As verified in the updated MR Version 02, in case of emergencies for M4, the readings of meter M3 and M3 (B) can be used to calculate emission reductions. As checked in the daily maintenance and emergency measures for meters ^{/Q&M/}, the fault/emergency meter should be repaired and calibrated only by national designated institutions with metering certificate. According to the Project Operation and Maintenance Records ^{/Q&M/} and power record table ^{/LOG/} check, during this monitoring period, no emergency situation/failure of meters occurred.</p> <p>2. According to the daily maintenance and emergency measures for meters ^{/Q&M/} check, the explanation is acceptable.</p> <p>So CAR C3 is closed.</p>

Finding:	C3
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	C4
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In the MR, it is not mentioned, how long relevant monitoring data will be recorded.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	All the data including calibration records are kept until 2 years after the end of the total credit time of the project. The related information has been added in the updated MR version 02.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	OK. The information required has been verified in the updated MR version 02. So CAR C4 is closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The description of the parameters is the same, but it is unclear, which are measured by different meters. Please make the tables clear.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The meter M3 and M4 will monitor the same parameter (electricity connected and imported from the grid), while, meter M3 is used for cross-checking the baseline emission and meter M4 is used for the baseline emission calculation. The tables are clearly presented in MR version 02.

Finding:	D1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. The description of the parameters has been checked in the revised table of MR version 02 which complies with the facts as verified on-site. So CAR D1 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	D2
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The last calibration date is 2011-06-23 and calibration test report is valid from 2011-06-23 to 2012-06-22 which can't cover a part of the crediting period. Please kindly provide the calibration test report covering 2010-10-08 to 2011-06-22.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The calibration test report required has been provided.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. The calibration test report dated 2010-06-23 covering 2010-10-08 to 2011-06-22 has been delivered and verified by the audit team. The related information has been added in the updated MR version 02. So CL D2 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	D3
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>It is mentioned that the meter has been regularly checked following the relevant Chinese standards. Please clarify which standards have been followed in the MR.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The meters will be checked following the Chinese national standard "Technical Management Code for Electricity Metering" (DL/T448-2000). The corresponding parts are revised in MR version 02.</p>

Finding:	D3
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. “Technical Management Code for Electricity Metering” (DL/T448-2000) has been clearly mentioned in the D.2 of the updated MR version 02. So CL D3 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	D4
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please clearly clarify how the data used for the emission reductions calculation was cross-checked in the MR.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	All the data used in calculating emission reductions are from meter M4. The readings of meter M3 will be used for the cross-check of baseline emissions. The corresponding parts are revised in the MR version 02.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. The data from meter M4 managed by the Dali Electric Power Bureau are used for calculating emission reductions. The readings of meter M3 could be used for cross-checks as the meters M3 and M4 both measured the electricity supplied to the Project from the grid ($EG_{grid\ to\ pj,y}$) which has been clearly indicated in the updated MR version 02. So CAR D4 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	E1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR



Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The presentation of values in the MR, including those used for the calculation of emission reductions, should be in international standard format, e.g. 1,000 representing one thousand and 1.0 representing one.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	All the data presented in MR version 01 are revised to the standard format in MR version 02.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	OK. The issue has been resolved in the updated MR version 02. So CAR E1 is closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CRs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation, such as Technical specification of Boilers, Turbine and Generator^{/TA/}, operation log^{/LOG/}, calibration record^{/CAL/}, Power Wiring Diagram^{/PWD/} it can be confirmed that w.r.t. the realized technology, the project equipments as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD^{/PDD/}.

The project construct agreement was signed on 2008-08-22 and the real construction of the project started on 2008-09-08 and put into operation on 2009-09-17. The total installed capacity of the project is checked as 6 MW, involving one set of suspension preheater (SP boiler), one set of air quenching cooler (AQC boiler) and one set of turbine generator, please refer to Table 2-5^{/PDD/,/TS/}. The electricity generated by the project and auxiliary electricity are metered by five meters, which have the same accuracy of 0.5S and been calibrated annually by a qualified entity^{/CAL/}, pls. refer to Table 5-2. The calibration validity of all meters is confirmed to cover the 1st monitoring period from 2010-10-08 to 2011-10-17 (including both days).

The project supplies zero emission electricity to the manufacturing facility of the corporation and substitutes equivalent amount of electricity from the Southern Power Grid^{/PDD/,/PWD/}.

5.2. Project history

The project owner signed the construction contract with the construction company Dalian East New Energy Development Co., Ltd on 2008-08-22^{/PDD/} and the activity was put into operation on 2009-09-17^{/LOG/}. The project was registered as a CDM project on 2010-10-08^{/unfccc/}.

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. The validation report^{/VAL/} has been reviewed, no such issues were identified for this project.

Furthermore as this is the 1st periodic verification no issues from former verifications are to be considered.

5.3. Special events

No special events with effect on the monitoring of the project have been observed during the monitoring period. CAR B1 has been raised and closed successfully.

By means of checking daily operation and maintenance logs^{/LOG/}, the verification team confirmed the following events happened, after the downtimes, the project activity continue normally, thus the events have no impact on the operation mode:

Table 5-2: Special Events^{/LOG/, /CD/}

Event	Date
Breakdown for maintenance	2011-07-09~2011-07-20 ^{/O&M/} During this monitoring period (08/10/2010-17/10/2011), the turbine generator, the SP boiler and the AQC boiler of the Project were under maintenance and overhaul for about 11 days in July 2011, the detail records are provided for verification.
Zero cleared	2010-10-29 ^{/CD/} The grid connected agreement signed on Sep. 28, 2010, M4 (740022) was used from Oct. 01, 2010. In order to be comparable, Dali Power Supply Bureau decided to make clearance for the meters (350313, 350187, 35090, 000080 and 740022) after communication with the project owner.

5.4. Compliance with the monitoring plan

The monitoring system and all applied procedures are completely in compliance to the registered monitoring plan. In order to monitor the parameters indicated in the registered monitoring plan, such as $EG_{total, y}$, $EG_{pj \text{ to grid}, y}$, $EG_{grid \text{ to pj}, y}$ and $Q_{OE, y}$, the meter M1, M2, M3, M3B, M4 have been installed. The monitoring meters have been installed in line with the registered monitoring plan, w.r.t the numbers, location and accuracy. The accuracy of the meters is 0.5S. To ensure a reliable monitoring result, the calibration for these meters was carried out annually, which is in line with the national standards.

Table 5-2: Key meters information^{/CAL/}

	Series No.	Type	Accuracy	Meter Factor	Calibration Date	Valid Until
M1	350313	DSSD331	0.5S	25,000	2010-06-23 2011-06-23	2011-06-22 2012-06-22
M2	350187	DSSD331	0.5S	25,000	2010-06-23 2011-06-23	2011-06-22 2012-06-22
M3	350190	DSSD331	0.5S	25,000	2010-06-23 2011-06-23	2011-06-22 2012-06-22
M4	740022	DSSD331	0.5S	25,000	2010-06-23 2011-06-23	2011-06-22 2012-06-22
M3B	000080	DSSD331	0.5S	25,000	2010-06-23 2011-06-23	2011-06-22 2012-06-22

Note: the Manufacturer of the meters is Weisheng Group Co., Ltd.

By means of on-site interview, it is confirmed that the meter reading frequency and data archives are consistent with the monitoring plan in the registered PDD^{/PDD/}.

The actual electricity value in kWh is calculated by the meter readings multiplying their corresponding meter factor, which was cross-checked during the on-site visit.

5.5. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology (AMS-III.Q version 02).

The methodology AMS-III. Q ver. 02 requires monitoring of the following:

- The electricity quantity generated by the project in year y ($EG_{total,y}$)
- The net electricity quantity generated by the project ($EG_{pj\ to\ grid,y}$)
- The electricity quantity supplied to the project from the grid ($EG_{grid\ to\ pj,y}$)
- The annual electricity generation by the project activity in year y ($Q_{OE,y}$)
- Data needed to determine project emissions due to the electricity consumption (including auxiliary use) the relevant monitoring procedure in the tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" shall be followed and for calculating project emissions due to fossil fuel consumption (including auxiliary use) $PE_{fuel,y}$, the monitoring of the relevant parameters shall be conducted as per the tool "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion".
- CO₂ emission factor of electricity or heat that would have been consumed by the recipient facility(ies) in the absence of the project activity;

For the project, the EF_{CM} has been ex-ante calculated in the registered PDD, so it is unnecessary to monitoring CO_2 emission factor of electricity that would have been consumed by the recipient facility(ies) in the absence of the project activity during the first crediting period. The project installs heat recovery equipment to generate electricity, therefore consumes no fossil fuel and monitoring of related parameter is therefore also not applicable.

As verified on-site, the net electricity generated by the project is just connected to the grid and used for cement production, not sale electricity to the grid. The $EG_{pj \text{ to grid, } y}$ 'The net electricity quantity generated by the project' was measured by meter M4 continuously and recorded monthly. M4 is managed by Grid Company which issues Statements list of captive power system reserve costs and the fund charged according to the records of M4. Meter M4 records, Statements list of captive power system reserve costs and the fund charged and Power hourly records table of M1, M2 and M3 ^{/INO/} were available on-site. The DCS system was employed to provide continuous on-line monitoring for M1, M2, M3, M4 and the meter reading was archived in electronic and paper format ^{/LOG/MMR/}.

In conclusion, the monitoring activity of the project complies with the monitoring methodology.

5.6. Monitoring parameters

During the verification all relevant monitoring parameters $EG_{total, y}$, $EG_{pj \text{ to grid, } y}$, $EG_{grid \text{ to } pj, y}$ and $Q_{OE, y}$ (as listed in chapter B.7.1 of the PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedures are described parameter-wise in the project specific verification checklist.

Meter M1 was installed to measure the total power generation. The project owner installed M2 to measure the electricity consumed by the power plant. In the registered PDD, parameters related to meter M2 in "Data and parameter monitored" table on page 30 and 31 were not mentioned. And the meter M2 is not used for emission reductions calculation for the project. Both the meter M3 and M3 (B) can be used for crosscheck for meter M4, the meter M2 is only used when M3, M3 (B) and M4 are abnormal, however, during this monitoring period (2010-10-08 to 2011-10-17), no emergency situation/failure of these 3 meters occurred, so the records of meter M2 is not included in MR. The function of M2 has been described clearly in data collection of section C in MR version 03. Meter M3 is a bidirectional electricity meter which was installed to measure both electricity connected to the grid by the project and the electricity supplied to the project from the grid ($EG_{grid \text{ to } pj, y}$). The meter M3B is a back-up meter for meter M3. The meter M4 is also a bidirectional electricity meter managed by the Electric Power Bureau to measure both the electricity connected to the grid by the Project ($EG_{pj \text{ to grid, } y}$) and the electricity supplied to the Project from the grid ($EG_{grid \text{ to } pj, y}$).

The monitoring meters were selected and installed according to the national standards and the calibrations for these meters were carried out by an independent qualified entity. The calibration frequency also complied with the national smartcards. The meters were read by qualified people ^{/RTC/}. The reading of the meter is recorded manually and electronically.

After appropriate corrections were carried out by the project participant, it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and are in line with all applicable standards and relevant requirements.

5.7. Monitoring report

A draft monitoring report ^{/MR/} was submitted to the verification team by the project participants. The team has made this report publicly available on 2011-11-25 prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and in accordance with the registered PDD and other relevant requirements.

CAR A2, CAR B1, CAR C1, CAR C2, CAR C3, CAR C4, CAR D1 and CAR D4 have been raised and closed successfully.

5.8. ER Calculation

During the verification mistakes in the ER calculation were identified. Corresponding CAR E1 was raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. Thus it is confirmed that the ER calculation is overall correct.

Baseline Emissions:

The formula used for the determination of baseline emissions ^{/MR/} is consistent with the PDD ^{/PDD/}:

Baseline emissions (BE_y) = Grid emission factor (EF_y) x Net electricity supplied (EG_y)

EG_y = EG_{pj to grid,y} - EG_{grid to pj,y}

BE_y = 0.8712 tCO₂e/MWh x 32841.992 MWh
= 28611.94 tCO₂e
= 28611 tCO₂e

Where,

The net electricity EG_y supplied to the grid is continuously measured by meter M4

which is a bidirectional electricity meter managed by the Electric Power Bureau and it could monitor both the electricity quantity connected to the grid by the project $EG_{pj \text{ to grid},y}$ and the electricity quantity supplied to the project from the grid $EG_{grid \text{ to pj},y}$.

EG_y : Net electricity connected to the grid by the project in year y;

$EG_{total,y}$: Total electricity generated by the project in y year measured by M1;

$EG_{pj \text{ to grid},y}$: The electricity quantity connected to the grid by the project by M3 and M4

$EG_{grid \text{ to pj},y}$: The electricity quantity supplied to the project from the grid by M3 and M4

The audit team has used the Statements list of captive power system reserve costs and the fund charged covering 2010-10-08 to 2011-10-17 and the power hourly records table^{/INO/} to cross-check EG_y .

The baseline emissions during the monitoring period (2010-10-08 to 2011-10-17) are 28,611 tCO₂e.

Project Emission

According to the registered PDD, the project will not use auxiliary fuels. As verified on-site and interviewed with the operational staff^{/IM01/}, there is no combustion of auxiliary fuels in the project activity. Thus according to the approved methodology there is no project emission in the proposed project, so in accordance with AMS III.Q ver.02, $PE_y = 0$.

Leakage:

As per AMS III.Q (Version 02), $LE_y = 0$.

Emission Reduction:

The formula used for the determination of emission reduction during the 1st monitoring period is consistent with the PDD:

$$\begin{aligned} \text{Emission Reduction (ER}_y\text{)} &= BE_y - PE_y - LE_y \\ &= (EF_y \times EG_y) - PE_y - LE_y \\ &= 28,611.94 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} \\ &= 28,611 \text{ tCO}_2\text{e} \end{aligned}$$

Therefore, the emission reductions ER_y during 2010-10-08 to 2011-10-17 are 28,611 tCO₂e. According to the meter reading records, invoices and Statements list of captive power system reserve costs and the fund charged^{/INO/}, the calculation is reproducible and considered to be conservative. Besides, the ER spreadsheet was confirmed by checking the meter reading records and statements list of captive power system reserve costs and the fund charged from the local grid company^{/INO/}.
/XLS/

Table 5.2 Emission reduction during 1st monitoring period

Period	EG _{pj to grid,y}	EG _{grid to pj,y}	The power exported to the grid EG _y (KWh)
2010.10.08-2010.10.31	463,170	863	462,307
2010.11.01-2010.11.30	533,167	4,315	528,853
2010.12.01-2010.12.30	2,610,111	11,647	2,598,464
2011.01.01-2011.01.31	3,491,919	6,615	3,485,303
2011.02.01-2011.02.28	2,552,997	12,367	2,540,630
2011.03.01-2011.03.31	3,339,236	5,465	3,333,771
2011.04.01-2011.04.30	3,237,406	10,787	3,226,619
2011.05.01-2011.05.31	2,977,942	10,643	2,967,299
2011.06.01-2011.06.30	3,458,698	10,930	3,447,768
2011.07.01-2011.07.31	2,214,939	15,246	2,199,693
2011.08.01-2011.08.31	2,153,812	21,430	2,132,382
2011.09.01-2011.09.30	3,220,256	9,204	3,211,052
2011.10.01-2011.10.17	2,724,677	16,826	2,707,851
SUM	32,978,330	136,338	32,841,992

$$EG_y = EG_{pj \text{ to grid},y} - EG_{grid \text{ to pj},y} = 32,978,330 \text{ kWh} - 136,338 \text{ kWh} = 32,841,992 \text{ kWh}$$

$$ER_y = (EF_y \times EG_y) - PE_y - LE_y = 0.8712 \text{ tCO}_2\text{e/MWh} \times 32,841.992 \text{ MWh} - 0 - 0 \\ = 28,611 \text{ tCO}_2\text{e}$$

Note: Emission factor EF_y is determined ex-ante in registered PDD as $0.8712 \text{ tCO}_2/\text{MWh}^{/PDD/}$.

5.9. Quality Management

The only key monitoring parameter with influence on the calculation of the emission reductions is the net power supplied to the grid of the corporation.

The meters are monitored continuously and recorded monthly. All relevant evidences were fully checked by the verification team during the on-site visit, such as operation and maintenance records^{/O&M//LOG/}, meter readings^{/MMR/} recorded by the DCS system and operation technicians, calibration records^{/CAL/}, monitoring plan^{/MP/}, and quality assurance procedure^{/QA/}. All evidences are clearly identifiable and assessed to be correct.

The power was measured with a high accuracy (accuracy is 0.5S) by duly calibrated power meters.

A monitoring team has been set up and trained to conduct the monitoring. The monitoring procedures have been formed in the Operation Manual and Project

Management procedures^{/QA/}. The Internal Audit for monitoring work has been carried out and a Management System Internal Audit has been worked out, no major non-conformity was found in the internal audit.

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

5.10. Comparison with ex-ante estimated emission reductions

The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD ^{/PDD/}.

The calculated value was found to be proportionally lower than the ex-post determined value, thus no further justification was required.

5.11. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

5.12. Hints for next periodic Verification

There are no hints to be considered for the next periodic verification.

6. VERIFICATION OPINION

British Gas Trading Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: “Yunnan Hongta Cement Waste Heat Recovery Power Generation Project”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to utilize the waste heat recovered to produce the electricity to substitute those from the China Southern Power Grid. This verification covers the period from 2010-10-08 to 2011-10-17 (including both days).

In the course of the verification 9 Corrective Action Requests (CAR) and 3 Clarification Requests (CL) were raised and successfully closed. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, ie, AMS III.Q Version 02.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **28,611 t** CO_{2e}

Shanghai, 2012-05-08

Essen, 2012-05-08



Li, Yong Jun

TÜV NORD JI/CDM Certification
Program

Verification Team Leader



S. Winter

TÜV NORD JI/CDM Certification
Program

Final Approver

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
/BL/	Business License
/CAL/	<ol style="list-style-type: none"> 1. Calibration Test Reports of electricity meters covering the 1st monitoring period 2. Procedure of control of monitoring meters. 3. The Verification Regulation of Electrical Energy Meters with Electronics (JJG596-1999) and DL/T448-2000. 4. Certificate of Examination of Measurement Standard to Dali Power Supply Bureau of Yunnan Grid Company, issued by Quality and Technical Supervision of Dali, covering from 2010-10-08 to 2011-10-17
/MMR/	Monthly Reading Records covering 2010-10-08 to 2011-10-17.
/IAR/	Internal Audit Report
/INO/	<ol style="list-style-type: none"> 1. Statements list of captive power system reserve costs and the fund charged covering 2010.10.08-2011.10.17 2. Meter M4 records for the amount of electricity generated by waste heat power generation from 2010.10.08 to 2011.10.17 3. Power hourly records table of M1, M2 and M3
/LOG/	<ol style="list-style-type: none"> 1. Project operation logs such as boiler operation records and power record table 2. Equipments daily check log
/MP/	Monitoring Plan 2009-08-23
/QA/	<ol style="list-style-type: none"> 1. QA/QC Manual 2. Management system Internal Audit report 3. Project Management procedures 4. ISO 9001 QMS Certificate/ ISO 14001:2004/ GB/T28001-2001/GB/T19022-2003/ISO 10012:2003
/MR/	<ol style="list-style-type: none"> 1. Monitoring report 'Yunnan Hongta Cement Waste Heat Recovery Power Generation Project' for the 1st periodic verification 2010-10-08 to 2011-10-17, version 01, dated 2011-11-15. 2. Monitoring report "Yunnan Hongta Cement Waste Heat Recovery Power Generation Project" for the 1st periodic verification 2010-10-08 to 2011-10-

Reference	Document
	17, version 05, dated 2012-06-27.
/O&M/	<ol style="list-style-type: none"> 1. Project Operation and Maintenance Records/Equipments Check & maintenance log of boiler, turbine and generator 2. Equipment repair and maintenance records 3. Sample copy of O&M records 4. Daily maintenance and emergency measures for meters 5. Repair and Maintenance Plan
/PWD/	Power Wiring Diagram
/GLD/	The general layout drawing of the production line (with main equipments)
/RTC/	Project Responsibilities, Training and Competence Records: <ol style="list-style-type: none"> 1. Project Organization Chart and responsibilities 2. Staff Training Record 3. Certificate of CDM training 4. Sample Copy of Operator Certificates
/TA/	Technical Agreement for the main equipment <ol style="list-style-type: none"> 1. Technical Agreement for Generator signed with Jinan Power Equipment Factory 2. Technical Agreement for Boiler, signed with Hangzhou Boiler Group Co., Ltd on
/SE/	Specification of electric meters
/EPA/	Opinions of project completion environmental protection acceptance
/XLS/	Emission Calculation sheets provided by the project participant (related to the MR).
/CD/	Clearance Decision for the meters in waste heat power station from Dali Power Supply Bureau Yunnan Grid Company dated Oct. 25, 2010, remarks: the grid connected agreement signed on Sep. 28, 2010, M4 (740022) was used from Oct. 01, 2010. In order to be comparable, Dali Power Supply Bureau decided to make clearance at 9:00 on Oct. 29, 2010 for the meters (350313, 350187, 35090, 000080 and 740022) after communication with the project owner.
/AGC/	Approval of Grid Connection, issued by Yunnan Grid Company, dated June 16, 2009
/ETR/	Efficiency test report for Boiler DZL2.8-0.70-95/70 including the parameters of

Reference	Document
	the boiler
/CC/	The construction contract, dated Aug. 22, 2008
/CCA/	The construction completion acceptance, dated June 07, 2011

Table 7-2: Background investigation and assessment documents

Reference	Document
/AMS-III.Q/	AMS-III.Q ver. 02, "Type III: Other project activities Category Q: "Waste Energy Recovery (gas/heat/pressure) Projects" (Version 02)."
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/PDD/	Project Design Document for CDM project: "Yunnan Hongta Cement Waste Heat Recovery Power Generation Project" version 1.7, dated 2010-09-23
/VAL/	Validation Report for CDM project "Yunnan Hongta Cement Waste Heat Recovery Power Generation Project" version 1.0, dated 2010-10-08
/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)
/VVM/	UNFCCC Validation and Verification Manual (Version 01.2, EB 55)

Table 7-3: Websites used

Reference	Link	Organisation
/dna-HP/	www.cdm.ccchina.gov.cn	DNA of China

Reference	Link	Organisation
/dna-SP/	http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx	DNA of United Kingdom
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/mep/	http://www.zhb.gov.cn/	Ministry of Environmental Protection of China
/bqs/	http://xxgk.yn.gov.cn/canton_model38/default.aspx?departmentid=10540	Bureau of Quality and Technical Supervision

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Yang, Xing Hui	Yunnan Hongta Dianxi Cement Co., Ltd. / Vice General Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Li, Yu Hua	Yunnan Hongta Dianxi Cement Co., Ltd. / Director of Firing Workshop
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Ming, Zhong Shan	Yunnan Hongta Dianxi Cement Co., Ltd. / Engineer of Firing Workshop
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Su, Guo Chao	Yunnan Hongta Dianxi Cement Co., Ltd. / Director of Mobility and Equipment Department
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Luo, Guang Ming	Yunnan Hongta Dianxi Cement Co., Ltd. / Financer of Financial Department
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Zhang, Sheng	Yunnan Hongta Dianxi Cement Co., Ltd. / Engineer of Mobility and Equipment Department
/IM01/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Zhao, Zhen Fang	Yunnan Hongta Dianxi Cement Co., Ltd. / Engineer of Mobility and Equipment Department



Reference	Mol ¹		Name	Organisation / Function
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Rao, Xiao Guang	Hangzhou Carbon Trade Environment Engineering Co., Ltd. / Project Director
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Lin, Yan	Hangzhou Carbon Trade Environment Engineering Co., Ltd. / Project Manager

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Verification Protocol
- A2:** Appointment / Authorisation
statements

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
Raw data generation				
<ul style="list-style-type: none"> • Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology 	<ul style="list-style-type: none"> • Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is 	<ul style="list-style-type: none"> • Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy • Inappropriate QA/QC 	<ul style="list-style-type: none"> • Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures 	<ul style="list-style-type: none"> • See Table A-2

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> Accuracy of values supplied by Third Parties 	<ul style="list-style-type: none"> organized Training Internal audit procedures Internal check of QA/QC measures of involved Third Parties 	<ul style="list-style-type: none"> measures of Third Parties 	<ul style="list-style-type: none"> Application of CDM management system procedures Check of trainings Check of responsibilities Check of QA/QC documentation / evidences of involved Third Parties 	
Raw data collection and data aggregation				
<ul style="list-style-type: none"> Wrong data transfer from raw data to daily and monthly aggregated reporting forms IT Systems Spread sheet programming Manual data transmission Data protection Responsibilities 	<ul style="list-style-type: none"> Cross-check of data Plausibility checks of various parameters. Appropriate archiving system Clear allocation of responsibilities Application of CDM Management system procedures Usage of standard software solutions 	<ul style="list-style-type: none"> Unintended usage of old data that has been revised Incomplete documentation Ex-post corrections of records Ambiguous sources of information Non-application of management system procedures Manual data transfer mistakes 	<ul style="list-style-type: none"> Check of data aggregation steps Counter-calculation Data integrity checks by means of graphical data analysis and calculation of specific performance figures Check of management system certification Check of data archiving system 	<ul style="list-style-type: none"> See Table A-2



Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
	(Spreadsheets) <ul style="list-style-type: none"> Limited access to IT systems Data protection procedures 	<ul style="list-style-type: none"> Unintended change of spread sheet programming or data base entries Problems caused by updating/upgrading or change of applied software 	<ul style="list-style-type: none"> Check of application of Management system procedures 	
Other calculation parameters				
<ul style="list-style-type: none"> Emission factors, oxidation factors, coefficients 	<ul style="list-style-type: none"> The values and data sources applied are defined in the PDD and monitoring plan 	<ul style="list-style-type: none"> Unintended or intended Modification of calculation parameters Wrong application of values Misinterpretations of the applied methodology and/ or the PDD Missing update of applicable regulatory framework (e.g. IPCC values) 	<ul style="list-style-type: none"> Update-check of regulatory framework Countercheck of the applied MP in the MR against the methodology and the PDD 	<ul style="list-style-type: none"> See Table A-2
Calculation Methods				

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> Applied formulae Miscalculation Mistakes in spread-sheet calculation 	<ul style="list-style-type: none"> Advanced calculation and reporting tools A CDM coordinator is in charge of the CDM related calculations Usage of tested / counterchecked Excel spreadsheets Involvement of external consultants 	<ul style="list-style-type: none"> The danger of miscalculation can only be minimized. 	<ul style="list-style-type: none"> Countercheck on the basis of own calculation. Spread sheet walk-through. Plausibility checks Check of plots 	<ul style="list-style-type: none"> See Table A-2
Monitoring reporting				
<ul style="list-style-type: none"> Data transfer to the author of the monitoring report Data transfer to the monitoring report Unintended use of outdated versions 	<ul style="list-style-type: none"> An experienced CDM consultant is responsible for monitoring reporting. CDM QMS procedures are defined 	<ul style="list-style-type: none"> The danger of data transfer mistakes can only be minimized Inappropriate application of QMS procedures 	<ul style="list-style-type: none"> Counter check with evidences provided. Audit of procedure application 	<ul style="list-style-type: none"> See Table A-2

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. General Description of the project activity				
A.1. Brief description of the project activity (EB 54 Annex 34, A.1) Check if section A.1 of the MR includes the following: <ul style="list-style-type: none"> - Purpose of the PA and the measures taken to reduce GHG emissions - Brief description of the installed technology and equipments - Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc. - Total emission reductions achieved in this monitoring period 	/MR/ /PDD/ /IM01/ /BL/ /PWD/ /GLD/ /EPA/ /AGC/	The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input type="checkbox"/> Purpose of the PA and the measures taken to reduce GHG emissions <input checked="" type="checkbox"/> Brief description of the installed technology and equipments <input type="checkbox"/> Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc <input checked="" type="checkbox"/> Total emission reductions achieved in this monitoring period In this context the following findings have been identified: CL A1 Please provide the evidences for the dates of construction and of commissioning.	CL A1	OK
A.2. Project Participants (EB 54 Annex 34, A.2) Check if section A.2 of the MR includes the following: <ul style="list-style-type: none"> - All PPs as displayed on the UNFCCC website 	/MR/	The verification team has checked section A.2 of the MR and confirms that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> All PPs as displayed on the project related UNFCCC website are correctly listed 	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A.3. Location of the Project Activity (EB 54 Annex 34, A.3) Check if section A.3 of the MR reflects correctly the following: <ul style="list-style-type: none"> - Address of the project location - Latitude and Longitude 	/MR/ /PDD/ /IM01/	The verification team has checked section A.3 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The address has been correctly given in the MR <input checked="" type="checkbox"/> Latitude and Longitude are in line with the information given in the PDD and reflects the actual location of the PA. 	OK	OK
A.4. Technical description of the project (EB 54 Annex 34, A.4) Check if section A.4 of the MR correctly describes / includes the following: <ul style="list-style-type: none"> - Detailed description of the technology applied - Diagrams 	/MR/ /PDD/ /IM01/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input type="checkbox"/> The description of the technology applied is complete and appropriate <input type="checkbox"/> Appropriate diagrams have been included in the description In this context the following findings have been identified: CAR A2 According to the guideline, the detailed technical process including diagrams should be indicated in A.4 of the MR.	CAR A2	OK
A.5. Title, reference and version of the baseline and monitoring methodology	/MR/ /PDD/	The verification team has checked section A.5 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
applied to the project (EB 54 Annex 34, A.5) <i>Check if section A.5 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> - Reference to the applicable version of the methodology - Reference to the applicable version(s) of relevant methodological tools - Relevant EB decisions, if applicable 	/unfccc/	information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Name and version of the applicable CDM Methodology <input type="checkbox"/> Name and version of applicable CDM methodological tools <input checked="" type="checkbox"/> Relevant EB decisions 		
A.6. Registration date of the project activity (EB 54 Annex 34, A.6) <i>Check if section A.6 of the MR correctly includes the following:</i> <ul style="list-style-type: none"> - Registration date 	/MR/ /unfccc/	The verification team has checked section A.6 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Registration date 	OK	OK
A.7. Crediting period of the PA and related information (EB 54 Annex 34, A.7) <i>Check if section A.7 of the MR correctly includes the following:</i> <ul style="list-style-type: none"> - Start date of the crediting period. In this context please check, if applicable, whether post 	/MR/ /unfccc/	The verification team has checked section A.7 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Start date of the crediting period. <input checked="" type="checkbox"/> Type and length of the crediting period 	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>registration changes to the start date have been accepted by the EB.</i> - Length and type of the crediting period				
A.8. Name of the responsible person(s) / entity/(ies) (EB 54 Annex 34, A.8) <i>Check if section A.8 of the MR correctly includes the following:</i> - Contact information of the person(s)/entity(ies) responsible for completing the MR.	/MR/ /IM01/	The verification team has checked section A.8 of the MR and confirms by means of interviews with the PP that the information provided is complete and correct with regards to the following: <input checked="" type="checkbox"/> Contact information of the person(s) / entity/(ies) responsible for completing the MR..	OK	OK
B. Implementation of the project activity				
B.1. Implementation status of the project				
B.1.1. Initial project implementation (EB 55 Annex 1, §§ 182, 195-201) <i>Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?</i> <i>Further focus on the potential phase wise implementation and check the reporting on the</i>	/IM01/ /PDD/ /TA/ /ETR/	<i>Description:</i> This is 1 st periodic verification. The project was fully in operation on Sep. 17 th 2009. According to the on-site information, the main constructions and equipment involving a steam turbine, a SP boiler, an AQC boiler and a generator are checked and cross verified with the PDD and the equipment contracts.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>corresponding status and starting dates accordingly.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p>		<p><i>Justification of evidences:</i></p> <p>Through site visit and interviewing with PP as well as registered PDD and technical specifications.</p> <p><i>Conclusion:</i></p> <p>The project has been implemented and operated as per the registered PDD and all physical features of the project are in place.</p>		
<p>B.1.2. Technical equipment changes (EB 55 Annex 1, § 187)</p> <p><i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i></p> <p><i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>Also, discuss –if applicable- any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex</i></p>	<p>/IM01/ /TA/ /PDD/ /LOG/ /ETR/</p>	<p><i>Description:</i></p> <p>The technical equipment, e.g. boilers, steam turbine, generator are in line with the PDD and the MR.</p> <p><i>Justification of evidences:</i></p> <p>It was confirmed by the on-site visit, especially by checking key equipment name plates, relevant purchasing contracts and technical specifications.</p> <p>By means of checking the information published on the UNFCCC website and the on-site observation and by means of interviews.</p> <p><i>Conclusion:</i></p> <p>It is confirmed that the relevant technical equipment of the project activity hasn't been exchanged or modified during the monitoring period.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
66/67).				
<p>B.1.3. Operation of the project activity (EB 55 Annex 1, § 195)</p> <p><i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i></p> <p><i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p>	/IM01/	<p><i>Description:</i></p> <p>No exchange or modification of the operation mode during the monitoring period is detected by the verification team.</p> <p>The DCS system of the project shows the technical process. The DCS system is an electronic system provided automatic meter reading, power wire diagram, and equipment performance recording service. The operation log and maintenance records are recorded by trained and qualified staff, according to the daily operation and periodic maintenance status.</p> <p><i>Justification of evidences:</i></p> <p>During the on-site visit, the operational personnel have introduced the operation status of the project to the verification team.</p> <p>The power wire diagram and operation log and maintenance records have been checked by the verification team. The installed capacity, project layout, technology and operation status are in line with the description in the PDD.</p> <p><i>Conclusion:</i></p> <p>No relevant operation mode was exchanged within the monitoring period.</p>	OK	OK
<p>B.1.4. Incidents (EB 55 Annex 1, § 187, 208a)</p>	/IM01/	<p><i>Description:</i></p> <p>The operation log and maintenance records are recorded by</p>	CAR B1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i></p> <p><i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i></p>		<p>trained and qualified staff. According to the daily operation and periodic maintenance status, there are no relevant incidents have happened within the monitoring period.</p> <p><i>Justification of evidences:</i> The verification team has checked the operation log and maintenance records of the 1st monitoring period.</p> <p><i>Conclusion:</i> CAR B1 is raised. CAR B1 According to the guideline, the information regarding the actual operation of the project activity including information on special events, for example overhaul times, downtimes of equipment, exchange of equipment should be mentioned and it is to be confirmed, if any events or situation occurred impacting the applicability of the methodology. In the MR, it is mentioned that no overhaul or equipment exchange took place which is inconsistent with the actual situation as verified on-site. An update of the monitoring report is requested.</p>		
<p>B.1.5. Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements have been accounted for.</p>	<p>/IM01/ /dna-HP/</p>	<p><i>Description:</i> No legislation with effect on the project activity in the host country has been changed.</p> <p><i>Justification of evidences:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
In case of changes data sources shall be referenced.		<p>The staff interviewed by the verification team confirmed that there no legislation with effect on the project activity has been changed. The management system procedures have been checked by the verification team. No adjustment on the operation of the project owing to the exchange of the legislation was found.</p> <p><i>Conclusion:</i> There is no legislation change.</p>		
<p>B.1.6. Open issues from validation (EB 55 Annex 1, §§ 181-183, 188c, 190c)</p> <p><i>Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?</i></p>	/VAL/	<p><input checked="" type="checkbox"/> There were no open issues addressed in the validation report</p> <p><input type="checkbox"/> All open issues from the validation have been appropriately addressed.</p> <p><input type="checkbox"/> The following issues related to the validation have not yet been appropriately addressed:</p>	OK	OK
<p>B.1.7. Open issues from previous verification (EB 55 Annex 1, § 193)</p> <p><i>Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVM.</i></p>		<p><input type="checkbox"/> There were no open issues addressed in the previous verification report</p> <p><input type="checkbox"/> All open issues from the previous verification have been appropriately addressed.</p> <p><input type="checkbox"/> The following issues related to the previous verification have not yet been appropriately addressed:</p>	N/A	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																		
B.1.8. Publication of the Monitoring Report <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i> <i>Check if comments have been received and if yes, how they have been addressed.</i>	/unfccc/	<i>Description:</i> Monitoring report was published on 2011-11-25, and on-site verification was conducted 2011-12-14. The DOE has uploaded the monitoring report more than two weeks prior to the on-site visit. <i>Justification of evidences:</i> The UNFCCC website has been checked. <i>Conclusion:</i> The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities. No comments have been received.	OK	OK																		
B.2. Requests for Revisions of MP (EB 55 Annex 1, §§ 201, 203, 219) <i>Check (i) if there have been any requests for revisions of the monitoring plan in the past.and/or (ii) if there is a need for a RfRev. Make sure that the monitoring report reflects the application of the revision as approved by the EB, where applicable.</i> <i>Check in case of approved revisions if the date of approval has been included.</i>	/unfccc/	<table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">No requests for revisions of the MP.have been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td><input type="checkbox"/></td><td colspan="3">The following RfRev have been approved or are under approval by the UNFCCC</td></tr><tr><td rowspan="3">1</td><td>Title</td><td colspan="2"></td></tr><tr><td>Status</td><td colspan="2"><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Appr.date</td><td colspan="2"></td></tr></table>	<input checked="" type="checkbox"/>	No requests for revisions of the MP.have been submitted to the UNFCCC prior to the current monitoring period			<input type="checkbox"/>	The following RfRev have been approved or are under approval by the UNFCCC			1	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Appr.date			OK	OK
<input checked="" type="checkbox"/>	No requests for revisions of the MP.have been submitted to the UNFCCC prior to the current monitoring period																					
<input type="checkbox"/>	The following RfRev have been approved or are under approval by the UNFCCC																					
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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)				Draft Concl.	Final Concl.																						
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		Appr.date																											
		<table><tr><td rowspan="2"></td><td colspan="4">During the verification of the current MP no need for a RfRev has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td></tr><tr><td colspan="4">The following revisions of the MP are to be requested from the EB for the current MP</td></tr></table>		During the verification of the current MP no need for a RfRev has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA				The following revisions of the MP are to be requested from the EB for the current MP																					
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		<table><tr><td>1</td><td>Issue</td><td colspan="2"></td></tr></table>	1	Issue																									
1	Issue																												
B.3. Requests for Deviations applied to this MP (EB 55 Annex 1, §§ 203, 211-219) <i>Check (i) if there have been any requests for deviations in the past.and/or (ii) if there is a need for a RfDev. Make sure that the monitoring report reflects the application of the deviation as approved by the EB, where applicable. Check in case of approved deviations if the approval date and reference number has been included.</i> <i>Further check in case of approved RfDev whether the MR appropriately reflects the application of the EB</i>	/unfccc/	<table><tr><td><input checked="" type="checkbox"/></td><td colspan="4">No requests for deviations have been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td rowspan="4"><input type="checkbox"/></td><td colspan="4">The following RfDev have been approved or are under approval by the UNFCCC</td></tr><tr><td rowspan="4">1</td><td>Title</td><td colspan="2"></td></tr><tr><td>Status</td><td colspan="2"><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Ref. No.</td><td colspan="2"></td></tr><tr><td></td><td></td><td>Appr.date</td><td colspan="2"></td></tr></table>	<input checked="" type="checkbox"/>	No requests for deviations have been submitted to the UNFCCC prior to the current monitoring period				<input type="checkbox"/>	The following RfDev have been approved or are under approval by the UNFCCC				1	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Ref. No.					Appr.date			OK	OK
<input checked="" type="checkbox"/>	No requests for deviations have been submitted to the UNFCCC prior to the current monitoring period																												
<input type="checkbox"/>	The following RfDev have been approved or are under approval by the UNFCCC																												
	1	Title																											
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			Appr.date																										

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)				Draft Concl.	Final Concl.						
guidance.			2	Title									
				Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved								
				Ref. No.									
				Appr.date									
		<input type="checkbox"/>	In case of approved guidance of the EB: The monitoring report reflects the application of the EB guidance regarding the RfDev.										
		<input checked="" type="checkbox"/>	During the verification of the current MP no need for a RfDev has been indentified										
		<input type="checkbox"/>	The following deviations are to be requested from the EB for the current MP										
			1	Issue									
		B.4. Initial verification <i>In case an initial verification has been carried out, check if all FARs, recommendations etc. can be confirmed as existent for the periodic verification.</i>	/IM01/	<input checked="" type="checkbox"/>	No initial verification has been carried out.					OK	OK		
				<input type="checkbox"/>	There are no open issues, recommendations etc. pending from the initial verification								
C. Description of the monitoring system		<input type="checkbox"/>	The following issues related to the initial verification have to be addressed:										
C.1. Management System	/IM01/	Description:					OK	OK					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(EB 55 Annex 1, § 184 a (iii))</p> <p><i>Check if the GHG data monitoring system can be assessed as appropriate.</i></p> <p><i>In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.</i></p> <p><i>In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.</i></p>	<p>/MR/ /RTC/ /QA/</p>	<p>The quality management system is embedded in the company. The procedures e.g. for monitoring staff training, meter calibration, maintenance and recordings, documents control, corrective actions, internal audit etc. were established in the CDM monitoring manual and implemented.</p> <p><i>Justification of evidences:</i></p> <p>It was verified by means of cross-checking the operation and maintenance records and monitoring manual as well as by on-site interviews and observation.</p> <p><i>Conclusion:</i></p> <p>The GHG data monitoring system is managed appropriately and effectively.</p>		
<p>C.2. Metering diagram (EB 54 Annex 34, C)</p> <p><i>Check first if the MR includes a metering diagram showing all relevant monitoring points..</i></p> <p><i>Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.</i></p>	<p>/IM01/ /MR/ /PDD/ /PWD/</p>	<p><i>Description:</i></p> <p>The description location and function of the meters is not in line with the power wiring diagram. The monitoring report contains a metering diagram as Figure 1 in section C.</p> <p><i>Justification of evidence:</i></p> <p>By means of on-site observation, interview and checking the MR and the PDD besides Power Wiring Diagram.</p> <p><i>Conclusion:</i></p> <p>The MR includes a metering diagram showing all relevant monitoring points. However CAR C1 is raised.</p>	<p>CAR C1</p>	<p>OK</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>CAR C1</p> <ol style="list-style-type: none"> 1. The simplified diagram of the ammeter installation is inconsistent with the connection grid verified on-site, revision requested. 2. M2 and M3 (B) are indicated in the diagram, but missing in the description of data collection. 3. The function of M1 and M3 (B) is different from the related description in the PDD. 4. Please clarify which meter the data is from used for the emission reduction calculation. 5. Further clarify the change of the source of $Q_{OE,y}$ from M3 in the registered PDD to M1 in the Monitoring Report for the calculation of f_{cap}. 		
<p>C.3. Roles and Responsibilities (EB 54 Annex 34, C)</p> <p><i>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.</i></p> <p><i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i></p> <p><i>If so, have appropriate training measures been carried out.</i></p> <p><i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i></p>	<p>/IM01/ /MR/ /QA/ /RTC/</p>	<p><i>Description:</i></p> <p>A monitoring team is established in the company, the relevant responsibilities were clearly defined.</p> <p>The power plant staffs are in charge of recording the reading of meter M1, M2, M3 and M3 (B), meanwhile, the Electric Power Bureau could record the readings of meter M4. The data collected daily are then aggregated into monthly report, which constitutes the basis for monitoring report.</p> <p><i>Justification of evidences:</i></p> <p>The relevant people were interviewed; the data collection process was also observed and verified during on-site visit.</p> <p><i>Conclusion:</i></p>	CAR C2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>The roles and responsibilities were clearly defined; the data collection process was efficiently handled by a qualified person.</p> <p>But CAR C2 is raised.</p> <p>CAR C2</p> <p>The monitoring structure and related responsibilities in the MR are different from the actual monitoring organization and responsibilities as verified on-site. Update requested.</p>		
<p>C.4. Emergency procedures for the monitoring system (EB 54 Annex 34, C)</p> <p><i>Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required</i></p>	<p>/IM01/ /MR/ /QA/</p>	<p><i>Description:</i></p> <p>A procedure for corrective actions and preventive actions is established in the Monitoring Manual and is implemented in the company. The meter will be re-calibrated when it lost calibration over the allowable error limit. The recordings M3, M3(B) and M4 can be used as back-up data for each other.</p> <p><i>Justification of evidences:</i></p> <p>By means of on-site interviewing and checking the monitoring report.</p> <p><i>Conclusion:</i></p> <p>The emergency procedure is established and the determined emission reduction during the emergency is appropriate.</p> <p>But CAR C3 is raised.</p> <p>CAR C3</p> <p>1. How the emission reductions are defined in case of emer-</p>	<p>CAR C3</p>	<p>OK</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		gencies is missing. 2. In fact, there is not recorded data for M3 (B) available on-site. Clarification requested.		
C.5. Data archive and data protection Check whether all records of monitoring parameters are archived according to the monitoring plan. Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.	/MM/ /QA/ /MMR/ /IAR/ /INO/ /LOG/	<i>Description:</i> All the data will be archived after checking and ensuring that there are no material mistakes. <i>Justification of evidences:</i> The record of the monitoring data and the hard copy have been checked and assessed by the verification team. <i>Conclusion:</i> CAR C4 is raised. CAR C4 In the MR, it is not mentioned, how long relevant monitoring data will be recorded.	CAR C4	OK
D. Data and parameters monitored				
D.1. $EG_{total,y}$ or $Q_{OE,y}$		Description: The Total electricity quantity generated by the project in year y or The annual electricity generation by the project in year y		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>a) Measurement / Determination method (EB 55 Annex 1, §§ 184-185, 202-203)</p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/IM01/ /PDD/ /AMS-III. Q/ /QA/ /Q&M/ /SE/ /CD/	<p><i>Description:</i></p> <p>Electricity quantity generated by the project $EG_{total,y}$ and the annual electricity generated by the project $Q_{OE,y}$ was monitored by Meter 1. The meters' accuracy is 0.5S, as per the description in the monitoring plan of the registered PDD. The parameter was measured continuously and recorded daily on the basis of every hour from the DCS system. The DCS system is an electronic system providing automatic meter readings, power wire diagram, and equipment performance recording service. The DCS system was employed to provide continuous on-line monitoring and the meter reading was archived in electronic and paper document form.</p> <p>The installation and calibration comply with national standards.</p> <p><i>Justification of evidences:</i></p> <p>According to on-site observation, the equipment maintenance, operational log checking and power wiring diagram.</p> <p><i>Conclusion:</i></p> <p>But CAR D1 is raised. CAR D1</p> <p>The description of the parameters is the same but it is unclear, which are measured by different meters. Please make the tables clear.</p>	CAR D1	OK
<p>b) Accuracy</p>	/CAL/	<p><i>Description:</i></p>	CAR D2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(EB 55 Annex 1, §§ 205c, 206a)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p>	<p>/SE/ /LOG/</p>	<p>The total electricity generated by the project was measured by Meter 1 continuously with an accuracy of 0.5S and recorded daily. The calibration was conducted every year by an independent entity in line with the registered monitoring plan.</p> <p><i>Justification of evidences:</i></p> <p>The measured value was cross-checked with the records in the DCS system and the values from other meters. The DCS system is an electronic system and can record the meter reading automatically. Besides, by means of checking the calibration certificates, it is confirmed that the accuracy of equipment used for monitoring is controlled and calibrated in line with the monitoring plan. The accuracy has been confirmed in the name plates of the meter and in the specification of electric meters from the meter supplier.</p> <p><i>Conclusion:</i></p> <p>No inaccuracies occurred during the monitoring period. The meter has been duly calibrated and the DOE confirms that the calibration is valid for a part of this monitoring period. But CL D2 is raised.</p> <p>CL D2</p> <p>The last calibration date is 2011-06-23 and calibration test report is valid from 2011-06-23 to 2012-06-22 which can't cover a part of the crediting period. Please kindly provide the calibration test report covering 2010-10-08 to 2011-06-22.</p>		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>c) QA/QC Procedure (EB 55 Annex 1, §§ 184b (vii), 205c, 206) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/CAL/ /QA/ /Q&M/ /RTC/</p>	<p><i>Description:</i> The meter accuracy of the Meter 1 is 0.5S as per the description in the monitoring plan of registered PDD. The installation and calibration of these meters were conducted by a qualified entity and comply with the national standards. The meter reading was recorded by the DCS system and written down by the operational staff on the operational log. At the same time the paper file of the meter reading records is archived. The equipments were duly maintained by trained and qualified personnel. <i>Justification of evidences:</i> The qualification certificate has been provided to the verification team. The meters calibration records covering a part of the monitoring period were available during the verification, and checked to be credible. The maintenance record Staff Training Planning and Records have been checked by the verification team and can proved the equipment is maintained by qualified staff. <i>Conclusion:</i> The calibration and maintenance of the monitoring equipment have been carried out appropriately. But CL D3 is raised. CL D3</p>	CL-D3	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		It is mentioned that the meter has been regularly checked following the relevant Chinese standards. Please clarify which standards have been followed in the MR.		
<p>d) Correctness (EB 55 Annex 1, §§ 202, 206, 221e)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	/MR/ /XLS/ /LOG/ /INO/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <i>Description:</i> The monthly electricity generated by the project is consistent with the original records from the DCS system. The DCS system is an electronic system and can record the meter reading automatically. <i>Justification of evidences:</i> By means of on-site observation, the monthly electricity generated by the project in the ER spreadsheet is derived from the original records from the DCS system. The records in the DCS system have been cross-checked and re-calculated by the verification team. <i>Conclusion:</i> The value given in the monitoring report is correct and sufficiently justified. But CAR D4 is raised. CAR D4 Please clearly clarify how the data used for the emission reductions calculation was cross-checked in the MR.	CAR D4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
D.2. $EG_{pj \text{ to grid}, y}$ and $EG_{grid \text{ to } pj, y}$		Description: Net electricity quantity generated by the project and electricity quantity supplied to the project from grid		
a) Measurement / Determination method (EB 55 Annex 1, §§ 184-185, 202-203) <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/IM01/ /PDD/ /AMS-III. Q/ /QA/ /Q&M/ /SE/ /CD/	Description: Net electricity quantity generated by the project and electricity quantity supplied to the project from grid was monitored by Meter 3 and Meter 4 which are bidirectional meter. The meters' accuracy is 0.5S, as per the description in the monitoring plan of the registered PDD. The parameter was measured continuously and recorded monthly by the DCS system. The installation and calibration complies with the national standards. Justification of evidences: According to the equipment maintenance and operational log as well as power wiring diagram checked by the verification team on-site, the equipment installed on the project site complies with the description in the PDD. This parameter is measured continuously and recorded monthly on the basis of every hour data from the DCS system. Conclusion: The parameter is correctly measured and recorded.	OK	OK
b) Accuracy (EB 55 Annex 1, §§ 205c, 206a) <i>In case of measured (or estimated) values, check</i>	/CAL/ /SE/ /LOG/	Description: Net electricity quantity generated by the project and electricity quantity supplied to the project from grid was monitored by	Refer to CL D2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>		<p>Meter 3 and Meter 4 continuously with an accuracy of 0.5S and recorded monthly. The calibration was conducted every year by an independent entity in line with the registered monitoring plan.</p> <p><i>Justification of evidences:</i></p> <p>The measured value was cross-checked with the records in the DCS system. Besides by means of checking the calibration certificates, it is confirmed that the accuracy of equipment used for monitoring is controlled and calibrated in line with the monitoring plan. The accuracy has been confirmed in the name plates of the meter and in the specification of electric meters from the meter supplier.</p> <p><i>Conclusion:</i></p> <p>No inaccuracies occurred during the monitoring period. The meter has been duly calibrated and the DOE confirms that the calibration is valid for a part of this monitoring period.</p> <p>But please refer to CL D2</p>		
<p>c) QA/QC Procedure (EB 55 Annex 1, §§ 184b (vii), 205c, 206) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/CAL/ /QA/ /Q&M/ /RTC/</p>	<p><i>Description:</i></p> <p>The meter accuracy of the Meter 3 and Meter 4 is 0.5S as per the description in the monitoring plan of registered PDD. The installation and calibration of these meters were conducted by the qualified entity and comply with the national standards. The meter reading was recorded by the DCS system and written down by the operational staff on the operational log. At the same time the paper file of the meter reading record is archived.</p> <p>The equipments were duly maintained by the trained and</p>	Refer to CL D3	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>qualified personnel.</p> <p><i>Justification of evidences:</i></p> <p>The qualification certificate has been provided to the verification team. The meters calibration records covering a part of the monitoring period were available during the verification, and checked to be credible. The maintenance record Staff Training Records have been checked by the verification team and can prove the equipment is maintained by qualified staff.</p> <p><i>Conclusion:</i></p> <p>The calibration and maintenance of the monitoring equipment have been carried out appropriately. But please refer to CL D3.</p>		
<p>d) Correctness (EB 55 Annex 1, §§ 202, 206, 221e)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /LOG/ /INO/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct</p> <p><i>Description:</i></p> <p>The monthly net electricity quantity generated by the project and electricity quantity supplied to the project from grid is consistent with the original records from the DCS system. The DCS system is an electronic system that can record the meter reading automatically.</p> <p><i>Justification of evidences:</i></p> <p>By means of on-site observation, the monthly net electricity</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>quantity generated by the project and electricity quantity supplied to the project from grid measured by M3 and M4 in the ER spreadsheet are derived from the original records from the DCS system. The records have been cross-checked and re-calculated by the verification team.</p> <p><i>Conclusion:</i> The value given in the monitoring report is correct and sufficiently justified.</p>		
E. Emission reductions calculation				
<p>E.1. Traceability (EB 55 Annex 1, § 182)</p> <p><i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i></p>	/XLS/	<p><i>Description:</i></p> <p>An unprotected ER spreadsheet has been provided to the verification team, all formulas are visible.</p> <p><i>Justification of evidences:</i></p> <p>By the means of checking the statements list and operational log, the data presented in the ER spreadsheet are traceable.</p> <p><i>Conclusion:</i></p> <p>The calculation is fully traceable. The excel calculation spreadsheet has been provided and all applied formulae are visible.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
E.2. Parameter consistency (EB 55 Annex 1, § 186; EB 54 Annex 34 Pt.1) <i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?</i> <i>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR, calculation spreadsheet.</i>	/XLS/ /MR/ /INO/	<i>Description:</i> The calculation spreadsheet is completely in line with the MR. All parameter values have been used consistently. The data which were used to calculate the emission reductions were derived from Meter M4 records for the amount of electricity generated by waste heat power generation. The data were cross-checked against the onsite meter reading records and statements list of captive power system reserve costs and the fund charged. <i>Justification of evidences:</i> By checking the monitoring report, ER spreadsheet, Meter M4 records for the amount of electricity generated by waste heat power generation and Statements list of captive power system reserve costs and the fund charged. <i>Conclusion:</i> All internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet.	OK	OK
E.3. Parameter presentation (EB 54 Annex 34 Pt.1) <i>Check if all values included in the MR are presented</i>	/MR/	<i>Description:</i> Some values are not presented as per international standards.	CAR E1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>as per international standards</i></p> <ul style="list-style-type: none"> - <i>Format: Standard format (e.g. 1,000 representing one thousand and 1.0 representing one).</i> - <i>Units: Values shall be directly given in SI units – or additionally to original units transferred to SI.</i> - <i>Short scale naming system: (Only) million = 10⁶ and billion 10⁹ shall be used.</i> 		<p><i>Justification of evidences:</i></p> <p>By the means of checking the ER spreadsheet and the MR.</p> <p><i>Conclusion:</i></p> <p>CAR E1 is raised.</p> <p>CAR E1</p> <p>The presentation of values in the MR, including those used for the calculation of emission reductions, should be in international standard format, e.g. 1,000 representing one thousand and 1.0 representing one.</p>		
<p>E.4. Correctness of calculation (EB 55 Annex 1, §§ 204-206)</p> <p><i>Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.</i></p> <p><i>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i></p> <p><i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i></p>	<p>/XLS/ /MR/ /PDD/</p>	<p><i>Description:</i></p> <p>The calculation is presented in the ER spreadsheet and submitted to the DOE. The emission reductions are calculated as follows:</p> $ER_y = BE_y - PE_y - LE_y$ $BE_y = EG_y \times EF_y$ <p>where</p> <ul style="list-style-type: none"> ER_y : Emission reduction BE_y : Baseline emission PE_y : Project emission LE_y : Leakage EG_y: EG_{pj to grid,y} - EG_{grid to pj,y}, net electricity quantity generated by the project minus electricity quantity supplied to the project from grid 	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>EF_y : Grid emission factor</p> <p><i>Justification of evidences:</i></p> <p>By means of checking the ER spreadsheet and the MR as well as the registered PDD</p> <p><i>Conclusion:</i></p> <p>The applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology. The provided calculations are complete and reflect all requirements of the monitoring plan.</p>		
<p>E.5. Emission reductions table (EB 54 Annex 34, E.4)</p> <p><i>Check if the MR includes a summary table of the emission reductions calculation specifying separately</i></p> <ul style="list-style-type: none"> - Total baseline emissions - Total project emissions: - Total leakage - Total emission reductions. <p><i>Assess whether the values are correct or need to be revised as a consequence of issues identified above.</i></p>	/MR/	<p><input checked="" type="checkbox"/> The MR includes in section E.4 a summary table of the emission reductions calculation.</p> <p><input checked="" type="checkbox"/> The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.</p> <p><input checked="" type="checkbox"/> The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.</p> <p><input checked="" type="checkbox"/> During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>E.6. Comparison with ex-ante determined emission reductions (EB 54 Annex 34, E.5; E.6)</p> <p><i>Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</i></p> <p><i>Check further whether in case of an increase an appropriate explanation is included in the MR.</i></p> <p><i>Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP which might require a notification / approval of changes (as per EB 48 Annex 66/67).</i></p>	<p>/XLS/ /MR/ /PDD/ /IM01/ /LOG/</p>	<p><i>Description:</i></p> <p>The monitoring period lasting from 2010-10-08 to 2011-10-17, totally 374 days, is compared with an estimated annual ER as per the PDD. As the result indicates, the actual ER is less than the estimation.</p> <p><i>Justification of evidences:</i></p> <p>The registered PDD and operation log are checked against the MR during the on-site verification.</p> <p><i>Conclusion:</i></p> <p>The MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</p>	OK	OK

ANNEX 2: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Mr. Yongjun Li**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor	2015-06-26
Validation, Verification		
VCS	Senior Assessor	2015-06-26

CODE	TECHNICAL AREA
1.2	Renewable Energies
13.1	Waste Handling and Disposal

039 – Rev. 5, Date: 2011-04-12

**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Ms. Xuemei Li**

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2014-09-15
VCS	Assessor	2014-09-15

CODE	TECHNICAL AREA
13.2	Animal waste management
13.3	Animal waste management

285 – Rev. 1, Date: 2011-11-21

**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Mr. Jianmin Wu**

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation
4.3	Iron and Steel
4.5	Waste Heat Recovery
9.1	Chemical Process Industries
11.1	Chemical Process Industries
12.1	Chemical Process Industries

265 – Rev. 5, Date: 2011-04-18

**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Ms. Weiming Yu**

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2014-09-13
VCS	Lead Assessor	2014-09-13

CODE	TECHNICAL AREA
1.2	Renewable Energies
13.1	Waste Handling and Disposal

085 – Rev. 1, Date: 2011-09-14

**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Mr. Rainer Winter**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2013-07-03
JR	Senior Assessor	2013-07-03
VCS	Senior Assessor	2013-07-03

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 TSM
4.1	Cement Sector	
4.3	Iron and Steel	
4.5	Waste Heat Recovery	
9.1	Chemical Process Industries	
9.1	Metal Production	
11.1	Chemical Process Industries	
11.2	GHG Capture and Destruction	
12.1	Chemical Process Industries	
13.1	Waste Handling and Disposal	13.1.1 Waste Management

003 – Rev. 5, Date: 2011-08-01

**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Ms. Büsran Grünwald**

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2014-11-02
VCS	Assessor	2014-11-02

245 – Rev. 1, Date: 2011-11-03

**Statement of Competence**
Assessment and authorization according to the provisions
of the TÜV NORD JI/CDM Certification Program**Mr. Stefan Winter**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2014-06-30
Technical Reviewer		
VCS	Senior Assessor (Validation, Verification)	2014-06-30
Technical Reviewer		

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 TSM
2.2	Heat distribution	
3.1	Energy demand	13.1.1 Waste management 13.1.2 Wastewater management
13.1	Waste handling and disposal	
13.2	Animal waste management	
13.3	Animal waste management	

163 – Rev. 2, Date: 2011-06-10