



VALIDATION REPORT

GANSU GUAZHOU BEIDAQIAO WIND POWER PROJECT IN CHINA

REPORT No. 2010-1197

REVISION No. 01

DET NORSKE VERITAS



VALIDATION REPORT

Date of first issue: 25 August 2010		ConCert Project No.: PRJC-237846-2010-CCS-CHN
Recommended for approval by: Astakala Vidyacharan	Approved by: Michael Lehmann	Organisational unit: DNV Climate Change and Environmental Services
Client: Longyuan (Jiuquan) Wind Power Co., Ltd.		Client ref.: Zhou Jide

DNV CLIMATE CHANGE
SERVICES AS

Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
<http://www.dnv.com>
Org. No: NO 994 774 352 MVA

Summary:

Project Name: Gansu Guazhou Beidaqiao Wind Power Project

Country: China

Methodology: ACM0002

Version: 12.1.0

GHG reducing Measure/Technology: wind power

ER estimate: 446 721 tCO₂e per year (average) over first renewal crediting period of 7 years

Size

☒ Large Scale

☐ Small Scale

Validation Phases:

☒ Desk Review

☒ Follow up interviews

☒ Resolution of outstanding issues

Validation Status

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Full Approval and submission for registration

☐ Rejected

In summary, it is DNV's opinion that the project activity "Gansu Guazhou Beidaqiao Wind Power Project" in China, as described in the PDD, version 2.0 of 9 September 2010, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 12.1.0. Hence DNV requests the registration of the project as a CDM project activity.

Report No.: 2010-1197		Subject Group: Environment	
Report title: Gansu Guazhou Beidaqiao Wind Power Project in China			
Work carried out by: Gong Zheng, Zhang Lei, Tang Zhiang			
Work verified by: Simon Wong			
Date of this revision: 23 May 2011	Rev. No.: 01	Number of pages: 28	

Indexing terms	
Key words	
Climate Change	
Kyoto Protocol	
Validation	
Clean Development Mechanism	
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Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DNV	Det Norske Veritas
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MP	Monitoring Plan
NCV	Net Caloric Value
NDRC	National Development and Reform Commission
NWPG	Northwest China Power Grid
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
RMB	Renminbi, Chinese currency (yuan)
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax



1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed a validation of the “Gansu Guazhou Beidaqiao Wind Power Project” in China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfillment of stated criteria.

The host Party is China and the Annex I Party is Netherlands. Both Parties fulfill the participation criteria and have approved the project and authorized the project participants. The DNA of China confirmed that the project assists in achieving sustainable development.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

The project correctly applies ACM0002 version 12.1.0: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

By generating renewable energy which will displace electricity in the Northwest China Power Grid, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefit to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 446 721 tCO_{2e} per year over the 7-years crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is DNV’s opinion that the project participants are able to implement the monitoring plan.

In summary, it is DNV’s opinion that the “Gansu Guazhou Beidaqiao Wind Power Project” in China as described in the PDD version 2.0 dated 9 September 2010 meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 12.1.0. Hence, DNV requests the registration of the project as a CDM project activity.

Beijing and Oslo, 23 May 2011

Gong Zheng
CDM Validator
DNV Beijing, China

Michael Lehmann
Director of Services and Technologies
DNV Climate Change Services AS



2 INTRODUCTION

Longyuan (Jiuquan) Wind Power Co., Ltd. has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the Gansu Guazhou Beidaqiao Wind Power Project in China (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

2.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 version 12.1.0 (Sectoral Scope: 01) /26/. The validation was based on the recommendations in the Validation and Verification Manual /25/.

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



3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

3.1 Desk review of the project design documentation

The following tables list the documentation that was reviewed during the validation.

3.1.1 Documentation provided by the project participants

- /1/ Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.: CDM-PDD for project activity “Gansu Guazhou Beidaqiao Wind Power Project” in China, version 1.0 dated 6 July 2010.
Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.: CDM-PDD for project activity “Gansu Guazhou Beidaqiao Wind Power Project” in China, version 2.0 dated 9 September 2010.
- /2/ HydroChina XiBei Engineering Corporation: The feasibility study report of Gansu Guazhou Beidaqiao Wind Power Project of December 2008.
National Development and Reform Commission: The approval of FSR for Gansu Guazhou Beidaqiao Wind Power Project dated 13 May 2009.
- /3/ Lanzhou University Research Center for Environmental Quality Assessment Center: The Environmental Impact Assessment report (EIA) of Gansu Guazhou Beidaqiao Wind Power Project in April 2008.
Environmental Protection Administration of Gansu province: the approval of the EIA of Gansu Guazhou Beidaqiao Wind Power Project on 6 August 2008.
- /4/ Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.: IRR calculation for project activity “Gansu Guazhou Beidaqiao Wind Power Project” in China, dated 23 June 2010.
- /5/ Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.: Emission reduction calculation for project activity “Gansu Guazhou Beidaqiao Wind Power Project” in China, dated 14 January 2010.
- /6/ Jingyuan County Third Construction Company and Gansu Province fourth Construction Group Co., Ltd. and Longyuan (Jiuquan) Wind Power Co., Ltd.: The turbine basement construction contract, dated 6 November 2009.
- /7/ Sinovel Wind Group Co., Ltd and Longyuan (Jiuquan) Wind Power Co., Ltd.: wind turbines procurement contract, dated 28 December 2009.
- /8/ Gansu Province Electric Power Engineering Consulting Supervision Bright Co., Ltd.: Construction permission for Gansu Guazhou Beidaqiao Wind Power Project, dated 28 November 2009.



- /9/ Longyuan (Jiuquan) Wind Power Co., Ltd.: Board meeting decision for CDM consideration, dated 12 June 2009.
- /10/ Longyuan (Jiuquan) Wind Power Co., Ltd.: Stakeholder meeting table and meeting record, dated 20 September 2009.
- /11/ Longyuan (Jiuquan) Wind Power Co., Ltd.: 30 copies of consultation questionnaires for the stakeholder comments, dated 20 September 2009.
- /12/ HydroChina XiBei Engineering Corporation: the coordinates of total 134 wind turbines, in December 2008.
- /13/ Longyuan (Jiuquan) Wind Power Co., Ltd.: Equipment and CDM training plan on employees in year 2010.
- /14/ Longyuan (Jiuquan) Wind Power Co., Ltd. and Electrabel NV/SA: CDM emission reduction purchase agreement dated 16 December 2010.
- /15/ Guazhou branch of Industrial and Commercial Bank of China Co., Ltd.: Loan Contract for Longyuan (Jiuquan) Wind Power Co., Ltd., dated 24 December 2009.
- /16/ Gansu Province Guazhou County Industrial and Commercial Bureau: Business license for Longyuan (Jiuquan) Wind Power Co., Ltd., dated 17 September 2009.
- /17/ Gansu Province Power Company: the approval of electricity connection of Gansu Guazhou Beidaqiao Wind Power Project, dated 27 April 2010.
- /18/ Longyuan (Jiuquan) Wind Power Co., Ltd. and Electrabel NV/SA: emission reduction purchase agreement dated 16 December 2010.
- /19/ Longyuan (Jiuquan) Wind Power Co., Ltd. and Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.: CDM consultation contract in September 2009.
- /20/ Longyuan (Jiuquan) Wind Power Co., Ltd.: Prior Consideration of the CDM Form to UNFCCC, dated 21 April 2010. It was confirmed by the UNFCCC on 7 May 2010:
<http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html>.
- /21/ Longyuan (Jiuquan) Wind Power Co., Ltd.: Prior Consideration of the CDM Form to the Chinese DNA, National Development and Reform Commission, dated 24 September 2009.
 It was confirmed by the Chinese DNA on 17 May 2010.
- /22/ The solar PV, biomass and geothermal project in China meets high operating cost and lack of policy support:
http://www.wefweb.com/news/200916/1413073809_0.shtml
http://www.ce.cn/cyssc/ny/xny/200901/12/t20090112_17928711.shtml;
 Tentative Management Measures for Price and Sharing of Expenses for Electricity Generation from Renewable Energy, Document No. NDRC Energy [2006]7
http://www.sdpc.gov.cn/jggl/jggs/t20060120_129595.htm.

3.1.2 Letters of approval

- /23/ National Development and Reform Commission DNA of China: *Letter of approval* for Gansu Guazhou Beidaqiao Wind Power Project, dated 19 April 2011.
 It is confirmed by:
http://cdm.ccchina.gov.cn/website/CDM/pdf/Item_new/Item_new6294.pdf
- /24/ Ministry of Housing, Spatial Planning and the Environment DNA of the Netherlands:



Letter of approval dated 2 March 2011.

It is confirmed by the letter involving the information of LoA delivery from DNA of Netherlands dated 2 March 2011.

3.1.3 Methodologies, tools and other guidance by the CDM Executive Board

- /25/ CDM Executive Board: Validation and Verification Manual, Version 1.2, EB 55 Annex 1, dated 30 July 2010.
- /26/ CDM Executive Board: *Baseline and monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable source*, Version 12.1.0, dated 26 November 2010.
- /27/ CDM Executive Board: *Tool to calculate the emission factor for an electricity system*, Version 02, dated 16 October 2009.
- /28/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*, Version 05.2, dated 26 August 2008.
- /29/ CDM Executive Board: Guidance for request for deviation titled “*Application of AM0005 and AMS-I.D in China*”, dated 7 October 2005.
<http://cdm.unfccc.int/Projects/deviations/87512>.
- /30/ CDM Executive Board: Information Note on the Highest Tariffs Applied by the Executive Board in Its Decisions on Registration of Project in China, Version 01, dated June 2010.

3.1.4 Documentation used by DNV to validate / cross-check the information provided by the project participants

- /31/ IPCC: *2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual*, 2006.
- /32/ National Development and Reform Commission: *The emission factor calculation for each power grid of China*, dated 2 July 2009.
http://qhs.ndrc.gov.cn/qjfzjz/t20090703_289357.htm
- /33/ China NDRC and National Construction Committee, “*Economic Evaluation Code and Parameter for Construction Project (Version 3)*”, 2006.
- /34/ General Office of the State Council: *Notice of the General Office of the State Council concerning the Strict Prohibition for Construction of Thermal Power Plants with the Capacity of less than 135 MW*, dated 15 April 2002.
http://www.gov.cn/gongbao/content/2002/content_61480.htm.
- /35/ State Power Corporation of China: *Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects (trial)*, dated March 2003.
- /36/ Shi Pengfei: China Wind Farms Capacity Statistics in 2007, dated 28 February 2008.
<http://www.cwea.org.cn/upload/20080324.pdf>
- /37/ The Compiling Committee of China Electric Power Yearbook: *China Electric Power Yearbook 2004~2008*, pressed by China Electric Power Press
- /38/ Department of Energy Statistics, National Bureau of Statistics and Department of General Affairs, National Energy Administration of China: *China Energy Statistical*



- Yearbook 2006~2008*, pressed by China Statistics Press.
- /39/ Standing Committee of the seventh National People's Congress: *Environmental Protection Law of the People's Republic of China*, voted through and valid since 26 December 1989.
http://www.law-lib.com/law/law_view.asp?id=6229
- /40/ Standing Committee of the ninth National People's Congress: *Law of the People's Republic of China on Evaluation of Environmental Effects*, voted through 28 October 2002 and valid from 1 September 2003.
http://news.xinhuanet.com/zhengfu/2002-10/29/content_611415.htm
- /41/ State Council: *City Construction Tax and Additional Education Fee Policy*, 1 January 1999.
- /42/ State Council: *Provisional Regulations of the People's Republic of China on Value Added Tax*, State Council No.134 [1993], issued on 13 December 1993 and effective on 1 January 1994.
- /43/ State Council: *Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax*, valid since 1985.
<http://www.chinatax.gov.cn/n480462/n480513/n480919/index.html>
- /44/ Standing Committee of the tenth National People's Congress: *Law of the People's Republic of China on Renewable Energy*, voted through 28 February 2005, valid since 1 January 2006.
http://www.gov.cn/ziliao/flfg/2005-06/21/content_8275.htm.
- /45/ The tenth National People's Congress: *Law of the People's Republic of China on Enterprise Income Tax*, [2007] No.63, voted through 16 March 2007 and valid since 1 January 2008.
http://www.gov.cn/flfg/2007-03/19/content_554243.htm
- /46/ Tariff approval documents in Gansu province:
- 1) Tariff approval of wind power projects from NDRC of China, Fagaijiage [2007] No.1260, 9 June 2007;
http://www.hebwj.gov.cn/upfiles/xy_col32gjc_20070718164220007126.htm
 - 2) Tariff approval in the wind power projects from NDRC of China, Fagaijiage [2007] No.3303, 3 December 2007
 - 3) Notice on tariff management of wind power projects from NDRC of China, Fagaijiage [2009] No.1906, 20 July 2009;
http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727_292827.htm
- /47/ Ministry of Finance & State Administration of Taxation: *notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on products made through comprehensive utilization of resources and other products*, [repealed], issued on 1 December 2001 and effective on 1 January 2002.
- /48/ State Council: *Provisional Regulations of the People's Republic of China on Value Added Tax*, State Council No.538 [2009], issued on 5 November 2008 and effective on 1 January 2009.
http://www.chinaacc.com/new/63_67_/2008_11_17_wa8088515201711180021980.shtml



- /49/ Ministry of Finance & State Administration of Taxation: *Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products*, No.156 [2008], issued on 9 December 2008 and effective on 1 January 2009.
- /50/ The other wind farms are all applying for or have already received CDM registration:
- <http://cdm.unfccc.int/Projects/Validation/DB/9LRRXC1QZP9PY6JGKS3CMLAJK1L0IU/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/G2Z970ROSYCH9ASIY94LR4SQ5VJ4RU/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/Y4PGBN259OAOA3PIJQM4KSGGAD4PFS/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/2YD3JZ9KR20ZGX2FXX8B7NBQKJ7DHX/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/WQM8P31V4EMTG5LDD7TGAR07GQ57DC/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/UONS52HO8KGHZ16C5QBQBWBVT49QJ/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/VEUGTD9SW98S2VC2ZYWYNFIJKZXN7L/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/LGVJDI0L2E53XSWXX2LNGGKCHQO8X4/view.html>
- <http://cdm.unfccc.int/Projects/DB/DNV-CUK1261995235.23/view>
- <http://cdm.unfccc.int/Projects/Validation/DB/UVJW7H0NVVLZ82MSS6SB0AHF144CML/view.html>
- <http://cdm.unfccc.int/Projects/DB/DNV-CUK1244612185.44/view>
- <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1247703700.0/view>
- <http://cdm.unfccc.int/Projects/Validation/DB/MQITVE6TRC525WAG3WX90YKNXLAV2L/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/FO1R9WYNXB0L00TJMJ1OPNW5YT WZMP/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/XM8D1FR4BCG44KYVSA7OLLVM06O0HG/view.html>
- <http://cdm.unfccc.int/Projects/Validation/DB/D0XZG1N4NQUBQYV2C7U6RAQAT3M8F8/view.html>
- /51/ Gold Standard website: *Gansu Anxi Wind Farm Project is under the assistance of carbon finance (GS-VER)*.
<https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=554>
- /52/ The price of material and salaries of the employees are gradually increasing in China: China IC network, the raw material price increasing, dated 25 January 2008:



http://www.ic37.com/htm_news/2008-1/15834_66520.htm

Finance network, the salary increase of Chinese employees, dated 28 March 2008:

<http://finance1.jrj.com.cn/news/2008-03-28/000003465715.html>

/53/ Economic reform in electricity sector in year 2002:

State Council, Notice of electricity industrial reform Guofa[2002] No.5, dated 10 February 2010:

<http://www.chinabaike.com/law/zy/xz/gwy/1333796.html>

Electricity Information Net, Summary of the electricity industrial reform, dated April 2002:

<http://www.chinarein.com/jcdd/zhuanjiantan/index1.htm>

Main changes between the PDD published for the 30 days stakeholder commenting period and the final PDD submitted for registration:

1. Approved methodology ACM0002, "Consolidated methodology for grid-connected electricity generation from renewable sources" was updated to version 12.1.0 of 26 November 2010.
2. Updated the project activity crediting period start date as 1 July 2011 in stead of 1 January 2011.
3. Issues addressing the CARs and the CLs raised in this report.

After reviewing the revised PDD, DNV issued this final validation report and opinion.

3.2 Follow-up interviews with project stakeholders

Since the project was permitted to start construction on 28 November 2009 /8/, and the construction period is 2 years according to the FSR. The proposed project was still under basement construction stage at the commencement of validation, and there would have been only few issues that could have been verified through a physical site visit in August 2010. According to the FSR /2/ and EIA /3/, no resettlement of villagers was involved in this project and there are no negative comments from local and global stakeholders. This is also confirmed during the interview with the project owner. Meanwhile, the PDD and other additional background documents, like FSR /2/, EIA /3/ and wind turbine purchase contract /7/, relating to the project design are effective on this project, no further issues can be assessed through on site visit. Hence, DNV can justify that a physical site visit for this project was not arranged during the validation process.

The follow-up interview was held on 17 August 2010 by Gong Zheng and Zhang Lei from DNV in the DNV Beijing Office. Representatives of the project owner, Longyuan (Jiuquan) Wind Power Co., Ltd. /54/, and the project consultant, Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd. /55/ were interviewed to resolve issues identified during the desk review.

	Date	Name	Organization	Topic
/54/	2010-8-17	Zhou Jide	Longyuan (Jiuquan) Wind Power Co., Ltd.	➤ Information of project construction ➤ The development of wind power project in Gansu Province



				(Project Owner)	➤ The approval status (incl. EIA approval, the feasibility study report approval, CDM project approval) ➤ Project management ➤ Emission reduction monitoring plan ➤ Consulting process for stakeholder's comments ➤ Investment risks and barriers ➤ Baseline determination of the project ➤ Applicability of selected methodology ACM0002 ➤ Issues related to the additionality ➤ Common practice analysis ➤ Emission reductions calculation ➤ Emission reduction monitoring plan and project management
/55/	2010-8-17	Li Gang	Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd. (Project Consultant)		

3.3 Resolution of outstanding issues

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of four tables. The different columns in these tables are described in the figure below. The completed validation protocol for the project activity "Gansu Guazhou Beidaqiao Wind Power Project" in China is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities				
Requirement	Reference	Conclusion		
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK) or a corrective action request (CAR) if a requirement is not met.		

Validation Protocol Table 2: Requirement Checklist				
Checklist question	Reference	Means of verification (MoV)	Assessment by DNV	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the CDM-PDD	Gives reference to documents where the answer to the checklist question or item is found.	Means of verification (MoV) are document review (DR) , interview (I) or any other follow-up actions (e.g., on site visit and telephone or email interviews) and cross-checking (CC) with available information relating to projects or technologies similar to the proposed CDM project activity under validation.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A corrective action request (CAR) is raised when project participants have made mistakes, the CDM requirements have not been met or there is a risk that emission reductions cannot be monitored or calculated. A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. A forward action request (FAR) during validation is raised to highlight issues related to project implementation that require review during the first verification of the project activity.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Corrective action and/or clarification requests	Ref. to checklist question in table 2	Response by project participants	Validation conclusion
The CARs and/or CLs raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The validation team's assessment and final conclusions of the CARs and/or CLs.

Validation Protocol Table 4: Forward Action Requests		
Forward action request	Ref. to checklist question in table 2	Response by project participants
The FARs raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by project participants on how forward action request will be addressed prior to first verification.

Figure 1 Validation protocol tables



3.4 Internal quality control

The validation report underwent a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation team

Role	Last Name	First Name	Country	Type of involvement					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA1.2 Competence
Technical team leader (CDM validator)	Gong	Zheng	China	✓	✓	✓	✓		
CDM validator with sectoral experience	Tang	Zhiang	China	✓		✓			✓
GHG Auditor	Zhang	Lei	China	✓	✓	✓			
Technical reviewer	Wong	Simon Yon Sing	Malaysia					✓	✓

The qualification of each individual validation team member is detailed in Appendix B to this report.



4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the PDD, version 2.0 dated 9 September 2010.

4.1 Participation requirements

The project participants are Longyuan (Jiuquan) Wind Power Co., Ltd. of China and Electrabel NV/SA of the Netherlands. The host Party (China) and the Annex I Party (Netherlands) meet all relevant participation requirements /23/ /24/.

A letter of approval (LoA) /23/ was issued by DNA of China on 19 April 2011, authorizing Longyuan (Jiuquan) Wind Power Co., Ltd. as project participant and confirming that the project assists in achieving sustainable development /23/.

A letter of approval (LoA) was issued by DNA of the Netherlands on 2 March 2011, authorizing Electrabel NV/SA as project participant and confirming that the project assists in achieving sustainable development/24/.

DNV has received the LoAs directly from the project participants issued by the DNAs of China and the Netherlands on 19 April 2011 /23/ and 8 March 2011 /24/, respectively. During the validation, by checking the website link from Chinese DNA /23/ and the e-mail involving the LoA delivery from the DNA of the Netherlands /24/, DNV confirmed the authenticity of the LoAs provided by the project participants and considers that the LoAs comply with the paragraphs 45-48 of the CDM Validation and Verification Manual /25/.

The validation did not reveal any information that indicates the project can be seen as a diversion of official development assistance (ODA) funding towards China according to the FSR approval /2/.

4.2 Project design

The project involves installation and operation of 134 wind turbines in Guazhou County, Jiuquan city, Gansu province of China.

The installed capacity of each unit is 1 500 kW, thus constituting a total generation capacity of 201 MW. The wind turbines will be manufactured by Sinovel Wind Group Co., Ltd, which is a domestic company in China and the technology has been widely applied in China /7/, hence the project is supporting the growth of Chinese wind turbine manufacturing market. DNV was able to confirm that the project design engineering reflects current good practice in China.

The expected net supplied power to the grid is 480 708 MWh per year, i.e. a plant load factor of 27.31%, based on the feasibility study report (FSR), which was prepared by HydroChina XiBei Engineering Corporation in December 2008 and approved by National Development and Reform Commission on 13 May 2009 /2/. The fluctuation of wind speed has been taken into consideration and based on that conservative assumptions have been made regarding the



annual electricity generation. DNV was able to verify the mentioned values derived from the FSR /2/.

The project's electricity generation will be delivered to the Gansu Grid, which belongs to the Northwest China Power Grid, under the approval of electricity connection of Gansu Guazhou Beidaqiao Wind Power Project /17/. The Northwest China Power Grid is dominated by coal-fired power plants, and thus greenhouse gas (GHG) emissions are expected to be reduced. The Gansu Guazhou Beidaqiao Wind Power Project and the physical connected Northwest China Power Grid are clearly defined as project boundary /1/. The project's system boundary is in line with the delineation of the grid boundaries regulated by DNA of China /32/.

The issuance date of the turbine basement construction contract between Jingyuan County Third Construction Company and Gansu Province fourth Construction Group Co., Ltd. and Longyuan (Jiuquan) Wind Power Co., Ltd. for Gansu Guazhou Beidaqiao Wind Power Project was 6 November 2009 /6/ which is earlier than and the turbine purchase contract /7/ and the construction permission /8/. Thus, the turbine basement construction contract for Gansu Guazhou Beidaqiao Wind Power Project (6 November 2009) is defined as the project's starting date. The expected operational lifetime of the project activity is 20 years as per the wind turbines purchase contract /7/. A renewable crediting period of 7 years has been chosen for the project, starting from 1 July 2011. The emission reductions are estimated to be 446 721 tCO₂e per year and total 3 127 047 tCO₂e over the first seven-year crediting period /1/.

DNV considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant forms and guidance for completing the PDD.

4.3 Application of selected baseline and monitoring methodology

The project applies the approved consolidated baseline and monitoring methodology ACM0002 version 12.1.0, titled "Consolidated baseline methodology for grid-connected electricity generation from renewable source".

The applicability of this methodology is justified since:

1. The project is a wind farm project with the installation capacity of 201 MW, which has been confirmed from the FSR /2/ and the turbine procurement contract /7/.
2. The electricity from the project activity is proposed to be supplied to the Northwest China Power Grid (NWPG) /17/, and information on the characteristics of NWPG can be clearly identified.
3. The project is a new wind farm power plant with total combined capacity of 201 MW, not involved switching from fossil fuels to renewable energy sources at the site of the project activity, as confirmed by the FSR /2/ and the interview.

The assessment of the project's compliance with the applicability criteria of ACM0002 version 12.1.0 are documented in detail in section B.2 of Table 2 in the validation protocol in Appendix A to this report.

4.4 Project boundary

The spatial extent of the project boundary is defined as the site of the project and all power plants connected physically to the Northwest China Power Grid (NWPG), including Qinghai,



Gansu, Shaanxi, Ningxia Hui Autonomous Region and Xinjiang Uygur Autonomous Region /32/. There are no significant transmission constraints amongst the power plants of the Northwest China Power Grid, nor with the proposed project. It is in DNV's opinion that the project boundary of Gansu Guazhou Beidaqiao Wind Power Project is clearly defined.

The emission source in this project boundary is as following table:

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	<i>CO₂</i>	<i>Main emission source in Northwest China Power Grid.</i>
<i>Project emissions</i>	<i>N/A</i>	<i>Project emission is regarded as zero as the project is a renewable energy (wind source) project and no backup power existed at the project site.</i> <i>Therefore no project emission sources of more than 1% of the emission reductions were identified.</i>
<i>Leakage</i>	<i>N/A</i>	<i>There are no leakages that need to be considered in applying this methodology ACM0002 version 12.1.0 /26/.</i>

The identified boundary and selected sources and gases are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, which are not addressed by ACM0002 (version 12.1.0).

4.5 Baseline determination

According to the applied methodology ACM0002 version 12.1.0 /26/, the baseline scenario is:

“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Hence the baseline for the proposed project is provision of equivalent amount of annual power output by the NWPG where the proposed project is connected into, which is the continued operation of the existing power plants and the addition of new generation sources on the NWPG to meet the electricity demand.

According to ACM0002 version 12.1.0 /26/, baseline emissions are equal to power generated by the project that delivered to the Northwest China Power Grid, multiplied by the baseline grid emission factor. The grid emission factor has been determined *ex-ante* based on the most recent information available at the time when the PDD was web-hosted and has been fixed for the entire first crediting period /26/. This is reflected in the combined margin (CM) - the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor. The weighting is set to be 75% and 25% respectively /27/.



The approved baseline methodology has been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM project activity.

All the assumption and data used by the project participants are listed in the PDD and/or supporting documents. All documents relevant for establishing the baseline scenario are correctly quoted and interpreted in the PDD. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.

4.6 Additionality

The additionality of the project has been established using the “*Tool for the demonstration and assessment of additionality*” version 05.2 approved by the CDM EB /28/.

Evidence for prior CDM consideration and continuous actions to secure CDM status

The turbine basement construction contract between Longyuan (Jiuquan) Wind Power Co., Ltd. and Jingyuan County Third Construction Company and Gansu Province fourth Construction Group Co., Ltd. was signed on 6 November 2009 /6/, which is the first significant financial commitment for this project. The wind turbine purchase contract between Longyuan (Jiuquan) Wind Power Co., Ltd. and Sinovel Wind Group Co., Ltd was signed on 28 December 2009 /7/. The construction permission was issued by Gansu Province Electric Power Engineering Consulting Supervision Bright Co., Ltd. on 28 November 2009 /8/. Thus, 6 November 2009 was justified as the starting date of the project activity. This is in DNV’s opinion correctly considered as the earliest of financial commitments to expenditure for the project activity.

The FSR was prepared by HydroChina XiBei Engineering Corporation in December 2008 /2/ and then was approved by National Development and Reform Commission on 13 May 2009 /2/. In the FSR, the project owner was suggested to consider CDM benefit /2/ because the IRR of the project was lower than the industry (wind power plant) benchmark of 8% and hence financially unattractive /1/ /2/. The project owner identified CDM as a mean to overcome the investment barriers to proceed with the project, as evidenced in the board meeting minutes of Longyuan (Jiuquan) Wind Power Co., Ltd. on 12 June 2009 /9/. The project owner signed emission reduction purchase agreement with the Electrabel NV/SA on 16 December 2010 /18/.

Gansu Guazhou Beidaqiao Wind Power Project is a newly built wind power project /2/ and the starting date of the project activity (6 November 2009) is after 2 August 2008. The project owner sent the CDM prior consideration Form to UNFCCC on 24 March 2010 /20/ which is within 6 months of the project starting date i.e 6 November 2009. Then the commencement notification letter for Gansu Guazhou Beidaqiao Wind Power Project was sent to the DNA of China on 2 March 2010 /21/. CDM was therefore seriously considered in the decision to proceed with the project activity.

The project participants started the global stakeholder consultation (8 April 2010) six months after the starting date of the project activity (6 November 2009). DNV considers that sufficient actions have been taken to secure CDM status in parallel with the physical implementation of the project..



It is DNV's opinion that the proposed CDM project activity complies with the requirements of the latest version of the guidance on prior consideration of CDM.

4.6.1 Identification of alternatives to the project activity

Four alternatives to the project have been identified and discussed:

- a) The proposed project undertaken without being registered as a CDM project activity
 - b) The thermal power plant with the same annual electricity output as the proposed project.
 - c) A power plant using other source of renewable energy with the same annual electricity output as the proposed project.
 - d) Provision an equivalent amount of annual power output by Northwest Power Grid.
- DNV considers the list of realistic and credible alternatives to be complete.

The baseline scenario selection was appropriately assessed as below:

Alternative a) The proposed project itself, but not undertaken as a CDM project activity: this is a realistic and credible alternative available to the project owner.

Alternative b) Construction of a coal-fired power plant with equivalent installed capacity or annual electricity generation: this is not consistent with the regulation "*Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or below*" /34/. In order to provide the same output as the proposed project, the proposed project using fossil fuel fired would need to an installed capacity of 77.16 MW /37/ /38/. Therefore, this alternative, though realistic and credible, has been excluded from further discussion. It also has been observed by DNV that the non-compliance of the mandatory laws and regulations related to the implementation of fossil fuel power plants is not a common practice in China.

Alternative c) Construction of a power plant using other renewable energy, such as hydro, solar PV and biomass power plant with equivalent installed capacity or annual electricity generation: In China, solar PV, biomass and geothermal 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 /22/. Gansu Guazhou Beidaqiao Wind Power Project is located in desert area according to the FSR /2/. And the proposed project area lacks water resource /2/ /3/. Thus, DNV was able to verify other renewable energy sources are either not available in the geographical area of the project or are not commercially available at present. The alternative c) is thus not a likely alternative.

Hence, only alternative a) and d) will be discussed at next steps.

4.6.2 Investment analysis

Choice of approach

As the proposed project generates financial and economic benefits other than CDM related income through the sales of electricity and the alternative to the project does not involve an investment, a benchmark analysis is justified for conducting the investment analysis.

Investment analysis: Benchmark selection

According to the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* /35/, in China an IRR of 8% (after tax) for the total investment of a project is regarded as a benchmark for investing in wind farm projects. The benchmark of 8% (after tax) is therefore appropriate for this project.

DNV was able to confirm this is suitable and reasonable as following:



1. This benchmark was determined by the national administration of this industry in China /35/;
2. This benchmark is for project and after tax and the investment analysis for this project will be for project and after tax also;
3. This *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects /35/* is referred to the risk premiums of large scale wind farm power project.

Input parameters

A FSR in China is required to be developed by a qualified third party, like HydroChina XiBei Engineering Corporation, accredited for this task directly by Chinese government. An approval letter of the FSR is issued by Chinese government only after it passes the public assessment of the sector experts designated by the government. It is in DNV's opinion that FSR can be regarded as an accurate and trustworthy source of information coming from a recognized entity once it has the approval letter from the government.

The input parameters used in the financial analysis of this project activity are all taken from the FSR developed by the HydroChina XiBei Engineering Corporation in December 2008 /2/ and the approval letter was issued by the National Development and Reform Commission on 13 May 2009 /2/, which can thus be considered information provided by an independent and recognized source.

DNV compared the input parameters for the financial analysis /4/ included in the PDD /1/ with parameters stated in the FSR /2/ and was able to confirm that the values applied are consistent with the value stated in the FSR /2/.

The FSR was approved on 13 May 2009 /2/ and thus only 6 months prior to the decision to proceed with the project activity (i.e. project start date) which was on 6 November 2009 /7/. Given this relative short period of time between approval of the FSR and the decision to proceed with the project activity, it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.

Furthermore, the input parameters used in the financial analysis were compared with the data reported for other applying for registration and registered CDM projects developed in Gansu Province and validated by DNV, by comparing the investment costs, and O&M costs as indicated in Table 1.

Table 1: Comparison of financial indicators between wind power projects in Gansu Province

Project	Installed capacity (MW)	Total investment (Million RMB)	Total investment RMB/kWh (RMB/kWh)	Total investment per MW (Million RMB/MW)	Annual O&M/ Investment	Other cost (RMB/kW)	Status
CECIC HKC Gansu Changma Wind Power project	201	1 620.92	3.752	8.064	3.76%	-	Applying for registration of CDM
Gansu Datang Changma Wind Power Project	201	1 923.72	4.201	9.571	2.29%	25	Registered as a CDM project
Gansu Guazhou 300 MW Wind Power Project	300	2 377.86	3.545	7.926	3.00%	40	Registered as a CDM project
Gansu Guazhou Ganhekou	199.5	1 957.02	4.425	9.810	2.57%	-	Registered as a CDM



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Fourth Wind Farm Power Generation Project							project
Gansu Guazhou Ganhekou No.3 Wind Power Plant Project	201	1 908.851	4.415	9.497	2.6%	-	Applying for registration of CDM
Gansu Guazhou Ganhekou No.8 Wind Farm Project	201	1 955.95	4.413	9.731	2.34%	-	Registered as a CDM project
Gansu Guazhou Ganhekou No 1 Wind Farm Project	199.5	1 910.4770	4.409	9.576	2.5%	-	Registered as a CDM project
Gansu Guazhou Qiaowan Wind Farm Project	201	1 942.04	4.457	9.662	1.74%	-	Applying for registration of CDM
Huadian Gansu Guazhou Ganhekou No. 7 Wind Farm Project	201	1 954.11	4.270	9.722	2.64%	25	Registered as a CDM project
Huaneng Gansu Guazhou Ganhekou No.2 Wind Farm	199.5	1 983.2	4.512	9.941	2.35%	-	Applying for registration of CDM
Gansu Datang Yumen 49 MW,	49.3	455.699	4.396	9.243	2.8%	25	Registered as a CDM project
Gansu Yumen Sanshilijingzi Wind Power Project	49.3	435.250	4.402	8.828	2.1%	25	Registered as a CDM project
CGN Gansu Anxi Daliang 49.5MW Wind Power project	49.5	463.61	3.95	11.709	2.52%	35	Registered as a CDM project
Gansu Bayin Pingchuan Jiancaitang 45MW Wind Farm Concession Project	45	425.03	4.279	10.97	2.6%	40	Registered as a CDM project
Gansu Yumen Diwopu Wind Power Project	49.5	452.12	4.241	9.134	2.07%	25	Registered as a CDM project
Gansu Jingtai 45MW Wind Power Project	45	397.99	4.726	8.844	2.24%	25	Registered as a CDM project
Gansu Yumen Diwopu Phase II Wind Power Project	49.5	426.71	3.750	8.620	3.18%	35	Registered as a CDM project
Gansu Guazhou Daliangxi Wind Power Project	49.5	462.42	4.016	9.342	2.26%	-	Registered as a CDM project
Gansu Guazhou Xiangyang Phase II Wind	49.5	452.54	4.058	9.122	2.36%	30	Registered as a CDM project



Power Project							
Gansu Tianrun Liuyuan 1st Stage 49.5MW Wind Park Project	49.5	477.81	4.083	9.653	3.87%	20	Registered as a CDM project
The proposed project	201	1913.1476	3.98	9.518	2.83%	30	

(1) Total Static Investment:

The comparison of investment cost per kWh and per MW between the proposed project and the registered CDM projects in Gansu Province is listed above in Table 1. It can be seen from Table 1 that the investment cost per kWh of 3.98 RMB and the investment cost per MW of 9.518 million RMB falls within the range of the other projects. The range of investment cost per kWh was 3.545 to 4.726 RMB/kWh and the range of investment costs per MW was found to be 7.926 to 11.709 million RMB/MW.

The investment costs were further cross checked against real costs. DNV has checked the actual contract cost for the wind turbines purchase and the actual cost for the construction in the contracts, the total amount of the wind turbine purchasing price, wind turbines' foundation construction price, wind turbines installation price and the tower purchasing price constitute 80.87% of the static total investment, the actual contract is 1.07% higher than the amount in the FSR /6/ /7/. Hence the use of budgeted investment costs is conservative. DNV was thus able to confirm that the investment cost applied in the financial analysis is deemed to be appropriate and conservative.

(2) Annual Operation and Maintenance Cost:

The assumed operation and maintenance cost is taken from the FSR /2/, which is designed based on the *Economic Evaluation Code and Parameter for Construction Project* /33/. The O&M costs for wind power projects may vary by site location, conditions for transportation, applied technology and number of turbines.

As shown in the Table 1 above, the proposed project (with annual operation and maintenance cost 2.83%) is deemed to be in the range of percentage of O&M costs relative to investment costs for similar wind power projects (with the range from 1.74% - 3.87%) located in the same region in Gansu Province, and this enables DNV to confirm that the O&M cost is reasonable.

(3) Other cost

The term other cost refers to additional production expenses, administrative expenses and operating expenses, except depreciation, maintenance, insurance, material, salary and welfare. This definition was derived from the document "*Economic Evaluation Code and Parameters for Project Construction Project*" /33/ which was considered as the financing assessment basis and source for preparing FSR. DNV can confirm the "other cost" identified in the FSR is appropriate and it is in line with the relevant regulation for designing FSR in China. Comparing the "other cost" of the proposed project with already registered projects of a similar scale in China, DNV has checked and found that the "other cost" (30 RMB/kW) of the proposed project used in the investment analysis is within the range of the "other cost" (25~40 RMB/kW) for the registered CDM projects.

Furthermore, it should be noted that even if other cost were assumed to be zero, the project



IRR without CER revenue would be 6.65%, which is still lower than the benchmark of 8%. It indicates that the “other cost” has little impact on the IRR calculation.

(4) Annual Power Generation:

Annex 11 of CDM-EB 48th meeting report gives a guideline for validation of plant load factor for renewable energy. One option is to use plant load factor provided to the government while applying the project activity for implementation approval. The FSR has this purpose and hence according to current CDM regulation, the checking that the value is in line with the FSR should be considered sufficient for validation of plant load factor. This was the case for this project.

According to the FSR /2/, the annual output is estimated based on the long term weather statistic data (30 years) provided by local meteorological station. For estimating the real condition of the wind resources of the project site, the engineering company needs to collect one year wind speed dataset from an anemometer tower installed at the project site. The professional software WASP was used to select the rich wind source area, and then using software WindFarmer to optimize the location of each turbine for maximize power generation /2/. The yearly data was then processed in professional software to calculate the annual theoretical power generation, from which the annual effective power generation was obtained through discount by considering factors such as air density, trailing stream, wind turbine efficiency etc. Subsequently, the plant load factor of the proposed project is determined. It is DNV’s opinion that the determination of plant load factor follows the local standard requirements and conservative.

(5) Power Tariff:

The tariff of 0.5206 RMB/kWh (Incl. VAT) used in investment analysis for the proposed project, which was estimated in the FSR developed in December 2008 /2/. As show in the following table 2,

Table 2: The tariffs for wind power in Gansu Province after Year 2002: /46/

No	Project	Installed capacity (MW)	Tariff in PDD *. (RMB/kWh)
1	CECIC HKC Gansu Changma Wind Power project	201	0.5206
2	Gansu Datang Changma Wind Power Project(Ref No.3512)	201	0.563
3	Gansu Guazhou 300 MW Wind Power Project	300	0.54
4	Gansu Guazhou Ganhekou Fourth Wind Farm Power Generation Project	199.5	0.5206
5	Gansu Guazhou Ganhekou No.3 Wind Power Plant Project	201	0.54
6	Gansu Guazhou Ganhekou No.8 Wind Farm Project	201	0.5206
7	Gansu Guazhou Ganhekou No 1 Wind Farm Project	199.5	0.5206
8	Gansu Guazhou Qiaowan Wind Farm Project	201	0.5206
9	Huadian Gansu Guazhou Ganhekou No. 7 Wind Farm Project(Ref.No. 3241)	201	0.561
10	Huaneng Gansu Guazhou Ganhekou No.2 Wind Farm	199.5	0.5206
11	Gansu Datang Yumen 49MW Wind	49.3	0.54



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	Power Project		
12	Gansu Yumen Sanshilijingzi Wind Power Project	49.3	0.5599
13	CGN Gansu Anxi Daliang 49.5MW	49.5	0.518
14	Gansu Anxi Xiangyang Wind Power Project	49.5	0.506
15	Gansu Bayin Pingchuan Jiancaitang 45MW Wind Farm Concession Project	45	0.54
16	Gansu Yumen Diwopu Wind Power Project	49.5	0.54
17	Gansu Jingtai 45MW Wind Power Project	45	0.54
18	Gansu Guazhou Daliangxi Wind Power Project	49.5	0.54
19	Gansu Yumen Diwopu Phase II Wind Power Project	49.5	0.54
20	Gansu Guazhou Xiangyang Phase II Wind Power Project	49.5	0.54
	The proposed project	201	0.5206

The present project in Gansu province is having a tendering of tariff. The resulting tariff is 0.5206 RMB/kWh (incl. VAT) and no better tariff can be achieved by the project owner.

The tariff of 0.54 RMB/kWh (incl. VAT) has been checked by DNV to be the guiding tariff issued by NDRC in 2009 /46/ .

Nevertheless, even by increasing the tariff to the guiding tariff of 0.54 RMB/kWh (incl. VAT) of the latest available tariff, the IRR is 6.70% and still below the benchmark of 8%.

In China, the electric power system reform /53/ was implemented by the State Council in 2002 which led to a diversification in the ownership of power generation and the tariff reform. After the reform, power companies and grid companies were separated to be more market oriented.

CDM Executive Board issued the “Information note on the highest tariff applied by the EB in its decision on registration of projects in the People’s Republic of China” in EB 54 Para 53, which states that the highest tariff for wind power project in Gansu Province is 0.585 RMB/kWh (incl. VAT) /30/. This tariff may refer to Gansu Jieyuan Yumen wind Farm Phase I. However, the detailed information on the tariff on this project is not public available, but the website link from Yumen City Science and Technology Division indicated that Gansu Yumen Jieyuan wind Farm project Phase I began to construct in 1997 and partly (phase I) put into operation since March 2001, i.e. before the electricity reform. By using this highest tariff in Gansu Province, the IRR of Gansu Guazhou Beidaqiao Wind Power Project is still lower than the benchmark of 8%. Hence, it is DNV’s opinion that the tariff implemented in the PDD is reasonable.

(6) Taxes:

The taxes and depreciation rate applied in the project financial assessment are shown in the following table:

Table 3 Tax Rates involved in the project

Value added tax (VAT)	17%
Income tax	25%
Rate of residual value	5%
Depreciation period (years)	15



Education tax (of the VAT)	3%
City maintenance and construction tax (of the VAT)	5%

(a) VAT for equipment

17% VAT is paid as usual for purchased goods. According to Provisional regulations of the people's republic of China on value added tax from State Council issued on 10 November 2008 and implemented from 1 January 2009 /48/, the equipment VAT can be credited over the operation period against the tariff VAT until the VAT from the equipment VAT is fully recovered. For this project, this happens in the 6th year of operation.

(b) VAT on tariff

The VAT rate on the tariff of 17% applied to the financial analysis is substantiated by the following arguments.

On 13 December 1993, the “*Provisional Regulation of Value-added Tax in China*” (No.134 [1993]) was issued and became effective on 1 January 1994 /42/. In this Regulation (No.134 [1993]) /42/, the VAT occurred on the sales of electricity was stipulated to be 17%.

On 1 December 2001, the “*Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on products made through comprehensive utilization of resources and other products*” (No. 198 [2001]) /47/ was issued and become effective on 1 January 2002 /47/. As stated in this notice (No.198 [2001]) /47/, the payable value added tax should be half levied for sales of electricity generated from the wind power. Based on the documents introduced above, the VAT rate involved in some wind power projects with the commission dates after 2002 is 8.5%, i.e. half of 17%.

However, on 9 December 2008, the “*Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products*” (No.156 [2008]) /49/ was issued. As stipulated in this notice (No.156 [2008]) /49/, VAT refund half upon levy shall be applicable for selling the electricity generation from wind power etc. The regulation entered into force on 1 January 2009 and the former regulation /47/ was repealed simultaneously.

Based on the document introduced above, the VAT rate adopted by the proposed project is 17%. Half of the VAT incurred by the electricity sales has been annually recovered from the 7th year to 21st year after the equipment VAT is fully recovered.

The income tax rate (25%) is derived from the FSR, which is in line with *the Law of the People's Republic of China on Enterprise Income Tax* /45/.

The rate of residual value (5%) is derived from the FSR and is recovered at the end of operation period in the project IRR calculation spreadsheet /4/. According to the *Implementation Rules of the Enterprise Income Tax Law* /45/, the net residual value of a fixed asset shall be reasonably determined by an enterprise according to the nature and condition of the fixed asset. It may not be changed once determined.

The depreciation period of 15 year is derived from the FSR and thus the depreciation rate per year is 6.33%. According to the *Implementation Rules of the Enterprise Income Tax Law* /45/, an enterprise shall begin computing depreciation for a fixed asset in the month following the month in which the asset is into service, and shall cease computing depreciation for a fixed asset in the month following in which the asset's use is ceased. The minimum number of years for computing depreciation of fixed assets is 10 years for the manufacturing and business operations. Therefore, the depreciation period of 15 years for the proposed project is



in line with the the *Implementation Rules of the Enterprise Income Tax Law /45/* which is acceptable.

The city maintenance and construction tax rate is 5% of VAT and the additional education tax is 3% of VAT which is derived from *City Construction Tax and Additional Education Fee Policy /41/*, which is widely used in the design phase of projects and is also the actual tax rate when plants are under operation.

According to the guidance of EB51 Annex 58, the interest payable should be taken into account of the income tax calculation in cases where the benchmark applied in the investment analysis is post tax. As for the proposed project, the IRR benchmark of 8% is post tax and the interest tax payable has been verified to be included in the calculation of the income tax.

Therefore, DNV confirms that all the tax rates used in the financial analysis of the proposed project are in line with the relevant regulations of the tax rates

In conclusion, based on our local and sectoral expertise, and database of publicly available information, DNV considers that the input values used in the financial analysis are reasonable and are likely to adequately represent the economic situation of the project.

Calculation and conclusion

The IRR calculations over 20 years of operation were provided in a spreadsheet /4/. The calculations were verified and found to be correct by DNV. The assumptions used in the calculations were deemed to be correct by DNV. The project IRR without CDM revenues is 6.28%, which confirms that the project in the absence of CDM benefits and compared to the benchmark of 8% is not financially attractive. With CER revenues, the project IRR increases to 9.39%, and this is above the benchmark /4/.

Sensitivity analysis

A sensitivity analysis has been carried out for parameters contributing more than 20% to revenues or costs to check the robustness of the financial analysis. Reasonable variations of the total static investment, annual operational costs, and annual output delivered to the grid and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

DNV was able to verify that the project IRR will touch the benchmark only if the above mentioned parameters change by values as mentioned below:

Key Indicators	Variation of the parameter indicator needed to reach benchmark 8%
Total static investment costs	-15.55%
Annual O&M cost	-53.6%
Electricity tariff	12.6%
Annual output delivered to the grid	12.6%



1) Static investment costs: DNV was able to confirm that 15.55% decrease in investment costs is unlikely to happen, as 80.87% of the total investment of the proposed project goes towards purchase and installation of electric equipments (wind turbines and turbine basement construction purchase contract) /6/ /7/. Compared to the estimations in the FSR, the real costs of wind turbines procurement and installation are 1.07% more than the values in the FSR /2/, which indicates that the actual investment cost could not decrease. Therefore the static total investment is not likely to decrease by more than 15.55%.

2) Annual O&M cost: The annual O&M cost consists of maintenance cost, material costs, salary/welfare, insurance cost and other cost /33/. And the prices of materials and salaries of the employees are gradually increasing in China in recent years /33/, which will lead to gradual increase of annual O&M cost. Therefore, the annual O&M cost decreases by 53.6% to reach benchmark 8% will unlikely happen.

3) Electricity tariff: To reach the 8% benchmark, power tariff must increase 12.6% to 0.5862 RMB/kWh, which is not likely to happen. Based on the above mentioned cross-checking, it was confirmed that from year 2002 till now, the highest tariff has been found to be consistently 0.563 RMB/kWh (refer to Table 2).

4) Annual output delivered to the grid: According to the FSR /2/, the annual output is estimated based on the long term (30 years) weather statistic data provided by local meteorological station and one year wind resources measurement. Moreover, the trend of annually average wind speed of the project site is stable and trends to decrease over the recent years. The power load factor is thus likely to fluctuate only within a small range. Hence, it is unlikely to increase on average by 12.6%.

The sensitive analysis above shows that very unrealistic favourable circumstances would be needed for the IRR to reach the benchmark.

In conclusion, the investment analysis and sensitivity assessment have shown that Gansu Guazhou Beidaqiao Wind Power Project is unlikely to be a financially attractive option without the income from CERs sales.

4.6.4 Common practice analysis

In China, most policies are promulgated in provincial level by combining the national policy with the region's condition. It is thus reasonable to select Gansu Province as scope for common practice analysis. Furthermore, only those projects developed after 2002 are chosen for the common practice analysis, since 2002 is a threshold for economic reform in electricity sector /53/. The comparing capacity is defined as the large projects which have installation capacity larger than 15 MW. Project developer has properly considered the wind power projects built after 2002 with installed capacity no less than 15 MW in Gansu Province. ..

Existing wind farms in Gansu Province established from year 2002 to year 2009 (the capacity of 100-300MW) as show in table 4 which are derived from registration website from "China Wind Farms Capacity Statistic in 2007", UNFCCC and web site of China DNA have been considered for the analysis /36/. It is confirmed that all these wind power projects have applied for CDM projects or registered as CDM projects /50/. Thus, DNV was able to confirm that the project is not common practice.

DNV was able to verify that some other wind power projects developed at the similar scale



since 2002 in Gansu Province /36/. Evidence provided clearly demonstrates there are 14 wind power projects in the selected range have applied for CDM projects /50/ except for one project: Gansu Anxi Wind Farm Project. However, DNV was able to verify that Gansu Anxi Wind Farm Project has also applied for carbon finance (GS-VER) /51/ and therefore the project can not be considered comparable to the proposed project. Thus, it can be concluded that the proposed project activity i.e. wind power projects without CDM revenues is not a common practice in Gansu Province.

In conclusion, it is sufficiently demonstrated that the project is not a likely baseline scenario, and that emission reductions resulting from the project are additional.

4.7 Monitoring

The project applies the approved monitoring methodology ACM0002 version 12.1.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable source” /26/.

The monitoring plan is in accordance with the monitoring methodology. The monitoring plan will give opportunity for real measurements of achieved emission reductions.

Monitoring of sustainable development indicators is not required by the Chinese DNA /23/. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime /3/.

The project monitoring plan is in compliance with the monitoring methodology ACM0002 (version 12.1.0).

It is DNV’s opinion, that the project participants are able to implement the monitoring plan.

4.7.1 Parameters determined ex-ante

The combined margin emission factor is determined *ex-ante* based on the most recent information available; the detailed calculations of the combined margin emission factor are described in the following section 4.6.4. The parameters are listed in below table:

Data and Parameters	Unit	Value applied	Source of data used
Operating margin of NWPG (OM)	tCO ₂ /MWh	1.0246	China Electric Power Yearbook 2004-2008; China Energy Statistical Yearbook, 2006-2008 /37/ /38/.
Build Margin of NWPG (BM)	tCO ₂ /MWh	0.6433	
Emission factor of NWPG (CM)	tCO ₂ /MWh	0.9293	

4.7.2 Parameters monitored ex-post

The parameter monitored *ex-post* is the net electricity generation from the proposed project activity. The net electricity generated from the project will be measured through two meters which will be installed at the substation. The two meters are bidirectional and the accuracy degree of the metering equipments will be no less than 0.5S. The meters will be annually



calibrated by a qualified third party according to the national and industrial regulations. The on-grid electricity will be monitored continuously and recorded at least on a monthly basis. This data will be cross verified against the sales receipt from the grid. Data will be archived for 2 years following the end of the crediting period by means of electronic and paper backup. The project owner will be responsible for the overall monitoring and reporting and will keep all the data and material.

4.7.3 Management system and quality assurance

The project's monitoring plan includes:

- A description of the responsibilities and authorities for project management;
- A description of the installation of metering equipment;
- Procedures for the calibration of metering equipment;
- Monitoring of the net electricity delivered to the Northwest China Power Grid;
- Data quality control and management;
- Training programme.

Detailed procedures have been elaborated in the PDD section B.7.2. These will be maintained and implemented to enable subsequent verification of emission reductions.

4.8 Algorithms and/or formulae used to determine emission reductions

The emission reductions (ER_y) by the project activity during the crediting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y), as follows:

1) Baseline emissions: baseline emissions (BE_y in tCO_2) are the product of the grid emission factor ($EF_{grid,CM,y}$ in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh).

2) Project emissions: There are no emissions from the project which is a renewable energy project (wind power).

3) Leakage: No leakage has to be considered for the proposed project activity.

The PDD version 1.0 was published on 7 July 2010, and the calculation of the grid emission factor is the latest data which was available at the commencement of validation. The data used in the EF calculation is in accordance with data in the China Electric Power Yearbook from 2004 to 2008 /37/ and the China Energy Statistical Yearbook from 2006 to 2008 /38/ which is confirmed by DNV.

The grid emission factor of the Northwest China Power Grid is determined *ex-ante* for the first 7 years renewable crediting period following “*Tool to calculate the emission factor for an electricity system*”, version 02 dated 16 October 2009 /27/, based on the most recent information available at the time when the PDD was web-hosted on 7 July 2010. It has been calculated as the weighted average ($w_{OM} = 0.75$; $w_{BM} = 0.25$) of the operating margin and the build margin as prescribed for wind power projects by the tool.

Operating Margin: Simple OM was chosen and this is justified since the low cost /must run resources constitute less than 50% of total grid generation the method (18.8% in 2003, 19.92% in 2004, 25.36% in 2005, 24.71% in 2006 and 23.15% in 2007) /37/.



Aggregated generation and fuel consumption data are used due to the fact that more disaggregated data are not available in the Northwest China Power Grid, the total electricity delivered to the Northwest China Power Grid has been used which are obtained from the China Electric Power Yearbook from 2004 to 2008 /37/. Country specific data for net calorific value of each type of fossil fuel are obtained from the China Energy Statistical Yearbook from 2006 to 2008 /38/ and the IPCC 2006 default values /31/ for the oxidation factor and the emission factors of each type of fossil fuel are deemed reasonable.

The OM is calculated to be 1.0246 tCO₂/MWh. The sources and calculation has been verified by DNV.

Build Margin: Build margin was determined *ex-ante*. Because plant specific fuel consumption and electricity generation data are not publicly available in China, the guidance requested by DNV from the CDM Executive Board for a deviation of the baseline methodology of AM0005 has been applied for calculation of the build margin (BM) emission factor for this project /35/:

- Use of capacity additions from the years 2004 to 2007 is chosen and reaches 21.26% of the total installed capacity /37/ /5/.
- Use of weights estimated using installed capacity in place of annual electricity generation. Thermal power plant accounts for 78.74% of the total installed capacity additions in this period. Since specific data for each technology is not available, the fraction of fuels (coal 98.14%; natural gas 0.08%; oil 1.77%) was estimated from the CO₂ intensity for the fuels used in Northwest China Power Grid /37/.
- Efficiencies of 38.10% for coal power plants and 49.99% for oil or gas power plants are defined as the best technology commercially available in China by the DNA of China /32/.

Country specific net calorific value of each kind of fuel from the China Energy Statistics Yearbook in 2008 /38/, and IPCC 2006 default values /31/ for emission factors of each kind of fuel and carbon oxidation factor are used to calculate the BM in the Northwest China Power Grid. The official supporting documentation has been verified.

The BM is calculated as 0.6433 tCO₂e/MWh which was verified from the BM calculation spreadsheet /5/.

The resulting combined margin emission factor is 0.9293 tCO₂e/MWh is fixed *ex-ante* for the first crediting period. The annual electricity delivered to the Northwest China Power Grid is expected to be 480 708 MWh. The expected annual baseline emissions of the project are 446 721 tCO₂e /1/.

The baseline emission estimate can be replicated using the data and parameter values provided in the PDD and supporting files for validation. No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology have been found. The data sources mentioned have been verified by DNV.

In summary, the GHG calculations are complete and transparent, and the data accuracy has been verified.

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average *ex-ante* estimation of emission reduction conservatively calculated to be 446 721 tCO₂e per year for the selected crediting period.



All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources. All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD. All values used in the PDD are considered reasonable in the context of the proposed CDM project activity. The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD.

4.9 Environmental impacts

An Environmental Impact Assessment (EIA) of the project activity has been conducted by Lanzhou University Research Center for Environmental Quality Assessment Center in April 2008 /3/ and the potential environmental impacts, such as waste water, noise and waste gas, have been sufficiently identified. No significant environmental impacts are expected from the project activity. Environmental Protection Administration of Gansu province approved the EIA on 6 August 2008 /3/.

4.10 Comments by local stakeholders

Besides the stakeholder consultation process required by Chinese EIA regulations, an additional stakeholder consultation process has been performed. A public stakeholder meeting and a stakeholder survey of local villagers and residents in the area were held on 20 September 2009 to invite the comments from the local villagers and residents near the project area /11/. The project owner has sent and received 30 copies of questionnaires /11/. The project site is located at the waste desert and there are few residents who live at near the project site and are impacted by the project, and there are no farmlands and pastures but desert around the project site according to the FSR /2/ and EIA /3/. DNV thus considers the 30 questionnaires are reasonable to represent all local stakeholders near the project site.

The survey showed that the proposed project received support from local stakeholders, which was confirmed by verifying the questionnaires by DNV /11/.

DNV considers the local stakeholder consultation carried out adequately.

4.11 Comments by Parties, stakeholders and NGOs

The PDD, version 1.0 dated 6 June 2010, was made publicly available on the CDM website and Parties, stakeholders and NGOs were through the CDM website (<http://cdm.unfccc.int/Projects/Validation/DB/B2I5O22QSFBAJWGWDJBT7GU6T1TXVC/view.html>) invited to provide comments during a 30 days period from 7 July 2010 to 5 August 2010. No comments were received in this period.

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory requirements for Clean Development Mechanism (CDM) project activities

Requirement	Reference	Conclusion
About Parties		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	~~CAR 1~~ OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	~~CAR 1~~ OK
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK

Requirement	Reference	Conclusion
that would have occurred in the absence of the registered CDM project activity.		
About forecast emission reductions and environmental impacts		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

Table 2 Requirements checklist

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A General description of project activity						
A.1 Title of the project activity (VVM para 55-57)						
A.1.1	Does section A.1 of the PDD include a clearly identifiable project title, version number of the PDD and date of the PDD?	/1/	DR	☒ Clearly identifiable title of the project activity ☒ Version number of the PDD is included ☒ Date of the PDD is included.		OK
A.1.2	Is the PDD is in accordance with the applicable requirements for completing PDDs?	/1/	DR	☒ Yes <i>If no, list where the PDD is not in accordance:</i>		OK
A.2 Description of the project activity (VVM para 58-64)						
A.2.1	How was the design of the project assessed?	/1/	DR I	What type is the project? ☐ Project in existing facility or utilizing existing equipment(s) ☐ Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO ₂ e per year. In this case, a site visit must be performed. ☐ Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO ₂ e per year. In such case the number of physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis. ☐ The project is an individual small scale		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			project activity with emission reductions not exceeding 15 000 tCO₂e per year. In this case, DOE may not conduct a physical site visit as appropriate. ☒ Greenfield project The proposed project is a greenfield project, which was verified against the FSR and FSR approval /2/. ☐ Physical site inspection ☒ Reviewing available designs and feasibility studies Since the project was permitted to start construction on 28 November 2009 /8/, and the construction period is 2 years. The construction of wind turbines basements was completed. The proposed project was still under construction at the time of validation starting. There will be few issues that could be verified during physical site visit in August 2010. According to the FSR /2/ and EIA /3/ for this project, Gansu Guazhou Beidaqiao Wind Power Project is located in desert and no resettlement by the project activity. This is also confirmed during the interview with the project owner. Meanwhile, the PDD and other additional background documents, like FSR /2/, EIA /3/ and wind turbine purchase contract /7/, relating to the project design are effective on this project. Hence, DNV can justify that a physical site visit for this project was not arranged during the validation process. The follow-up interview was held on 17 August 2010 by Gong Zheng and Zhang Lei from DNV		

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				in the DNV Beijing Office. Representatives of the project owner, Longyuan (Jiuquan) Wind Power Co., Ltd. /54/, and the project consultant, Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd. /55/ were interviewed to resolve issues identified during the desk review.		
A.2.2	If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/ /8/	DR I	The proposed project was still under construction at the time of validation starting. The project construction permission date is 28 November 2009. /8/ and construction period is 2 years. /2/ The construction of wind turbines basements were completed at the time of interview with the project owner.		OK
A.2.3	If physical site visits were performed based on sampling (only applicable for bundled small scale projects, each with emission reductions not exceeding 15 000 tCO ₂ e per year), justify the sampling through a statistical analysis:	/1/	DR	Not applicable.		OK
A.2.4	Is the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity?	/1/	DR	Yes. The description in the PDD covers all relevant elements, like the location, installed capacity and provides a clear understanding of the nature of the proposed CDM project activity.		OK
A.2.5	Does the project activity involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/ /2/	DR I	Gansu Guazhou Beidaqiao Wind Power Project is a new built project and there is no alternation which was confirmed during the interview. It can also be proved by the approved FSR /2/.		OK
A.2.6	Does the project design engineering reflect current good practices?	/1/	DR I	All 134 turbines had been supplied by Sinovel Wind Group Co., Ltd according to Wind Turbines Purchase Contract /7/. The used wind turbines have advantages on utilizing wind resources and improving efficiency. This kind of wind turbines have		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.																
				already widely used in China which reflects current good practices.																		
A.2.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/ /7/	DR I	The technologies employed in the proposed project activity are advanced domestic technologies. The manufacturer of the turbines is Sinovel Wind Group Co., Ltd, which is a domestic company and has been widely adopted in China and there is no transfer of technology from any Annex-I party involved.		OK																
A.3 Participation requirements (VVM para 51-54, 123-125)																						
A.3.1	Do all participating Parties fulfil the participation requirements as follows: a) Party has ratified the Kyoto Protocol b) Party has designated a Designated National Authority c) The assigned amount has been determined	/1/	DR	<table><tr><td>The LoAs from the host party and Annex I have not been provided.</td></tr><tr><td><table><tr><td>China (host)</td><td>The Netherlands (Annex I)</td></tr><tr><td>☒ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☒ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr></table></td></tr></table>	The LoAs from the host party and Annex I have not been provided.	<table><tr><td>China (host)</td><td>The Netherlands (Annex I)</td></tr><tr><td>☒ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☒ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr></table>	China (host)	The Netherlands (Annex I)	☒ Yes ☐ No	☐ Yes ☐ No	☒ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	CAR-1	OK						
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A.3.2	Do the letters of approval meet the following requirements? a) LoA confirms that Party has ratified the Kyoto Protocol b) LoA confirms that participation is voluntary c) The LoA confirms that the project contributes to the sustainable development of the host country? d) The LoA refers to the precise project activity title in the PDD e) The LoA is unconditional with respect to (a) to (d) above f) The LoA is issued by the respective Party’s DNA	/1/	DR	<table><tr><td>The LoAs from the host party and Annex I have not been provided.</td></tr><tr><td><table><tr><td>China (host)</td><td>The Netherlands (Annex I)</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>NA</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr></table></td></tr></table>	The LoAs from the host party and Annex I have not been provided.	<table><tr><td>China (host)</td><td>The Netherlands (Annex I)</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>NA</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr><tr><td>☐ Yes ☐ No</td><td>☐ Yes ☐ No</td></tr></table>	China (host)	The Netherlands (Annex I)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	NA	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	CAR-1	OK
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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
g) The LoA was received directly by the DNA or the PP h) In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic				☐ DNA ☐ PP ☐ DNA ☐ PP The LoAs from host payty has not yet provided.		
A.3.3	Have all private/public project participants been authorized by an involved Party?	/1/	DR	The Longyuan (Jiuquan) Wind Power Co., Ltd. is the project participant of Gansu Guazhou Beidaqiao Wind Power Project. The LoA from the host party and Annex I have not been provided.	~~CL-1~~	OK
A.4 Technical description of the project activity (VVM para 58-64)						
A.4.1	Is the project's location clearly defined?	/1/	DR I	Yes. The proposed project is located in Guazhou County, Jiuquan City, Gansu province of China. Its geographical coordinates are E96°15'25"-96°18'15", N40°40'25"-40°44'40". Its average altitude is 1380-1470 m. As of the geographical coordinate of the project is in a range, it needs to give the coordinate for each wind turbine.	~~CL-1~~	OK
A.5 Public funding of the project activity						
A.5.1	In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/1/	DR I	The investment of Gansu Guazhou Beidaqiao Wind Power Project is all from Longyuan (Jiuquan) Wind Power Co., Ltd.. The fund is composed of self capital of Gansu Guazhou Beidaqiao Wind Power Project and commercial bank loan./15/		OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B Application of a baseline and monitoring methodology						
B.1 Methodology applied (VVM para 65-76)						
B.1.1	Does the project apply an approved methodology and the correct version thereof?	/1/ /26/	DR	Yes. The approved methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable source” version 12.1.0 is applied for the proposed project /26/.		OK
B.1.2	If applicable, has any specific guidance provided by the CDM EB in respect to the applied methodology been considered?		DR	Not applicable.		OK
B.2 Applicability of methodology (and tools) (VVM para 65-76) <i>Insert a row for each applicability criteria of the applied methodology (and tools)</i>						
B.2.1	How was it validated that project complies with the following applicability criteria: The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit?	/1/ /2/	DR I	Gansu Guazhou Beidaqiao Wind Power Project is a new built project and there is no alternation which was confirmed during the interview. It can also be proved by the approved FSR /2/.		OK
B.2.2	How was it validated that project complies with the following applicability criteria: Project activities that not involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site?	/1/ /2/	DR	Gansu Guazhou Beidaqiao Wind Power Project is the project that uses wind to generate electricity. So there is no fossil fuel switch in this project. It can also be verified by the project design in the approved FSR /2/.		OK
B.2.3	How was it validated that project complies with the	/1/	DR	Gansu Guazhou Beidaqiao Wind Power Project is		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
following applicability criteria: Not a biomass fired power plants?		/2/		the project that uses wind to generate electricity not by using biomass. It can also be verified by the project design in the approved FSR /2/.		
B.2.4	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/ /26/	DR	Yes. The selected baseline is directly determined by the approved methodology ACM0002 version 12.1.0 /26/ and confirms the applicability of the methodology.		OK
B.3 Project boundary (VVM para 78-80)						
B.3.1	What are the project's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/ /32/	DR	The project boundary is defined as the site of the project activity and all power plants connected physically to the Northwest China Power Grid /17/ as per ACM0002 version 12.1.0 /26/. Northwest China Power Grid consists of independent province-level electricity systems includes Qinghai, Gansu, Shaanxi, Ningxia Hui Autonomous Region and Xinjiang Uygur Autonomous Region power grid, according to the grid boundary published by National Development and Reform Commission in July 2009 /32/.		OK
B.3.2	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	/1/ /26/ /32/	DR	The major emission source of Gansu Guazhou Beidaqiao Wind Power Project is CO ₂ and this is in line with the approved methodology ACM0002 version 12.1.0 /26/. The project boundary is defined as the site of the project activity and all power plants connected physically to the Northwest China Power Grid. NWPG includes Qinghai, Gansu, Shaanxi, Ningxia Hui Autonomous Region and Xinjiang Uygur Autonomous Region power grid /32/. This boundary covers all possible sources linked to the project activity.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.3.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR	There is no other emission sources involved in Gansu Guazhou Beidaqiao Wind Power Project. And there is also no other sources contribute more than 1% of the estimated emission reductions of the project.		OK
B.4	Baseline scenario determination (VVM para 81-88, 105-107) <i>Ensure that the evaluation of all alternatives provided in the PDD and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. Check that all alternatives required to be considered by the methodology are included in the final PDD. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this.</i>					
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/ /28/	DR	Yes. The identified baseline scenarios are: 1) The proposed project is not undertaken as a CDM project activity; 2) The thermal power plant with the same annual electricity output as the proposed project; 3) Other renewable energy project with the same annual electricity output as the proposed project; 4) To provide the same electricity output by NWPG. The baseline scenarios mentioned above is listed completely, according to "Tool for the demonstration and assessment of additionality" version 05.2 /28/.		OK
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/ /2/	DR I	The baseline scenario is identified directly according to the methodology ACM0002 version		OK

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	/26/ /35/	CC	12.1.0 /26/. Then four alternative baseline scenarios to the project have been identified and discussed: 1) The proposed project not undertaken as a CDM project activity; 2) The thermal power plant with the same annual electricity output as the proposed project; 3) Other renewable energy project with the same annual electricity output as the proposed project; 4) To provide the same electricity output by NWPG. Alternative 1) This scenario is not a realistic and credible alternative, as discussed in the benchmark analysis in the PDD /1/. In fact the IRR of total investment is 6.28% which is lower than the benchmark IRR 8% for electrical engineering project /35/. Alternative 2) In 2007, the average operation time of thermal power plant in Gansu Province is 6 231 hours /37/, and the effective operation time of proposed project is 2 392 hours and an average annual generation of 480 708 MWh /2/. To provide the same output as the proposed project, the alternative thermal power plant will have the capacity of 77.16 MW. The thermal power plant with capacity less than 135 MW is forbidden to build in China according to the law “<i>Notice of the General Office of the State Council concerning the Strict Prohibition for Construction of Thermal Power Plants with the Capacity of less</i>”		

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			than 135 MW /34/. So alternative 2) conflicts with Chinese regulations and not a realistic option. Alternative 3) The project site is located on the desert and it is not suitable to build hydro station according the FSR /2/. The sola PV, biomass and geothermal projects are all in the demonstration phase and can bring only poor economic benefits /22/. Alternative 4) “Provide the same electricity output by “Northwest China Power Grid” is a realistic alternative consistent with current laws and regulations, which is also economically feasible.		
B.4.3 What is the baseline scenario?	/1/ /26/	DR	The baseline scenario of Gansu Guazhou Beidaqiao Wind Power Project is identified directly according to the methodology ACM0002 version 12.1.0 /26/: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system” It is in line with ACM0002 version 12.1.0 /26/.		OK
B.4.4 Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/ /26/	DR	Yes. The baseline scenario of Gansu Guazhou Beidaqiao Wind Power Project is identified directly according to the methodology ACM0002 version 12.1.0 /26/.		OK
B.4.5 Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes. The renewable energy law, sectoral policies and development trends in the NWPG have been		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			I	taken into account.		
B.4.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /26/	DR	Yes. The baseline scenario of Gansu Guazhou Beidaqiao Wind Power Project is identified directly according to the methodology ACM0002 version 12.1.0 /26/.		OK
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /26/	DR	Yes. The baseline scenario of Gansu Guazhou Beidaqiao Wind Power Project is identified directly according to the methodology ACM0002 version 12.1.0 /26/.		OK
B.4.8	Is the baseline determination adequately documented in the PDD? - All assumptions and data used by the project participants are listed in the PDD and related document to be submitted for registration. The data are properly referenced. - All documentation is relevant as well as correctly quoted and interpreted. - Assumptions and data can be deemed reasonable - Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD. - The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity	/1/ /2/ /3/ /26/ /38/	DR I CC	The baseline scenario has been directly determined according to the methodology ACM0002 version 12.1.0. - All data in the PDD used to determine the baseline emissions are from the EIA /3/, FSR /2/, revised IPCC 2006 /31/, China Electric Power Yearbook (2004~2008) /37/, China Energy Statistical Yearbook (2006~2008) /38/ and other reference document. - According to the reference list, all documents of the baseline determination were correctly quoted and interpreted. - The EIA was approved by Environmental Protection Administration of Gansu province dated 6 August 2008 /3/ and FSR was approved by National Development and Reform Commission dated 13 May 2009 /2/. - Relevant national include Chinese renewable law and China environment protection law and sectoral policies and circumstances are considered and listed in the PDD /1/. - The baseline determination is in line with the		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			methodology procedure as per ACM0002 version 12.1.0 /26/.		
B.5 Additionality determination (VVM para 94-121)					
B.5.1 What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/ /26/	DR	The tool used to assess additionality is “Tool for the demonstration and assessment of additionality” version 05.2. Yes. All the process of analyzing the additionality in the PDD is in line with the methodology ACM0002 version 12.1.0 /26/.		OK
B.5.2 Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/ /2/ /22/ /34/	DR I CC	Yes. In 2007, the average operation time of thermal power plant in Gansu Province is 6 231 hours /37/, and the effective operation time of proposed project is 2 392 hours and an average annual generation of 480 708 MWh /2/. To provide the same output as the proposed project, the alternative thermal power plant will has the capacity of 77.16 MW. The thermal power plant with capacity less than 135 MW is forbidden to build in China according to the law “ <i>Notice of the General Office of the State Council concerning the Strict Prohibition for Construction of Thermal Power Plants with the Capacity of less than 135 MW</i> ” /34/. So alternative 2) conflicts with Chinese regulations and not a realistic option. The relevant regulatory requirements have been taken into account consideration.		OK
B.5.3 Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /2/ /22/ /34/	DR	Yes. The evidence provided is sufficient to support the relevant arguments /2/ /22/ /34/.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.4 What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/1/	DR	The project additionality is mainly based on the investment analysis /1/.		OK
Prior consideration of CDM (VVM para 98-103)					
B.5.5 What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/1/ /2/ /6/ /8/ /9/ /10/ /11/ /19/ /20/ /21/	DR I CC	1. FSR of Gansu Guazhou Beidaqiao Wind Power Project finished in December 2008 /2/ and had been approved on 13 May 2009 /2/. 2. Project owner held the managing director's office meeting to seek CDM dated 12 June 2009 /9/. 3. The CDM consultation contract was signed between Longyuan (Jiuquan) Wind Power Co., Ltd. and Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd. in September 2009 /19/. 4. The project owner held a stakeholder meeting near the project site on 20 September 2009 /10/. 5. The stakeholder questionnaire survey was carried out on 20 September 2009 /11/. 6. The construction contract was signed on 6 November 2009 /6/. 7. The construction of the proposed project was permitted to start on 28 November 2009 /8/. 8. The project owner signed Wind Turbines Purchase Contract dated 28 December 2009. 9. Prior Consideration of the CDM Form was sent to UNFCCC of the commencement of Gansu Guazhou Beidaqiao Wind Power Project and the intention to seek CDM status on 21 April 2010. It was confirmed by the UNFCCC on 7 May 2010: /20/ 10. Prior Consideration of the CDM Form was		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				sent to NDRC of the commencement of Gansu Guazhou Beidaqiao Wind Power Project and the intention to seek CDM status dated 24 September 2009. It was confirmed by the Chinese DNA on 17 May 2010 /21/. DNV can verify that the project owner seriously considered CDM prior to the time of decision to proceed with the project activity.		
B.5.6	If the starting date is after 2 August 2008 and before the global stakeholder consultation, has the DNA and UNFCCC confirmed that the project participants have informed in writing of the project's intention to seek CDM status?	/1/ /20/ /21/	DR CC	Yes. Prior Consideration of the CDM Form was sent to UNFCCC of the commencement of Gansu Guazhou Beidaqiao Wind Power Project and the intention to seek CDM status on 21 April 2010. It was confirmed by the UNFCCC on 7 May 2010 /20/. Prior Consideration of the CDM Form was sent to NDRC of the commencement of Gansu Guazhou Beidaqiao Wind Power Project and the intention to seek CDM status dated 24 September 2009. It was confirmed by the Chinese DNA on 17 May 2010 /21/.		OK
Continuous efforts to secure CDM status (only to be completed if starting date is before 2 August 2008)						
B.5.7	What initiatives were taken by the project participants from the starting date of the project activity to the start of validation in parallel with the physical implementation of the project activity?	/1/	DR	N/A		OK
B.5.8	When did the construction of the project activity start?	/1/	DR	N/A		OK
B.5.9	When was the project commissioned?	/1/	DR	N/A		OK
B.5.10	Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status?	/1/	DR	N/A		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
Investment analysis (VVM para 108-114) <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation.</i>					
B.5.11 Does the project activity or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PDD?	/1/ /2/ /4/	DR	Yes. The only source of generating revenue is from the sales of electricity apart from CDM. This is reflected in the PDD /1/. It can be confirmed by the FSR /2/ and IRR spreadsheet /4/.		OK
B.5.12 Do any of the alternatives to the project activity involve investment? Is this reflected in the PDD?	/1/	DR	The alternatives to the project activity do not involve any investment and it is reflected in the PDD.		OK
B.5.13 Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/	DR	Yes. As the proposed project generates financial and economic benefits other than CDM related income through the sales of electricity and the alternative for the baseline scenario of the proposed project is not a similar investment project, a benchmark analysis (option III) is justified for conducting the investment analysis. The choice is in line with Tool for the demonstration and assessment of additionality version 05.2 /28/.		OK
B.5.14 Is the benchmark/discount rate the latest available at the time of decision?	/1/ /35/	DR I CC	According to the Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects (trial) /35/, in China an IRR of 8% (after tax) of a project is regarded as a benchmark for investing in large scale hydropower plants, fossil fuel fired plants as well as wind farm projects. The benchmark of 8% (after tax) is therefore appropriate for this project. DNV was able to confirm this is suitable and reasonable as		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			following: 1. This benchmark was determined by the national administration of this industry in China; 2. This benchmark is for project IRR and after tax and the investment analysis for this project will be for 'project and after tax' also; 3. Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects (trial) /35/ refers to the risk premiums of wind farm power project, and this file is still valid.		
B.5.15 What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/1/ /4/ /35/	DR	The financial indicator is project IRR after tax. The IRR calculations were provided in a spreadsheet /4/. The financial indicator is in correspondence with the benchmark /35/.		OK
B.5.16 Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?	/1/	DR	It is not applicable.		OK
B.5.17 Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?	/1/ /2/ /4/	DR I	The income tax calculation takes depreciation into account /4/. The depreciation year is 15 years with the fixed residual rate 5% /2/. All the sources of the taxes applied in FSR and PDD for financial analysis like income tax rate, depreciation rate, City Maintenance and Construction Tax rate, Education Surtax etc are required to provide to DOE for verification.	~~CL2~~	OK
B.5.18 Is the time period of the investment analysis and operating time of the project realistic? Has salvage value been taken into account? Is working capital returned in the last year of operation?	/1/ /2/ /4/	DR CC	Yes. The operation time period is 20 years for Gansu Guazhou Beidaqiao Wind Power Project which is derived from the FSR /2/. The depreciation time is 15 years and the rate of residual value of fixed assets is 5%. The working capital returned as income in the last year of		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.19 When a feasibility study report or similar approved by the government is used as the basis for the investment analysis: Can it be confirmed that the values used in the PDD are fully consistent with the FSR and is the period of time between finalization of the FSR and the investment decision adequate?	/1/ /4/	DR CC	operation /4/. Yes. The input parameters used in the financial analysis of the “Gansu Guazhou Beidaqiao Wind Power Project” are taken from the feasibility study report (FSR) developed by HydroChina XiBei Engineering Corporation dated December 2008 and approved by National Development and Reform Commission dated 13 May 2009 /2/. The input parameters used in the financial analysis can thus be considered information provided by an independent and recognized source. DNV compared the input parameters for the financial analysis /4/ included in the PDD with the parameters stated in the FSR /2/ and was able to confirm that the values applied are consistent with the values stated in the FSR /2/. The FSR was prepared by HydroChina XiBei Engineering Corporation dated December 2008 and approved by National Development and Reform Commission dated 13 May 2009 /2/. Thus it is only six months prior to the decision to proceed with the project activity (i.e. project start date) which was on 6 November 2009 /7/. Given this relative short period of time between approval of the FSR and the decision to proceed with the project activity, it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project. The project-IRR with CERs is not included in the	~~CL3~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			PDD. The project proponent is requested to include the information in the PDD.		
B.5.20 How was the amount of output (e.g. sales of electricity) assessed? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /4/	DR	☐ The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval ☒ The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company) ☐ Other approach. Provide details on how the load factor was validated:: It needs to clarify the suitability of PLF in financial analysis.	~~CAR-2~~	OK
B.5.21 How was the output price (e.g. electricity price) assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /4/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☒ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants <i>Provide details on how the output price was validated:</i> It needs to clarify the suitability of tariff in financial analysis with sufficient evidence documents.	~~CAR-2~~	OK
B.5.22 How were the investment costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /4/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☒ Review of feasibility reports, public announcements, contracts and annual financial reports related to the project and the project participants	~~CAR-2~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			Provide details on how the investment costs were validated: It needs to clarify the suitability of investment cost in financial analysis with sufficient evidence documents.		
B.5.23 How were the O&M costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /4/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☒ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants Provide details on how the O&M costs were validated: It needs to clarify the suitability of O&M cost in financial analysis with sufficient evidence documents.	~~CAR-2~~	OK
B.5.24 Describe the assessment of the other input parameters. Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /4/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☒ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants Provide details on how other input parameters were validated: The parameters used applied in investment analysis need to be justified by cross-checking or other appropriate manner, to be valid and appropriate.	~~CAR-2~~	OK
B.5.25 Was the financial calculation spreadsheet verified and found to be correct?	/1/ /4/	DR	The parameters used applied in investment analysis need to be justified by cross-checking or other appropriate manner, to be valid and appropriate.	~~CAR-2~~	OK
B.5.26 Sensitivity analysis: Have the key parameters contributing to	/1/	DR	Yes, The key parameters contributing to more		OK

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	more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered?	/4/	CC	than 20% of the revenue/costs during operating or implementation have been identified. No possible correlation between the parameters is considered.		
B.5.27	Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/ /4/	DR	Yes. The sensitive analysis contains the variation -10% to +10% and also the variation to the benchmark.		OK
B.5.28	Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/	DR	It needs to be justified whether the variation of total investment and O&M cost could decrease to exceed the benchmark.	CL-4	OK
Barrier analysis (VVM para 115-118)						
B.5.29	Are the barriers identified complimentary to a potential investment analysis? Does the barrier have a clear impact on the financial returns so that it can be assessed in an investment analysis? Each barrier is discussed separately.	/1/	DR	N/A		OK
B.5.30	How were the investment barriers assessed to be real? Are the investment barriers substantiated by a source independent of the project participants?	/1/	DR	N/A		OK
B.5.31	How does CDM alleviate the investment barriers?	/1/	DR	N/A		OK
B.5.32	Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
B.5.33	How were the technological barriers assessed to be real? Are the technological barriers substantiated by a source independent of the project participants?	/1/	DR	N/A		OK
B.5.34	How does CDM alleviate the technological barriers?	/1/	DR	N/A		OK
B.5.35	Is the project activity prevented by the technological barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
B.5.36	How were the barriers due to prevailing practise assessed to be real? Are the barriers due to prevailing practise substantiated by a source independent of the project	/1/	DR	N/A		OK

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	participants?					
B.5.37	How does CDM alleviate the barriers due to prevailing practise?	/1/	DR	N/A		OK
B.5.38	Is the project activity prevented by the barriers due to prevailing practise and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
B.5.39	How were the other barriers assessed to be real? Are the other barriers substantiated by a source independent of the project participants?	/1/	DR	N/A		OK
B.5.40	How does CDM alleviate the other barriers?	/1/	DR	N/A		OK
B.5.41	Is the project activity prevented by the other barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
Common practice analysis (VVM para 119-121)						
B.5.42	What is the geographical scope of the common practice analysis? Is this justified?	/1/	DR I CC	In China, provincial governments are authorized to regulate wind power projects in the province. Thus the investment climate, tariff, land policy, regulations etc. are usually similar for wind power projects in the same province. Therefore, Gansu Province is selected as the geographical scope for the common practice analysis. However, more comprehensive information of the similar projects should be provided in the common practice analysis in order to demonstrate the additionality of the project activity.	~~CL-5~~	OK
B.5.43	What is the scope of technology and size (e.g. capacity of power plant) for the common practice analysis and how has this been justified?	/1/	DR I	Since the proposed project has an installed capacity of 201 MW, the similar projects are defined as the wind farm projects with the capacity of 100-300MW in Gansu Province.		OK
B.5.44	What is the data source(s) used for the common practice	/1/	DR	Refer to B.5.42	~~CL-5~~	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
analysis?			I			
B.5.45	How many similar non-CDM-projects exist in the region within the scope?	/1/	DR	Refer to B.5.42	~~CL-5~~	OK
B.5.46	How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	Refer to B.5.42	~~CL-5~~	OK
B.5.47	What is the conclusion of the common practice analysis?	/1/	DR	The conclusion will be got at the final report.	~~CL-5~~	OK
Conclusion						
B.5.48	What is the conclusion with regard to the additionality of the project activity?	/1/	DR	The conclusion will be generated as soon as the above CLs/CARs resolved.	~~CAR-2~~ ~~CL-2~~ ~~CL-3~~ ~~CL-4~~ ~~CL-5~~	OK
B.6 Calculations of GHG emission reductions						
Data and parameters that are available at validation and that are not monitored (VVM para 199-203)						
B.6.1	How was the amount of fossil fuel type i (t or m ³) consumed by province available at validation verified?	/1/ /38/	DR	The amount of fossil fuel type (t or m ³) consumed by province verified was referenced from China Energy Statistical Yearbook 2006-2008 /38/.		OK
B.6.2	How was the net electricity generated and delivered to the grid in the project electricity system in year y verified?	/1/ /37/	DR	The net electricity generated and delivered to the grid was referenced from China Electric Power Yearbook 2006-2008 /37/.		OK
B.6.3	How was the Net Calorific value of fossil fuel type i in year y verified?	/1/	DR	The Net Calorific value of fossil fuel type in year was referenced from China Energy Statistical Yearbook 2008 /38/.		OK
B.6.4	How was the CO ₂ emission factor of fossil fuel type i in year y verified?	/1/ /31/	DR	The CO ₂ emission factor of fossil fuel type in year was referenced from 2006 IPCC Guidelines for National Greenhouse Gas Inventories.		OK
B.6.5	How was the installed capacity of relevant power source connected to the grid verified?	/1/ /37/	DR	The installed capacity of relevant power source connected to the grid was referenced from China Electric Power Yearbook 2006-2008 /37/.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.6.6	How was the amount of best commercially available technology of coal, oil and gas fired plant verified?	/1/ /32/	DR	The best commercially available technology for coal, oil and gas fired plant was referenced from the statistics by NDRC official website /32/.		OK
B.6.7	How was the electricity imported to the project electricity system from the connected electricity system in year y verified?	/1/ /37/	DR	The electricity imported to the project electricity system from the connected electricity system in year y was referenced from China Electric Power Yearbook /37/.		OK
Baseline emissions (VVM para 89-93)						
B.6.8	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /5/ /32/	DR	The emission reduction calculation process is documented in a transparent manner and it is cross-checked by the published data from NDRC, and DNV can conclude that all the data and calculation in the provided calculation spreadsheet is correct and appropriate /5/ /32/.		OK
B.6.9	Have conservative assumptions been used when calculating the baseline emissions?	/1/ /27/ /29/	DR	Yes. All the used assumptions are in line with the “Tool to calculate the emission factor for an electricity system” version 02 /27/ and Guidance for request for deviation titled “ <i>Application of AM0005 and AMS-I.D in China</i> ” from EB /29/.		OK
B.6.10	Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	There are no significant uncertainties in baseline emission according to ACM0002 version 12.1.0 /26/.		OK
Project emissions (VVM para 89-93)						
B.6.11	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	There is no need to consider project emissions according to the approved methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable source” version 12.1.0 /26/.		OK
B.6.12	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	N/A		OK
B.6.13	Are uncertainties in the project emission estimates properly	/1/	DR	N/A		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
addressed?					
Leakage (VVM para 89-93)					
B.6.14 Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	There is no need to consider project emissions according to the approved methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable source" version 12.1.0 /26/.		OK
B.6.15 Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	N/A		OK
B.6.16 Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	N/A		OK
Emission Reductions (VVM para 89-93)					
B.6.17 Algorithms and/or formulae used to determine emission reductions: - All assumptions and data used by the project participants are listed in the PDD and related document submitted for registration. The data are properly referenced - All documentation is correctly quoted and interpreted. - All values used can be deemed reasonable in the context of the project activity - The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration.	/1/ /27/ /32/ /37/ /38/	DR CC	- Yes. EIA was approved by Environmental Protection Administration of Gansu province on 6 August 2008 /3/, and FSR was approved by National Development and Reform Commission on 13 May 2009 /2/, and all other document used to determine emission reductions can be verified, the data can be deemed. - Yes. According to the reference list, all documents /27/ /32/ /37/ /38/ used to determine emission reductions were correctly quoted and interpreted. - Yes. All values used can be deemed reasonable in the context of the project activity. - Yes. The description of baseline emission in the PDD needs to be updated according to the approved "Tool to	~~CAR-3~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			calculate the emission factor for an electricity system” version 02 /27/. In EF calculation spreadsheet, for the combined emission factor, the weights ω_{OM} and ω_{BM} are selected as 0.5 and 0.5, which is not the same as the value in the notification provided by NDRC.		
B.7 Monitoring plan (VVM para 122-124)					
Data and parameters monitored					
B.7.1 Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/ /26/	DR	The means of monitoring description in the PDD are according to the approved methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable source” version 12.1.0 /26/ and are in a complete and transparent manner. However, the details of training plan have not been provided to validation team.	CL-6	OK
B.7.2 Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/ /26/	DR I	Yes. The only parameter needs to be monitored is the net electricity generation supplied by Gansu Guazhou Beidaqiao Wind Power Project according to the approved monitoring methodology ACM0002 /26/ which is included in the monitoring plan.		OK
B.7.3 In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/	DR I	Yes. Net electricity generation supplied by the project plant/unit to the grid will be measured by electricity meters installed at the transformer station.		OK
B.7.4 In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR I	Yes. The meter is installed with the accuracy no less than 0.5S.		OK
B.7.5 In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment	/1/	DR I	The installation and location of all meters for monitoring needs to be clearly stated in PDD	CL-7	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	described and deemed appropriate? Describe each relevant parameter.			according to the physical truth.		
B.7.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR I	Yes. The readings of electricity meter will be continuously measured.		OK
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR I	The readings of electricity meter will be at least monthly recorded.		OK
Ability of project participants to implement monitoring plan						
B.7.8	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/ /26/	DR I	The installation and location of all meters for monitoring needs to be clearly stated in PDD according to the physical truth.		OK
B.7.9	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/ /26/	DR I	Yes. The authority and responsibility of project management is described in the PDD.		OK
B.7.10	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/ /26/	DR I	Yes. QA/QC procedures are included in monitoring plan.		OK
B.7.11	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/ /26/	DR I	The archived electronic data will be kept until 2 years after the end of the total crediting period.		OK
Monitoring of sustainable development indicators/ environmental impacts						
B.7.12	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /26/	DR I	Monitoring of sustainable development indicators is not required by the Chinese DNA.		OK
B.7.13	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /26/	DR I	Chinese DNA does not require collection and archiving of data related to environmental, social and economic impacts. The environmental		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			impacts will be monitored by local environmental authority.		
B.7.14 Are the sustainable development indicators in line with stated national priorities in the host country?	/1/ /26/	DR I	Yes. This will be on local authority decision.		OK
C Duration of the project activity / crediting period					
C.1.1 Start date of project activity (VVM para 99-100, 104)					
C.1.2 How has the starting date of the project activity been determined? What are the dates of the first contracts for the project activity? When was the first construction activity?	/1/ /3/ /7/ /6/ /8/	DR I	Yes. The starting date was determined to be 28 December 2009 /7/, which was the earliest date among the purchase contract /7/, construction permission /3/ and construction contract /6/. The first construction activity started on 28 November 2009 which is the Construction Permission letter issuance date /8/.		OK
C.1.3 Is the stated expected operational lifetime of the project activity reasonable?	/1/ /2/	DR	It should be clarified why the operational lifetime includes construction period.	~~CL-8~~	OK
C.1.4 Is the start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable?	/1/	DR	The choice of crediting period for Gansu Guazhou Beidaqiao Wind Power Project is seven years renewable crediting period /1/. It stated in the PDD, version 2.0, dated 9 September 2010 that the crediting starting date is chosen as 1 July 2011 /1/. The crediting period is clearly defined in the PDD and reasonable.		OK
D Environmental Impacts (VVM para 131-133)					
D.1.1 Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring?	/1/ /3/	DR I	Yes. The EIA of Gansu Guazhou Beidaqiao Wind Power Project was completed by Lanzhou University Research Center for Environmental Quality Assessment Center in April 2008 /3/.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				The EIA of Gansu Guazhou Beidaqiao Wind Power Project was approved by Environmental Protection Administration of Gansu province on 6 August 2008 /3/. There is no special condition that needs monitoring according to the EIA and the approval of EIA for the proposed project /3/.		
D.1.2	Does the project comply with environmental legislation in the host country?	/1/ /3/	DR I	Yes. The EIA of Gansu Guazhou Beidaqiao Wind Power Project was approved by Environmental Protection Administration of Gansu province on 6 August 2008 /3/.		OK
D.1.3	Will the project create any adverse environmental effects?	/1/ /3/	DR I	The project will have no significant impacts on the local environment according to the EIA /3/.		OK
D.1.4	Have identified environmental impacts been addressed in the project design?	/1/ /3/	DR	Yes. It clearly states the environmental impacts in the PDD, which covers air impact, waste water, solid waste, and impact of land disturb.		OK
D.1.5	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	Yes. The analysis of the environmental impacts has been sufficiently described in the PDD.		OK
D.1.6	Are transboundary environmental impacts considered in the analysis?	/1/ /3/	DR	There is no need to consider transboundary environmental impacts.		OK
E Stakeholder Comments (VVM para 128-130)						
E.1.1	Have relevant stakeholders been consulted?	/1/ /10/ /11/	DR I	Yes. A stakeholder meeting was held on 20 September 2009 in Guazhou County under the help from local government. /1/ /10/. Then the project owner carried out a public survey on the proposed project by questionnaires. 30 questionnaires were distributed and 30 of the distributed questionnaires had been returned./11/ The local villagers and residents in the area were		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				included in this survey.		
E.1.2	Have appropriate media been used to invite comments by local stakeholders?	/1/ /10/ /11/	DR I	A public stakeholder meeting and a survey of the potential stakeholders using a questionnaire were implemented.		OK
E.1.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/ /3/	DR	For the renewable energy project as such wind power project, the stakeholder consultation process is not required by regulations or laws in China.		OK
E.1.4	Is a summary of the stakeholder comments received provided?	/1/ /10/ /11/	DR I	Yes. The stakeholder meeting minutes was provided /10/ and 30 copies of questionnaires were also provided /11/, which were verified by DNV to be consistent with the summary in the PDD.		OK
E.1.5	Has due account been taken of any stakeholder comments received?	/1/ /10/ /11/	DR	No negative comments were received from the stakeholder representatives.		OK

Table 3 Resolution of corrective action requests and clarification requests

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CAR 1 The LoA from the host party and Annex I have not been provided.	A.3.1 A.3.2 A.3.3	The LoA from the Netherlands and China has been provided to DNV.	DNV has received the LoAs directly from the project participants issued by the DNAs of China and the Netherlands on 19 April 2011 /23/ and 8 March 2011 /24/, respectively. During the validation, by checking the website link from Chinese DNA /23/ and the e-mail involving the LoA delivery from the DNA of the Netherlands /24/, DNV confirmed the authenticity of the LoAs provided by the project participants and considers that the LoAs comply with the paragraphs 45-48 of the CDM Validation and Verification Manual /25/. The CAR 1 is closed..
CAR 2 The parameters used applied in investment analysis, especially plant load factor, tariff, total investment and O&M costs, need to be justified by cross-checking or other appropriate manner, to be valid and appropriate.	B.5.17 B.5.20 B.5.21 B.5.22 B.5.23 B.5.24 B.5.25	To compare with Similar projects with the capacity of 100-300MW operated after 2002 in Gansu Province, the parameters used applied in investment analysis, especially plant load factor, tariff, total investment and O&M costs, were appropriate and conservative. According to the statistics on Similar projects with the capacity of 100-300MW operated after 2002 in Gansu Province, the tariff range for wind power projects is 0.5206-0.54RMB/kWh, with which the IRR of the proposed project were lower than the benchmark. The statistics on Similar projects with the	OK (1) Total Static Investment: The comparison of investment cost per kWh and per MW between the proposed project and the registered CDM projects in Gansu Province is listed above the Table 1. It can be seen from Table 1 that the investment cost per kWh of 3.98 RMB and the investment cost per MW of 9.518 million RMB were in the range of the other projects. The range of investment cost per Kwh was 3.545 to 4.726 RMB/kWh and the range of investment costs per MW was found to be 7.926 to 11.709 million RMB/MW. The investment costs were further

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		capacity of 100-300MW operated after 2002 in Gansu Province has been provided to DOE.	attempted cross checked against real costs. DNV has checked the actual cost for the wind turbines purchase and the actual cost for the construction in the contracts, the total amount of the wind turbine purchasing price, wind turbines' foundation construction price, wind turbines installation price and the tower purchasing price constitute 80.87% of the static total investment, the actual contract is 1.07% higher than the amount in the FSR /6/ /7/. Hence the budgeted investment costs are conservative. DNV was thus able to confirm that the investment cost applied in the financial analysis is deemed to be appropriate and conservative. (2) Annual Operation and Maintenance Cost: The assumed operation and maintenance cost is taken from the FSR /2/, which is designed based on the Economic Evaluation Code and Parameter for Construction Project /33/. The O&M costs for wind power projects may vary by site location, conditions for transportation, applied technology and number of turbines. As shown in the Table 1 above, the proposed project (with annual operation and maintenance cost 2.83%) is deemed to be in the range of percentage of O&M costs relative to investment costs for similar wind power projects (with the range from 1.74%

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			- 3.87%) located in the same region in Gansu Province, and this enables DNV to confirm that the O&M cost is reasonable. (3) Other cost The term other cost refers to additional production expenses, administrative expenses and operating expenses, except depreciation, maintenance, insurance, material, salary and welfare. This definition was derived from the document “Economic Evaluation Code and Parameters for Project Construction Project” /33/ which was considered as the financing assessment basis and source for preparing FSR. DNV can confirm the “other cost” identified in the FSR is appropriate and it is in line with the relevant regulation for designing FSR in China. Comparing the “other cost” of the proposed project with already registered projects of a similar scale in China, DNV has checked and found that the “other cost” (30 RMB/kW) of the proposed project used in the investment analysis is within the range of the “other cost” (25~40 RMB/kW) for the registered CDM projects. Furthermore, it should be noted that even if other cost were assumed to be zero, the project IRR without CER revenue would be 6.65%, which is still lower than the benchmark of 8%. It indicates that the “other cost” has little impact on the IRR

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			calculation. (4) Annual Power Generation: Annex 11 of CDM-EB 48th meeting report gives a guideline for validation of plant load factor for renewable energy. One option is to use plant load factor provided to the government while applying the project activity for implementation approval. The FSR has this purpose and hence according to current CDM regulation, the checking that the value is in line with the FSR should be considered sufficient for validation of plant load factor. This was the case for this project. According to the FSR /2/, the annual output is estimated based on the long term weather statistic data (30 years) provided by local meteorological station. For estimating the real condition of the wind resources of the project site, the engineering company needs to collect one year wind speed dataset from an anemometer tower installed at the project site. The professional software WAsP was used to select the rich wind source area, and then using software WindFarmer to optimize the location of each turbine for maximize power generation /2/. The yearly data was then processed in professional software to calculate the annual theoretical power generation, from which the annual effective power generation was obtained through

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			discount by considering factors such as air density, trailing stream, wind turbine efficiency etc. Subsequently, the plant load factor of the proposed project is determined. It is DNV's opinion that the determination of plant load factor follows the local standard requirements and conservative. (5) Power Tariff: The tariff of 0.5206 RMB/kWh (Incl. VAT) used in investment analysis for the proposed project, which was estimated in the FSR developed in December 2008 /2/. The present project in Gansu province by having a tendering of tariff. The resulting tariff is 0.5206 RMB/kWh (incl. VAT) and no better tariff can be achieved by the project owner. The tariff of 0.54 RMB/kWh (incl. VAT) has been checked by DNV to be the guiding tariff issued by NDRC in 2009 /46/ . Nevertheless, even by increasing the tariff to the guiding tariff of 0.54 RMB/kWh (incl. VAT) of the latest available tariff, the IRR is 6.70% and still below the benchmark of 8%. Moreover, as the highest wind tariffs in China indicated from CDM Executive Board, the highest tariff in Gansu Province is 0.585 RMB/kWh (incl. VAT) /30/. By using this highest tariff in Gansu Province, the IRR of Gansu Guazhou Beidaqiao Wind Power Project would not cross the benchmark of 8%. Thus the tariff

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			implemented in the PDD is conservative. Hence, it is DNV's opinion that the tariff implemented in the PDD is reasonable. Therefore, DNV confirms that all the tax rates used in the financial analysis of the proposed project are in line with the relevant regulations of the tax rates. In conclusion, based on our local and sectoral expertise, and database of publicly available information, DNV considers that the input values used in the financial analysis are reasonable and are likely to adequately represent the economic situation of the project. The CAR 2 is closed.
CAR 3 In EF calculation spreadsheet, for the combined emission factor, the weights ω_{OM} and ω_{BM} are selected as 0.5 and 0.5, which is not the same as the value in the notification provided by NDRC.	B.6.16	It was only a calculated error in the EF calculation spreadsheet. The corrected EF calculation spreadsheet with the weights ω_{OM} of 0.75 and ω_{BM} of 0.25 has been provided to DOE.	OK. The updated emission reduction spreadsheet has been provided on 17 September 2010. DNV has verified to be correct. The CAR 3 is closed.
CL 1 As of the geographical coordinate of the project is in a range, it needs to give the coordinate for each wind turbine.	A.4.1	The detail geographical coordinate for each wind turbine of the project has been provided according to the report of micro-location selection of the proposed project.	OK. The coordinate for each wind turbine has been provided and verified by DNV. The CL 1 is closed.
CL 2 All the sources of the taxes applied in FSR and PDD for financial analysis like income tax rate, depreciation rate, City Maintenance and Construction Tax rate, Education Surtax etc are required to provide to DOE for verification.	B.5.17 B.5.48	1. Rate of residual value of fixed assets was from the provision on salvage value of the fixed assets issued by State Administration of Taxation that determinates the value among the range of 3%-5% for construction projects in	OK The taxes and depreciation rate applied in the project financial assessment are shown in the Table 3: (a)VAT for equipment 17% VAT is paid as usual for purchased

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		China. 2. Rate of VAT was from Notice on VAT Policy regarding Some Resources Utilization and Other Products issued by Ministry of Finance and State Administration of Taxation that determinates the value of 17% for wind power projects in China. 3. Rate of city construction tax was from the provision on the Rate of city construction tax of the People's Republic of China issued by the State Council of China that determinates the value of 5% for wind power projects in China. 4. Rate of additional education fee was from the provision on the Rate of additional education fee of the People's Republic of China issued by the State Council of China that determinates the value of 3% for wind power projects in China. 5. Rate of income tax was from the law on Enterprise Income Tax of the People's Republic of China issued by the State Council of China that determinates the value of 25% for wind power projects	goods. According to Provisional regulations of the people's republic of China on value added tax from State Council issued on 10 November 2008 and implemented from 1 January 2009 /48/, the equipment VAT can be credited over the operation period against the tariff VAT until the VAT from the equipment VAT is fully recovered. For this project, this happens in the 6th year of operation. (b) VAT on tariff The VAT rate on the tariff of 17% applied to the financial analysis is substantiated by the following arguments. On 13 December 1993, the "Provisional Regulation of Value-added Tax in China" (No.134 [1993]) was issued and became effective on 1 January 1994 /42/. In this Regulation (No.134 [1993]) /42/, the VAT occurred on the sales of electricity was stipulated to be 17%. On 1 December 2001, the "Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on products made through comprehensive utilization of resources and other products" (No. 198 [2001]) /47/ was issued and become effective on 1 January 2002 /47/. As stated in this notice (No.198 [2001]) /47/, the payable value added tax should be half levied for sales of electricity generated from the wind power. Based on the

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		in China. 6. Rate of welfarism was from the provision on Enterprise Income Tax of the People's Republic of China issued by the State Council of China that determinates the value of no more than 14% for wind power projects in China. 7. Depreciation rate of 5 %(equivalent to Depreciation life of 15years) was from the deduction method on fixed assets issued by State Administration of Taxation that determinates the depreciation life of 10-20 years for construction projects in China.	documents introduced above, the VAT rate involved in some wind power projects with the commission dates after 2002 is 8.5%, i.e. half of 17%. However, on 9 December 2008, the “Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products” (No.156 [2008]) /49/ was issued. As stipulated in this notice (No.156 [2008]) /49/, VAT refund half upon levy shall be applicable for selling the electricity generation from wind power etc. The regulation entered into force on 1 January 2009 and the former regulation /47/ was repealed simultaneously. Based on the document introduced above, the VAT rate adopted by the proposed project is 17%. Half of the VAT incurred by the electricity sales has been annually recovered from the 7th year to 21st year after the equipment VAT is fully recovered. The income tax rate (25%) is derived from the FSR, which is in line with the Law of the People's Republic of China on Enterprise Income Tax /45/. The rate of residual value (5%) is derived from the FSR and is recovered at the end of operation period in the project IRR calculation spreadsheet /4/. According to the Implementation Rules of the Enterprise

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			Income Tax Law /45/, the net residual value of a fixed asset shall be reasonably determined by an enterprise according to the nature and condition of the fixed asset. It may not be changed once determined. The depreciation period of 15 year is derived from the FSR and thus the depreciation rate per year is 6.33%. According to the Implementation Rules of the Enterprise Income Tax Law /45/, an enterprise shall begin computing depreciation for a fixed asset in the month following the month in which the asset is into service, and shall cease computing depreciation for a fixed asset in the month following in which the asset's use is ceased. The minimum number of years for computing depreciation of fixed assets is 10 years for the manufacturing and business operations. Therefore, the depreciation period of 15 years for the proposed project is in line with the the Implementation Rules of the Enterprise Income Tax Law /45/ which is acceptable. The city maintenance and construction tax rate is 5% of VAT and the additional education tax is 3% of VAT which is derived from City Construction Tax and Additional Education Fee Policy /41/, which is widely used in the design phase of projects and is also the actual tax rate when plants are under operation.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			According to the guidance of EB51 Annex 58, the interest payable should be taken into account of the income tax calculation in cases where the benchmark applied in the investment analysis is post tax. As for the proposed project, the IRR benchmark of 8% is post tax and the interest tax payable has been verified to be included in the calculation of the income tax. Therefore, DNV confirms that all the tax rates used in the financial analysis of the proposed project are in line with the relevant regulations of the tax rates In conclusion, based on our local and sectoral expertise, and database of publicly available information, DNV considers that all the taxes applied in FSR and PDD for financial analysis are reasonable. The CL 2 is closed.
CL 3 The project_IRR with CERs is not included in the PDD. The project proponent is requested to include the information in the PDD.	A.5.19	The project IRR with CERs has been included in the updated PDD version 2.0.	OK. The project IRR with CERs has been included and verified by DNV. The CL 3 is closed.
CL 4 It needs to be justified whether the variation of total investment and O&M cost could decrease to exceed the benchmark.	B.5.28 B.5.48	According to the analysis on total investment and O&M cost in Sub-step 2d. Sensitivity analysis, it was impossible to decrease to exceed the benchmark. Furthermore, to compare with Similar projects with the capacity of 100-300MW operated after 2002 in Gansu Province, the	OK. A sensitivity analysis has been carried out for parameters contributing more than 20% to revenues or costs to check the robustness of the financial analysis. Reasonable variations of the total static investment, annual operational costs, and annual output

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		proposed project is addtionality, though the average value on total investment and O&M cost was used to estimate the IRR, respectively.	delivered to the grid and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation. 1) Static investment costs: DNV was able to confirm that 15.55% decrease in investment costs is unlikely to happen, as a large part of the total investment of the proposed project goes towards purchase and installation of electric equipments (wind turbines). Compared to the estimations in the FSR, the real costs of wind turbines procurement and installation are 1.07% more than the values in the FSR /2/, which indicates that the actual investment cost could not decrease. Therefore the static total investment is not likely to decrease by more than 15.55%. 2) Annual O&M cost: The annual O&M cost consists of maintenance cost, material costs, salary/welfare, insurance cost and other cost /33/. And the prices of materials and salaries of the employees are gradually increasing in China in recent years /33/, which will lead to gradual increase of annual O&M cost. Therefore, the annual O&M cost decreases by 53.6% to reach benchmark 8% will unlikely happen.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			3) Electricity tariff: To reach the 8% benchmark, power tariff must increase 12.6% to 0.5862 RMB/kWh, which is not likely to happen. Based on the above mentioned cross-checking, it was confirmed that from year 2002 till now, the highest tariff has been found to be consistently 0.563 RMB/kWh (refer to Table 2). 4) Annual output delivered to the grid: According to the FSR /2/, the annual output is estimated based on the long term (from 1978 to 2007) weather statistic data provided by local meteorological station and wind resources measurement. Moreover, the trend of annually average wind speed of the project site is stable and trends to decrease over the recent years. The power load factor is thus likely to fluctuate only within a small range. Hence, it is unlikely to increase on average by 26.76%. The sensitive analysis above shows that very unrealistic favourable circumstances would be needed for the IRR to reach the benchmark. All the description has been updated in the revised PDD version 2.0 /1/ The CL 4 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CL 5 More comprehensive information for wind power projects should be provided in the common practice analysis in order to demonstrate the additionality of the project activity.	B.5.42 B.5.43 B.5.44 B.5.45 B.5.46 B.5.47 B.5.48	The statistics on Similar projects with the capacity of 100-300MW operated after 2002 in Gansu Province has been added in the common practice analysis to state clearly the additionality of the project activity in the updated PDD version 2.0.	OK. Existing wind farms in Gansu Province established from year 2002 to year 2009 (the capacity of large tan 15MW) which are derived from registration website from “China Wind Farms Capacity Statistic in 2007”, UNFCCC and web site of China DNA have been considered for the analysis /36/. It is confirmed that all these wind power projects have applied for CDM projects or registered as CDM projects /50/. Thus, DNV was able to confirm that the project is not common practice. The relevant information has been updated in the section B.5 in the revised PDD version 2.0 /1/. Hence, DNV can confirm that that emission reductions resulting from the project are additional. The CL 5 is closed.
CL 6 The details of training plan and record have not been provided to validation team.	B.7.1	The training plan and records on CDM and operation in 2010 have been provided to DOE. Moreover, In Section B.7.2 of PDD, the relevant description on CDM training has been regulated.	OK The client has provided the training plan and records on CDM and operation. DNV can confirm that procedure for training of monitoring personnel is identified in the PDD. The CL 6 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CL 7 The installation and location of all meters for monitoring needs to be clearly stated in PDD according to the physical truth.	B.7.5 B.7.8	According to the approval letter for the monitoring system of the proposed project issued by the local power grid company, the installation and location of all meters for monitoring has been stated in the updated PDD version 2.0.	OK The location of the meters has been clearly described in PDD. It has been revised in Section B.7 of the PDD 2.0 /1/. DNV can confirm that the monitoring plan is in line with the Methodology of ACM0002 version 12.1.0. The CL 7 is closed.
CL 8 The operational lifetime of the project needs to be clearly stated in the PDD.	C.1.3	The operational lifetime of the project is 20 years according to the FSR of the proposed project. Moreover, the relevant sections have been updated in the PDD version 2.0.	OK It has been revised in Section C.1 of the PDD 2.0 /1/. DNV confirm that operational lifetime of the project is corrected. The CL 8 is closed.
CL 9 It is requested to clarify/update the following in the PDD: • The reference given under footnote 3, 8, 9 cannot be opened and need to be updated, along with a description of this reference in English. • In the PDD section A.2. Description of the project activity (b), it is mentioned that the installation and operation of 200 sets of wind turbines. • In table section A.4.3 Technology to be employed by the project activity of the PDD, it is mentioned that 33 sets of turbines. • In the PDD section A.6.1 Explanation of methodology choices step 7, it is mentioned that $EG_{facility,y}$ be 116.574 GWh.	N/A section A.2 A.4.3 A.6.1 B.5 of the PDD Version1.0	The references given under footnote 3, 8, 9 have be updated in the PDD version 2.0. The other inconsistencies mentioned in CL9 were clerical errors. In the PDD version 2.0, the errors have been corrected according to the data of the FSR.	OK. The evidences have been provided and checked by DNV /22/. DNV can confirm that solar PV, biomass and geothermal of the same annual electricity output as the proposed project are far from being attractive investment in China power grid. The other inconsistencies have been revised in the PDD version 2.0, which is deemed by DNV to be acceptable. The CL 9 is closed.

Table 4 Forward action requests

Forward action request	Reference to Table 2	Response by project participants
N/A	N/A	N/A

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APPENDIX B

CURRICULA VITAE OF THE VALIDATION TEAM MEMBER

Mr. Zhang Lei, Lucas holds a Bachelor Degree in Applied Chemistry. Prior to joining DNV, He had four years and seven months experience in coal gasification industry covering the process of coke production line and wastewater treatment. His experience also covers the fields of environmental management and environmental impact assessment. He has experience of around one year in validation and verification of CDM projects in DNV.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in "Waste Handling and Disposal".

Mr. Gong Zheng, Justin holds a Bachelor and a Master Degree in Chemical Engineering. Having an overall experience of around five years. Prior to joining DNV, he had more than three years experience in project operation and pre-planning experience in the operation of energy plants and he was involved in energy design and supply. His experience also covers the fields of project management and cleaner production in chemical industries.

He has experience of around 2 years in validation and verification of numerous CDM projects in DNV. All these projects are located in China.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in "Energy Generation from Renewable Energy Sources".

Mr. Tang Zhiang, Walter holds a Bachelor Degree in Thermodynamic Engineering and a Master Degree in Business Administration. Having an overall experience of around twelve years. Prior to joining DNV, he had around 5 years in the field of power industry covering of consulting and engineering for thermal power, wind power, hydropower and solar energy projects. His experience also covers the field of space industry for thermal design, the energy analysis and thermal control for about 4 years.

He has gained the relevant financial and investment knowledge through his courses in MBA. He has applied his financial and investment knowledge in his consulting work for the power industry, such as investment risk analysis, financial accounting, investment parameters assessment, etc.

He has experience of more than 3 years in validation and verification of numerous CDM, VCS and GS projects in DNV both in China and abroad.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in "Energy Generation from Renewable Energy Sources".

Simon Wong Yon Sing holds a Bachelor's Degree in Chemical Engineering with Environmental Engineering, with a year experience in the field of design and operation/maintenance of wastewater treatment as part of working in wastewater design & equipment supply services. His experience in designing and maintaining the wastewater treatment systems covers the fields of various manufacturing and chemical industries in Malaysia. He has experience of more than 3 years in validation and verification of numerous CDM projects in DNV, both in Malaysia and abroad. His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in Energy Generation

from Renewable Energy Sources, Waste Handling and Disposal and Animal Waste Management System.