
Verification Report and VCU Certification Statement

Climate Bridge Ltd.

Hebei Kangbao Wolongtushan 30MW Wind Farm Project

Reporting period: from 30 September 2006 to 14 April 2007

PROJECT No. Vol0151

DATE: 28 AUG 2007

Date of first issue: 28 Aug 2007	Project No.: VOL0151
Approved by: Siddharth Yadav	Organisational unit: SGS Climate Change Programme
Client: Climate Bridge Ltd.	Client ref.: Mr. Alex Wyatt

Summary:

SGS United Kingdom Ltd has been contracted by Climate Bridge Ltd. to verify the reduction in greenhouse gas emissions reported for "Hebei Kangbao Wolongtushan 30 MW Wind Farm Project" (hereinafter the project) in Kangbao County, Zhangjiakou City of Hebei province, P.R.China for the monitoring period from September 30th, 2006 to April 14th, 2007 according to Voluntary Carbon Standard version 1.

The objective of this project is to generate electricity using renewable wind power resources and to sell the generated electricity to North China Power Grid. The project activity generates greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions from electricity that would have otherwise been generated by existing power plants and the added capacity of new power plants connected to the North China Power Grid, which is dominated by fossil fuel.

The project activity has been monitored and emission reductions were calculated on the basis of the approved CDM baseline and monitoring methodology ACM0002 Version 6, monitoring report and relevant documentation presented to SGS.

In our opinion, the GHG emission reductions as reported in the monitoring report are fairly stated. As a consequence, SGS assessors were able to verify that the emission reductions for the period from September 30th, 2006 to April 14th, 2007 amount to 32711 tonnes of CO₂ equivalent.

This report presents the findings of the assessment and provides justification for the verification process together with the opinion of verification and certification.

Report No.: VOL0151	Subject Group: GHG project verification	
Report title: Hebei Kangbao Wolongtushan 30 MW Wind Farm Project		
Work carried out by: Robin Wang Sarah Ruan		
Work verified by: Elton Chen Siddharth Yadav		
Date of this revision: 28 Aug 2007	Rev. No.: 01	Number of pages: 27

Indexing terms

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reductions
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
GHG	Green House Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NCPG	North China Power Grid
NGO	Non-governmental Organization
NIR	New Information Requests
ODA	Official Development Assistance
PDD	Project Design Document
PPA	Power Purchase Agreement
SGS	SGS United Kingdom Ltd
VCS	Voluntary Carbon Standard
VCUs	Voluntary Carbon Units

Table of Contents		Page
1	INTRODUCTION	3
1.1	Objective	3
1.2	Scope	3
1.3	Description of the Project Activity	3
2	METHODOLOGY.....	4
2.1	Review of Documentation	5
2.2	Site Visits	5
2.3	Assessment	5
2.4	Reporting of Findings	6
3.	VERIFICATION FINDINGS.....	6
3.1	Remaining Issues, CARs, NIRs from Previous Validation or Verification	9
3.2	Project Implementation	9
3.3	Completeness of Monitoring	9
3.4	Accuracy of Emission Reduction Calculations	9
3.5	Quality of Evidence to Determine Emission Reductions	9
3.6	Management System and Quality Assurance	10
3.7	Additionality	10
4.	TESTING ON VCU VERIFICATION CRITERIA.....	11
5.	VERIFICATION AND CERTIFICATION STATEMENT	13
6.	REFERENCES	14
7.	APPENDIX.....	15

1 INTRODUCTION

SGS United Kingdom Ltd has been contracted by Climate Bridge Ltd. to perform an independent verification of the reductions in greenhouse gas emissions reported for the wind project, namely, Hebei Kangbao Wolongtushan 30 MW Wind Farm Project for the monitoring period from 30th September, 2006 to 14th April, 2007 according to Voluntary Carbon Standard version 1. This report presents the findings of the assessment and provides justification for the verification process together with the opinion of verification and certification.

1.1 Objective

The objectives of this independent verification exercise are, by review of objective evidence, to establish that:

- Whether the project has resulted in emission reductions as declared by the monitoring report.
- The data reported are accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored GHG emission reductions from anthropogenic sources by the project activity. The verification is based on the validated and registered CDM project design document and the monitoring report. Criteria in proposed Voluntary Carbon Standard (version 1) have been taken into account for this verification.

SGS has employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring. The verification performed also includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to GHG emission reductions in project in the monitoring reporting period.

1.3 Description of the Project Activity

Sectoral scope 1: Energy industries

Title of project activity:	Hebei Kangbao Wolongtushan 30 MW Wind Farm Project
Project Entity:	Hebei Construction Investment Zhangjiakou Wind Energy Co., Ltd. (P.R.China)
Location of the project activity:	Kangbao County, Zhangjiakou City of Hebei province, P.R.China

Hebei Kangbao Wolongtushan 30 MW Wind Farm Project involves the installation of 40 turbines, with each capacity of 750kW, providing a total installed capacity of 30MW. The project is expected to sell approximate 60GWh power to the North China Power Grid annually.

The project activity reduces carbon dioxide (CO₂) through substituting electricity that would have otherwise been generated by existing power plants and the added capacity of new power plants connected to the North China Power Grid, which is dominated by fossil fuel.

It has been verified through site visit and documents review that the North China Power Grid is determined as the project boundary. This is consistent with the validated and registered CDM PDD and the approved CDM methodology ACM0002 Version 6.

The electricity is exported to and imported from the North China Power Grid through Kangbao Substation, which is the connection of the wind power plant and the grid. According to the Power Purchase Agreement, the electricity exchanged with the grid through Kangbao Substation is determined based on data from a gateway meter installed at Kangbao Substation. And correlative electricity invoices have been issued accordingly.

Besides, there exists a small amount of electricity consumed through a 10kV backup line, which connects the wind power plant and the grid. This amount of electricity is determined based on monthly electricity bills issued from the power supplier, North China Power Grid, to the wind power plant.

The project started its operation on Sep 30th, 2006. During the monitoring period from Sep 30th, 2006 to Apr 14th, 2007, the total net electricity supplied to the grid amounts to 32078.58 MWh, which is calculated by subtracting imported electricity and the line loss electricity from exported electricity. According to the validated and registered CDM PDD and the approved CDM methodology ACM0002 Version 6, the ex-ante determined baseline emission factor is 1.0197tCO₂/MWh. Thus, the CO₂ emission reductions due to the project in the monitoring period amount to 32711 tonnes of CO₂ equivalent.

2 METHODOLOGY

SGS's approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced:

- A Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes verification approach and the sampling plan;
- Corrective Action Requests and New Information Requests, if necessary.

In the second stage, using the Verification checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This stage included the site visit and the desk review of correlative evidential documents.

At the end of this stage, SGS produced this verification report which is the basis of verification statement.

Verification team

Name	Role	SGS office
Robin Wang	Lead Assessor	SGS China
Sarah Ruan	Assessor	SGS China

Duration of verification

Preparations: *From 7th Jun, 2007 to 14th Jun, 2007*

On-site verification: *15th Jun, 2007*

Reporting: *From 15th Jun, 2007 to 23rd Aug, 2007*

2.1 Review of Documentation

The validated and registered CDM PDD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 6 of this report.

2.2 Site Visits

As part of the verification, the following on-site inspections have been performed:

Location: Wolongtu Mountain, Kangbao County, Zhangjiakou City of Hebei province, P.R.China	
Date: 15 th Jun, 2007	
Coverage	Source of information / Persons interviewed
<p>A interview with project participants, including reviewing Acceptance Check Report on Construction, Project Monitoring Scheme and Plan, Training Plan, and Personal Responsibility Document for Operation;</p> <p>A review of performance records, for example, logbook, manual records and electronic records of meters;</p> <p>Collection of Certificate of Metrological Authorization and Calibration and Test Records of meters, Electricity Transfer Notes & Invoices due to electricity exchanged with the grid, Electricity Bills due to line loss;</p> <p>Observations of established practices and testing of the accuracy of monitoring equipment.</p>	<p>Mr. Yang Xiaohua, HECIC New-energy Co. Ltd.</p> <p>Mr. Wang Bing, HECIC New-energy Co. Ltd.</p> <p>Mr. Bai Pengyu, HECIC New-energy Co. Ltd.</p> <p>Mr. Feng Shijun, CDM Office of Hebei Province</p>

2.3 Assessment

The parameters and values presented in the monitoring report were assessed through review of detailed project documentation; interviews with personnel from Hebei Construction Investment Zhangjiakou Wind Energy Co., Ltd.; check of log book, manual records and electronic records; collection of Certificate of Metrological Authorization and Calibration and Test Records of meters, Electricity Transfer Notes & Invoices due to electricity exchanged with the grid, and Electricity Bills due to line loss; observation of established monitoring and reporting practices and assessment of the reliability of measuring equipment. Data for ex-ante determination of the grid emission factor have also been assessed.

Information which was not available during site visit was reported as New Information Request (NIR) following submission of additional information, monitoring and operational records, and the reconsolidation of all reported data was assessed again.

2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings.

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- I. mistakes have been made with a direct influence on project results;
- II. validation protocol requirements have not been met; or
- III. There is a risk that the project would not be accepted as a VCS project or that emission reductions will not be verified.

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

3. VERIFICATION FINDINGS

It has been verified through site visit and document review that:

- The project operation started on Sep 30th, 2007. And the monitoring period is from September 30th, 2006 to April 14th, 2007, which is consistent with the submitted monitoring report and is linked up with the first day of monitoring period in the validated and registered CDM PDD.
- Being registered as a CDM project, this project is compliance with the CDM requirements, especially in following aspects:
 - The project boundary is consistent with what is properly defined in the validated and registered CDM PDD as per the approved CDM baseline methodology ACM0002 Version06;
 - The monitoring has been implemented according to the approved CDM monitoring methodology ACM0002 Version06;
 - The documents presented for this verification are complete and transparent;
 - As part of the management system, QA/QC procedures are documented as described in the registered CDM PDD.
- All 40 turbines, each of which has a capacity of 750kW, have been in operation, with the total project capacity of 30 MW. And electricity exchanged with the grid in this monitoring period from September 30th, 2006 to April 14th, 2007 has been taken into account.

CARs and NIRs were raised, addressed and closed out as below record:

Date: 25th Jun, 2007

Raised by: Robin Wang/ Sarah Ruan

No.	Type	Issue	Ref
1	NIR1	The Calibration and Testing records of the main meter as well as the Certificate of Metrological Authorization has not been provided yet. Please supplement it accordingly.	
Date: August 14 th , 2007 [Comments] Calibration and Testing records of Gateway Meter 114 and Backup Meter 302, and the Certificate of Metrological Authorization have been presented.			
Date: August 14 th , 2007 [Acceptance and close out]: Calibration and Testing records of Gateway Meter 114 and Backup Meter 302, and the Certificate of Metrological Authorization were received. NIR is closed out.			

Date: 25th Jun, 2007

Raised by: Robin Wang/ Sarah Ruan

No.	Type	Issue	Ref
2	NIR2	The invoices of imported electricity by windfarm or other relevant evidences confirmed by grid company have not been provided for verifying. Please supplement it.	
Date: August 6 th , 2007 [Comments] Invoices of imported electricity issued by the power supplier have been presented.			
Date: August 6 th , 2007 [Acceptance and close out]: Invoices of imported electricity issued by the power supplier were received. NIR 2 is closed out.			

Date: 25th Jun, 2007

Raised by: Robin Wang/ Sarah Ruan

No.	Type	Issue	Ref
3	NIR3	Please provide evidences of electricity imported from the backup line.	
Date: August 6 th , 2007 [Comments] Bills for line loss electricity were presented.			
Date: August 6 th , 2007 [Acceptance and close out]: Bills of imported electricity which was regarded as "line loss" on backup line were received. NIR 3 is closed out.			

Date: 13th Aug, 2007

Raised by: Sarah Ruan / Robin Wang

No.	Type	Issue	Ref
4	CAR1	In MR, the period of the monitoring report is from Sep 30 th , 2006 to Apr 4 th , 2007. This is different from the actual situation.	
Date: August 16 th , 2007 [Comments] The date has been modified in MR based on the actual situation. The crediting period is from Sep 30 th , 2006 to Apr 14 th , 2007.			
Date: August 16 th , 2007 [Acceptance and close out]: It is verified that the monitoring period in the Monitoring Report is from Sep 30 th , 2006 to Apr 14 th , 2007. It is in compliance with the actual situation. CAR1 is closed out.			

Date: 16th Aug, 2007

Raised by: Sarah Ruan / Robin Wang

No.	Type	Issue	Ref
5	CAR2	In MR, the line loss electricity is not subtracted from the electricity exported to the grid.	
Date: August 16 th , 2007 [Comments] The modified MR has properly subtracted the line loss electricity from the electricity exported to the grid.			
Date: August 16 th , 2007			

[Acceptance and close out]: It is verified that the line loss electricity has been properly subtracted from the electricity exported to the grid. CAR 2 is closed out.

The reported value of exported, imported and line loss electricity have been verified against manual record of Gateway Meter 114, background electronic record of Backup Meter 302 and monthly electricity bills. Further reference has been made against Electricity Transaction Notes and correlative invoices due to power selling and purchase.

The net electricity supplied to North China Power Grid by the project is calculated by subtracting imported and line loss electricity from exported electricity.

Reported amount of electricity in the monitoring report is as follows:

Table 1. Reported Amount of Electricity

Period	Reported amount of electricity exported to the grid (KWh)	Reported amount of electricity imported from the grid (KWh)	Reported amount of line loss electricity (KWh)	Net electricity supplied to North China Power Grid by the project (KWh)
Sep 30 th ,2006~Oct 31 st ,2006	1300200.00	15840.00	576.00	1283784.00
Nov 1 st ,2006~Nov 30 th ,2006	4342800.00	25080.00	0	4317720.00
Dec 1 st ,2006~Dec 31 st ,2006	6172320.00	11880.00	576.00	6159864.00
Jan 1 st ,2007~Jan 31 st ,2007	5377680.00	38280.00	576.00	5338824.00
Feb 1 st ,2007~Feb 28 th ,2007	5390880.00	10560.00	0	5380320.00
Mar 1 st ,2007~Mar 31 st ,2007	6841560.00	27720.00	487.00	6813353.00
Apr 1 st ,2007~Apr 14 th ,2007	2794680.00	9480.00	487.00	2784713.00
Total	32220120.00	138840.00	2702.00	32078578.00

Verified amount of electricity in the monitoring report is as follows:

Table 2. Verified Amount of Electricity

Period	Verified amount of electricity exported to the grid (KWh)	Verified amount of electricity imported from the grid (KWh)	Verified amount of line loss electricity (KWh)	Net electricity supplied to North China Power Grid by the project (KWh)
Sep 30 th ,2006~Oct 31 st ,2006	1300200.00	15840.00	576.00	1283784.00
Nov 1 st ,2006~Nov 30 th ,2006	4342800.00	25080.00	0	4317720.00
Dec 1 st ,2006~Dec 31 st ,2006	6172320.00	11880.00	576.00	6159864.00
Jan 1 st ,2007~Jan 31 st ,2007	5377680.00	38280.00	576.00	5338824.00
Feb 1 st ,2007~Feb 28 th ,2007	5390880.00	10560.00	0	5380320.00
Mar 1 st ,2007~Mar 31 st ,2007	6841560.00	27720.00	487.00	6813353.00
Apr 1 st ,2007~Apr 14 th ,2007	2794680.00	9480.00	487.00	2784713.00
Total	32220120.00	138840.00	2702.00	32078578.00

No difference is found between reported and verified values.

According to the validated and registered CDM PDD and the approved CDM methodology ACM0002 Version 6, the ex-ante determined baseline emission factor is 1.0197tCO₂/MWh. And the CO₂ emission reductions due to the project in the monitoring period are calculated as the product of as follows:

$$EG = 32078578.00 \text{ kWh} = 32078.58 \text{ MWh}$$

$$ER = 32078.58 \text{ MWh} \times 1.0197 \text{ tCO}_2\text{e/MWh} = 32711 \text{ tCO}_2\text{e}$$

Table 3 Verified VCUs

Period	EGy (MWh)	Emission Factor (tCO ₂ e/MWh)	VCUs (tCO ₂ e)
Sep 30 th ,2006~Dec 31 st ,2006	11761.37	1.0197	11993
Jan 1 st ,2007~Apr 14 th ,2007	20317.21		20718
Total	32078.58		32711

3.1 Remaining Issues, CARs, NIRs from Previous Validation or Verification

No. This is the first verification process.

3.2 Project Implementation

The physical components, project boundaries are in conformity with description in registered PDD and monitoring report. No additional emission sources used for project activity.

The first wind turbine started operation since Sep 30th, 2006, and total 40 turbines were put into operation till the end of this period.

3.3 Completeness of Monitoring

The monitoring of the project activity is found to be in conformity with monitoring methodology described in ACM0002 Version 6 and monitoring plan indicated in PDD of project activity.

The required metering systems have been installed and operational. The meters comply with appropriate quality standards applicable for this technology.

The sustaining records were sufficient to enable verification of emission reductions.

3.4 Accuracy of Emission Reduction Calculations

Data of electricity delivered to the grid are manually recorded and telemetric downloaded. Calibration and Testing records have been presented for verification. Uncertainty of metering system is in compliance with national and industrial regulation,

Emission factor of the grid is assessed as per ACM0002 Version 6.

Formula used to calculate the emission reduction is checked and found correct.

Emission reductions were calculated through conservative approaches.

3.5 Quality of Evidence to Determine Emission Reductions

Operational records and other evidences have been documented, collected and archived in either hard copies or electronic copies. Electricity is measured by calibrated instruments; data can be crosschecked through log book of turbines, records of meter readings at project side as well as at the grid side, Electricity Transaction Notes and electricity invoices and bills. All values used in

determining emission reductions are substantiated with proofs which are free from any material error.

3.6 Management System and Quality Assurance

GHG managing team has been established by the project owner, namely Hebei Construction Investment Zhangjiakou Wind Energy Co., Ltd. All related records have been documented. Responsibility of team member has been allocated as per the monitoring plan in the registered CDM PDD.

3.7 Additionality

The selected baseline is equivalent electricity delivered to the grid that would have otherwise been generated by existing power plants and the added capacity of new power plants connected to the North China Power Grid, which is dominated by fossil fuel.

Furthermore, this project was registered as CDM project on 5th Apr, 2007 (UNFCCC reference number 0878), please refer to following website for more details:

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1169559890.44/view.html>

In the registered PDD, the additionality has been established using the “Tool for the demonstration and assessment of additionality version 2” as below:

Step 1: Identification of the alternatives to the project activity consistent with the current laws and regulation.

The alternate baseline scenarios for the project activity have been identified as,

1. Construction of a fuel-fired power plant with equivalent amount of annual electricity supply;
2. The project activity not undertaken as a CDM project activity;
3. Construction of a power plant using other sources of renewable energy with equivalent amount of annual electricity supply; and
4. Provision of an equivalent amount of annual power output by the grid into which the project is connected.

Step 2: Investment Barrier

Benchmark analysis (option III of Step 2 of Tool for the demonstration and assessment of additionality) is selected for conducting the investment analysis.

In China an IRR of 8% for total investment of a project is regarded as benchmark for investment in hydropower plants, fossil fuel fired plants and wind power project. The project IRR without revenues from selling emission reductions is 7.47% which shows that the project is not financially attractive in absence of emissions reduction benefits.

Step 4: Common practice analysis

According to *China Electric Power Yearbook 2005, 2003 & 2002*, the wind farm plants take little proportion in installed capacity in Hebei province, in recent three years, namely 0.07% in 2004, 0.07% in 2002, and 0.06% in 2001. Therefore, wind farm project is not a common technique for power generation in Hebei province. And there are only 5 wind power projects having been put

into operation before 31st Dec, 2005 in Hebei Province. Among them one is in very small installed capacity of 1.2MW (2×0.6MW); one was put into operation before the reform of the China electricity system; two other wind projects are facing financial difficulties and are now seeking assistance through carbon financing, and the last one has been registered as CDM project on 23rd Mar, 2006. Therefore, the project activity cannot be considered as common practice in the Hebei Province.

Step 5: Impact of emissions reduction revenues

With the sales revenues of emission reductions, the financial indicator of the project will be significantly improved and the loan payback will be guaranteed.

The additionality has been accepted and project has been registered as CDM project.

Thus, according to the VCS version 1 using the CDM additionality criteria, this wind power project is additional.

4. TESTING ON VCU VERIFICATION CRITERIA

#	Criterion	Finding/Conclusion
1	Project Category	1. Energy Industries (Renewable/non-renewable)
2	Geographic Location	In conformity with the description in PDD.
3	Eligible GHGs	1. Carbon dioxide
4	Project Start Date	First turbine commissioned on 30 th Sep, 2006
5	Emission reduction start date	Emission Reduction start date is 30 th Sep, 2006
6	Public Funding and Grants	No indication that project has employed Public Funding, grants or Official Development Assistance (“ODA”) for construction or running operations in the geographic location of the Project Activity
7	Project Boundary/GHG Assessment Boundary	Hebei Kangbao Wolongtushan 30 MW Wind Farm Project site and North China Power Grid is selected as the project boundary.
8	Calculation Methodology	CDM methodology ACM0002 Version 06 has been correctly applied.
9	Secondary Effects	As a windfarm project, there exist no significant secondary effects.

10	Project Additionality	The project additionality has been confirmed. Please refer to section 3.7 for details.
11	Quality of Reductions	Relevant permits for this project have been obtained by project owner. Project design and implementation has been carried out in compliance with all relevant local and national environmental and social legislation in China.
12	Monitoring Process	CDM monitoring methodology ACM0002 version 06 has been used, sustaining records are sufficient to enable verification of emission reductions.

5. VERIFICATION AND CERTIFICATION STATEMENT

Reporting period: From 30th September, 2006 to 14th April, 2007

Verified emission in the above reporting period:

Project emissions 0 t CO₂ equivalents
 Baseline emissions 32711 t CO₂ equivalents
 Emission reductions 32711 t CO₂ equivalents
 Hereinto: 11993 tCO₂e from 30th Sep, 2006 to 31st Dec, 2006,
 20718 tCO₂e from 1st Jan, 2007 to 14th Apr, 2007.

Introduction

SGS United Kingdom Ltd. has been engaged by Climate Bridge Ltd. to verify and certify the greenhouse gas (GHG) emission reductions reported from the Hebei Kangbao Wolongtushan 30 MW Wind Farm Project for the period from 30/09/2006 to 14/04/2007, equating to 32711 tonnes of CO₂ equivalents.

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported for the period from 30/09/2006 to 14/04/2007 and the verification testing conducted against the GHG Assertion of the Climate Bridge Ltd., and the PDD of Hebei Kangbao Wolongtushan 30 MW Wind Farm Project.

Responsibilities of Climate Bridge Ltd. and SGS United Kingdom Ltd.

The management of the Climate Bridge Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project Monitoring and Verification Plan. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Climate Bridge Ltd.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions from the project for the period from 30/09/2006 to 14/04/2007 and on the calculation of GHG emission reductions from the project based on the verified emissions for the same period.

Basis of GHG verification opinion

Our verification approach was based on the requirements as defined in Voluntary Carbon Standard version 1.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our verification includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for the given period.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the given period, prepared on the basis of the Monitoring Report, are fairly stated.

This assessment included:

- Collection of evidence supporting the reported data
- Checking whether the provisions of the Monitoring Plan in the PDD, were consistently and appropriately applied

We have verified whether the information included in the attached appendix representing the emission reductions achieved has been determined correctly for the given period from the baseline figure.

Certification Statement

Based on process and procedures conducted, in our opinion, Climate Bridge Ltd.'s monitoring report on emission reductions for the Hebei Kangbao Wolongtushan 30 MW Wind Farm Project during the reporting period from 30/09/2006 to 14/04/2007 is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. The GHG emission reductions were calculated correctly on the basis of approved monitoring methodology ACM0002 version 06.

Therefore, SGS United Kingdom Limited is able to certify that the project is in full compliance with the Voluntary Carbon Standard Version 1, and the reported emission reductions achieved by Hebei Kangbao Wolongtushan 30 MW Wind Farm Project, certified as VCUs, during the reporting period from 30/09/2006 to 14/04/2007 is 32711 VCUs.

28th Aug, 2007



GHG Lead Assessor

28th Aug, 2007



Siddharth Yadav, Technical Reviewer

6. REFERENCES

- /1/ *Voluntary Carbon Standard, Version 1.*
- /2/ *Approved consolidated monitoring methodology ACM0002 Version 06.*
- /3/ *Project Design Document, version 2, Jan 15th, 2007.*
- /4/ *Monitoring report of Hebei Kangbao Wolongtushan 30 MW Wind Farm Project, September 30th, 2006 to April 14th, 2007 Version 2, see appendix*
- /5/ *Calibration and Test Record for Gateway Meter 114 and Backup Meter 302*
- /6/ *Manual records of Gateway Meter 114 and electronic records of Backup Meter 302*
- /7/ *Electricity Transaction Notes*
- /8/ *Bills issued by North China Power Grid Co. Ltd. Zhangjiakou Power Supply Company for power loss due to 10kV backup line*



7. APPENDIX

**Hebei Kangbao Wolongtushan 30 MW
Wind Farm Project
VCS Monitoring Report**

Monitoring Period:

Start Date: Sep. 30th, 2006

End Date: Apr. 14th, 2007

Version Number: 2

Date: Aug. 23rd, 2007

This document reports the emission reductions generated by Hebei Kangbao Wolongtushan 30 MW Wind Farm Project whose CDM registration reference number is 0878 during the following monitoring period: September 30, 2006 to April 14, 2007.

1. Project Category

Hebei Kangbao Wolongtushan 30 MW Wind Farm Project involves the installation of 40 turbines, each of which have a capacity of 750kW, providing a total installed capacity of 30MW. The project is expected to sell 60GWh power to the North China Power Grid annually.

Category 1: Renewable energy (wind).

2. Geographic Location

The Hebei Kangbao Wolongtushan 30 MW Wind Farm Project is sited on the Wolongtu Mountain which is in the Kangbao County, Zhangjiakou City of Hebei province, P.R.China. The Project has geographical coordinates with east longitude of 114°51' and north latitude of 41°28'. The objective of the Project is to utilize the wind power for generating electricity which will be sold into the North China power grid.

3. Eligible GHGs

The project activity is a grid-connected zero-emissions renewable electricity generation plant that would not be implemented otherwise.

The project activity only reduces carbon dioxide (CO₂) through substitution of the North China power grid electricity generated by fossil fuel power plant by electricity of wind power generation.

No other GHG reductions such as methane (CH₄) and nitrous oxide (N₂O), which happen under assistant activities of transportation, storage and extraction from the project activity and/or from the North grid are accounted.

4. Project Start Date

September 30, 2006

5. Emission Reduction Start Date

September 30, 2006

6. Public funding and grants

There is no public funding from Annex I Parties for the Project.

7. Project Boundary/GHG Assessment Boundary

North China power grid covers six provinces—Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia and Shandong Province. The project site is located at Hebei province. The electricity generation of this project will transmit into local grid, and then transmit to North China power grid.*

Because of the following reasons, the project boundary is determined as 'North China power grid' in this project activity:

1) The project site is located at Hebei province. Hebei provincial grid is one of the main transmission networks of North China power grid. Its power generation is managed and dispatched by North China power grid.

2) The relationship between North China power grid and other China Power Grid is listed in below table[†].

Year	Electricity output(MW)	Input from other Grid(MW)	(%)
2002	377617637	2905200(from Northeast China power grid)	0.77 %
2003	429609286	4244380(from Northeast China power grid)	0.99 %
2004	493687660	4514550(from China Central Power Grid)	0.91%

It shows North China power grid is a stable and relatively independent regional grid with sample and clear grid system boundary;

3) Since North China power grid has been a stable regional grid for several years, its basic data of electricity generation, electricity dispatch and other grid related information has been recorded historically, and those data was officially published by government so they are public available.

Therefore, North grid is determined as the Project boundary.

8. Calculation Methodology

The baseline emission (BE) during the monitoring period results from:

$$BE = EG \cdot EF$$

* Refer to <Feasibility report of Kangbao Wolongtushan wind farm project>

[†] Reference from *China Electric Power Yearbook 2005*

Where

EG – net power transmitted to the grid during the monitoring period (10⁴kWh);
 EF - emission factor of the grid (calculated ex-ante and will not be updated during the first crediting period). Detailed calculation method for emission factor (EF) has been indicated in the PDD.

The monitoring period is from Sep 30th, 2006. to Apr 14th, 2007. Meter 114 provides the official monthly record for electricity supplied to and imported from the grid. Therefore, from Sep 30th, 2006 to March 31st, 2007, the exported and imported electricity had been monitored effectively by Meter 114. In addition to that, power loss through 10kV circuitry connected to the standby meters, namely Meter 410 and Meter 420 is taken into account by subtracting the monthly power loss from the exported electricity.

For the period of Apr 1st, 2007 to Apr 14th, 2007, Meter 114 does not provide accurate data for half month. We used the conservative method to make the estimation.

Meter 302 at the project site keeps record of power exported or imported setting aside the power transmission loss between the power plant and the power substation and gives daily number of exported and imported electricity. To calculate the electricity from Apr 1st to Apr 14th, we subtracted the amount of electricity Meter 114 gives for the whole month of April by the amount of electricity provided by Meter 302 from Apr 15th 2007 to Apr 30th 2007. In addition to that, power loss through 10kV circuitry connected to the standby meters, namely Meter 410 and Meter 420 is taken into account by subtracting the power loss for April from the exported electricity.

Period	Exported (10 ⁴ kWh)	Power loss connected to the standby meters (10 ⁴ kWh)	Imported (10 ⁴ kWh)	Net power transmitted to the grid: (10 ⁴ kWh)
2006.09.30-2006.10.31	130.02	0.0576	1.584	128.3784
2006.11.01-2006.11.30	434.28	0	2.508	431.772
2006.12.01-2006.12.31	617.232	0.0576	1.188	615.9864
2007.01.01-2007.01.31	537.768	0.0576	3.828	533.8824
2007.02.01-2007.02.28	539.088	0	1.056	538.032
2007.03.01-2007.03.31	684.156	0.0487	2.772	681.3353
2007.04.01-2007.04.14	279.468	0.0487	0.948	278.4713
Total	3222.012	0.2702	13.884	3207.858

$$BE = EG \cdot EF = 32078.58 \text{ MWh} \cdot 1.0197 \text{ tCO}_2\text{e/MWh} = 32,711 \text{ tCO}_2\text{e}$$

As the emissions and leakage from the project activity are zero, emission reduction is equal to baseline emission. Emission reduction during the monitoring period September 30, 2006 to April 14, 2007 is 32,711 tCO₂e.

9. Secondary Effects

All CDM methodologies have considered both the primary effects and the secondary effects. As the Project is in full compliance with CDM Methodology ACM0002.ver 06-“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, no additional analysis is needed for secondary effects.

10. Project Additionality

The baseline scenario of the Project is identified and demonstrated by using the Step 1 and Step 2 of the *Tool for the Demonstration and Assessment of Additionality* approved by CDM EB.

Step 0: Preliminary screening of projects started after 1 January 2000 and prior to 31 December 2005.

The Project is not above described type of project that starts before the date of registration and account emission reduction prior to the start of the crediting period.

The Project is not financial attractiveness in feasibility period, the IRR of total investment would not reach benchmark and has barriers to be set up.

CDM was introduced to the Project owner on 22nd, July,2005, in Hebei CDM Conference.

Potential CERs revenue can help the project to be financial attractive. So the project owner had considered CERs revenue to be the project income, and accelerate the beginning of its construction*.

The construction period started from 16th, Oct., 2005.

The validator did the on site validation on 18th, June, 2006.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

The objective of the Step 1 is to define realistic and credible alternatives to the project activity(s) that can be the baseline scenario through the following sub-steps:

* Source from news published on <Hebei Daily>, 25th, July,2005

Sub-step 1a. Define alternatives to the project activity:

Plausible and credible alternatives available to the Project that provide outputs or services comparable to the proposed CDM project activity include:

Alternative I: Construction of a fuel-fired power plant with equivalent amount of annual electricity supply;

Alternative II: The Project activity not undertaken as a CDM project activity;

Alternative III: Construction of a power plant using other sources of renewable energy with equivalent amount of annual electricity supply; and

Alternative IV: Provision of an equivalent amount of annual power output by the grid into which the Project is connected.

The terrain of the project site area is flat, which is not suitable for development of hydropower project. In China, biomass power generation technology is still in the demonstration phase and can bring only poor economic benefits, which can not be operated without support from the national policies*. Since there exist no economically exploitable hydro or biomass resources with a commensurate scale within the area of the Project. Alternative III is not feasible.

Sub-step 1b. Enforcement of applicable laws and regulation

For Alternative I, considering the same annual electricity supply, the alternative baseline scenario for the Project should be a fuel-fired power plant with installed capacity lower than 15 MW. Further, as the Project is a grid-connected wind power generation project, the alternative baseline scenario must be a grid-connected fuel-fired power generation project. However, according to China's regulations, construction of fuel-fired power plants with the installed unit capacity lower than 135 MW is prohibited in the areas which can be covered by large grids such as provincial grids†. For these reasons, the possible alternative baseline scenario of building a fuel-fired power plant with an installed capacity lower than 15 MW conflicts with China's current regulations. Therefore, Alternative I is not feasible.

For Alternative II, the Project activity not undertaken as a CDM project activity satisfies China's regulations.

For Alternative IV, the installed capacity of the North China power grid for both the existing power plants and the power plants to be built in a foreseeable future satisfies China's regulations, which is also economically feasible.

Therefore Alternative II and Alternative IV are analyzed in Step 2 as potential project alternatives. According to the analysis in below, the project is not financial attractive, so Alternative II is not feasible. According to current policies and regulations in China electric-energy market, providing the same capacity and electricity supply from North

* *Tentative Management Measures for Price and Sharing of Expenses for Electricity Generation from Renewable Energy*, Document No. NDRC Energy[2006]13.

† *Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or Below* issued by the General Office of the State Council, decree no. 2002-6.

China power grid is feasibility, therefore Alternative IV is finally determined to be the baseline scenario.

Step 2. Investment analysis

The purpose of this step is to determine whether the project activity is economically or financially less attractive than Alternative II without an additional revenue/funding, possibly from the sale of certified emission reductions (CERs). The investment analysis was conducted in the following steps:

Sub-step 2a. Determine appropriate analysis method

The *Tool for the Demonstration and Assessment of Additionality* suggests three analysis methods which are simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III). Since the Project will earn revenues not only from the CERs sales but also from electricity sales, the simple cost analysis method is not appropriate. Investment comparison analysis method is only applicable to projects whose alternatives are similar investment projects. The Alternative IV of the Project is the North China power grid rather than new investment projects. Therefore Option II is not appropriate. The Project will use benchmark analysis method (Option III) based on the consideration that benchmark IRR of the power sector is available.

Sub-step 2b. Apply benchmark Analysis (Option III.)

According to the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects*, the financial benchmark rate of return (after tax) adopted by the Project is 8% for the IRR of total investment. On the basis of above benchmark, calculation and comparison of financial indicators are carried out in sub-step 2c.

Sub-step 2c. Calculation and comparison of financial indicators

(1) Basic parameters for calculation of financial indicators

Based on the feasibility study report of the Project, basic parameters for calculation of financial indicators are as follows*:

Installed Capacity:	30MW
Estimated annual electricity output:	57,946MWh
Electricity tariff:	0.600 RMB/KWh (with VAT)
Crediting period:	7 years
Expected CERs Price:	8 Euro/tCO ₂ e
Project Lifetime:	21years
Static Total investment:	275,090,000 Yuan RMB
Loan period:	15 years
Interests of the loan:	6.12%

* Data from <Feasibility report of Kangbao Wolongtushan wind farm project> and <Modification on financial evaluation of Feasibility report of Kangbao Wolongtushan wind farm project>

Annual O & M cost: 5,615,000 Yuan RMB
 Income tax rate : 33%
 Sales tax and surtax : 298300 Yuan RMB

Detail of IRR calculation is provided in Annex 5.

(2) Comparison of the financial benchmark of IRR of total investment for the Project

In accordance with the benchmark analysis (Option III), if the financial indicators (such as IRR) of a project are lower than the benchmark, the project is not considered as financially attractive. Based on the data above, without CERs sales revenues, the IRR of total investment of the Project is 7.47%, which is lower than the benchmark (8%). The Project is not financially attractive.

Sub-step 2d. Sensitivity analysis

For the project, following financial parameters were taken as uncertain factors for sensitive analysis of financial attractiveness:

- ◆ Static total investments
- ◆ Annual electricity output
- ◆ Electricity tariff, (Yuan/KW.h),with VAT
- ◆ Annual O&M cost

Since the impact of electricity tariff (with VAT) on total investment is the same to the impact of annual electricity output, only the impacts of static total investment, annual O&M cost and electricity tariff (with VAT) of the Project on IRR of total investment were analyzed. The results of sensitive analysis of three indicators of the Project are shown in Table 1 and Figure 3.

Table 1. IRR of total investment sensitivity to different financial parameters of the Project (without CERs sales revenues)

Range Parameter	- 10%	0	+10%
Static total investment (%)	8.73	7.47	6.33
Annual O&M cost (%)	7.76	7.47	7.18
Electricity tariff (withVAT) (%)	6.12	7.47	8.68

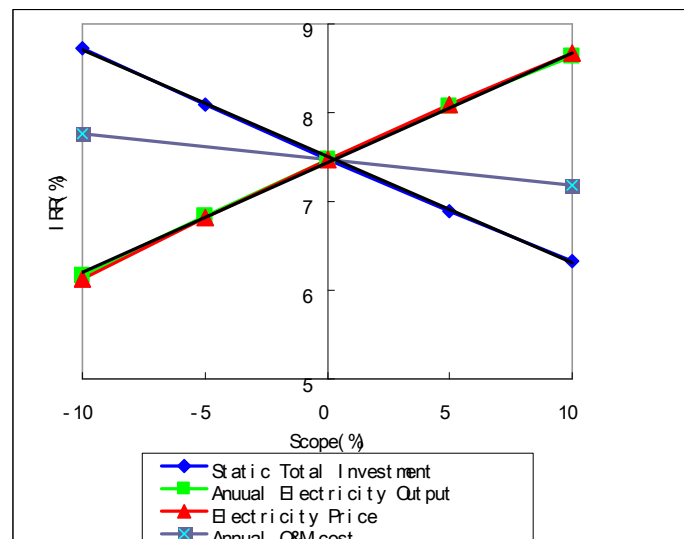


Figure 3. IRR of total investment sensitivity to different financial parameters of the Project (without CERs sales revenues)

Based on the relationship shown in Figure B-1, we can calculate that the IRR can reach the benchmark 8%, in case of the variation range of the *electricity tariff/ annual electricity output* reaches +4.53%, or the *static total investment* reaches -4.51%. However, it could not happen in the project, because:

Since the Project will be finished very soon, its static total investment will not be changed much. Therefore, the Static total investment could not be reduced 4.51%. The detail will be provided in validation and verification time.

The project owner has got an agreement with the Grid Company about the electricity price, which is 0.600 RMB/KWh (with VAT). Thus the Electricity tariff could not be raised by 4.53%. The detail will be provided in validation and verification time.

Based on the agreement signed with the Grid Company, the Electricity output is not only determined by the electricity generation, but also by the requirement of its Grid Company, which means, even if the project's electricity generation raises 4.53%, for some reason, its Grid Company could not allow it to connect to Grid, thus, the electricity output could not raise 4.53%. In addition, the electricity output in feasibility study is a forecast data of accurateness, which according to the average power of wind, the rate of the wind, the data of other wind farm project in same condition*, thus, the electricity output could not raise 4.53% normally.

Therefore, the IRR of total investment of the Project could not reach the benchmark and the additionality of the Project would not be influenced.

In conclusion, the practical and feasible baseline scenario is Alternative IV, the provision of equivalent amount of annual electricity supply by the grid into which the Project is

* Refer to <Feasibility report of Kangbao Wolongtushan wind farm project>

connected. Therefore the baseline scenario of the Project is the provision of equivalent amount of annual electricity supply by the North China power grid.

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the project activity:

Wind farm projects which were put into operation before 31st Dec. 2005 in Hebei Province are listed in Table2.

Table 2 Wind farm projects put into operation before 31st Dec. 2005 in Hebei Province*

Name	Total No. of the wind farm (Tai)	Total capacity of the wind farm(KW)
Zhangbei wind farm project	24	9850
Chengde wind farm project	88	53700
Fengning wind farm project	2	1200
Shangyi Manjing wind farm project first phase	23	34500
Zhangbei Manjing wind farm project	6	9000

Sub-step 4b. Discuss any similar options that are occurring:

Among the wind farm projects listed in Table 2:

The installed capacity of wind farm project takes little proportion in recent three years in Hebei province, which is 0.07% in 2004, 0.07% in 2002, and 0.06% in 2001[†]. Therefore, wind farm project is not a common technique for power generation in Hebei province. Besides:

Zhangbei wind farm project was put into operation before 1999, due to the reformation of China electricity system in 2000[‡], project put into operation before 2000 will not impact the additionality of the proposed Project.

Fengning wind farm project, with installation capacity is 1.2MW(2×0.6MW), which capacity is much smaller than the proposed Project. Thus it was faced less technical difficulties and enjoyed less annual O&M cost.

Chengde wind farm project and Shangyi Manjing wind farm project-first phase are all in the process of finding carbon finance help.

Zhangbei Manjing wind farm project is registered successfully as CDM project in 23rdMar 2006[§].

* Source from<Stat. of domestic wind farm installation capacity in 2005>, Shipengfei.
<http://www.cses.org.cn/nywzbody.asp?id=9>

† Data refers to *China Electric Power Yearbook 2005,2003 & 2002*

‡ <http://www.bjbusiness.com.cn/20060807/yaowen30.htm>

§ Source from <http://cdm.unfccc.int/Projects/registered.html>

Hebei Guyuan 30.6 MW Wind farm projects and Zhangbei Mijiagou Wind Farm Project, which are put into construction in Hebei Province, are developing as CDM Project*.

In sum, existing wind farm projects will not impact the additionality of the Project.

Step 5. Impact of CDM registration

If the Project can be successfully registered as a CDM project, the CERs sales revenues will

- guarantee the loan payback, supplement the high investment of the Project and significantly improve the financial indicators of the Project;
- be one of the sources to serve as the maintenance fund for wind turbines therefore to guarantee the successful implementation of the Project.

Considering of the CERs sales revenues (calculated with EURO 8/tCO_{2e}, 7 yrs×3 crediting period), the IRR of total investment of the Project will be significantly improved to reach benchmark, as shown in Table 3.

Table 3 IRR of the Project[†]

	Project IRR
Without revenue of CERs	7.47%
With revenue of CERs	9.72%

11. Quality of Reductions

The Project’s design and implementation has been carried out in compliance with all relevant local and national environmental and social legislation in China. The official EIA done by local environmental bureau proves that it is feasible to set up the Project activity. No significant environmental impacts are considered by the project sectors.

The Project clearly fits into the development priority of China. The Project will not only supply renewable electricity to grid, but also contribute to sustainable development of the local community, the host country and the world by means of:

- reducing greenhouse gas emissions compared to a business-as-usual scenario;
- helping to stimulate the growth of the wind power industry in China;
- reducing the emission of other pollutants resulting from the power generation industry in China, compared to a business-as-usual scenario;
- creating local employment opportunities during the project construction and operation period;
- promoting the development of local tourism industry.

* Source from <http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=1322>

[†] Data from <Feasibility report of Kangbao Wolongtushan wind farm project> and <Modification on financial evaluation of Feasibility report of Kangbao Wolongtushan wind farm project>, detail of IRR calculation is provided in Annex 5.

12. Monitoring Process

The monitoring methodology ACM0002 (version 06) – “Consolidated monitoring methodology for grid-connected electricity generation from renewable sources” is selected for the project. In keeping with the monitoring methodology, the following parameter has been monitored for the project:

Net electricity delivered to the grid

ID	Data type	Data variable	Data unit	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	For how long is archived data kept?
EGy	Electricity	The electricity supplied to the grid by the project	10 ⁴ kWh	Recorded on a monthly basis	100 %	Electronic with paper back-up	During the crediting period and two years after

Quality Control (QC) and Quality Assurance (QA) procedures

ID	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
EGy	Low	<p>The kWh output from each wind turbine will be monitored and recorded at the on-site control centre using a computer system. The project operator is responsible for recording this set of data.</p> <p>Measurements are being continuously recorded by the on-site computer system, and then the output will be aggregated so that monthly electricity output can be shown. Electricity sales invoices will also be obtained as an additional check. This data set will be provided by the project company from its normal recording system.</p>

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The Monitoring Plan has been implemented accordingly. It clearly states the three persons from the QC team of the project owner are responsible for the roles and responsibilities in the monitoring plan of the project.

ANNEX 1: CONTACT DETAILS

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