



VALIDATION REPORT

CARBON RESOURCE MANAGEMENT LTD

VALIDATION OF THE SOUTHERN DISTRICT HEATING NETWORK IN URUMQI CITY

REPORT No. **BVC/CHINA-VAL/0085/2008**

REVISION No. **03**

BUREAU VERITAS CERTIFICATION

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Summary:

Bureau Veritas Certification has made the validation of the Southern District Heating Network in Urumqi City owned by Urumqi Heating Supply Co., Ltd located in Tianshan District, Urumqi City, Xinjiang Uygur Autonomous Region, P.R. China 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up on-site visit and interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CLs and CARs), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology AM0058 version 03.1 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: BVC/CHINA-Val/0085/2008	Subject Group: CDM
Project title: Southern District Heating Network in Urumqi City	
Work carried out by: Liao Ling (Team Leader) Jasmine Tang Xuemei (Team Member) Ziyuan Zeng (Team Member) Wang Sheng (Expert)	
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ABBREVIATIONS

BM	Build Margin
BVC	Bureau Veritas Certification
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CH ₄	Methane
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
DRC	Development & Reform Commission
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau
ERPA	Emission Reduction Purchase Agreement
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GSP	Global Stakeholders Process
GWP	Global Warming Potential
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
ISHC	International Stakeholder Consultation
ISO	International Organization for Standardization
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
NWPG	Northwest Power Grid
NDRC	National Development and Reform Commission
NGO	Non Government Organization
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation & Verification Manual



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1 INTRODUCTION

Carbon Resource Management Ltd (the project participant from Annex I Party) has commissioned Bureau Veritas Certification (hereinafter refer to as "BVC") to validate its CDM project Southern District Heating Network in Urumqi City (hereinafter called "the Project") in Tianshan District, Urumqi City, Xinjiang Uygur Autonomous Region, P.R. China.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meet the stated requirements and 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).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team consists of the following personnel:

Liao Ling	Team Leader,
Bureau Veritas Certification, Climate Change Lead Verifier	
Jasmine Tang Xuemei	Team Member,
Bureau Veritas Certification, Climate Change Lead Verifier	
Ziyuan Zeng	Team Member
Bureau Veritas Certification, Climate Change Lead Verifier	



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Engineer

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual /1/ issued by the Executive Board at its 55th meeting on 30/07/2010. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, 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 completed validation protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Project Design Document (PDD) submitted by Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. revised the PDD and resubmitted it on 15/06/2011 and the validation conclusions presented in this report relate to the project as described in the PDD version 06 (Ref-92).

2.2 Follow-up Interviews

On 13/05/2009, Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the PP, the consultant and local stakeholders were interviewed (see Section 6-References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview Topics

Interviewed organization	Interview topics
Urumqi Heating Supply Co., Ltd (Project owner and participant from Host Party, hereafter referred to as the "PP")	<ul style="list-style-type: none"> ➤ Project background information and CDM consideration. ➤ Project technology, operation, maintenance and monitoring capability. ➤ Project monitoring and management plan. ➤ Stakeholder consultation process. ➤ Project approval status (include EIA approval, CDM project approval status) ➤ Heating supply status in the area ➤ The facilities and equipments in the Xinjiang Huadian Hongyanchi Power Plant and sample of the dispersive boiler houses ➤ Government policies related to central heating projects
Local Stakeholder	<ul style="list-style-type: none"> ➤ Project background in details ➤ Stakeholder comments ➤ Social and environmental impact of the Project
Global Climate Change Institute, INET, Tsinghua University, and Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. (The CDM Consultants)	<ul style="list-style-type: none"> ➤ Applicability of selected methodology. ➤ Baseline determination. ➤ Emission reductions calculation. ➤ Emission reduction monitoring plan.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

Corrective Action Requests (CAR) is issued, where:

- (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.

BVC may use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

BVC may also use the term Forward Action Request (FAR) during validation to highlight issues related to project implementation that require review during the first verification of the project activity.

To guarantee the transparency of the verification process, the concerns raised are documented in



more detail in the verification protocol in Appendix A.

2.4 Internal Quality Control

The validation report underwent a technical review before requesting registration of the project activity. The technical review was performed by a qualified technical reviewer.

3 VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

- The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.
- The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **15** Corrective Action Requests, **41** Clarification Requests and **1** Forward Action Request.

The CARs and CLs were closed based on adequate responses from the Project Participant which meet the applicable requirements. They have been reassessed before their formal acceptance and closure

The number between brackets at the end of each section correspond to the VVM paragraph

3.1 Approval (49-50)

The letters of approval have been provided and the following support documents have been verified by BVC.

- ✍ The China's DNA has issued a Letter of Approval (No. 1381) in Aug. 2008, authorizing Urumqi Heating Supply Co., Ltd as the Project Participant and confirms that Southern District Heating Network in Urumqi City contributes to China's Sustainable development. (Ref-3)
- ✍ The UK's DNA has issued a Letter of Approval (Ref: CRML/20/2009) on 24/08/2009, authorizing Carbon Resource Management Ltd as the Project Participant for the Project. (Ref-4)

BVC received these letters of approval from the project participants and does not doubt the letters' authenticity.

The letters of approval do not contain a specific version of both the PDD and the validation report.

The title and contents of the letter of approvals refer to the precise proposed CDM project activity title in the PDD being submitted for registration.

- ✍ Bureau Veritas Certification considers the letters of approval are in accordance with para. **45 - 48 /VVM**.
- ✍ Complying with para. **45 and 46/VVM**, BVC recognizes that:



- a). Both letters indicate that each participating Party is a Party to the Kyoto Protocol;
- b). Both letters indicate that the participation is voluntary;
- c). The China's LoA also confirms that the proposed CDM project activity contributes to the sustainable development of China (host country);
- d). The title and contents of the LoAs refer to the precise proposed CDM project activity title in the PDD being submitted for registration;
- e). Based on the information given in these letters, BVC considers the approval as unconditional with respect to the items above.

☞ Complying with para. 49 and 50/VVM, BVC recognizes that the Project is helpful to fulfill the host country's goals of promoting sustainable development. The Project is expected to be in line with host-country specific CDM requirements because of:

- a). Improving environmental quality by replacing the polluted small boilers;
- b). Improving energy efficiency by using high efficient heat source from CHP instead of the isolated low efficient coal-fired boilers.
- c). Reducing Greenhouse Gas emissions;
- d). Improving the residents' living standards and promoting the local economic development.

There are also evidences in various approvals issued by the local government of host country, which are summarized as below:

- ✍ Environment Impact Assessment (EIA) approved by Environmental Protection Bureau of Xinjiang Uygur Autonomous Region on 17/06/2004 (Code: XHKH [2004] No.271). (Ref-11)
- ✍ Feasibility Study Report (FSR) Approval issued by Xinjiang Uygur Autonomous Region Development & Reform Commission on 29/03/2004 (Code: XJTZ [2004] No.379) (Ref-10)
- ✍ The Project is a district heating supply project and the development of such centralized heating supply is in line with China industry policies. (Ref-7)

Prior to the implementation of the Project, the heat supplied by the Project was supplied by existing isolated district heating networks, supplied by coal-fired boilers, without a primary heating network. The baseline scenario identified in the PDD is continued operation or rehabilitation of existing isolated district heating networks, or establishment of new isolated district heating networks for new buildings supplied by coal-fired boilers, without the introduction of a primary heating network, which is dominated by the thermal power generation. The project scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emission Reductions (CERs) under the CDM, based on the analysis presented in the PDD.

The overall layout of the Project is sound, and the geographical (Tianshan District, Urumqi City, Xinjiang Uygur Autonomous Region, P. R. China) and temporal (10 years) boundary of the Project is clearly defined.

☞ 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 the host country.

3.2 Participation (54)

The participation for each project participant has been approved by a Party of the Kyoto Protocol.

☞ Complying with **para.54/VVM**, BVC hereby confirms that by referring to information on the UNFCCC website:

<http://maindb.unfccc.int/public/country.pl?country=CN> and

<http://maindb.unfccc.int/public/country.pl?country=GB>.

3.3 Project design document (57)

☞ Complying with **para.57/VVM**, BVC hereby confirms that the PDD complies with the latest Project Design Document Form (CDM-PDD) version 3.0 and guidance documents for completion of PDD version 07.

3.4 Changes in the Project Activity

By site visit and document reviewing, the following changes in project were discovered as compared to details mentioned in webhosted PDD, and the actual information has been correctly used in the final PDD which is being submitted for requesting for registration.

Table 2 Change to the Project activity compare with the GSP PDD

Item	GSP PDD	Final PDD
Geographical coordinates of the project	E87°36'20" ~ E87°39'25" and N43°45'15" ~ N44°48'54".	E87°36'20"~ E87°39'25" and N43°43'56" ~N43°49'31"
Quantities of boilers and boiler houses	340 boilers in 144 boiler houses existing prior to the implementation of the Project	333 small boilers in 142 isolated small boiler houses and 15 large boilers in 3 large boiler houses existing prior to the implementation of the Project
Quantities Substation	197 substations will be included in the Project	193 substations will be included in the Project
Existing Area	14.09 million m ² existing prior to the implementation of the Project	14.13 million m ² existing prior to the implementation of the Project
Efficiency of existing boilers	55%	Specific efficiency of each boiler houses listed in Annex 3 of the PDD.
Coal consumption in the CHP	The coal consumption after fully commission of the Project was estimated in the PDD as follow:	The coal consumption after fully commission of the Project was estimated by authorized entity as follow:



	2,537,142 tons coal for CHP 242 134 tons coal for HOBs	2,256,626 tons raw coal for CHP, 255,611 tons raw coal
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These changes have been checked against the relevant evidences and found consistent, as follow:

1) The geographical coordinates of the Project

The actual heating area is regulated by government, and the Heating Supply Schematic Plan Diagrams in Southern Urumqi and the detail information regarding the buildings have been checked; therefore, the typo in the coordinates will not impact the determination of emission reductions.

2) The quantities of the boilers and boiler houses

The quantities of boilers and boiler houses in the PDD version 01 were incorrect; the accurate data in the final version of PDD have been checked against the FSR (Ref-8) and the initial survey forms and found consistent (Ref-12, Ref-13), the emission reductions determination based on the value in the final version based on the correct and accurate data is therefore appropriate.

3) Quantity of substations

The quantity of substations in the PDD version 01 was incorrect, by checking the FSR. BVC can confirm that the quantity of substations in the final version of the PDD was consistent with the current situation. The quantity of substations will be monitored as well as the heat supplied by each substation.

4) Existing Area

In the final version of PDD, there is 40,000m² heating area larger than the one in the PDD version 01, the heating area has been have been checked against the FSR (Ref-8) and the initial survey forms and found consistent (Ref-12, Ref-13), and will be monitored ex-post.

5) Efficiency of existing boilers

The efficiency of existing boilers in the PDD version 01 was an approximate value sourced from the EIA, which was not in line with the methodology. In the final version of PDD, the efficiency of each existing boiler house was determined by qualified industrial entity based on the historical fuel consumption data; and in line with the methodology and conservative methods have been taken into account.

6) Coal consumption in the CHP and HOBs

The coal consumption in the CHP and HOBs in the PDD version 01 was estimated by the CDM consultant; and the values of both the CHP and HOBs in the final version of the PDD were estimated by industrial entity and more accurate. The coal consumption by both CHP and HOBs will be monitored ex-post.

Subsequently, BVC can confirm that the changes to the description of the Project are reasonable.

3.5 Project description (64)

The Project is located in Tianshan District, Urumqi City, Xinjiang Uygur Autonomous Region, People's Republic of China, the geographical coordinates of the heating area is 43°43'56" to 43°49'31" North and the longitude range is 87°36'20" to 87°39'25" East.

Prior to the implementation of the Project, the districts that will be heated by the Project were heated by existing isolated district heating networks using inefficient and isolated coal-fired boilers in boiler houses, and the new district will be heated by existing isolated heating network or new isolated heating networks. The Project will introduce a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers, utilize the heat extracted from four effective exhaust condensation units of Xinjiang Huadian Hongyanchi Power Plant and four heat only boiler houses.

The baseline scenario is the same as the scenario existing prior to the implementation of the Project, the key parameters of the Project as follow:

Table 3 Parameter of the scenario existing and Project

Item		Existing scenario	Project scenario
Installed capacity	Existing	333 boilers in 142 small boiler houses, and 15 boilers in 3 large boiler houses existing prior to the implementation of the Project; the individual capacity of each boiler have been listed in the Annex 3 of the PDD.	4 × 200MW turbines with 754 MW heat supplied capacity and 691 MW of the 18 heat only boiler in four peak load supplementary boiler houses (3 of them were existing boiler houses and 1 commissioned after the implementation of the Project) and the total thermal capacity are: 754 MW+691 MW= 1445 MW
	Forecast	The added capacity plus the existing capacity should meet the heating supply demand	
Heating area	Existing	14,130,000 m ²	Beginning from 14,130,000m ² and will finally reach 17,490,000m ²
	forecast	Finally would reach 17,490,000m ² , among which, 14,130,000m ² are old existing buildings, 840,000m ² are new constructed buildings will be connected to the existing boiler houses, and 2,520,000m ² are new buildings will be heated by new boiler houses.	
Indoor temperature		18°C	18°C
Heating period		181 days/year	181 days/year

As the small boilers for heating are inefficiency, the Project improves the thermal energy efficiency and reduces the CO₂ emissions, the estimated annual emission reductions are 1,165,472tCO₂e



after the Project is fully commissioned, and the estimated average annual emission reductions are 1,155,074tCO₂e during the ten years of its fixed crediting period.

The processes undertaken by BVC to validate the accuracy and completeness of the Project description include document review and cross check with the FSR and relevant approvals issued by local government.

☞ Complying with **para.64/VVM**, BVC hereby confirms that the project description in PDD (Ref-2) is accurate and complete in all respects.

3.6 Baseline and monitoring methodology

3.6.1 Baseline and monitoring methodology

The Project employs the approved baseline and monitoring methodology AM0058 version 03.1 – “Introduction of a new primary district heating system” valid from 11/06/2009. (/2/)

By on-site visiting, interviewing with the PP and reviewing relevant documents, BVC confirms that the Project complies with the applicability conditions of methodology AM0058 version 03.1:

➤ The methodology is applicable to Project:

The Project is a new primary district heating system to supply heat to residential and commercial consumers, where the heat is extracted from four existing electricity generation units (4×200MW) which belong to the grid-connected Xinjiang Huadian Hongyanchi Power Plant and four heat only boiler houses. The power plant had no heat extraction prior to the project activity. The FSR, FSR Approval issued by local government and the Heating Supply Schematic Plan Diagrams have been checked and found consistent. (Ref-8, Ref-10, Ref-21)

➤ The applicable conditions of the methodology are met, and

(1) The geographical extent of the Project boundary can be clearly identified, including

- ◆ The location of existing and new buildings connected to the district heating system,
- ◆ The identification of boilers and sub-stations and isolated heating networks connected to them
- ◆ The location and interconnections of cogeneration units at Xinjiang Huadian Hongyanchi Power Plant.

The FSR, FSR Approval issued by local government and the Heating Supply Schematic Plan Diagrams have been checked and found consistent. (Ref-8, Ref-10, Ref-19)

(2) Xinjiang Huadian Hongyanchi Power Plant, which supplied heat to the district heating network was commissioned more than 3 years prior to the Project and operates in accordance with the following conditions:

- ◆ The heat is extracted from Xinjiang Huadian Hongyanchi Power Plant, which is a grid-connected coal-fired power plant;
- ◆ Only coal is used in the Xinjiang Huadian Hongyanchi Power Plant (a maximum of 1%



of auxiliary fuel may be used for start-up, etc.). The same type of coal is fired in the Xinjiang Huadian Hongyanchi Power Plant in the baseline and project scenarios.

- ◆ The power plant was commissioned in Sep. 2000 and the heat extraction started in Oct, 2005. The technical lifetime of the CHP plant is 30 years before and after the implementation of project activity. After the implementation of the project activity, the heat is simply extracted from the steam turbine, which does not result in any major integrated production changes at the power plant. Therefore, the project activity does not lead to the increase in the technical lifetime of the CHP plant and does not result in any major integrated production changes at the CHP plant.

The Monthly Operation Records and the Statement on Basic Data Issued by Xinjiang Huadian Hongyanchi Power Plant have been checked and found consistent. (Ref-21, Ref-22)

(3) All fossil fuel fired heat only boilers operate according to the following conditions:

- ◆ The heat supplied to the district heating system is only used for space heating of buildings in the residential and commercial sector, but not for production processes.
- ◆ Only coal is used in each of the boilers included in the project boundary (less than 1% of auxiliary fuel is used for start-up, etc.).

➤ The Project will not count for the following potential emission reductions:

- (1) Emission reductions resulting from the supply of hot tap water through the district heating system.
- (2) Emission reductions resulting from the inclusion in the district heating system those areas, were in the baseline scenario heating was provided on an individual basis, e.g. by coal-fired stoves, electric appliances or boilers in individual apartments.
- (3) Emission reductions resulting from a decrease in heat losses due to the water losses or from demand-side measures.
- (4) Emission reductions resulting from heat supply to new residential areas, in cases where more than 50% of the annual heat production originates from heat-only boilers and less than 50% of heat comes from the power plant within the primary district heating system as the heat supplied by heat only boilers only account for approximately 28.55% in total. The heat extracted from the CHP and the HOBs will be monitored, and if the heat from HOBs is more than 50%, the emission reductions from new buildings will not be counted for.

The Project will not supply hot tap water, no areas in the Project were heating by individual basis in the baseline scenario; All heat supplied to final consumers will be measured at each substation i as part of the monitoring plan to determinate the emission reduction. Therefore no emission reductions resulting from a decrease in heat losses due to water losses or demand-side measures will be counted for; which have been checked against the FSR and its approval and found consistent. (Ref-8, Ref-10)

☞ Complying with **para.76/VVM**, BVC hereby confirms that the selected baseline and monitoring



methodology, tool and other methodology component is previously approved by the CDM Executive Board, and applicable to the Project, which complies with all the applicability conditions therein.

- ☞ Complying with **para.77/VVM**, based on the on-site assessment and documents reviewing, BVC hereby confirms that, as a result of the implementation of the Project, there are no greenhouse gas emissions occurring within the project boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

3.6.2 Project boundary (80)

The spatial extent of the Project boundary is clearly defined in line with the AM0058 version 03.1, the physical delineation of project boundary includes:

- The site of the power plant, Xinjiang Huadian Hongyanchi Power Plant located in Urumqi city, including the cogeneration units and all interrelated production units;
- The sites of four heat only supplementary boilers houses;
- The district heating system connected to the heat sources, including pipes, sub-stations and buildings that will be connected.

- ☞ Complying with **para.80/VVM**, BVC hereby confirms that the identification of Project boundary is in line with the delineation confirmed by the government authorities, (Ref-8, Ref-10, Ref-19) and the grid boundary is in line with the “Notification on Determining Baseline Emission Factor of China’s Grid” published by China’s DNA on 18/07/2008. (Ref-51) During on-site visit, via observations of the physical site and interviewed with the representatives from government authority, BVC hereby confirms that the identified boundary and the selected sources and gases are justified for the Project.

3.6.3 Baseline identification (87 - 88)

The Project is a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers, the PDD identified the baseline scenario by properly applying the procedures given by the methodology AM0058 version 03.1.

In accordance with AM0058 version 03.1, the baseline was determined using the latest approved version of the “Combined tool to identify the baseline scenario and demonstrate additionality” (version 2.2):

Before identifying the baseline scenario, according to the AM0058 version 03.1, categories j for buildings included in the project boundary has been defined on the basis of the following common attributes:

- Type of technology employed by the heating system(s), to which buildings in category j would be connected in the baseline scenario;
- Fuel type used by the heating system(s), to which buildings in category j would be connected in the baseline scenario;

- Type of buildings/sub-area (i.e. existing or new).

Totally three categories of buildings involved in the project, classified by their heating sub-areas, as follow:

Table 4 Category of Buildings

Category <i>j</i>		Area (m ²)	Description
Existing buildings	1	14,130,000	Buildings in a part of the area supplied by a sub-station, during the project activity, that were connected to an existing isolated heat distribution network (i.e. to an existing a boiler house) before the start of the project activity.
	2	840,000	Recently constructed buildings (i.e. built after the start of the project activity either next to existing buildings or in place of a demolished building) that are connected to sub-stations that, as a result of the project activity, replace old boiler houses, supplying to existing isolated heat distribution network, should be treated as existing buildings.
New buildings	3	2,520,000	Buildings in a part of the area supplied by a sub-station, during the project activity, which are constructed after the start of the implementation of the project activity. These are buildings constructed in an area which prior to project activity did not have any heat distribution network.

All identified categories have been described transparently in the Annex 3 of the PDD, and the choices of categories have been justified by referring to following documents:

- The initial statistical data of the isolated boilers collected by Urumqi Heating Supply Co., Ltd before the Project implementation (Ref-16).
- Heating Supply Schematic Plan Diagrams issued by the heating authority of Urumqi. (Ref-19)
- Approved FSR provided by the district heating company, i.e. the PP. (Ref-8)

According to the methodology, the PDD should transparently document which buildings belong to which category *j*, the data and correspondence relationship are available, the information have been checked against the evidences and found consistent (Ref-8, Ref-16, Ref-19); however, since the project covers 17.49 million m² area, the district includes many sensitive and confidential entities, such as location of military camp, etc, such information is treated as national confidential information according to Chinese law. BVC can confirm that the information provided in the PDD is detailed enough for determination of emission reductions. The accurate buildings information will not be included in the PDD but will be confidential evidence submitted to CDM EB and will not be published; this is in line with paragraph 6 of the CDM modalities and procedures.

Step 1: Identification of alternative scenarios



In step 1, all alternative scenarios that available to the PP and that provide outputs or services (i.e. heat supply) with comparable quality as the Project were identified. The output and services regarding heating service as the Project in terms of:

- The heating area of building category 1 is 14,130,000 m²; the area of building category 2 is 840,000m², the area of building category 3 is 2,520,000m², the total heating area is 17,490,000m².
- The mean temperature during heating period is -7.4°C, the total heating period is 181 days, and heating target for the indoor temperature is not lower than 18°C.

The methodology AM0058 version 03.1 requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, as follow:

- 1) Introduction of a new integrated district heating system(s) connected by a new primary network:
 - (a) The proposed project activity undertaken without being registered as a CDM project activity;
 - (b) The introduction of a new district heating system, but with a different configuration for heat generation;
 - (c) The replacement of the heat-only boilers in the existing network(s) by new heat-only boilers.

As for scenario 1(a), the Project is a district heating system using heat from existing cogeneration power plant and large heat only boilers, which is technology feasible and listed in the Energy Conservation Law of the P.R. China; therefore it is a credible and realistic scenario.

As for scenarios 1(b) and 1(c), since Xinjiang Huadian Hongyanchi Power Plant has enough heating capacity (Ref-21), to use the heat from other power plants far away or large heating only plants for heating source for Southern District Heating Network in Urumqi City is not realistic and credible; and the average remaining lifetime of the existing heat only boilers is 14.92 years (Ref-76), to replace the existing heat only boilers by new heat only boilers is not realistic. And as common sense in China, oil and gas are more expensive than coal in China, and using these two types of fuel to replace coal for heating in Urumqi is not realistic. Other heat generation configurations, such as ground source heat pump or geothermal resources, are not commercially available in Urumqi. As discussed above, alternatives 1(b) and 1(c) are not realistic and credible scenarios.

- 2) Continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the following technologies:
 - (a) Coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network;
 - (b) Natural gas fired boilers in boiler houses, supplying several buildings through a small heat distribution network;



- (c) Oil fired boilers in boiler houses, supplying several buildings through a small heat distribution network;
- (d) Small decentralized cogeneration plants;
- (e) Renewable energy sources, such as biomass or solar thermal collectors, connected to a small heat distribution network.

The scenario prior to the implementation of the Project is that the districts that will be heated by the Project were heated by existing isolated district heating networks using inefficient and isolated coal-fired boilers in boiler houses, and the new district will be heated by existing isolated heating network or new isolated heating networks. Therefore, scenario 2(a) is one of realistic and credible baseline scenarios.

According to the Investigation of Energy Price in Cities (Ref-31) and the Present Condition and Prospects for the Heat System of Gas (Ref-33), the heating costs of oil and gas are far higher than coal; therefore, using oil and/or gas for heating is unacceptable; therefore, scenarios 2(b) and 2(c) are not realistic and credible.

According to the reports issued by NDRC, small cogeneration plants are not attractive financially and even face to be closed-down (Ref-34), therefore, scenario 2(d) is not realistic and credible.

Solar and geothermal energy for heating are incredible alternatives because their immature technology development (Ref-32, Ref-33); and using biomass as energy for heating is also incredible as its difficulty and cost on collection, storage, transport and combustion (Ref-35). Therefore, scenario 2(e), using renewable energy sources connected to a small heat distribution network, is not realistic and credible.

3) Continued use or introduction of building isolated heating networks using:

- (a) Coal fired boilers for individual buildings;
- (b) Natural gas fired boilers for individual buildings;
- (c) Oil fired boilers for individual buildings.

4) Continued use or introduction of individual heat supply solutions:

- (a) Coal fired stoves for individual apartments;
- (b) Natural gas fired stoves for individual apartments;
- (c) Oil fired stoves for individual apartments;
- (d) Electricity (e.g. off-peak storage heating);
- (e) Individual heating devices using renewable energy sources, e.g. solar thermal collectors;
- (f) Individual heating devices using non-renewable biomass.

According to the confirmation from Heat Supply Administrative Office of Urumqi City (Ref-16), no boilers for individual buildings/apartment, no individual natural gas-fired stoves, oil-fired stoves,



heating devices using renewable energy sources or non-renewable biomass for individual heat supply solutions were involved in the area that will be heated by the Project.

According to the Implementation Measures on City Centralize Heating Industrial Policy (Ref-37), coal-fired boilers for individual buildings are strictly forbidden to be constructed for new buildings in city; therefore scenario 3(a) is not realistic.

As the coal fired stoves have lower efficiency and resulted air pollution, which technology is backward and does not match the consuming need of the Project; and strictly forbidden to be constructed for new buildings in city (Ref-37), so 4(a) is not realistic and credible.

As same as the reasons for excluding the scenarios 2(b) and 2(c), the heating costs of oil and gas are far higher than coal; therefore, using oil and/or gas for heating is unacceptable; therefore, scenarios 3(b), 3(c), 4(b) and 4(c) are not realistic and credible.

The heating cost using electricity is too higher and therefore unsuitable for so large scale heating. (Ref-31)

And according to the Administrative Measures on City District Boiler Heating (Ref-39), the new buildings should be heated by district heating networks; no individual heating supply solutions are permitted. Therefore, all scenarios of alternative 4 are not realistic and credible.

It should be noted that in the result of stakeholder survey, there were some stakeholders still used individual coal fired heating boilers or individual small stoves in winter for heating; however, these buildings existed prior to the publishing of regulation (Ref-37, Ref-38), and did not have district heating conditions and were not included in existing buildings connected to existing boiler houses of the Project (Ref-38). If these buildings are demolished and new buildings are constructed in those areas, the new buildings will be connected to small isolated heating system in the absence of the Project, which has been confirmed by national regulation and by local authorized government. (Ref-37, Ref-38)

As discussed above, the alternative scenarios 1(b), 1(c), 2 (b), 2(c), 2(d), 2(e), all sub scenarios of alternative 3 and alternative 4 are not realistic and credible, BVC has checked the relevant documents/regulations and found consistent.

Consequently, BVC hereby confirms that the realistic and credible alternative scenarios for the Project are 1(a) and scenario 2(a).

Step 2: Barrier analysis

In accordance with the methodology, "Combined tool to identify the baseline scenario and demonstrate additionality" and "Guidelines for objective demonstration and assessment of barriers" (/2/, /6/, /11/), the barrier analysis was carried out in the PDD.

Technological barriers

According to the approved FSR, the Statement on the Technical Barrier of the Southern District Heating Network in Urumqi City issued by the Beijing Gas & Heat Power Project Design Institute, the largest altitude difference of the Project is 163 meter, which is the largest one in China (Ref-8, Ref-23). The high altitude difference results in high water pressure in the pipe line which will cause



destruction of equipment and then destruction of the heating network; so the Project had to utilize three-level heating network.

To further validate the technical barrier, BVC has checked the Charge Standard of Engineering Investigation and Design issued by the State Planning Commission and Ministry of Construction in 2002 (Ref-99), the Further Explanation on the Technical Barrier of the Southern District Heating Network in Urumqi City issued by the Beijing Gas & Heat Power Project Design Institute (Ref-98) and the investigation carried out by the Xinjiang issued by Xinjiang Heating Supply Association (Ref-69). According to this Charge Standard, the difficulty factor of normal two level small district heating project is 0.85 to 1.0; and the difficulty factor of complex project is 1.15. The difficulty factor of the Project is 1.15 caused by the three-level heating network and the large heating area (larger than 10 million m²); according to the Further Explanation on the Technical Barrier (Ref-98), there is only the Project has the three-level heating network in Xinjiang (Ref-69).

The identified barrier would prevent the implementation of the Project, which has been confirmed by the evidences; and the barrier cannot be fully quantified and represented as costs and should be identified as a barrier for implementation of project. BVC can confirm that the evidences are in line with Guideline 3 of the Guidelines for objective demonstration and assessment of barriers version 01, (EB50 Annex13) (/11/), i.e. the specific technological barrier was demonstrated by the regulatory information and the evidences sourced from authorized institute (Ref-8, Ref-9, Ref-23), the evidences provided are in line with the requirement of the "Combined Tool to Identify the Baseline Scenario and Demonstrate Additionality" version 02.2 (/6/), and the evidences can object demonstrate that the barrier actually prevented the implementation of other projects in similar circumstances.

Therefore, BVC can confirm that the technological barrier was objective demonstrated.

As for the scenario 2(a), it was the continued operation or rehabilitation of an existing [isolated] district heating network(s) or establishment of a new [isolated] district heating network(s) for heating. The isolated small district heating networks do not face so large altitude difference like the Project, therefore, the identified barrier will not prevent the scenario 2(a).

As discussed above, there is only one alternative scenario 2(a) that is not prevented by the identified barrier, and this alternative is not the proposed project activity undertaken without being registered as a CDM project activity, then the alternative scenario 2(a) is identified as the baseline scenario, which is in line with the "Combined tool to identify the baseline scenario and demonstrate additionality" version 02.2 (/6/).

Therefore, BVC can confirm that baseline scenario is correctly identified as the scenario 2(a), i.e. continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network.

☞ Complying with **para.87 and 88/VVM**, BVC hereby confirms that:



- (a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sector policies and circumstances are considered and listed in the PDD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.7 Additionality of a project activity (97)

Methodology AM0058 version 03.1 "Introduction of a new primary district heating system" (/2/) and "Combined tool to identify the baseline scenario and demonstrate additionality" version 02.2 (/6/) has been employed for demonstrating and assessing the additionality of the Project. The additionality of the project has been carefully checked, in doing so BVC has put the main focus on the following issues:

3.7.1 Prior consideration of the CDM (104)

It has been demonstrated by the timeline of events of the Project that the CDM revenues was seriously considered in the decision to proceed with the Project prior to start of the Project and, the continuing and real action were taken to secure CDM status for the Project in parallel with its implementation:

Table 5 Timeline of the Project Activities

Date	Actions	Reasons or Impacts	Evidences verified
20/11/2003	First time to consider CDM	The kick-off meeting on China's CDM capacity building	Ref-46✓
Mar. 2004	Completion of FSR with consideration of CDM	The feasibility study report of the proposed project was completed by taking CDM impact into consideration, with the help from CDM consultants.	Ref-8✓
29/03/2004	The FSR was approved by local government	Initial permit implementation of the Project	Ref-10✓
15/04/2004	The PP made the decision of searching for CDM support	Based on the FSR, the PP made the investment decision	Ref-64✓
08/07/2004	The CDM consulting contract was signed	Seek the support of CDM to make the Project to be financially feasible	Ref-47✓

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Date	Actions	Reasons or Impacts	Evidences verified
15/10/2004	Preliminary study on the feasibility of CDM	CDM technology development	Ref-49✓
14/01/2005	The first main equipment contract signed	Starting date of project activity	Ref-41✓
Apr. 2005	Signed PDD development contract with consultant	Seek the support of CDM to make the Project to be financially feasible	Ref-48✓
14/01/2005	Started to extract heat from the CHP plant	Progress of the heating supply project	Ref-63✓
28/03/2006	Discussion on primary heating system methodology for new ideas	Study on the methodology	Ref-49✓
29/10/2006	Discuss new methods on heating network in Urumqi CDM project and track the latest developments of the proposed methodology	Study on the methodology combined the actual situation of the project	Ref-49✓
20/12/2006	Project progress and data collection	Further progress of CDM development	Ref-49✓
05/01/2007	Term sheet signed with CER buyer	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-45✓
May 2007	Communication with the methodology development entity	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-50✓
23/05/2008	Emission Reductions Purchase Agreement (ERPA) was signed	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-65✓
24/06/2008	Applying for Letter of Approval from the China's DNA	The PP was seeking CDM support in parallel with the implementation of the Project	Ref-66✓
Aug. 2008	LoA from China's DNA was issued	Milestone of the CDM development	Ref-3✓ Ref-78✓
02/09/2008	The PDD was published on EB's website for global stakeholders' comments	The PP was seeking CDM support in parallel with the implementation of the Project	Ref-1✓
24/08/2009	LoA from UK's DNA was issued	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-4✓

From table above, BVC was able to verify that the start date of the Project determined as 14/01/2005 is appropriate (the date at which the first main equipment Contract was signed), which



is the earliest of the dates at which the implementation or construction or real action of the Project began. This is in accordance with the latest CDM glossary.

The Project is an existing project according to the definition in the “Guidance on the demonstration and assessment of prior consideration of the CDM” version 03 (Annex 22, EB 49, 11/09/2009) (hereinafter called “Guidance-Prior Consideration”), i.e. the start date of the Project is before 02/08/2008. The start date of the Project is also prior to the date of publication of the PDD for global stakeholder consultation on 02/09/2008, and BVC has reviewed the approved FSR, the Term Sheet signed with CER buyer and ERPA signed with Carbon Resource Management Ltd and Meeting Minutes of the PP to assessed the consideration on CDM taken by the PP, and confirmed that the benefit of the CDM have been a decisive factor in the decision to proceed with the Project. (Ref-8, Ref-10, Ref-45, Ref-47, Ref-48, Ref-49, Ref-50, Ref-64, Ref-65)

BVC has checked all reliable evidences from the PP, include CDM Term Sheet, LoAs, validation service contract and ERPA, and is able to verify that all documents are substantial and authentic at that situation in the host country. The gap between the documented evidences are less than two years, BVC was therefore able to confirm that continuing and real action have been taken to secure CDM status for the Project in parallel with its implementation, which are evident in accordance with the “Guidance-Prior Consideration”. (/8/)

- ☞ According to the “Glossary of CDM terms” version 05 (/9/) and “Guidance-Prior Consideration” (/8/), BVC confirms that the start date of the Project identified in the PDD is appropriate and reasonable at that situation.
- ☞ Complying with para.101-104/VVM, BVC has verified this issue, which could significantly influence the additionality of the Project, and confirms that the serious consideration under the context of the Project has been addressed appropriately in accordance with the above guidance. Consequently, the chronological events described with the relevant documented evidences are the objective foundation on which BVC developed its validation opinions.

3.7.1.1 Historical information on project timeline

The information regarding historical development of the Project was listed in the table above.

3.7.2 Demonstration of Additionality of the Project

The PDD employed the procedures given by the latest “Tool for the demonstration and assessment of additionality” version 05.2 to assess the additionality, which was in line with the methodology AM0058 version 03.1, as follow:

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

According to the discussion on identification above, there are two realistic and credible alternative scenarios to the Project:

- The Project not undertaken as a CDM project activity;
- Continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a



new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network.

After barrier analysis, the identified baseline scenario was Continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network.

Step 2: Investment analysis

According to the item 16 of “Guidelines on the Assessment of Investment Analysis”, the benchmark approach is suited in case where the choice of the developer is to invest or not to invest. The scenario existing prior to the implementation of the Project was the operation of existing isolated district heating networks belonging to different owners covering all buildings within the project boundary, which can provide the same service as the Project. For the PP, there was the choice to invest or not to invest.

Therefore, BVC can confirm that the benchmark analysis was chosen in the final version of PDD is in line with the guidelines.

Project IRR of 5.76% (post-tax) was employed by the Project as benchmark, which was the prevailing commercial interest rate issued by the People's Bank of China at time of investment decision was made (Ref-60). BVC has verified this benchmark and confirmed that it is in line with the “Tool for the demonstration and assessment of additionality”: benchmarks shall be derived from (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned). Furthermore, By checking the “Economic Evaluation Method and Parameters for Project Construction” (version 3) (Ref-52) issued by the NDRC and the former Ministry of Construction of China in 2006 after the FSR of the Project was finished, BVC found that the benchmark IRR of district heating is 8%, which is higher than the interest rate used in the PDD; therefore, BVC can confirm that the benchmark of 5.76% used in the PDD was conservative.

Before reviewing the IRR calculation, BVC has validated the basic parameters listed in the PDD in accordance with the Guidance of Para. 113/VVM. (/1/)

According to the relevant evidences provided, BVC confirms that the PP's final decision to proceed with the investment in the Project has been made based on the approved FSR, which was finalized in Mar. 2004, based on the conclusion in the FSR, PP decided to proceed with the Project on 15/04/2004 with the support from CDM revenues. Given this relative short period of time between FSR and the decision to proceed with the Project, BVC was therefore confident that it is unlikely in the context of the underlying Project that the input values would have materially changed, which is in line with the report of **Para. 113(a)/VVM**.

At the same time, BVC compared the input values for the financial analysis in the PDD and FSR,



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and confirms that all input parameters used in the financial analysis are taken from the approved FSR, BVC was therefore of the opinion that the investment analysis is in accordance **Para. 113(b) /VVM.**

Furthermore, BVC has reviewed the IRR calculation sheet and cross-checked the input values against relevant regulations/laws/evidences and confirms that:

- ↳ The operation period of 22 years was selected reasonably following the requirements of “Interim Rules on Economic Assessment of Electric Power Engineering Retrofit Projects” and Para.3 of “Guidelines on the Assessment of Investment Analysis” version 03.1 (/10/).
- ↳ The residual value rate of 5% was in compliance with relevant regulation valid at the time of investment decision was made, i.e. Notification on Administration of Enterprise Income Tax issued by State Administration of Taxation. (Ref-54)
- ↳ The total static investment in the final version of PDD was consistent with the approved FSR, and checked against the civil construction contracts (Ref-42), equipment purchasing contracts (Ref-41), the statistics conducted by the Urumqi DRC (Ref-43, Ref-44) and found consistent. Furthermore, BVC has checked the Audit Report issued by government authority (Ref-26) has confirmed that the actual cost of investment of the Project has reach 97% of the total static investment cost estimated in the FSR by the end of 2009, which includes the costs of equipments purchase (98.1% finished), equipment installation (98.1% finished), civil construction (96.2% finished), compensation for the replaced small boiler houses and finance cost (100% finished); considering the Project still not fully commission, BVC can confirm that the estimated total static investment estimated in the FSR and the PDD was reasonable..
- ↳ The heating supply price was fixed in 22Yuan/m² (Incl. VAT) by the government since 2003, the official notifications issued by the Urumqi Development and Reform Commission has been checked and found consistent; (Ref-24)
- ↳ The water price was 1.53Yuan/ton (Incl. VAT) in the FSR and the PDD, which was consistent with the price notification valid at the time of FSR was prepared (Ref-56); it has been raised to 2.22Yuan/tonne in 2005 (Ref-57); BVC has also checked the Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009 (Ref-89), and found the total water consumption in 2008-2009 heating period is consistent with the value estimated in the FSR.
- ↳ The tariff of electricity consumed by the Project in the FSR and the PDD was 0.35Yuan/kWh (Incl. VAT), which was consistent with the tariff regulation valid at the time of FSR was prepared (Ref-58); it has been raised to 0.382Yuan/kWh (Incl. VAT) in 2008 (Ref-59). BVC also checked the Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009 (Ref-89), and found the amount of electricity consumption in 2008-2009 heating period is consistent with the value estimated in the FSR. Furthermore, BVC has checked the electricity purchase invoices in 2009 (Ref-93) and the Financial Audit Report of the Project (regular audit) issued by authorized entity (Ref-26) and found consistent with that estimated in the FSR.
- ↳ As for the coal consumption in the four HOBs and the heat purchased from the CHP: their relationship is negative correlation, for specific heating area, if the heat purchased from CHP



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decreased, the coal consumed in the HOBs must be raised, and the total heat supplied should keep stable. Since the Project has started supplied heat in 2005, the total heat supplied by both the HOBs and the CHP estimated in the FSR was closed to the historic data in the past 4 years (2005 to 2008), and therefore reasonable considering the total heating area (Ref-8, Ref-15). It should be noted that the CHP started supply heat in the heating period from Oct. 2005 to Apr. 2006, and the Project paid the heat purchase cost in 2006, so the quantity of heat purchased from CHP in 2005 was zero; the same for the rest years, which is deemed reasonable. BVC also checked the Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009 (Ref-89), and found the coal consumption in 2008-2009 heating period is consistent with the value estimated in the FSR. Furthermore, BVC has checked the Heat Purchase VAT Invoices of the Project (Ref-27) and the Financial Audit Report of the Project (regular audit) issued by authorized entity (Ref-26) and found the amount of heat purchased by the Project was consistent with that estimated in the FSR.

- ✎ The price of heat purchase from the Xinjiang Huadian Hongyanchi Power Plant was sourced from the Heat Purchase Agreement signed between the PP and the Xinjiang Huadian Hongyanchi Power Plant, the contract has been checked and found consistent; furthermore, BVC has checked the Heat Purchase VAT Invoices of the Project and therefore can confirm the heat purchase price is 15Yuan/GJ (Incl. VAT) (Ref-25, Ref-27). BVC also checked the Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009 (Ref-89), and found the heat purchased consumption in 2008-2009 heating period is consistent with the value estimated in the FSR.
- ✎ The heating period was governed by the government; the official regulation on heating period has been checked and found consistent (Ref-18, Ref-24, Ref-70), the heating period is from October 15th to next April 15th totally 181 days.
- ✎ The heating area in the FSR and the PDD has been checked against the Approval of overall plan of Heating Supply in Urumqi City (Ref-19) and the Opinion on Heating Supply Schematic Plan Diagrams in Southern Urumqi (Ref-20) and found consistent.
- ✎ The heating fee charge rate in the FSR and PDD is 90%, BVC has checked the Final Report of research on Urumqi City Heating Price and found that the heating fee charge rate of Urumqi Heating Supply Co., Ltd (the PP) was 85.38%, 85.11% and 88.03% in 2006 to 2008 respectively (Ref-30), lower than the value estimated in the FSR and PDD; hence BVC can confirm that the heating fee charge rate in the FSR and the PDD was reasonable.
- ✎ BVC confirms that the annual O&M cost is the sum of fuel cost, salary and welfare of employees, material fee, maintenance fee, insurance fee and miscellaneous account, which was studied based on the "Economic Evaluation Method and Parameters for Project Construction" (version 3) (Ref-8, Ref-52, Ref-62). In particular, the price of coal in 2010 is at least treble of that in 2004 (Ref-29), therefore BVC can confirm the O&M cost of the Project in the PDD was conservative.
- The other O&M expense mentioned in the PDD is the miscellaneous account, which has been cross checked with the Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009 (Ref-89) and found consistent with the value in



2008-2009 heating period.

- The on-job training & trade union expenses in the FSR and the PDD is 1.7%, according to the China Trade Union Law (Ref-90), the on-job training & trade union fee can be 2% of total salary and farewell wage, therefore BVC can confirm that the on-job training & trade union cost in the FSR and PDD is reasonable.
 - According to the Statement on the Number of Workers of the Southern District Heating Network in Urumqi City from the design institute who carried out the FSR (Ref-97) the number of workers is 706 persons once the Project is in full operation. Following the "City District Heating Costs Supervision and Auditing Rules", issued by NDRC in 2006 (Ref-95), and considering that the Project includes 193 substations and 4 heat only boiler houses with 18 large heating boilers, the number of workers is reasonable and more conservative than that permitted by the rules.
 - The management cost has been cross checked with the Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009 (Ref-89) and found consistent with the value in 2008-2009 heating period. According to the Statement on the Management Costs of the Southern District Heating Network in Urumqi City issued by the FSR conductor (Ref-96), the management costs of the Project estimated in the FSR was based on the requirements of the "Economic Evaluation Method and Parameters for Project Construction" (version 3) issued by the NDRC and the former Ministry of Construction of China (Ref-52), the "City District Heating Costs Supervision and Auditing Rules" issued by NDRC (Ref-95). BVC has checked the quoted regulations and found the management costs in the FSR were applicable to the Project and in line with the regulations. Furthermore, BVC has checked the Financial Audit Report of the Project (regular audit) issued by authorized entity (Ref-26) and found the actual management costs were 7.3 million per year, higher than the 7.24 million when the Project put into full operation estimated in the FSR, and therefore can confirm that the management costs in the PDD was reasonable and conservative.
- ↳ A post-tax benchmark is applied for the investment analysis of the Project. BVC has checked the IRR calculation sheet and confirms that the interest has been taken into account in the calculation of income tax. The interest rate (5.76%) used in the investment analysis is the same one as prevailing commercial interest rate in China obtained from People's Bank of China (Ref-60). In addition, the debt-equity ratio estimated in the FSR was also approved by local DRC (Ref-8, Ref-10), and the loan contract value shows that the debt-equity ratio taken from the FSR is consistent with actual capital situation that PP raising (Ref-61). Therefore, BVC confirms that the interest payable has been taken into account in the calculation of income tax and deem appropriate.
- ↳ BVC has checked the IRR calculation sheet and confirm that depreciation has been deducted in estimating gross profits on which tax is calculated, and be added back to net profits for the purpose of calculating the financial indicator. BVC confirms that the depreciation calculated complies with "Economic Evaluation Method and Parameters for Project Construction" (version 3). (Ref-52)



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- ↳ BVC has also verified values of various taxes through crosschecking against the taxation rules conducted by local government and found to be fully consistent.
 - The income tax of 33% complies with Enterprise Income Tax Law of China valid at the time of investment decision was made. (Ref-53)
 - The VAT rate of heating supplied to residential is 13% according to the VAT regulations (Ref-55);
 - The VAT rate of coal and power is 17% (Ref-55), and the VAT has been deducted from the VAT of heating supply revenue;
- ↳ The scenario existing prior to the implementation of the Project was the operation of existing isolated district heating networks belonging to different owners covering all buildings within the project boundary, therefore the potential saving from not operating the existing boilers and from not having to purchase new equipments for the baseline scenario for the new buildings cannot be treated as the benefit of the Project owner, and did not need to be considered. Moreover, the Project had to pay for the network owned by those small boiler houses owners and compensation for demolishing their boiler houses still in operation; this part of costs was included in the investment costs (Ref-26).

In summary, based on the above reliable data sources and regulations, BVC was able to confirm that the input values from the FSR were valid and applicable at the time of making the investment decision. Therefore, BVC confirms that the investment analysis is in accordance with the **Para. 113(c) /VVM**.

The project IRR of the Project without CDM revenues is 3.56% lower than the benchmark, which shows that the Project is not financially attractive compared to the benchmark in the absence of CDM benefits.

BVC has reviewed the IRR calculation (Ref-67) and confirms that the IRR processing is consistent with the "Guidelines on the assessment of investment analysis" version 03.1 (/10/) and the data sources as well as the analysis approach are reliable and based on the FSR linking directive to the actual situation of the host country. Six financial parameters were taken as uncertain factors for sensitive analysis of financial attractiveness:

- Total static investment
- Heating price
- Heat purchase price
- Heating area
- O & M costs (excluded the heat purchase cost)
- Quantity of heat purchased

According to "Guidelines on the assessment of investment analysis" (/10/), variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. In line with this guidance, Total static



investment, Heat sale price, Heat purchase price, Heating area and O&M costs (excluded the heat purchase cost) have been taken as uncertain factors to do sensitivity analysis, and $\pm 10\%$ variation of above factors shall be considered in the sensitivity analysis. Therefore, BVC confirms that the variables and variations $\pm 10\%$ performed for sensitivity analysis is deemed to be appropriate for the Project.

- With a decrease in total static investment by 17.8%, the IRR of the Project will reach the benchmark. However, by checking the Financial Audit Report issued by authorized entity (Ref-26), BVC can confirm that a decrease in total static investment by 17.8% is impossible.
- With an increasing in heating price by 8.3%, the IRR of the Project will reach the benchmark. By checking the Notifications of heat supply price of Urumqi City (Ref-24), BVC can confirm that the heating price has been fixed for more than 7 years and is unlikely increase by 8.3% for the whole assessment period.
- With a decrease in heat purchase price by 19.3%, the IRR of the Project will reach the benchmark. Considering the persistently increasing of coal price (Ref-28), the heat purchase price is unlikely to be decreased by 19.3%.
- With an increasing in heating area by 35.1%, the IRR of the Project will reach the benchmark. The total heating capacity of the Project is 1445MW, and the total design heating load is 1323MW (Ref-8). The total heating capacity is only 9.2% higher than the design load (Ref-8, Ref-10). The Project does not have enough capacity to cover the increasing area by 35.1%.
- With a decrease in annual O&M cost (include cost of fuel, i.e. coal) by 17.8%, the IRR of the Project will reach the benchmark. Considering the price of coal in 2010 has been treble of the price estimated in Mar. 2004 when the FSR was finished (Ref-29), and increasing of the price of material and manpower cost (Ref-87, Ref-88), it is unlikely that the annual O&M cost would be decreased by 17.8%.
- With a decrease in the quantity of heat purchase by 29.3%, the IRR of the Project will reach the benchmark. However, the total heating capacity of the Project is 1445MW, and the total design heating load is 1323MW (Ref-8). The total heating capacity is only 9.2% higher than the design load (Ref-8, Ref-10). The HOBs cannot provide so much heat with decreased in heat purchased from the CHP; BVC can confirm that the quantity of heat purchased will not be decreased by 29.3%. Furthermore, as discussed above, the coal consumption in the HOBs and the heat purchased from CHP are negative correlation, any decrease in heat purchased must results in more coal consumption in the HOBs; considering that the price of coal has at least treble compared to that in the PDD (Ref-29), the resulting IRR of the Project would actually be lower with the decrease in heat purchased.

Considering the CERs sale revenues (calculated with 9.8EUR/tCO₂e), the project IRR of the Project can be crossing the benchmark at 8.74% and become economically feasible.

BVC can conclude that both of the variation range and relevant assumptions stated in the PDD are robust and the investment of the Project is deemed to be financially unattractive.

☞ Complying with para.114/VVM, based on the assessment result by the financial expert engaged,



BVC hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct.

Step 3. Barrier analysis

The final version of PDD did not employ the step 3 to demonstrate the additionality, which is in compliance with the Tool for the demonstration and assessment of additionality.

Step 4: Common practice analysis

The Common practice analysis was addressed as per Step 4 of Tool for the demonstration and assessment of additionality.

The Project is a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers. The activities in the same region/province have the similar natural climate condition, social living standard and economic developing status; hence BVC considered that delineating the border is reasonable.

Subsequently, BVC defined the criteria for identifying similar projects as follow:

- Primary district heating system using heat from cogeneration power plant; BVC confirms that this criteria regarding technical scope is reasonable since district heating system using CHP is different from those using heat only boilers;
- Located in Xinjiang Uygur Autonomous Region; BVC confirms that the region for common practice analysis is reasonable because the area of Xinjiang Uygur Autonomous Region is about 3 times of that of France and therefore large enough.
- Considering the heating area of the Project will reach 17,490,000m², the criteria for project scale was set at project with heating area similar in the range of 6 million m² to 27 million m². BVC also confirmed that the criteria regarding heating area is reasonable because the range has covered a range from 34% to 154% and wide enough for common practice analysis.

Following these criteria, BVC has verified the District Heating Project list in Xinjiang issued by Xinjiang Heating Supply Association (Ref-69), two similar projects were identified, i.e. Western District Heating Project in Shihezi City and Southern District Heating Project in Shihezi City.

The essential distinctions between the Project and the similar projects were identified:

The Project faces an objective technical barrier with a 163m altitude difference and had to employ three-level heating network (Ref-23), the engineering difficulty factor of the Project is 1.15; while the two similar projects do not have such barrier and they use two-level network which is common in China. There is only the Project has the highest difficulty factor of 1.15 belong to complex type (Ref-98) in heating industry in Xinjiang, the other difficulty factor of other projects in Xinjiang were only 0.85 (easy type) to 1 (normal type) (Ref-98, Ref-99). Therefore the essential distinctions were objective demonstrated.

BVC has verified the description in the PDD and found that it is consistent with the supporting documents and therefore can conclude that the Project is not common practice in the region.

☺ Complying with **para.121/VVM**, Based on above demonstration that in accordance with

“Combined tool to identify the baseline scenario and demonstrate additionality” and supported by reliable data sources, it is the opinion of BVC that the Project is thus additional.

3.7.3 Algorithms and/or formulae used to determine emission reductions (92-93)

The steps taken to assess the requirement outlined in paragraph 89 of the VVM are described below:

According to the baseline methodology AM0058 version 03.1, “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” version 02 and “Tool to calculate the emission factor for an electricity system version 02 dated 16/10/2009” version 02, (/2/, /4/, /5/) the baseline emissions, project emissions and leakage were determined.

Baseline Emissions

According to the methodology AM0058 version 03.1, the baseline emissions (BE_y) of the Project include emissions from fossil fuels fired by the isolated boilers of the heat production (BE_{HG,y}) and emissions from the current fossil fired electricity generation (BE_{EL,y}), as follow:

$$\text{Formula 1: } BE_y = BE_{HG,y} + BE_{EL,y}$$

Step 1. Baseline emissions from heat generation

Baseline emissions from heat generation (BE_{HG,y}) are estimated by the estimated quantity of heat supplied from sub-station i to buildings in category j (Q_{j,i,y}) multiply the CO₂ emission factor for heat generation for category j connected to sub-station i (EF_{BL,HG,j,i}), as follows:

$$\text{Formula 2: } BE_{HG,y} = \sum_i \sum_{j \in 1} Q_{j,i,y} \times EF_{BL,HG,j,i} + \sum_i \sum_{j \in 2} Q_{j,i,y} \times EF_{BL,HG,j,i} + \sum_i \sum_{j \in 3} Q_{j,i,y} \times EF_{BL,HG,j,i}$$

All categories *j* included in the project boundary defined as combination of building type/technology of boiler/fuel used in boiler has been defined and document in the Annex 3 of the PDD and check against the relevant supporting documents and found consistent (Ref-8, Ref-16, Ref-19, Ref-20); all sub-stations *i* have been included in the project boundary.

The quantity of heat supplied from sub-station i to buildings in category j (Q_{j,i,y}) are estimated by the total carpet area of buildings in category j connected to substation i (A_{j,i}) multiply the measured quantity of heat supplied by substation ‘i’ in year y.

$$\text{Formula 3: } Q_{j,i,y} = \frac{A_{j,i}}{\sum_j A_{j,i}} \times Q_{i,y}$$

According to the FSR (Ref-8), the Heating Supply Schematic Plan Diagrams issued by the government heating authority (Ref-19, Ref-20) and the Corresponding Table of Substations, Buildings and Boiler Houses issued by the Urumqi Heating Supply Co., Ltd (Ref-20), the existing buildings (include category 1 and 2) and new buildings (category 3) are separated and no substation supplied to area including both existing buildings and new buildings. The heat and the

parameter $A_{j,i}$ will be monitored ex-post.

- (a) For existing building category 1 and category 2, the quantity of heat supplied from substation i to buildings in category j ($Q_{j,i,y}$) are estimated as follow:

Formula 4: $Q_{i,y} = \text{Min}\{Q_{\text{inst_cap},j,i}, Q_{i,y}\}$

Where:

$Q_{\text{inst_cap},j,i}$ is the maximum quantity of heat that could have been supplied per year by existing boiler(s) supplying to existing buildings within the area supplied by sub-station i in the absence of the project activity

The maximum quantity of heat ($Q_{\text{inst_cap},j,i}$) is the nameplate capacity value of the boiler supplying to building type j at sub-station i ($CAP_{j,i}$) multiply by the number of operational hours per year (T). As for the Project, it is hard to separate the heat supplied by each boiler in a boiler house, the amount of nameplate capacity value of all boilers in the boiler house was used instead of capacity of individual boiler.

Formula 5: $Q_{\text{inst_cap},j,i} = CAP_{j,i} * T$

The capacity of all the boilers and boiler houses ($CAP_{j,i}$) are listed in the Annex 3 of the PDD, which have been checked against the FSR (Ref-8) and the Information Forms of Existing Boilers Issued by each boiler houses owner (Ref-12) and found consistent. The heating period in Urumqi City is 181 days per year, i.e. the number of operational hours per year (T) is 4,344 hours per year, which has been checked against the Notifications on Heating Supply in City issued by Urumqi City Government (Ref-70) and found consistent.

There are four situations regarding the corresponding relationship of boiler houses and substations for existing buildings category 1 and category 2, the quantity of heat supplied by substation i and corresponding capacity of boiler houses was determined by the following methods:

Table 6 Determination of $Q_{j,i}$ and $CAP_{j,i}$ for varies corresponding of substations and boiler houses

situation	Sub-station	Boiler house	$Q_{j,i}$	$CAP_{j,i}$
a	one	one	Quantity of heat supplied by the substation	Sum of nameplate capacity of all boilers in the boiler house
b	one	several	Quantity of heat supplied by the substation	Sum of nameplate capacity of all boilers in the corresponding boiler houses
c	several	one	Sum of quantity of heat supplied by the corresponding substations	Sum of nameplate capacity of all boilers in the boiler house

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situation	Sub-station	Boiler house	$Q_{j,i}$	$CAP_{j,i}$
d	several	several	Sum of quantity of heat supplied by the corresponding substations	Sum of nameplate capacity of all boilers in the corresponding boiler houses

After checking the Emission Reduction spreadsheet (Ref-76), BVC can confirm that the ways for determination of $Q_{i,y}$ and $CAP_{j,i}$ were conservative. (Ref-12)

For estimating the baseline emissions, the $Q_{i,y}$ of existing building is estimated based on the following data and formula:

Formula 6: $Q_{i,y} = \sum_j W_{j,i} \times A_{j,i} \times T \times 0.0036$

Where:

$W_{j,i}$ is the index of mean load for heating of building (W/m^2), it was determined by the following Formula 7;

$A_{j,i}$ is the heating area (m^2)

T the number of operational hours per year, the value is 181 days (4344hours), which was regulated by the government (Ref-18, Ref-70).

Formula 7: $W_j = w_j \times \frac{T_N - T_P}{T_N - T_W}$

Where,

w_j is the index of design load for heating of building. The value for existing buildings category 1 is $77W/m^2$, which was determined by the Beijing Gas & Heat Power Project Design Institute and Urumqi Heating Engineering Design Institute based on the historic data from 1993 to 2002 in Urumqi City (Ref-8, Ref-9, Ref-14), and the index of design load for heating of category 2 and category 3 is $70W/m^2$ (Ref-8, Ref-9). The evidences have been checked and found consistent and the value is reliable.

T_N is the indoor mean air temperature during heating period, the value is $18^\circ C$ in the FSR, which has been cross checked with national standard, local regulations and Congregation Planning of Urumqi City approved by Urumqi DRC and found consistent (Ref-8, Ref-9, Ref-14, Ref-74, Ref-75).

T_P the mean outdoor temperature during heating period, the value is $-7.4^\circ C$ sourced from the FSR, which has been cross checked with the Congregation Planning of Urumqi City approved by Urumqi DRC (Ref-8, Ref-9, Ref-14, Ref-18)

T_W the outdoor design temperature during heating period, the value is the value is $-22^\circ C$, sourced from the FSR, which has been cross checked with the Congregation Planning of Urumqi City approved by Urumqi DRC (Ref-8, Ref-9, Ref-14, Ref-18)

The Formula 6 and Formula 7 are sourced from the industrial standard: Design Code of District Heating Network (standard code: CJJ 34-2002) approved by the Ministry of Construction of China (Ref-71), which is the standard for district heating network design in China, which were also confirm by the District Heating Design Manual (Ref-73).

$$W_{1,i} = 77\text{W/m}^2 \times [18 - (-7.4)] / [18 - (-22)] = 48.895 \text{ W/m}^2$$

$$W_{2,i} = 70\text{W/m}^2 \times [18 - (-7.4)] / [18 - (-22)] = 44.45 \text{ W/m}^2$$

The quantity of heat supplied by each substation ($Q_{j,i,y}$) and this parameter should be monitored ex-post.

(b) For the cases where category j consists of new buildings, as defined in the Table 4 Category of Buildings above for the identification of the baseline scenario, the quantity of heat supplied to this category is estimated as follows:

If $Q_{\text{extracted},y} < Q_{\text{HOB},y}$, then $Q_{j,i,y} = 0$;

If $Q_{\text{extracted},y} > Q_{\text{HOB},y}$, then $Q_{j,i,y}$ is calculated by the Formula 3 above.

Where:

$Q_{\text{extracted},y}$ is the quantity of heat extracted from the Xinjiang Huadian Hongyanchi Power Plant during the year y, (GJ)

$Q_{\text{HOB},y}$ is the total quantity of heat extracted from all heat-only boiler houses supplying to the area covered by primary network during the year y, (GJ)

As per the FSR, the $Q_{\text{extracted},y}$ was estimated at 9,387,948GJ per year, and the $Q_{\text{HOB},yB}$ was estimated at 3,752,035GJ per year (Ref-8); therefore $Q_{\text{extracted},y} > Q_{\text{HOB},y}$ for ex-ante estimated baseline emissions, and both two parameters will be monitored ex-post, and the meters reading should be crosschecked against the meter readings of the point of heat supply as well as heat invoices to Urumqi Heating Supply Co., Ltd to ensure that the heat records are plausible and reliable.

Step 2: CO₂ emission factor for heating supply in the baseline

Sub-step 2a: CO₂ emission factor for the heat generation in the baseline

According to the methodology, the following factors may influence the CO₂ emission factor:

- The efficiency of the identified baseline technology ($\epsilon_{\text{HG,BL},j,i}$);
- The fuel type identified as baseline fuel type and respectively the CO₂ emission factor of this fuel ($\text{COEF}_{\text{BL,HG},j,i}$);

$\text{EF}_{\text{BL,HG},j,i}$ is determined as follows:

$$\text{Formula 8: } \text{EF}_{\text{BL,HG},j,i} = \frac{\text{COEF}_{\text{BL,HG},j,i}}{\epsilon_{\text{BL,HG},j,i}}$$

Where:

- $EF_{BL,HG,j,i}$ CO₂ emission factor for the heat generation system corresponding to substation i for category j in the absence of the project activity, (tCO₂/GJ)
- $COEF_{BL,HG,j,i}$ CO₂ emission factor of the fossil fuel used in the absence of the project activity in the heat generation system corresponding to substation i (tCO₂/GJ).
- $\varepsilon_{HG,BL,j,i}$ Energy efficiency of the heating supply system i that would be used in the absence of the project activity for buildings in category j.

Step 2b: Emission factor of fuel used

According to the identified baseline scenario, for all categories j, the identified baseline scenario is the generation of heat in the existing boiler houses or the establishment of new isolated heat distribution networks using coal-fired boilers, therefore, BVC can confirm that the emission factor $COEF_{BL,HG,j,i}$ corresponding to the coal; since no values provided by the fuel supplier in invoices available, the IPCC default value at the upper limit of the uncertainty at the 95% confidence interval as provided in table 1.4 of Chapter 1 of vol. 2 (Energy) of 2006 IPCC Guidelines on National GHG Inventories (0.0997tCO₂/GJ) was used in the PDD (Ref-79), which is in line with the methodology.

Step 2c: Efficiency of boilers used in the absence of the project activity

The efficiency of the boilers that would have been used in the absence of the project activity in boiler houses ($\varepsilon_{BL,HG,j,i}$) have been determined for each category j and each sub-station i, and will remain fixed for the duration of the crediting period.

The efficiency of the boilers ($\varepsilon_{BL,HG,j,i}$) was determined by the following approaches:

- For existing boilers houses No. 144 and No. 145, the efficiency of individual boiler are hard to be determined because the coal consumption and the heat supplied was not monitored separately for each boiler, but the total amount of coal consumed and the total heat supplied by the boiler house were available (Ref-13); hence the efficiencies of these two large boiler houses were determined by their historic coal consumption and the heat supplied.
- In China, the heat service is commonly charge in area but not in heat supplied, therefore, most of small boiler houses did not have heat meter and did not monitor the heat supplied. For existing boilers houses except No. 144 and No. 145, the efficiencies of individual boiler are hard to be determined because the coal consumption and the heat supplied was not monitored separately, but the total amount of coal consumed and the total heating area of each boiler house was available (Ref-12), the efficiency of each boiler house was determined by the Beijing Gas & Heat Power Project Design Institute and Urumqi Heating Engineering Design Institute based on the Information Forms of Existing Boilers Issued by each boiler houses owner and the formula given in the industry design standard (Ref-8, Ref-12, Ref-14, Ref-71, Ref-72).

$$\text{Formula 9: } \varepsilon_{BL,HG,j,i} = \frac{Q_{BL,HG,out,j,i}}{Q_{BL,HG,in,j,i}} = \frac{(W_{j,i} \times A_{j,i} \times T \times 3.6 \times 10^{-6}) \times 1.01}{FC_{coal,j,i} \times NCV_{fuel,j,i}}$$



Where,

- $Q_{BL,HG,out,j,i}$ is the annual historic heat supplied by the boiler house; (GJ)
- $Q_{BL,HG,im,j,i}$ is the annual historic energy input to the boiler houses generated by the fuel consumed. (GJ)
- $W_{j,i}$ is the annual heating load per unit heating area (W/m^2); the value for existing buildings was determined by the Formula 7 above, the result was $48.895 W/m^2$.
- $A_{j,i}$ is the area existing prior to the Project heated by the boiler house (m^2);
- T is the annual heating period (hours), the value is 4344hours.
- $FC_{coal,j,i}$ is the quantity of fuel combusted in the boiler house (tons standard coal), the historical quantity of coal consumed by each boiler house was sourced from the Information Forms provided by their owner (Ref-12)
- $NCV_{fuel,j,i}$ is the net calorific value of the fuel type i in year y (GJ/t). The coal consumed by all the boiler houses (except two large heat only boiler houses, No. 144 and No. 145) was provided in standard coal equivalent, the NCV of standard coal was $29.27 GJ/t$ source from the China Energy Statistic Yearbook 2008 (Ref-80). The value has been checked against the China Energy Statistic Yearbook 2008 and found consistent.

BVC is able to confirm the determination of the supplied heat is reasonable and conservative by following reasons:

- The heat supplied was determined by a qualified entity, Beijing Gas & Heat Power Project Design Institute, who has a top class certificate in district heating (Ref-9);
- The formulae are sourced from the industrial standard (Ref-73), which are also confirmed by the District Heating Design Manual (Ref-72);
- According to the Heating Supply Engineering (Ref-73), the error between the result estimated by these formulae and the actual heat supplied do not exceed 1%, and the conservative factor 1.01 has been taken into account in the estimated heat supplied.
- The heating areas of all the small boiler houses and the large boiler house No. 140 were stable prior to the implementation of the Project (Ref-8, Ref-12);
- The other basic data were sourced from authoritative and reliable evidences which have been confirmed above.

For each category defined in the Table 4 Category of Buildings above, the efficiency for each situation was determined by the following conservative procedures:

- For existing buildings (category 1 and category 2), buildings in a part of the area supplied by a sub-station, during the project activity, that were connected to an existing isolated heat distribution network (i.e. to an existing a boiler house) before the start of the project activity, the determination was specified in the Table 7 below:

Table 7 Determination of efficiency for the four situations of existing buildings

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Situation	Sub- station	Boiler house	$\varepsilon_{BL,HG,j,i}$
a	one	one	The efficiency of the boiler house
b	one	several	The best efficiency of all the boiler houses covered by the corresponding substation
c	several	one	The efficiency of the boiler house
d	several	several	The best efficiency of all the boiler houses covered by the corresponding substations

- For new buildings (category 3), the PDD adopted the default value of new boiler efficiency given by the methodology, i.e. 85%, which is in line with the methodology.

The determination of efficiency of the boiler houses was in compliance with the methodology, i.e. the efficiencies of existing boiler houses were based on historical fuel consumption data and the efficiency of new boilers was the default value given by the methodology. The data presented in Annex 3 of the PDD has been cross checked with the initial information forms (Ref-12), the FSR (Ref-8) and ER spreadsheet (Ref-76) and found consistent.

Step 3. Lifetime of existing heat only boilers

According to the mandatory Special Equipment Safety Supervision Regulations (Ref-81), all boilers must be tested and inspected for safe by authorized entity, BVC hence ensures that the exiting boilers have been operated and maintained according to the mandatory regulation and recommendations of equipment supplier as well. Therefore, the default value of technical lifetime of 25 years for boilers given by the “Tool to determine the remaining lifetime of equipment” /13/ was applicable to the Project. The age of every boiler has been specified in the Information Forms of Existing Boilers Issued by each boiler houses owner (Ref-12) or the determination document conducted by authorized entity (Ref-13). The determination of remaining lifetime of boilers has been transparently documented in the Annex 3 of the PDD and checked against the evidences and found consistent (Ref-12, Ref-76). The average remaining lifetime of all boilers is longer than the 10 years fixed crediting period.

Therefore, BVC is the opinion that the remaining lifetime of boilers determined by Bureau of Quality and Technical Supervision is reliable.

The baseline emissions from heat generation increase with the increasing of heating area, the estimated total baseline emissions from heat generation after fully commissioning are:

$$BE_{HG,y} = 2,082,225tCO_2e$$

Step 4: Baseline emissions from the power generation

According to the methodology AM0058 version 03.1, the ex-post calculation of baseline emissions from the power generation is based on the actual monitored electricity generated and supplied to the grid in the project activity ($EG_{PA,y}$), and it is limited by the maximum historic annual amount of electricity generated over the three most recent years ($EG_{max,hist}$) prior to the start of implementation of Project.

The electricity supplied by the project activity to the grid is estimated at 4,800,000,000kWh annually (Ref-8), this parameter will be monitored ex-post.

The Project was started to extract heat from the Xinjiang Huadian Hongyanchi Power Plant in Oct. 2005 (Ref-63), and the electricity generation records over the three most recent years prior to the heat extraction from the Xinjiang Huadian Hongyanchi Power Plant in the PDD have been checked against the Monthly Operation Records of Xinjiang Huadian Hongyanchi Power Plant (Ref-21) and found consistent, as follow:

Table 8 Historic Annual Amount of Electricity Generation of the CHP (kWh)

Period	Generated Electricity
01/10/2002 to 30/09/2003	1,916,680,000
01/10/2003 to 30/09/2004	2,077,238,000
01/10/2004 to 30/09/2005	4,526,364,000

The baseline emissions from the power generation are determined by the following formula:

$$\text{Formula 10: } BE_{EL,y} = \text{Min}(EG_{\max,hist}, EG_{PA,y}) \times EF_{BL,EL}$$

Where:

$EF_{BL,EL}$ is the baseline emission factor for the electricity production, it is calculated as following:

$$\text{Formula 11: } EF_{BL,EL} = \frac{44}{12} \times \frac{3.6}{1000} \times \frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL} \times \eta_{BL,EL}}$$

Where:

$EF_{FF,BL,EL}$ CO₂ emission factor for the fossil fuel fired in Xinjiang Huadian Hongyanchi Power Plant used prior to the start of the implementation of the project activity (tC/mass or volume unit)

$NCV_{FF,BL,EL}$ Net calorific value of fossil fuel fired in the power plant used prior to the start of the implementation of the project activity (TJ/mass or volume unit).

$\eta_{BL,EL}$ Efficiency of the power plant used prior to the start of the implementation of the project activity. This PDD adopts 38.31%, which was the design value provided by Xinjiang Huadian Hongyanchi Power Plant (Ref-22). BVC has checked the manufacture manual, and found this value was the efficiency at optimum load (Ref-101); BVC has also checked the value measured at the commissioning of the Xinjiang Huadian Hongyanchi Power Plant according to the manufacturers' procedures (Ref-100), and found the actual measured value was 38.307%. Therefore, BVC can confirm that the value of 38.31% used in the PDD was conservative and in accordance with the methodology. Furthermore, to guarantee the conservative, BVC has raised a Forward Action Request to monitor this parameter, if

the actual value is higher than the one in the PDD, the higher value should be used.

BVC has checked the China energy statistic yearbooks (Ref-80), 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Ref-79) and the Monthly Operation Records of the Xinjiang Huadian Hongyanchi Power Plant (Ref-21), no $EF_{FF,BL,EL}$ in unit tC/mass or volume available. However, the EF of carbon content in unit (tCO₂/TJ) is listed in the Table 1.4, Chapter 1, Vol. 2 of 2006 IPCC

Guidelines for National Greenhouse Gas Inventories, it is the result of $(\frac{44}{12} \times \frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}})$ and the

default value at the upper limited of the uncertainty at a 95% confidence interval is 99.7tCO₂e/TJ.

The design efficiency of the Xinjiang Huadian Hongyanchi Power Plant ($\eta_{BL,EL}$) was 38.31%, the evidence Statement on Basic Data of Xinjiang Huadian Hongyanchi Power Plant (Ref-22) has been checked by BVC and found consistent.

The $EF_{BL,EL}$ is 0.9369tCO₂e/MWh, BVC reproduced the Emission Reduction Calculation and got the same result. (Ref-76)

The values determined for $\eta_{BL,EL}$ shall remain fixed throughout the crediting period. However, if during the crediting period a technical measure is taken to improve efficiency of the project power plant and the efficiency increases by x percentage point, then the efficiency of the baseline power plant $\eta_{BL,EL}$ should also be increased by the same x percentage point. Therefore, BVC requires the PP to monitor the efficiency of the Xinjiang Huadian Hongyanchi Power Plant during non-heating supply period, and if a higher value than the design value is discovered, that the higher value should be used in the determination of baseline emissions.

The baseline emissions from power generation are estimated as:

$$BE_{EL,y} = \text{Min}(4,526,364,000\text{kWh}, 4,800,000,000\text{kWh}) \div 1000 \times 0.9369\text{tCO}_2\text{e/MWh} = 4,240,675\text{tCO}_2\text{e}$$

The baseline emissions are estimated as:

$$BE_y = BE_{HG,y} + BE_{EL,y} = 6,322,900\text{tCO}_2\text{e}$$

Project emissions

The Project involves four heat-only boiler houses, the project emissions (PE_y) are the CO₂ emissions from fossil fuel combustion associated with the production of heat and electricity in the Xinjiang Huadian Hongyanchi Power Plant, and the CO₂ emissions from fossil fuel combustion in heat-only boiler houses.

According to the methodology AM0058 version 03.1, the project emissions (PE_y) are calculated using the latest version of the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" (Version 02). (Ref-5)

Subsequently, according to the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" (Version 02), the formulae as following:

$$\text{Formula 12: } PE_y = \sum_j PE_{FC,j,y}$$

Formula 13: $PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$

Where:

$PE_{FC,j,y}$ are the CO₂ emissions from fossil fuel type i combustion in the process j (Xinjiang Huadian Hongyanchi Power Plant and the heat only boiler houses) during the year y (tCO₂/yr)

$FC_{i,j,y}$ is the quantity of fuel combusted in process j (Xinjiang Huadian Hongyanchi Power Plant and the four HOBs) during the year y (ton), the value for ex-ante determination of emission reductions was estimated by the historic data based on the 4 years operation since 2005 (Ref-15), this parameter will be monitored ex-post.

$COEF_{i,y}$ is the CO₂ emission coefficient of coal consumed in year y (tCO₂/t)

i are the fuel types combusted in process j during the year y, the Xinjiang Huadian Hongyanchi Power Plant and the boiler houses consumes coal only. (Ref-8, Ref-21)

j process where heat and electricity is generated

According to the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, two approaches can be used for calculating the CO₂ emission coefficient of coal ($COEF_{i,y}$), Option A should be the preferred approach, if the necessary data is available.

However, because the weighted average mass fraction of carbon in coal ($W_{C,i,y}$) and the weighted average density of coal ($\rho_{i,y}$) are not available, Option B was employed in the PDD, which is in line with the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”

Option B: The CO₂ emission coefficient ($COEF_{i,y}$) is calculated based on net calorific value and CO₂ emission factor of the fuel type i, as follows

Formula 14: $COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$

Where:

$COEF_{i,y}$ is the CO₂ emission coefficient of fuel type i in year y (tCO₂/t)

$NCV_{i,y}$ is the weighted average net calorific value of the fuel type i in year y (GJ/mass or volume unit). The final version of PDD adopted the historic value of 20.591GJ/t sourced from the Monthly Operation Records of the Xinjiang Huadian Hongyanchi Power Plant (Ref-21). This value will be monitored ex-post.

$EF_{CO2,i,y}$ is the weighted average CO emission factor of fuel type i in year y (tCO₂/GJ); This PDD adopts IPCC default value of 0.0997tCO₂/GJ, at the upper limit of the uncertainty at the 95% confidence interval, BVC has checked the Table 1.4, Chapter 1, Vol. 2 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories has been checked and found consistent. BVC also confirm that this value is same as the CO₂ emission factor of the fossil fuel used in the absence of the project activity in the heat generation system and

therefore reasonable.

i are the fuel types combusted in process j during the year y.

The total coal will be consumed by both the Xinjiang Huadian Hongyanchi Power Plant and the four HOBs estimated in the PDD was sourced from FSR (Ref-15), which will increase year by year with the increasing of heating area until the Project fully commission in 2013, and the quantity will reach 2,512,237 tons coal at that time, the ex-ante estimated project emissions are:

$$PE_y = 2,512,237t \times 20.591GJ/t \times 0.0997tCO_2/GJ = 5,157,428tCO_2e$$

Leakage

According to the methodology AM0058 version 03.1, the leakage emissions are calculated as follows:

$$\text{Formula 15: } LE_y = LE_{EL,y} + LE_{FS,y}$$

Where:

LE_y is the leakage emissions in the year y, (tCO₂e)

$LE_{EL,y}$ is leakage emissions from the decrease in the electricity supply to the grid during the year y, (tCO₂e)

$LE_{FS,y}$ is the leakage emissions from fuel switch during the year y, (tCO₂e)

The fuel used in the baseline and the project activity is the same fuel, no fuel switch and the leakage emissions from fuel switch is zero.

Therefore, the leakage of the Project is the leakage emissions from the decrease in the electricity supply to the grid during the year y, as follow:

$$LE_y = LE_{EL,y}$$

The leakage emissions from the decrease in the electricity supply to the grid during the year y are determined as follow:

If $EG_{PA,y} < EG_{min,hist}$, and $EF_{grid} > EF_{BL,EL}$

Then:

$$\text{Formula 16: } LE_{EL,y} = (EG_{min,hist} - EG_{PA,y}) \times (EF_{grid} - EF_{BL,EL})$$

Where:

$LE_{EL,y}$ is the leakage emissions from the decrease in the electricity supply to the grid during the year y, (tCO₂e)

$EG_{min,hist}$ is the minimum historic annual amount of electricity supplied to the grid over the three most recent years prior to the start of the project activity, as the Table 8 above, the



value is 1,916,680,000kWh. (Ref-21)

- $EG_{PA,y}$ is the monitored actual quantity of electricity supplied by the project activity to the grid in the year y , it is estimated at 4,800,000,000kWh (Ref-8), this parameter will be monitored ex-post.
- EF_{grid} is the emission factor of the electricity grid system (tCO_2/MWh), which is calculated ex-ante and fixed for the crediting period, which is in line with the methodology AM0058 version 03.1 and the “Tool to calculate the emission factor for an electricity system” version 02 /5/
- $EF_{BL,EL}$ is the baseline emission factor for the electricity production, The $EF_{BL,EL}$ is 0.9369 tCO_2e/MWh as calculated above.

As estimated in the FSR (Ref-8), the $EG_{min,hist} < EG_{PA,y}$, therefore, the leakage is zero in estimation of emission reductions; the $EG_{PA,y}$ will be monitored and the emission factor of the grid was fixed ex-ante as follow.

The emission factor of the electricity grid system is calculated as following seven steps. In addition, the calculation in the PDD refers to the latest “Notification of China-Grid EF” published by China’s DNA on 18/07/2008 which is most recent information available at the time of CDM-PDD submission to BVC for validation.

As per “Tool-Grid EF” version 02, seven steps therein are applied to calculate the emission factor:

Step 1.-Identify the relevant electricity systems.

NWPG is selected as the electric power system of the Project as per “Notification of China-Grid EF” issued by China’s DNA at the time of commencing this validation. There is no net electricity imported from other power grid during 2002 to 2005, but net electricity exported from NWPG to Centre China Power Grid. Electricity export was not subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

- ☞ BVC was able to confirm that the identified electric power system of the Project is consistent with “Notification of China-Grid EF”. The geographical extent of the project activity system has been documented transparently and all grid power plants connected to the system have been identified.

Step 2.- Choose whether to include off-grid power plants in the project electricity system (optional)

Option I (only grid power plants are included in the calculation) provided in “Tool-Grid EF” version 02 is chosen to calculate the operating margin and build margin emission factor.

Step 3.-Select an operating margin (OM) method.

For the calculation of the OM emission factor, the simple OM emission factor calculation method is selected because low cost/ must-run projects constitute less than 50% of the total grid generation during the last 5 years.

- ☞ Only grid power plants are included in the calculation. BVC has checked the calculation for low cost/must-run constitution of the total grid generation and confirmed the calculation is correct.



Therefore, simple OM emission factor calculation method is selected reasonable. A 3-year generation-weighted average, based on the most recent data from China Electric Power Yearbook 2005-2007, which are the data available at the time of submission of the CDM-PDD to the BVC for validation, has been applied and calculated correctly.

Step 4.-Calculate the operating margin emission factor according to the selected method.

Option B, Based on data on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system, is used to calculate simple OM emission factor. The data on electricity generation and auxiliary electricity consumption are obtained from the China Electric Power Yearbook from 2005 to 2007 (published annually). The data on different fuel consumptions for power generation and the net caloric values of the fuels are obtained from the China Energy Statistical Yearbook from 2005 to 2007. The emission factors of the fuels adopted are obtained from Table 1-2 and Table 1-4 of the "2006 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook."

The renewable crediting period is adopted for the Project and the OM will be fixed for the first crediting period.

✎ The data source are deemed reasonable and BVC confirms that the calculation can be replicated using the data and parameter provided in the PDD.

Step 5.-Identify the group of power units to be included in the build margin (BM).

The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently (Option b) is adopted properly for the Project.

Considering data availability, deviation accepted by EB was used in the PDD i.e.

- 1) Use of capacity additions during the last 1~3 years for estimating the build margin emission factor for grid-connected electricity.
- 2) Use of weights estimated using installed capacity in place of annual electricity generation.

✎ BVC hereby confirms that the data source and approaches taken are deemed reliable.

Step 6.-Calculate the build margin emission factor.

The BM emission factor of the power grid is calculated by multiplying the emission factor of the thermal power with the share of the thermal power in the most recently added approach to 20% of total installed capacity. The emission factor for thermal power is determined based on the most advanced and commercially available technology endorsed by China's DNA.

✎ BVC hereby confirms that the data sources are deemed reliable and calculation is appropriate.

Step 7.-Calculate the combined margin (CM) emissions factor.

According to the "Tool-Grid EF", the default weights $\omega_{OM} = 0.5$ for Operating Margin and $\omega_{BM} = 0.5$ for build Margin in the first crediting period are adopted.

The Simple OM emission factor ($EF_{grid,OM,y}$) of NWPG is calculated as 1.1225tCO₂e/MWh. Similarly,

the build margin emission factor ($EF_{grid,BM,y}$) of the NWPG is calculated as 0.6199tCO₂e/MWh.

Therefore, the combined baseline emission factor is determined ex-ante and will remain fixed during the first crediting period, viz.

$$EF_{grid} = 1.1225 \times 0.5 + 0.6199 \times 0.5 = 0.8712 \text{ tCO}_2\text{e/MWh}$$

Emission reductions

Formula 17: $ER_y = BE_y - PE_y - LE_y$

Where:

ER_y Emission reductions due to the project activity during the year y (tCO₂e)

BE_y Baseline emissions during the year y, (tCO₂e)

PE_y Project emissions during the year y, (tCO₂e)

LE_y Leakage emissions in the year y, (tCO₂e)

$$ER_y = 6,322,900 \text{ tCO}_2\text{e} - 5,157,428 \text{ tCO}_2\text{e} - 0 = 1,165,472 \text{ tCO}_2\text{e}$$

The estimated annual emission reductions of the Project are 1,165,472tCO₂e after the fully commission of the Project during the crediting period represents a reasonable estimation using the assumptions given by the Project. And the average annual emission reductions over the ten years crediting period are 1,155,074 tCO₂e.

The parameters used in the determination of emission reductions and do not be monitored ex-post are summarized as follow:

Table 9 Summary of Parameters Not Monitored

Parameter	Description	Value	Evidence
	Average remaining lifetime of boilers for category j	Listed in the PDD and ER spreadsheet	Ref-12 Ref-16 Ref-81
CAP _{j,i}	Nameplate capacity of all existing boilers	Listed in the PDD and ER spreadsheet	Ref-8 Ref-12 Ref-16 Ref-81
EG _{max,hist}	the maximum historic annual amount of electricity supplied to the grid over the three most recent years prior to the start of the project activity	4,526,364,000kWh	Ref-21 Ref-63
EG _{min,hist}	the minimum historic annual amount of electricity supplied to the grid over the three most recent years prior to the start of the project activity	1,916,680,000kWh	Ref-21 Ref-63

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Parameter	Description	Value	Evidence
$\text{COEF}_{\text{BL,HG},j,i}$	CO ₂ emission factor of the baseline fuel(s) of the heat production in the categories of j	0.0997tCO ₂ /GJ	Ref-79
$\epsilon_{\text{BL,HG},j,i}$	The efficiency of the boilers that would have been used in the absence of the project activity in boiler houses	Listed in the PDD and ER spreadsheet	Ref-8 Ref-12 Ref-13 /2/ /12/
$\frac{44}{12} \times \frac{EF_{\text{FF,BL,EL}}}{NCV_{\text{FF,BL,EL}}}$	EF _{FF,BL,EL} is CO ₂ emission factor for the fossil fuel fired in the power plant used prior to the start of the implementation of the project activity; NCV _{FF,BL,EL} is Net calorific value of fossil fuel fired in the power plant used prior to the start of the implementation of the project activity. Because no EF _{FF,BL,EL} in unit tC/mass or volume available, but the result of (44/12*EF _{FF,BL,EL} /NCV _{FF,BL,EL}) i.e. EF in unit (tCO ₂ /TJ) is listed in the Table 1.4, Chapter 1, Vol. 2 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories, this result was employed in the PDD.	99.7tCO ₂ /TJ	Ref-21 Ref-79 Ref-80
Subscript j	Categories grouped by (i) type of buildings (new/existing), (ii) type of technology used and (iii) fuel type used in the absence of the project activity. For each category j, all connected buildings should be clearly identified.	Listed in the PDD and ER spreadsheet	Ref-8 Ref-12 Ref-16 Ref-19
Subscript i	Sub-station	Listed in the PDD and ER spreadsheet	Ref-12 Ref-16 Ref-19
$\eta_{\text{BL,EL}}$	Efficiency of the power plant used prior to the start of the implementation of the project activity	38.31%	Ref-22 Ref-100
EF _{CO2,i,y}	the weighted average CO ₂ emission factor of the fuel type i in year y (tCO ₂ /GJ)	0.0997tCO ₂ /GJ	Ref-79

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Parameter	Description	Value	Evidence
EF_{grid}	Emission factor of the electricity grid system, it has been determined ex-ante and will be fixed for the crediting period according to the Tool to calculate the emission factor for an electricity system.	0.8712tCO ₂ e/MWh	/5/ Ref-76
w_j	the index of design load for heating of building	77W/m ² for existing building (category 1) 70W/m ² for new building (category 2 and category 3)	Ref-8, Ref-9, Ref-14
T_N	the indoor mean air temperature during heating period	18°C	Ref-8 Ref-9 Ref-14 Ref-74 Ref-75
T_P	mean outdoor temperature during heating period	-7.4°C	Ref-8 Ref-9 Ref-14 Ref-18
T_W	outdoor design temperature during heating period	-22°C	Ref-8 Ref-9 Ref-14 Ref-18

☞ Complying with **para.92 and 93/VVM**, BVC hereby confirms that:

- All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used by 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 AM0058 version 03.1, Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" version 02 and "Tool to calculate the emission factor for an electricity system" version 02 has been applied correctly to calculate project emissions, baseline emissions, leakages and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

3.8 Monitoring Plan (124)

The Project uses the approved monitoring methodology AM0058 version 03.1 for Introduction of a new primary district heating system.

Applicability of this methodology is justified in the PDD as the Project is a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers. Refer to the discussions on the applicability of the methodology at Section 3.6.1 above. BVC hereby confirms that the monitoring plan complies with the requirements of the methodology.

As summarized in the Table 9 above, the parameters not monitored and determined ex-ante have been verified. According to the AM0058 version 03.1, the monitoring plan includes the following parameters:

Table 10 Parameters need to be monitored

Parameter	Description	Measurement Procedures
Status of the district heating system and capacity	Dates of commissioning and status of rated capacity of boilers	Maps or schematic-plan diagrams of the district heating system, updated on the basis of information from schematic-plan diagrams of the district heating system and SCADA systems
$Q_{\text{extracted},y}$	Quantity of heat extracted from the cogeneration plant during the year y	Heat meter at supply side of heat exchanger
$A_{j,i}$	Total carpet area of all the building in category j supplied by substation i	Actual measurement for existing buildings, conducted by the municipal quality and technology supervision bureau, or estimations from the municipal planning agencies for new buildings
$Q_{i,y}$	Quantity of heat supplied from sub-station i to category j buildings	On site measurements of heat meters at substations
$EG_{PA,y}$	Actual quantity of electricity supplied to the grid in the year y	Continuous measurement with the electricity meters at Xinjiang Huadian Hongyanchi Power Plant.
$\eta_{BL,EL}$	Efficiency of the power plant used prior to the start of the implementation of the project activity	38.31% employed in the PDD was the design value provided by Xinjiang Huadian Hongyanchi Power Plant, this value will be monitored, if a value higher than 38.31% is discovered, the higher value should be used for determination of emission reductions.

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Parameter	Description	Measurement Procedures
FC_y	Quantity of fuel type i combusted in process j during the year y	On site measurements of the fossil fuel before sending to power plant boilers are conducted with weighing balances, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
$NCV_{i,y}$	Weighted average net calorific value of fuel type i in year y (GJ per mass or volume unit)	Historic data of 20.591GJ/t source from the Monthly Operation Records of the Xinjiang Huadian Hongyanchi Power Plant was used for ex-ante determination of emission reductions, and this parameter will be monitored ex-post as per the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion"

All parameter need to be monitored have been specified in the PDD, and the monitoring procedures, installation of monitoring equipments and QA/QC procedures are in line with standards/regulations (Ref-82, Ref-83, Ref-84, Ref-85) and the AM0058 version 03.1.

Therefore, BVC is of the opinion that the monitoring plan complies with the requirements of the methodology.

Operational management for the project activity is comprehensively detailed in PDD and this includes description of the responsibility, procedure reference, calibration frequency and maintenance needs.

BVC confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by the Project can be reported ex post and verified.

☞ Complying with **para.124/VVM**, BVC hereby confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design and the project participants are able to implement the monitoring plan.

3.9 Sustainable development (127)

China's DNA confirmed the contribution of the project to the sustainable development of the host Party. Refer to item 3.1 of this report.

3.10 Local Stakeholder consultation (130)

The PP introduced the Project to local stakeholders and invited comments from the local stakeholders (Ref-77) in Nov. 2007 prior to the publication the PDD on the UNFCCC website. The survey was conducted by distributing questionnaires to local stakeholders (Ref-77). The consulted local stakeholder included local residents, experts and government officials. (Ref-77)



The surveys show that the Project has strong local support among the local people. Most of the interviewed stakeholders agree the construction of the Project. Some interviewed stakeholders were concerned on heating supply quality regarding the temperature. According to the FSR (Ref-11), the heat supply quality will be higher than that supplied by isolated networks, and there is mandatory regulation to guarantee the quality of heating supply will not be reduced as result of the implementation of the Project (Ref-75). BVC interviewed the local stakeholders during the on-site visit of the validation process and received consistent responses (in Section 6 REFERENCES the person interviewed are listed). Furthermore, BVC by assessing the questionnaires answered by the stakeholders verified the adequacy of the consultation process.

- ☞ Complying with **para.130/VVM**, BVC hereby confirms that the local stakeholder consultation was properly performed. According to the findings, the Project will be beneficial to the local sustainable development without negative effects on the local stakeholders.

3.11 Environmental Impacts (133)

BVC has controlled that the Environmental Impact Assessment was carried out by Urumqi Environmental Protection Institute in May 2004, and approved by the Environmental Protection Bureau of Xinjiang Uygur Autonomous Region on 17/06/2004 (Code: XHKH [2004] No.271). (Ref-11)

The environmental impact caused by the Project have been identified and analyzed in the PDD. By checking the EIA report (Ref-11), BVC is able to guarantee that the environment impacts occurs mainly in the construction/operation period due to dust and exhaust gas, noise pollution, solid waste, waste water and social impact. All above impacts would be within an acceptable limit by implementing corresponding mitigation measures as per the statement of the EIA.

- ☞ Complying with **para.133/VVM**, BVC hereby confirms that, in accordance with the EIA, the Project will not have any significant impacts on the environment by means of measures of pollution avoidance and control as well as ecological recovery.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

- ☞ Complying with **para.173/VVM**, BVC published the project design document on the UNFCCC CDM website on 02/09/2008 and invited comments prior to 01/10/2008 by Parties, stakeholders and non-governmental organizations.

No comments were received during this period.



5 VALIDATION OPINION

Bureau Veritas Certification has performed the validation of Southern District Heating Network in Urumqi City in P.R. China. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up on-site visit and interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participants used the methodology AM0058 version 03.1, latest Combined tool to identify the baseline scenario and demonstrate additionality version 02.2, VVM version 01.2 to demonstrate the additionality of the Project. In line with the methodology and tool, the PDD provides investment analysis on levelized cost of heat to determine that the project activity itself is not the baseline scenario. The methodology AM0058 version 03.1, Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion version 02 and the Tool to calculate the emission factor for an electricity system (version 02) is also applied to determine the baseline emissions, project emissions, leakage and emission reductions.

By synthetic description of the project, the Project is likely to result in reductions of GHG emissions partially. An analysis of the investment demonstrates that the proposed project activity is not a plausible baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is expected to achieve the average annual emission reductions of 1,155,074tCO₂e over the chosen fixed crediting period.

The review of the project design documentation (version 04) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of Southern District Heating Network in Urumqi City as CDM project activity.

6 REFERENCES

Category 1 Documents:

Documents provided by the Urumqi Heating Supply Co., Ltd that relate directly to the GHG components of the project.

Ref-1	PDD version 01 dated 29/08/2008 available for public comments (GSP) on 02/09/2008 http://cdm.unfccc.int/Projects/Validation/DB/H1BYZ2UEIVYE999VGCLR1I7KDWW7VT/view.html
Ref-2	PDD version 04 dated 20/11/2010
Ref-3	Letter of Approval from DNA of China (Host country) dated Aug. 2008 (Code: No. 1381)
Ref-4	Letter of Approval from DNA of UK (Annex I party) dated 24/08/2009
Ref-5	Modalities of Communication Form dated 27/04/2010 signed by Urumqi Heating Supply Co., Ltd and Carbon Resource Management Ltd
Ref-6	Energy Conservation Law of the People's Republic of China effected from 01/01/1998 and revised on 01/04/2008
Ref-7	Regulation of Developing Cogeneration (Document Code: Ji Jichu [2000] No. 1268). http://www.jixi.gov.cn/2010/news.asp?id=5246
Ref-8	Feasibility Study Report (FSR) conducted by Beijing Gas & Heat Power Project Design Institute and Urumqi Heating Engineering Design Institute in Mar. 2004
Ref-9	Certificates of FSR conductor, A class for Beijing Gas & Heat Power Project Design Institute (certificate code: 010109-sj) and B class for Urumqi Heating Engineering Design Institute (certificate code: 301134-sy), authorized by former Ministry of Construction of P.R. China.
Ref-10	The FSR approval issued by Xinjiang Uygur Autonomous Region Development & Reform Commission on 29/03/2004 (Code: XJTZ [2004] No.379)
Ref-11	EIA report conducted by Urumqi Environmental Protection Institute in May 2004 and Approval issued by Environmental Protection Bureau of Xinjiang Uygur Autonomous Region on 17/06/2004 (Code: XHKH [2004] No.271)
Ref-12	143 Information Forms of Existing Boilers Issued by each boiler house owner
Ref-13	Determination of efficiency of boiler house No. 144 (Xingfu Road boiler house), No. 145 (Guangming Roan boiler house) and Weihuliang boiler house conducted by Beijing Gas & Heat Power Project Design Institute

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Ref-14	Statement on Determination of Efficiency of Boilers in Southern Urumqi City issued by qualified entity, Beijing Gas & Heat Power Project Design Institute, who has an A class certificate in district heating design
Ref-15	Statement on Determination of Coal consumption in the Xinjiang Huadian Hongyanchi Power Plant and the HOBs of Southern District Heating Network in Urumqi City, issued by the Beijing Gas & Heat Power Project Design Institute
Ref-16	Corresponding Table of substations, buildings/communities and boiler houses issued by Urumqi Heating Supply Co., Ltd
Ref-17	Confirmation on Heat Supply Status in Urumqi, issued by Heat Supply Administrative Office of Urumqi City
Ref-18	Cogeneration Planning of Urumqi City, approved by Urumqi Development and Reform Commission in 2007
Ref-19	Approval of overall plan of Heating Supply in Urumqi City dated 28/12/2000 (document code: XJGH [2000] No. 79) issued by the Xinjiang Uygur Autonomous Region Construction Department (former government department of Housing and Urban-Rural Construction Department) on 28/12/2000.
Ref-20	Opinion on Heating Supply Schematic Plan Diagrams in Southern Urumqi dated 18/09/2003 (document code: WCGH [2003] No. 230) issued by Urumqi Urban Planning Administration Bureau
Ref-21	Monthly Operation Records of the Xinjiang Huadian Hongyanchi Power Plant
Ref-22	Statement on Basic Data of Xinjiang Huadian Hongyanchi Power Plant, issued by the Xinjiang Huadian Hongyanchi Power Plant on 01/08/2008
Ref-23	Statement on the Technical Barrier of the Southern District Heating Network in Urumqi City issued by the Beijing Gas & Heat Power Project Design Institute
Ref-24	Notifications of Heat Supply Price of Urumqi City issued by the Urumqi Development and Reform Commission on 09/10/2003, document code: UJJGN [2003] No. 40, and still effected in 2010: http://urumqidrc.gov.cn/uploadfiles/2010-9/2010914164828376.xls
Ref-25	Heat Purchase Contract signed between the Urumqi Heating Supply Co., Ltd and the Xinjiang Huadian Hongyanchi Power Plant
Ref-26	Financial Audit Report of the Project (regular audit) issued by authorized entity
Ref-27	Heat Purchase VAT Invoices of the Project

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Ref-28	Trend of Coal Price, issued by NDRC http://www.sdpc.gov.cn/jjxsfx/t20090225_263319.htm
Ref-29	Quantitatively Analysis on Coal Price Trend, issued by Mr. Wei Gang, Researcher of Huatai Security, on 20/08/2010 http://www.p5w.net/stock/lzft/hyyj/201008/P020100828401526415102.pdf
Ref-30	Final Report of research on Urumqi City Heating Price finished in Jul. 2009, a sub-project of Heat Reform and Building Energy Efficiency Project (HRBEE) funded by the World bank/GEF/Ministry of Housing and Urban-Rural Development of the P.R. China, conducted by Urumqi Municipal Construction Commission, Urumqi DRC and Xinjiang Agricultural University
Ref-31	Investigation of Energy Price in Cities, page 13 of Challenge Faced by the Development of Clean Coal Technology in China, Ms. Yu Zhufeng, published by World Wide Fund for Nature (WWF): http://www.wwfchina.org/wwfpress/publication/climate/challengeyzzf.pdf
Ref-32	Evidences of high Cost on Solar heating http://www.hngyg.gov.cn/news1.aspx?hyid=20315&id=05
Ref-33	The Present Condition and Prospects for the Heat System of Gas, By Mr. Li Xianrui, Liu Xiao, BEIJING ENERGY CONSERVATION, 2000 Vol.2
Ref-34	Cogeneration Industrial Experiencing losses, issued by NDRC http://www.ndrc.gov.cn/xxfw/hyyw/t20051012_44968.htm
Ref-35	Research on Radius of Biomass Collection for Generation http://www.docin.com/p-52972906.html#
Ref-36	History, Question and Proposal for Geothermal Resources Investigating and Develop, Lin Wenjing, The Institute of Hydrogeology and Environmental Geology, CAGS
Ref-37	Implementation Measures on City Centralize Heating Industrial Policy (document code: JCZ [1992] No. 45), issued by former Ministry of Construction of P.R. China on 02/02/1992 and valid at present http://www.mohurd.gov.cn/hytj/cshczjstj/qt/200804/t20080423_160607.htm
Ref-38	Statement on the Heating Technology in Urumqi, issued by Urumqi Municipal Heating Industry Administration Office
Ref-39	Administrative Measures on City District Boiler Heating (document code: JCZ [1994] No. 599) issued by the former Ministry of Construction of P.R. China on 26/09/1994 and valid at present: http://www.keerqin.gov.cn/ReadNews.asp?NewsID=5458

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Ref-40	Cogeneration investigation report conducted by science and technology stimulative development research center of ministry of science and technology, P.R. China, 2004
Ref-41	Main equipments purchase contracts with equipment suppliers dated 15/10/2005
Ref-42	Main construction contracts signed with the civil construction entity
Ref-43	Progress of Key Construction Project of Urumqi, issued by Urumqi Development and Reform Commission in 2007, 2008 http://www.docin.com/p-5653023.html#
Ref-44	Energy and Resource Conserve Integrate Utilization Project list (2004 to 2008) issued by the Urumqi Development and Reform Commission in 2008 http://urumqidrc.gov.cn/uploadfiles/2008-7/200877165549950.xls
Ref-45	Term Sheet of Emission Reductions of the Project signed between the PP and another CER buyer dated 05/01/2007
Ref-46	The kick-off meeting on China's CDM capacity building supported by the DNA of China on 20/11/2003 http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=34
Ref-47	Consulting Contract signed with Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. on 08/07/2004
Ref-48	PDD Development Service Contract signed with Global Climate Change Institute, INET, Tsinghua University on Apr. 2005
Ref-49	Meeting minutes of study on applying for CDM, supported by the Global Climate Change Institute, INET, Tsinghua University and the Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd., dated 15/10/2004, 28/03/2006, 29/10/2006, 20/12/2006, Oct. 2007
Ref-50	Emails with the methodology AM0058 development entity
Ref-51	Notification on Determining Baseline Emission Factor of China's Grid dated on 18/07/2008. http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2413.pdf
Ref-52	"Economic Evaluation Method and Parameters for Project Construction" (version 3) issued by the NDRC and the former Ministry of Construction of China in 2006
Ref-53	Interim Enterprise Income Tax Regulation issued by the State Council of China in 1993 and expired in 2008

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Ref-54	Notification on Administration of Enterprise Income Tax issued by State Administration of Taxation in 2003, document code: GSF [2003] No. 70
Ref-55	Interim VAT Regulation (1993) Issued by the State Council of China effective since 01/01/2004 and expired on 01/01/2009 Interim VAT Regulation (2009) Issued by the State Council of China effective since 01/01/2009
Ref-56	Notification on Adjust Water Price in Urumqi issued by Urumqi Municipal Price Control Administration on 20/06/2002 http://www.xjpi.gov.cn/zfdj/new.php?lx=new&id=3797
Ref-57	Notification on Adjust Water Price in Urumqi issued by Urumqi Municipal Price Control Administration on 25/10/2005 http://www.xjpi.gov.cn/zfdj/new.php?lx=new&id=6654
Ref-58	Notification on Adjust Electricity Price in Urumqi City issued by Urumqi Municipal Price Control Administration on 26/11/2004 http://www.xjpi.gov.cn/zfdj/new.php?lx=new&id=4071
Ref-59	Notification on Tariff of Northwest Power Grid in 2008 issued by NDRC http://www.sdpc.gov.cn/zcfb/zcfbtz/2008tongzhi/t20080702_222225.htm
Ref-60	Historic Lending Rate issued by the People's Bank of China http://www.pbc.gov.cn/publish/zhengcehuobisi/631/1269/12693/12693_.html
Ref-61	Lending Agreement of the Project dated 09/05/2005
Ref-62	Regulations on Employee's Social Insurance, Medical Insurance, Unemployment Insurance, Employment Injury Insurance, Maternity Insurance and Health Fund Issued by local government.
Ref-63	Starting Extract Heat from the Xinjiang Huadian Hongyanchi Power Plant in Oct. 2005 http://www.xjhd.com.cn/news/gaikuang_zhuangji.asp
Ref-64	Project investment decision made on the PP's Board Meeting Minutes dated 15/04/2004
Ref-65	Emission Reductions Purchase Agreement (ERPA) was signed on 23/05/2008 with Carbon Resource Management Ltd
Ref-66	Bulletin on 49th Meeting of National CDM Board issued by China's DNA on 24/06/2008 provided. cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2329.doc
Ref-67	IRR calculation spreadsheet of the Project

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Ref-68	"Notice on Clarifying Enforcement Time to Adjust Enterprise Fixed Assets Residual Value Ratio" issued by State Administration of Taxation of China on 14/09/2005
Ref-69	District Heating Project list in Xinjiang issued by Xinjiang Heating Supply Association
Ref-70	Notifications on Heating Supply in City issued by Urumqi City Government
Ref-71	Design Code of District Heating Network (standard code: CJJ 34-2002) approved by the Ministry of Construction of China (the former government department of Ministry of Housing and Urban-Rural Development of the P.R. China)
Ref-72	District Heating Design Manual, published by the China Power Press in 2006
Ref-73	Heating Supply Engineering, published by China Machine Press in 2008, which is the textbook of district heating course
Ref-74	National Standard: Design code for residential buildings (code: GB50096-1999) published in 2009 and amended in 2003, by the Ministry of Construction of China (the former government department of Ministry of Housing and Urban-Rural Development of the P.R. China)
Ref-75	Management Regulation on the Heating Supply in Urumqi City, issued by the Standing Committee of the People's Congress of Urumqi on 03/06/2004
Ref-76	Emission Reduction calculation spreadsheet
Ref-77	Evidence of 50 pieces of stakeholder survey questionnaires
Ref-78	Public information of Letter of Approval issued by NDRC http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2348.pdf
Ref-79	2006 IPCC Guidelines on National GHG Inventories
Ref-80	China energy statistic yearbooks
Ref-81	Special equipment safety supervision regulations issued by the State Council in 2003
Ref-82	Regulations on Heating Management in Urumqi City issued by the Urumqi City Government in 2002, document code: HZ [2002] No. 77
Ref-83	Civil Building Heating Metrology Management Methods issued by Ministry of Housing and Urban-Rural Development of the P.R. China on 10/06/2008
Ref-84	National standard: Technical administrative code of electric energy metering (DL/T 448-2000)

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Ref-85	Guide for fuel balance of thermal power plant, issued by former Ministry of Electric Power of P.R. China, standard code: DL/T 606.2-1996
Ref-86	Public Notifications on invitation of comments on the Southern District Heating Network in Urumqi City
Ref-87	Building Materials Price Keep Rising, Ministry of Industry and Information Technology of China http://www.miit.gov.cn/n11293472/n11295125/n11299425/12164560.html
Ref-88	Material Price and Manpower Cost in 2008, National bureau of Statistics of China http://www.stats.gov.cn/was40/gjtjj_detail.jsp?searchword=%B9%A4%D7%CA&channelid=6697&record=354
Ref-89	Annual Execution Report submitted to Urumqi City Construction Committee in Aug. 2009
Ref-90	China Trade Union Law
Ref-91	PDD version 05 dated 10/03/2011
Ref-92	PDD version 06 dated 15/06/2011
Ref-93	Electricity purchase invoices of the Project in 2009
Ref-94	Thermal energy purchase invoices
Ref-95	"City District Heating Costs Supervision and Auditing Rules" issued by NDRC in 2006
Ref-96	Statement on the Management Costs of the Southern District Heating Network in Urumqi City issued by the FSR conductor in 2011
Ref-97	Statement on the Number of Workers of the Southern District Heating Network in Urumqi City issued by the FSR conductor in 2011
Ref-98	Further Explanation on the Technical Barrier of the Southern District Heating Network in Urumqi City issued by the Beijing Gas & Heat Power Project Design Institute
Ref-99	Charge Standard of Engineering Investigation and Design, issued by the State Planning Commission and Ministry of Construction in 2002
Ref-100	Test Report at the commissioning of the power plant conducted by State Electric Power Corporation Thermal Power Research Institute in 2001
Ref-101	Manufacture Manual of Turbine Generator Units of Xinjiang Huadian Hongyanchi Power Plant

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Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/	Validation and Verification Manual version 01.2 dated 30/07/2010, EB55 Annex 01
/2/	AM0058 version 03.1 "Introduction of a new primary district heating system" valid from 11/06/2009
/3/	Clarification AM_CLA_0182: Inquiries regarding the correct application of AM0058 with respect to baseline identification and determination of additionality
/4/	"Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion" version 02 (EB41 Annex 11)
/5/	"Tool to calculate the emission factor for an electricity system" version 02 dated 16/10/2009 (referred to as "Tool-Grid EF")
/6/	"Combined tool to identify the baseline scenario and demonstrate additionality" version 02.2, EB28 Annex14
/7/	"Tool for the demonstration and assessment of additionality" version 05.2, EB39 Annex10
/8/	Guidance on the demonstration and assessment of prior consideration of the CDM version 03 (EB49, Annex 22)
/9/	Glossary of CDM terms version 05
/10/	Guidelines on the Assessment of Investment Analysis version 03.1 (EB51, Annex58)
/11/	Guidelines for objective demonstration and assessment of barriers version 01, (EB50 Annex13)
/12/	AM0044 "Energy efficiency improvement projects: boiler rehabilitation or replacement in industrial and district heating sectors" version 01, valid from 21/12/2006
/13/	Tool to determine the remaining lifetime of equipment, EB50 Annex15

Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

Mr. Yuan Jun	Vice General Manager of Urumqi Heating Supply Co., Ltd
Mr. Bao Zhenxin	Director of CDM Office of Urumqi Heating Supply Co., Ltd
Mr. Yuan Zhijian	Director of Dispatching, Control and Monitoring Center of Urumqi Heating



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	Supply Co., Ltd
Mr. Liu Tao	Engineer of Urumqi Heating Supply Co., Ltd
Mr. Liu Deshun	Professor of Global Climate Change Institute, INET, Tsinghua University
Ms. He Cuiying	Manager of Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd.
Mr. Zhang Yukun	Project Manager of Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd.
Ms. Geng Yan	Project Manager of Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd.
Mr. Zhu Hailei	Project manager of Carbon Resource Management Ltd

7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Mr. Liao Ling	BVC, China	<p>Team Leader, Climate Change Lead Verifier.</p> <p>He holds a Bachelor Degree in Atmosphere Science. Before joining BV in 2008, he gained 2 years of technical working experience of CDM in P.R China. He obtained the certificate of CDM Verifier and Lead Auditor for EMS ISO 14001. He has completed the course assessment for the ISO 14064:2006.</p>
Ms. Jasmine Tang Xuemei	BVC, China	<p>Team Member, Climate Change Lead Verifier</p> <p>Climate Change Lead Verifier, She holds a Master Degree in Environment Engineering. She has 3 years of CDM technical experience in energy sector in P.R China and involved in approximate 60 CDM projects in P.R China. She obtained the certificate of CDM Lead Verifier and Lead Auditor for ISO 14001.</p>
Mr. Zeng Ziyuan	BVC, China	<p>Team Member, Climate Change Lead Verifier</p> <p>He holds a Bachelor Degree in Building Environment and Equipment Engineering. Before joining BV in 2008, he gained 2 years of working experience in the green building industry in P.R China. He obtained the certificate of CDM Lead Verifier and Lead Auditor for EMS ISO 14001. He has successfully completed the course assessment for the ISO 14064:2006.</p>
Mr. Wang Sheng	Tianjin Municipal Government	<p>Expert, Engineer, Director of Heating Engineering Technology Department of Hexi District, Tianjin Municipal Government</p> <p>He holds a Bachelor Degree in Thermal and Power Engineering, Hebei University of Technology; and a Master Degree in Environmental Engineering, Tianjin University. He has 10 years of district heating experience in North China, and has memberships both in Tianjin Boiler Technology Application Association and Tianjin Refrigeration and Air Conditioning Application Technology Association.</p>
Mr. Robin Wang Jing	BVC, China	<p>Internal Reviewer, Climate Change Lead Verifier</p> <p>He holds a Bachelor Degree in Gas & Heating Engineering. He was a Gas Engineer with over 10 years' experiences in petrochemical sector in P.R. China. Before joining BV in 2007, he gained two years of CDM audit experience in P.R China. He obtained the certificate of CDM Verifier and Lead Auditor for ISO 14001. He has completed the course assessment for the ISO 14064:2006.</p>

APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOL

Table 1 Validation requirements based on the VVM version 01.2 (EB55 Annex 01) and methodology AM0058 version 03.1

CHECKLIST QUESTION	Ref.	§	Comments		Draft Concl.	Final Concl.
1. Approval			COUNTRY A (P.R. China)	COUNTRY B (UK)		
1.1. Have all Parties involved approved the project activity?	VVM	44	Project participant from host party is: Urumqi Heating Supply Co., Ltd CAR-1 The LoA from China DNA is required. The LoA from China's DNA code No. 1381 dated Aug. 2008 has been checked by BVC.	CAR-2 The LoA from UK DNA is required. The LoA from UK's DNA code CRML/20/2009 dated 24/08/2009 has been checked by BVC.	CAR-1 CAR-2	OK
1.2. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participant or directly from	VVM	45	Pending close CAR-1 The LoA from China DNA has been provided and checked.	Pending close CAR-2 The LoA from UK DNA has been provided and checked.	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments		Draft Concl.	Final Concl.
the DNA)						
1.3. Does the letter of approval from DNA of each Party involved:	VVM	45				
1.3.1. Confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	P. R. China has ratified the Kyoto Protocol on 30/08/2002	UK has ratified the Kyoto Protocol on 31/05/2002,	OK	OK
1.3.2. Confirm that participation is voluntary?	VVM	45.b	Pending on CAR-1 Yes, the participant is voluntary.	Pending close CAR-2 Yes, the participant is voluntary.	Pending	OK
1.3.3. Confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	Pending on CAR-1 Yes	NA	Pending	OK
1.3.4. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	Pending on CAR-1 Yes. The LoA refers to the precise project title in the PDD being submitted for registration, which is Southern District Heating Network in Urumqi City.	Pending on CAR-2 Yes. The LoA refers to the precise project title in the PDD being submitted for registration, which is Southern District Heating Network in Urumqi City.	Pending	OK



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CHECKLIST QUESTION	Ref.	§	Comments		Draft Concl.	Final Concl.
1.4. Is (are) the letter(s) of approval unconditional with respect to (1.3.1) to (1.3.4) above?	VVM	46	No. It is conditional in China	No. It is conditional in Netherlands.	OK	OK
1.5. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA)?	VVM	47	Yes. China's DNA is NDRC	Yes UK' DNA is Department of Energy and Climate Change (DECC)	OK	OK
2. Participation						
2.1. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Pending on CAR-1 The project participant from Host country is Urumqi Heating Supply Co., Ltd.	Pending on CAR-2 The project participant from Annex I party is Carbon Resource Management Ltd	Pending	OK
2.2. Does the DOE have a contractual relationship with the project participants?	VVM	51	Yes.	Yes.	OK	OK
2.3. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	Yes. Refer to http://maindb.unfccc.int/public/country.pl?country=CN	Yes. Refer to http://maindb.unfccc.int/public/country.pl?country=GB	OK	OK
2.4. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	Yes	Yes	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments		Draft Concl.	Final Concl.
2.5. Is the information in section A.3 consistent with the contact details provided in Annex 1 of the PDD?	VVM	52	Yes	Yes	OK	OK
2.6. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation? (Provide reference of the approval document for each of the project participants)	VVM	52	Pending on CAR-1 Yes. The LoA from China DNA has been provided and checked.	Pending on CAR-2 Yes. The LoA from UK DNA has been provided and checked	Pending	OK
2.7. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No.		OK	OK
2.8. Has the approval of participation issued from the relevant DNA?	VVM	53	Pending on CAR-1 Yes	Pending on CAR-2 Yes	Pending	OK
3. Project design document						
3.1. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	Yes. Latest Version 03.2. per the Guidelines for Completing CDM-PDD, CDM-NMB and CDM-NMM – Version 07 –02/08/2008 (hereinafter referred as “Guidelines-Completing PDD”)		OK	OK
3.2. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Yes		OK	OK
3.3. Does the DOE conducted physical site visit to assess the Project? If the DOE does not undertake a physical	VVM	62	Yes The physical site visit has been conducted on		OK	OK



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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
site inspection, this should be appropriately justified.			<p>13/05/2009 by the following verifiers:</p> <p>Mr. Liao Ling Climate Change Lead Verifier of BVC</p> <p>Ms. Jasmine Tang Xuemei Climate Change Lead Verifier of BVC</p> <p>The personal interviewed as follow:</p> <p>Professor Liu Deshun, Global Climate Change Institute, INET, Tsinghua University</p> <p>Mr. Yuan Jun Vice General Manager of Urumqi Heating Supply Co., Ltd</p> <p>Mr. Bao Zhenxin Director of CDM office of Urumqi Heating Supply Co., Ltd</p> <p>Mr. Yuan Zhijian Director of Dispatching, Control and Monitoring Centre of Urumqi Heating Supply Co., Ltd</p> <p>Mr. Liu Tao Engineer of Urumqi Heating Supply Co., Ltd</p> <p>Ms. He Cuiying</p>		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			Manager of Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. Ms. Geng Yan Project Manager of Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. Mr. Zhu Hailei Project Manager of Carbon Resource Management Ltd		
3.4. In CDM-PDD section A.1, are the following provided?	EB 41	Ann 12	Yes	OK	OK
3.4.1. Title of project	EB 41	Ann 12	Southern District Heating Network in Urumqi City	OK	OK
3.4.2. Current version number and date of document	EB 41	Ann 12	GSP Version number: 1, dated 29/08/2008 The final version of PDD is 04 dated 20/11/2010	OK	OK
3.5. In CDM-PDD section A.2, are following provided (max. one page)?	EB 41	Ann 12			
3.5.1. A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, present scenario and baseline scenario	EB 41 - VVM	Ann 12 - 58 59	The purpose of the Project is to utilize the main heat source from the effective exhaust condensation units in Xinjiang Huadian Hongyanchi Power Plant for district heating in Urumqi City. Four large peak-load boiler houses		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
		60	<p>will be set as supplementary heat source to undertake winter heating of the buildings in this region. The new primary district heating system replaces the existing inefficient and isolated coal-fired boilers. As a result, the project improves the thermal energy efficiency and reduces the urban coal-burning air pollution.</p> <p>The Xinjiang Huadian Hongyanchi Power Plant started operation at the end of 2002. The expected annual power generation is 4,800,000MWh and it is only used for electricity generation prior to the implementation of the project activity.</p> <p>The Project is planned and designed by Urumqi Heating Supply Co., Ltd. It will supply heat to 17.45 million m² of residential, public and commercial buildings. The total heat capacity to supply the buildings in the project area is 1442MW. When the Project is fully completed, more than 340 isolated boilers located in 144 small coal-fired boiler houses will be demolished. The pollution will be reduced and the urban air quality will be significantly improved.</p> <p>CAR-3 The quantities of the boilers and boiler</p>	CAR-3	

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>houses and heating area are not consistent with the result of the initial boiler survey.</p> <p>Totally 333 small boilers in 142 boiler houses will be replaced by the Project and demolished, 15 boilers in 3 existing large boiler houses (No. 140, No.144 and No. 145) and 3 boiler in Weihuliang boiler house (put into operation after extraction heat from the CHP) will be supplementary heat source for the Project. There was a mistake in the PDD version 01 regarding to the heating area; the total heating area will reach 17.49 million m² which is 40,000m² larger than the value in the PDD version 01. The total thermal capacity of the Project (CHP plus four HOBs) is 1445MW. The quantity and capacity of boilers and the heating area have been checked against the evidences and found consistent, hence CAR-3 closed.</p> <p>CL-1 Please present a brief description of the Project according to the EB42 Annex12 -“Guidelines for Completing the Project Design Document (CDM-PDD) and The Proposed New Baseline and Monitoring Methodologies (CDM-NM)” (hereinafter</p>	CL-1	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			referred to as "Guidelines - Completing PDD"). The brief description of the Project in line with the Guideline -Completing PDD has been specified in the PDD. Hence CL-1 closed.		
3.5.2. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	The Project is a newly-built project, a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers.	OK	OK
3.5.3. Explanation on how the GHG emission reductions are effected	EB 41	Ann 12	Yes. The new primary district heating system replaces the existing inefficient and isolated coal-fired boilers. As a result, the Project improves the thermal energy efficiency and reduces the urban coal-burning air pollution. It also reduces the CO ₂ emissions.	OK	OK
3.5.4. The PP's vies on the contribution of project activity to sustainable development	EB 41	Ann 12	Yes. The contribution to sustainable development is included in Section A.2 of the PDD has been checked against the approved FSR of the Project.	OK	OK
3.6. In CDM-PDD section A.3, are following provided in the tabular format?					

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
3.6.1. List of project participants and parties	EB 41	Ann 12	Yes. The private entities involved in the project activity are listed at section A.3 of the PDD. Host Party (P.R. China): Urumqi Heating Supply Co., Ltd Annex I Party (UK): Carbon Resource Management Ltd The entities have been confirmed by checking the LoAs issued by the DNAs.	OK	OK
3.6.2. Identification of Host Party			Yes. P.R. China	OK	OK
3.6.3. Indication whether the Party wishes to be considered as project participant	EB 41	Ann 12	Not considered as PP.	OK	OK
3.7. In CDM-PDD section A.4.1, are following provided?	EB 41	Ann 12			
3.7.1. Technical description, location, host party(ies) and address as required	EB 41	Ann 12	Yes. Tianshan District, Urumqi City, Xinjiang Uygur Autonomous Region, China.	OK	OK
3.7.2. Detailed physical location with unique identification of the project activity (e.g. Longitude/latitude)	EB 41	Ann 12	Yes. The exact geographical coordinates of the project	CL-2	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>are E87°36'20" ~ E87°39'25" and N43°45'15" ~ N44°48'54".</p> <p>CL-2 The geographical coordinates of the Project in the PDD version 01 was not consistent with those in the FSR.</p> <p>The geographical coordinates of the Project have been revised to consistent with the FSR, i.e. E87°36'20" ~ E87°39'25" and N43°43'56" ~ N43°49'31", which have been checked against the FSR and found substantial; hence CL-2 closed.</p>		
3.8. In CDM-PDD section A.4.2, is the list of categories of project activities provided?	EB 41	Ann 12	Scope 1: Energy Industries	OK	OK
3.9. In CDM-PDD section A.4.3, are following provided?	EB 41	Ann 12			
3.9.1. A description of how environmentally safe and sound technology, and know-how, is transferred to the Host Party(ies)	EB 41	Ann 12	<p>CL-3 Please specify how environmentally safe and sound technology, and know-how, is transferred to the Host Party.</p> <p>The project involves technology transfer from abroad, since a pressure isolated heat exchange station equipment and dynamic hydraulic analysis technology are imported from Denmark. The</p>	CL-3	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			description regarding the technology has been specified in the PDD, hence CL-3 closed.		
3.9.2. Explanation of purpose of project activity with scenario existing prior to the start of project, scope or present activities and the baseline scenario	EB 41	Ann 12	<p>CL-4 Please describe the project activity, the project scenario and the baseline scenario clearly as per the "Guidelines -Completing PDD"</p> <p>The scenario existing prior to the implementation of the Project was same as the baseline, i.e. the buildings heated by the Project would have been heated by small heating boilers or isolated heating networks. And the Project is a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers. The information required by the Guidelines -Completing PDD has been specified in the PDD and consistent with the evidences, hence CL-4 closed.</p>	CL-4	OK
3.9.3. List and arrangement of the main manufacturing/production technologies, systems and equipments involved	EB 41	Ann 12	The Project activity will use cogeneration central heating technology. The project system mainly includes: boiler heating system, primary district heating network, heating network supervisory system. The information of Boiler heating system, Primary district heating network and heating		OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>network supervisory system has been listed in the PDD.</p> <p>CL-5 List and arrangement of the main manufacturing /production technologies, systems and equipments involved of the scenario existing prior to the start of the implementation of the project activity, the Project activity and the baseline scenario should be described as per the “Guidelines -Completing PDD”.</p> <p>The information required by the Guidelines -Completing PDD has been specified in the PDD and consistent with the evidences, hence CL-5 closed.</p>	CL-5	
3.9.4. The emissions sources and GHGs involved	EB 41	Ann 12	<p>No.</p> <p>CL-6 The emission sources and the greenhouse gases involved in the project activity are required to be presented in the Section A.4.3</p> <p>The emission sources and the greenhouse gases involved in the Project have been specified in the PDD, hence CL-6 closed.</p>	CL-6	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
3.10. In CDM-PDD section A.4.4, is the estimation of emission reductions provided as requested in a tabular format?	EB 41	Ann 12	No. CAR-4 Please provide the estimation of emission reductions in the tabular format. The tabular format has been used, hence CAR-4 closed.	CAR-4	OK
3.11. In CDM-PDD section A.4.5, is information regarding public funding provided?	EB 41	Ann 12	Yes, information has been provided in section A.4.5 of the PDD. No public funding from Annex I party involved in the Project. This has been checked against the approved FSR and found consistent.	OK	OK
3.12. In CDM-PDD section B.1, are following provided?	EB 41	Ann 12			
3.12.1. The approved methodology and version number	EB 41	Ann 12	AM0058 "Introduction of a new primary district heating system" version 01 was used. CAR-5 The latest version of the methodology and tools required by the methodology should be used. The latest version of the methodology AM0058 version 03.1, and the relevant tools required by the methodology have been used in the PDD, hence CAR-5 closed.	CAR-5	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
3.12.2. Any methodologies or tools which the above approved methodology draws upon and their version number	EB 41	Ann 12	"Tool for the demonstration and assessment of additionality" version 05.2 (hereinafter referred to as "Additionality Tool"), "Combined tool to identify the baseline scenario and demonstrate additionality" version 02.2, and "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion" version 02 were used.	OK	OK
3.13. In CDM-PDD section B.2, is justification of the choice of methodology that the project activity meets each of the applicability conditions provided?	EB 41	Ann 12	Please refer to 4.1 of this checklist below Pending on CL-11 to CL-14 Yes, the justification of choice of methodology has been discussed in section B.2.	Pending	OK
3.14. In CDM-PDD section B.3, are following provided?	EB 41	Ann 12			
3.14.1. Description of all sources and gases included in the project boundary in the table	EB 41	Ann 12	Yes.	OK	OK
3.14.2. A flow diagram of the project boundary physically delineating the project activity	EB 41	Ann 12	Yes.	OK	OK
3.14.3. The flow diagram with all equipments, systems and flows of mass and energy etc	EB 41	Ann 12	Yes.	OK	OK
3.15. In CDM-PDD section B.4, are following provided?	EB 41	Ann 12			

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
3.15.1. Explanation how the most plausible baseline scenario is identified in accordance with the selected baseline methodology	EB 41	Ann 12	An explanation of how to identify the baseline has been presented in the PDD. Pending on CL 15 to CL 26 Yes, the most plausible baseline scenario was identified by using the barrier analysis as provided by the methodology and tool.	Pending	OK
3.15.2. Justification of key assumptions and rationales	EB 41	Ann 12	Not applicable.	OK	OK
3.16. In CDM-PDD section B.5, are following provided?	EB 41	Ann 12			
3.16.1. Explanation of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology	EB 41	Ann 12	Please refer to section 5 of this checklist below. The additionality of the Project was demonstrated by investment analysis. The explanation on the investment analysis has been clearly stated in the PDD and checked against relevant evidences and found consistent.	Pending	OK
3.16.2. Justification of key assumptions and rationales	EB 41	Ann 12	Please refer to section 5 of this checklist below. The key assumption is the planned heating area, which has been checked against the authorized evidences and found consistent.	Pending	OK
3.16.3. Transparent illustration of all data used to determine	EB	Ann	Please refer to section 5 of this checklist below.	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
the additionality of the project activity (variables, parameters, data sources etc)	41	12	All input values were sourced from the approved FSR, and checked against relevant evidences.		
3.16.4. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation	EB 41	Ann 12	<p>The PDD presented a timeline of consideration of CDM during the implementation of the Project. Please refer to section 5.10 of this checklist below.</p> <p>Pending on CAR-15</p> <p>The start date of the Project was prior to the date of validation, and the CDM has been seriously considered in the decision to proceed with the Project.</p>	Pending	OK
3.17. In CDM-PDD section B.6.1, are following provided?	EB 41	Ann 12			
3.17.1. Explanation as to how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity	EB 41	Ann 12	Yes.	OK	OK
3.17.2. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	89	<p>Please refer to section 4.4 of this checklist below</p> <p>Yes, all equations and parameters in the PDD have been correctly applied in line with the methodology and the tools.</p>	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
3.17.3. Does the methodology provide for selection between different options for equations or parameters?	VVM	89	Yes	OK	OK
3.17.4. If yes, has adequate justification been provided and correct equations and parameters been used in accordance with the methodology selected? (a) Justification given in the PDD for the choice of data and parameters (b) Appropriate and correct? (c) Applicable to the proposed CDM project activity? (d) Resulting in a conservative estimate of the emission reductions?	VVM	89	Pending on CAR-7 to CAR-12 and CL-27 to CL-33 Justification has been provided and relevant evidences have been checked; equations and parameters have been used in accordance with the methodology and tools, the application of equations and parameters will result in conservative estimate of the emission reductions.	Pending	OK
3.18. In CDM-PDD section B.6.2, are following provided?	EB 41	Ann 12			
3.18.1. A compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken	EB 41 AM 0058	Ann 12 Ver. 03.1	Please refer to section 4.4 of this checklist below. Yes, all parameter and data not monitored required by the methodology are available when validation is undertaken. For conservative, a Forward Action Request was raised for monitoring the energy efficiency of the power plant during non-heating period. And in line with the "Tool to calculate the emission factor for an electricity	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			system", the emission factor of the power grid which the CHP of the Project is connected to will be determined ex-ante and fixed for the whole crediting period.		
3.18.2. Explanation and justification for the choice of the source of data	EB 41	Ann 12	Refer to section 4.4 below Yes, explanation and justification for choice of the source of data have been specified.	Pending	OK
3.18.3. Clear and transparent references or additional documentation in Annex 3	EB 41	Ann 12	Refer to section 4.4 below Yes, clear and transparent references and additional documentation and process have been specified in the Annex 3.	Pending	OK
3.18.4. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results	EB 41	Ann 12	Refer to section 4.4 below Yes, the measurement methods and procedures and responsible entity undertaken the measurement have been specified	Pending	OK
3.19. In CDM-PDD section B.6.3, are following provided?	EB 41	Ann 12			
3.19.1. A transparent ex ante calculation of project emissions, baseline emissions (or, where	EB 41	Ann 12	The baseline emissions and project emissions are both included in the PDD.	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology			Pending on CAR-7 to CAR-12 and CL-27 to CL-33 Yes, the ex-ante calculation of project emissions, baseline emissions and leakage applied relevant equations provided in the methodology and relevant tools.		
3.19.2. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 41	Ann 12	Pending on CAR-7 to CAR-12 and CL-27 to CL-33 The procedures have been specified in the PDD. The emission reduction spreadsheet has been provided; BVC has re-produced the calculation and got the same result.	Pending	OK
3.19.3. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 41	Ann 12	Yes, information and data have been provided in Annex 3, and the emission reductions calculation spreadsheet has been provided. Pending on CAR-7 to CAR-12 and CL-27 to CL-33 The emission reduction spreadsheet has been provided; BVC has re-produced the calculation and got the same result.	Pending	OK
3.20. In CDM-PDD section B.6.4 are, the results of the ex ante estimation of emission reductions for all years of	EB 41	Ann 12	Yes, the emission reductions have been presented in the tabular form.	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
the crediting period, provided in a tabular format?					
3.21. In CDM-PDD section B.7.1, are following provided?	EB 41	Ann 12			
3.21.1. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 41	Ann 12	Refer to section 6 below The procedures and methods for monitoring have been specified and in line with the methodology and tool.	Pending	OK
3.21.2. For each parameter the following information, using the table provided:	EB 41	Ann 12			
3.21.2.1. The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred.	EB 41	Ann 12	The national default value and IPCC default value are used. Pending on CL-39 to CL-41 The data sources will be used and the explanation has been specified.	Pending	OK
3.21.2.2. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration	EB 41	Ann 12	Yes. The measurement methods and procedures have been specified in the PDD. QA/QC procedures have been presented, and the monitoring instruments and employee training plan have been specified in Annex 4. CAR-6 The accuracy of the electricity meters is		OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
procedures are applied, what is the accuracy of the measurement method, who is the responsible person/entity that should undertake the measurements and what is the measurement interval; (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment. Provide any relevant further background documentation in Annex 4.			not in line with national industry standard. The accuracy of the electricity meters is 0.2s, which is in line with the national standard: Technical administrative code of electric energy metering (DL/T 448-2000). Hence CAR-6 closed.	CAR-6	
3.22. In CDM-PDD section B.7.2, are following provided?	EB 41	Ann 12			
3.22.1. A detailed description of the monitoring plan	EB 41	Ann 12	The monitoring plan includes monitoring organization, objects and requirements, monitoring instrument, monitoring measures and procedures, data processing and management, QA/QC procedures and emergency reactions.	OK	OK
3.22.2. The operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity	EB 41	Ann 12	Yes.	OK	OK
3.22.3. The responsibilities for and institutional arrangements for data collection and archiving	EB 41	Ann 12	Yes. The structure covered from general management	OK	OK



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			to data collection.		
3.22.4. Indication that the monitoring plan reflect good monitoring practice appropriate to the type of project activity	EB 41	Ann 12	Pending on CAR-6 The monitoring plan can reflect good monitoring practice to the type of project activity.	Pending	OK
3.22.5. Relevant further background information in Annex 4	EB 41	Ann 12	Yes. Monitoring instruments and contents of employee training have been presented in Annex 4.	OK	OK
3.23. In CDM-PDD section B.8, are following provided?	EB 41	Ann 12			
3.23.1. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 41	Ann 12	Yes. The date of completion of the application of the methodology AM0058 version 01 is 20/05/2008.	OK	OK
3.23.2. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 41	Ann 12	Yes. Global Climate Change Institute, INET, Tsinghua University and Beijing Huaxia Zhengtian International Info. Cons. Co., Ltd. are responsible for application of the baseline and monitoring methodology.	OK	OK
3.23.3. Indication if the person/entity is also a project participant listed in Annex 1	EB 41	Ann 12	No. Both the two entities above are not project	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			participant.		
3.24. In CDM-PDD section C.1.1, are following provided?	EB 41	Ann 12			
3.24.1. The starting date of a CDM project activity, which is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun	EB 41	Ann 12	<p>The start date of the project activity indicated in the PDD version 01 is October 2004.</p> <p>Pending on CAR-15</p> <p>The starting date of the Project has been correctly identified, which was the first main equipment Contract was signed. It was in line with the latest version of Glossary of CDM terms.</p>	Pending	OK
3.24.2. A description of how this start date has been determined, and a description of the evidence available to support this start date	EB 41	Ann 12	<p>No.</p> <p>Pending on CAR-15.</p> <p>The starting date has been correctly identified.</p>	Pending	OK
3.24.3. If this starting date is earlier than the date of publication of the CDM-PDD for global stakeholder consultation by a DOE, description in Section B.5 contain an explanation of how the benefits of the CDM were seriously considered prior to the starting date.	EB 41	Ann 12	<p>The starting date of the Project is earlier than the date of publication of the PDD for global stakeholder consultation. And the benefits of the CDM were considered prior to the starting date.</p> <p>Pending on CAR-15</p> <p>The starting date of the Project has been correctly identified as 14/01/2005, and the CDM benefits have been serious considered in decision to</p>	Pending	OK

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			proceed with the Project, continuing and real actions have been taken to secure CDM status for the project in parallel with its implementation.		
3.25. In CDM-PDD section C.1.2, is the expected operational lifetime of the project activity in years and months provided?	EB 41	Ann 12	<p>The expected operational lifetime of the Project is 22 years.</p> <p>CL-7 The operational lifetime should be sated both in years and months.</p> <p>The operation lifetime has been stated both in years and months; hence CL-7 was closed.</p>	CL-7	OK
3.26. In CDM-PDD section C.2, is it stated whether the project activity will use a renewable or a fixed crediting period and is C.2.1 or C.2.2 completed accordingly?	EB 41	Ann 12			
3.26.1. In CDM-PDD section C.2.1, is it indicated that each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable?	EB 41	Ann 12			
3.26.1.1. In CDM-PDD section C.2.1.1, are dates in the following format: (DD/MM/YYYY) provided?	EB 41	Ann 12	NA	OK	OK

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3.26.1.2. In CDM-PDD section C.2.1.2, is the length of the first crediting period in years and months provided?	EB 41	Ann 12	NA	OK	OK
3.26.2. In CDM-PDD section C.2.2, is the fixed crediting period at most ten (10) years provided?	EB 41	Ann 12	Yes, a 10 year's fixed crediting period was chosen. Pending on CAR-10 The average remaining lifetime of boilers is longer than 10 years of crediting period	Pending	OK
3.26.2.1. In CDM-PDD section C.2.2.1, are the dates provided in the following format: (DD/MM/YYYY)?	EB 41	Ann 12	Yes. The expected starting date of the crediting period is 01/01/2009. CL-8 The starting date of the crediting period should be estimated properly. The starting date of the crediting period has been revised to 15/10/2011, which is reasonable and hence CL-8 was closed.	CL-8	OK
3.26.2.2. In CDM-PDD section C.2.2.2, is the length of the crediting period in years and months provided?	EB 41	Ann 12	No. CL-9 The length of the crediting period should be stated both in years and months. The length of the crediting period has been stated both in years and months; hence CL-9 was closed.	CL-9	OK

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3.27. In CDM-PDD section D, are the conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the Host Party, if environmental impacts are considered significant by the project participants or the Host, provided?	EB 41	Ann 12	<p>The conclusion stated.</p> <p>The Environmental Impact Assessment (EIA) of the Project was finished by Urumqi Environmental Protection Institute and approved by Environmental Protection Bureau of Xinjiang Uygur Autonomous Region on 17/06/2004. These two documents have been provided during on-site visit and checked by BVC.</p> <p>According to the EIA and its approval, the impact of the Project is not considered significant. The Project will reduce the air pollution of Urumqi City due to heating supply in winter and is thus can protect the environment.</p>	OK	OK
3.28. In CDM-PDD section E.1, are the following provided?	EB 41	Ann 12			
3.28.1. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted.	EB 41	Ann 12	<p>Yes.</p> <p>The public comments were invited to evaluate the Project adopting the method of sending "Public Opinion Questionnaires". The PP sent out 50 investigation questionnaires to the stakeholders in the surrounding area of the Project in Urumqi City for the comments of the Project construction in Nov. 2007, and received all 50 questionnaires</p>	OK	OK

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			from the stakeholders.		
3.28.2. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures.	EB 41	Ann 12	Yes. By collecting suggestions of public by distributing questionnaires.	OK	OK
3.28.3. The local stakeholder process has been, completed before submitting the proposed project activity to the DOE for validation.	EB 41	Ann 12	Yes The consultant has been completed in Nov. 2007 before the PDD was submitted to DOE.	OK	OK
3.29. In CDM-PDD section E.2, are following provided?	EB 41	Ann 12			
3.29.1. Identification of local stakeholders that have made comments	EB 41	Ann 12	Yes. The consulted stakeholders include local residents, government officials, isolated boiler house staffs and other persons and there are 40 Hans, 2 Uigurs and 8 in other nationalities.	OK	OK
3.29.2. A summary of these comments.	EB 41	Ann 12	Yes. The comments were summarized in the PDD. CL-10 The summary of the stakeholder consultation in the PDD did not consistent with the initial questionnaires. The summary of the stakeholder has been	CL-10	OK

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			<p>revised and consistent with the evidences; hence CL-10 was closed.</p> <p>It should be noted that there were some stakeholders still used individual coal fired heating boiler and individual small stoves in winter for heating; however, these buildings did not have district heating conditions and were not included in existing buildings connected to existing boiler houses. If these buildings are demolished and new buildings are constructed in those areas, the new buildings will be connected to small isolated heating system in the absence of the Project, which has been confirmed by national regulation and by local authorized government.</p>		
3.30. In CDM-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 41	Ann 12	<p>Yes.</p> <p>All the stakeholders support the implementation of the Project.</p> <p>At the same time, the stakeholders concerned about the heat-supplying quality, and they hope that the conversion of heat supplying system would not change the indoor temperature. The PP planned circumspect heating programs to deal with various cases and ensure the heat supply</p>	OK	OK



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			temperature of the proposed project and the quality of residents' life. This has been checked against the approved FSR and its approval.		
3.31. In CDM-PDD Annex 1, are the following provided?	EB 41	Ann 12			
3.31.1. Contact information of project participants	EB 41	Ann 12	Yes.	OK	OK
3.31.2. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 41	Ann 12	Yes.	OK	OK
3.32. In CDM-PDD Annex 2, is information from Parties included in Annex I on sources of public funding for the project activity which 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 those Parties provided?	EB 41	Ann 12	No public funding from Annex I Parties is involved in the Project, which has been confirmed by checking the FSR and its approval.	OK	OK
3.33. In CDM-PDD Annex 3, is the background information used in the application of the baseline methodology provided?	EB 41	Ann 12	The background information provided in Annex 3 includes: ➤ information of substation and the	Pending	OK

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			<p>corresponding area</p> <ul style="list-style-type: none"> ➤ new building areas ➤ annual heating supply of substation ➤ boiler efficiency, emission factor and heating supply area ➤ the baseline emissions from heating supply <p>Pending on CAR-7 to CAR-12 and CL-27 to CL-33.</p> <p>The background information include substations and corresponding boiler houses, capacity of boilers, technical lifetime of boilers, remaining average lifetime of boilers, existing heating area and planned heating area, efficiency of boiler houses, determination of baseline emissions from heating supply and the emission factor of the grid which the CHP of the Project connected to have been specified in the PDD.</p> <p>According to the methodology, the PDD should transparently document which buildings belong to which category j, the data and correspondence relationship are available, the information have been checked against the evidences and found</p>		



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			consistent; however, since the project covers 17.49 million m ² area, the district includes many sensitive and confidential entities, such as location of military camp, etc. Such information is treated as national confidential information according to Chinese law. BVC can confirm that the information provided in the PDD have enough for determination of emission reductions. The accurate buildings information will not be included in the PDD but will be confidential evidence submitted to CDM EB and will not be published; this is in line with paragraph 6 of the CDM modalities and procedures.		
3.34. In CDM-PDD Annex 4, is the background information used in the application of the monitoring methodology provided?	EB 41	Ann 12	Yes. The information of monitoring instruments and contents of employee training was provided in the Annex 4.	OK	OK
4. Baseline and monitoring methodology					
4.1. Applicability of the selected methodology to the project activity					
4.1.1. Is the selected baseline and monitoring methodology, previously approved by the CDM	VVM	68	The Project is a new primary district heating network which will supply heat for residential and		

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Executive Board, applicable to the project activity?			<p>commercial buildings in the local district and replace the isolated small heating network with low efficient coal-fired boilers. The heat is extracted from the existing 4×200MW electricity generation units which belong to Xinjiang Huadian Hongyanchi Power Plant Co., Ltd. and four heat-only boiler houses will be used as peak load boiler house.</p> <p>The FSR, FSR Approval issued by local government and the Monthly Operation Records of the power plant have been checked and found consistent.</p> <p>CL-11 According to the methodology AM0058 version 03.1, the PDD should specify whether there is heat extraction from the power plant, other than the required for the operation of the power plant auxiliary systems, prior to the project activity. And the proportion of the heat supplied by the heat-only boilers in the total heat supplied by the Project should be presented in the PDD.</p> <p>There was no heat extracted from the CHP prior to the project activity, which has been checked</p>	CL-11	OK



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			against the Monthly Operation Records of the Xinjiang Huadian Hongyanchi Power Plant and found consistent; hence CL-11 closed.		
4.1.2. Is the methodology correctly quoted?	VVM	69			
4.1.3. Are the applicability conditions of the methodology met?	VVM	70			
4.1.3.1. the methodology is applicable to project activities that introduce a new primary district heating system to supply heat to residential and commercial consumers, where the heat comes: (a) Predominantly from an existing grid connected power plant with no heat extraction, other than the required for the operation of the power plant auxiliary systems, prior to the project activity. The project may also involve introduction of new modern heat only boilers to supplement heat from the existing power plant; or (b) From heat only boiler(s), in which case the project boundary includes only existing buildings.			The Project introduced a new primary district heating system to supply heat to residential and commercial consumers, the heat predominantly comes from an existing grid connected power plant without heat extraction prior to the implementation of the Project, and supplementary heat comes from four heat only boilers.	OK	OK
4.1.3.2. Whether the geographical extent of the project boundary can be clearly established in terms of: (a) location of existing and new buildings connected	AM00 58	Ver. 03.1	The geographical extent of the Project boundary can be clearly identified, including the location of existing and new buildings connected to the		

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<p>to the district heating system;</p> <p>(b) identification of boilers, sub-stations and connected isolated heating networks;</p> <p>(c) location and interconnections of heat extraction units at the power plant for feeding the project primary district heating system</p>			<p>district heating system, also the identification of boilers and sub-stations and isolated heating networks connected to them as well as location and interconnections of cogeneration units at Xinjiang Huadian Hongyanchi Power Plant Co., Ltd.</p> <p>The FSR, FSR Approval issued by local government and the Heating Supply Schematic Plan Diagrams in Southern Urumqi worked out by the Urumqi City Urban Planning Bureau have been checked and found consistent.</p> <p>CL-12 The PDD should specify the location and interconnections of heat extraction units at the power plant for feeding the project primary district heating system.</p> <p>The location and interconnections of heat extraction units at the power plant has been specified in the PDD as required by the methodology; hence CL-12 closed.</p>	CL-12	OK
4.1.3.3. If the heat comes from an existing grid connected power plant, does the power plant operated at least 3 years before the start of the Project, and operated under the following conditions:	AM0058	Ver. 03.1	Xinjiang Huadian Hongyanchi Power Plant from which heat is extracted for the southern district heating network, operates in accordance with the following conditions:		

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<p>(a) The heat is supplied by a grid-connected fossil fuel fired power plant</p> <p>(b) Only one type of fuel is used (a maximum of 1% of auxiliary fuel may be used for start-up, etc.). The same type of fossil fuel is fired in the power plant in the baseline and project scenarios;</p> <p>(c) The project activity does not lead to the increase in the technical lifetime of the power plant and does not result in any major integrated production changes at the power plant.</p>			<p>➤ The heat is extracted from a grid-connected coal-fired power plant (Xinjiang Huadian Hongyanchi Power Plant).</p> <p>➤ Only coal is used in the power plant (a maximum of 1% of auxiliary fuel may be used for start-up, etc.). The same type of coal is fired in the power plant in the baseline and project scenarios.</p> <p>The Monthly Operation Records of the power plant have been checked and found its fuel is coal and little diesel (less than 1%) was used.</p> <p>The project activity does not lead to the increase in the technical lifetime of the power plant and does not result in any major integrated production changes at the power plant.</p> <p>This has been confirmed by checking the FSR and its Approval issued by the government, the Project will extract heat from the power plant only and will not impact its technical lifetime.</p> <p>CL-13 The PDD should specify whether the power plant has in operation for at least 3 years prior to the project activity. The technical lifetime and the major integrated production of the power plant before and</p>	CL-13	OK

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			<p>after the implementation of the Project should be presented in the PDD.</p> <p>The Xinjiang Huadian Hongyanchi Power Plant has commissioned in 2000, and started extract heat in 2005, 5 years after its commissioning, which has been confirmed by checking the Monthly Operation Records of the power plant. And the technical lifetime of the CHP is 30 years before and after the implementation of the Project. BVC has checked the statement on basic data issued by the power plant, and then can confirm that the technical lifetime and the major integrated production of the power plant before and after the implementation of the Project will not be impacted, which has also been specified in the PDD. Hence CL-13 closed.</p>		
<p>4.1.3.4. Does all fossil fuel fired heat-only boiler(s) operate according to the following conditions:</p> <p>(a) The heat supplied to the district heating system is only used for heating of buildings and/or hot tap water supply in the residential and/or commercial sector, but not for industrial production processes;</p> <p>(b) Only one type of fuel is used in each of the boilers</p>	AM00 58	Ver. 03.1	<p>All fossil fuel fired heat-only boilers operated in accordance with the following conditions:</p> <p>➤ The heat supplied to the district heating system is only used for heating of buildings or hot tap water supply in the residential and commercial sector, but not for production processes.</p>	OK	OK

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included in the project boundary. (A maximum of 1% of auxiliary fuel may be used for start-up, etc.).			<ul style="list-style-type: none"> ➤ Only coal is used in each of the boilers included in the project boundary. This has been confirmed by checking the FSR, FSR Approval and initial boiler survey records.		
4.1.3.5. Does the Project counts for the following potential emission reductions: <ul style="list-style-type: none"> (a) Emission reductions resulting from the supply of hot tap water through the district heating system; (b) Emission reductions resulting from the inclusion in the district heating system those areas, where in the baseline scenario heating was provided on an individual basis, e.g. by coal-fired stoves, electric appliances or boilers in individual apartments; (c) Emission reductions resulting from heat supply to new residential areas, in cases where more than 50% of the annual heat production originates from heat-only boilers and less than 50% of heat comes from the power plant within the primary district heating system; (d) Emission reductions resulting from a decrease in heat losses due to the water losses or from demand-side measures (e.g. insulation of buildings, use of thermostatic valves, behavioural 	AM0058	Ver. 03.1	The Project will not count for the following potential emission reductions: <ul style="list-style-type: none"> ➤ Emission reductions resulting from the supply of hot tap water through the district heating system. ➤ Emission reductions resulting from the inclusion in the district heating system those areas, where in the baseline scenario heating was provided on an individual basis, e.g. by coal-fired stoves, electric appliances or boilers in individual apartments. ➤ Emission reductions resulting from a decrease in heat losses due to the water losses or from demand-side measures. ➤ Emission reductions resulting from new residential buildings. CL-14 As mentioned in the Section A of the PDD, there are four heat only boiler houses in the primary heating network,	CL-14	OK

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changes due to billing practices).			<p>the application of the criteria about emission reductions resulting from new residential buildings should be re-assessed.</p> <p>The heat supplied by the CHP and the HOBs will be monitored, in case the heat from CHP is less than that from the HOBs, the emission reductions resulting from new buildings will not be counted for, which has been specified in the PDD and in line with the methodology; hence CL-14 closed.</p>		
4.1.3.6. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM	70	No other emissions other than CO ₂ from fossil fuel combustion for electricity generation and heat generation both in baseline and Project activity are identified.	OK	OK
4.1.4. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	70			
4.1.4.1. If yes, was the PDD cross checked against the other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)	VVM	71	<p>Yes.</p> <p>The FSR, Approval of FSR issued by local government, Monthly Operation Records of the power plant have been provided and checked. Besides these documents, public information</p>	OK	OK

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			released by State-owned Assets Supervision and Administration Commission of the State Council has been checked and found the consistency. http://www.sasac.gov.cn/n1180/n1226/n2410/n314274/1320908.html		
4.1.4.2. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	71	Pending on CL-14 The methodology AM0058 version 03.1 and relevant tools are applicable to the Project.	Pending	OK
4.1.4.3. If no, clarification of the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	71	Pending on CL-14 The methodology AM0058 version 03.1 and relevant tools are applicable to the Project.	Pending	OK
4.1.4.4. If answer to (4.1.4) above is “no”, revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	Pending on CL-14 The methodology AM0058 version 03.1 and relevant tools are applicable to the Project.	Pending	OK
4.2. Project boundary					
4.2.1. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed	VVM	77	Yes.	OK	OK

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CDM project activity?					
4.2.1.1. Does the physical delineation of the project boundary includes: (a) The site of the power plant, including the heat extraction unit(s) and all interrelated production units to account for emissions resulting from changes in power generation and consumption due to the project activity; (b) The heat-only boilers that supply heat to the district heating system (e.g. such as peak load boilers); (c) The district heating system, including pipes, sub-stations and buildings that are or will be connected to the district heating system.	AM0058	Ver. 03.1	Yes. The physical delineation of the Project boundary includes: the site of Xinjiang Huadian Hongyanchi Power Plant Co., Ltd., including the 4×200MW cogeneration units and all interrelated production facilities, such as primary heat exchange station, extraction devices, connection pipes; the four heat-only boiler houses that supply heat to southern district heating network as supplementary heat source; the district heating network, including pipes, sub-stations and buildings that are or will be connected to the district heating system.	OK	OK
4.2.2. Is the delineation in the PDD of the project boundary correct?	VVM	78	Yes, confirmed by cross-checking with Heating Supply Schematic Plan Diagrams in Southern Urumqi worked out by government authority.	OK	OK
4.2.3. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	78	Yes.	OK	OK
4.2.4. Have all sources and GHGs required by the methodology been included within the project	VVM	78	Yes.	OK	OK

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boundary?			CO ₂ emissions from fossil fuel combusted for electricity generation and heat generation both in the baseline scenario and project activity have been included.		
4.2.5. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary?	VVM	78	No.	OK	OK
4.2.5.1. If yes, have the project participants justified that choice?	VVM	78	Not applicable	OK	OK
4.2.5.2. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	78	Not applicable	OK	OK
4.3. Baseline identification					
4.3.1. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	80	Pending on CL-15 to CL-26 The final version of PDD has correctly identified the baseline for the Project in line with the methodology.	Pending	OK
4.3.2. Have all procedures contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	81	Pending on CL-15 to CL-26 Yes, the procedures given by the methodology have been correctly applied, and support	Pending	OK

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			documents have been checked and found consistent.		
<p>4.3.2.1. Does the PDD define the categories j for buildings included in the project boundary on the basis of the following common attributes:</p> <p>(a) Type of technology employed by the heating system(s), to which buildings in category j would be connected in the baseline scenario;</p> <p>(b) Fuel type used by the heating system(s), to which buildings in category j would be connected in the baseline scenario;</p> <p>(c) Type of buildings/sub-area (i.e. existing or new).</p>	AM0058	Ver. 03.1	<p>No.</p> <p>CL-15 Please present the classification of types of buildings and transparently document which buildings belong to which category j as per the methodology.</p> <p>The buildings included in the Project are classified into three categories: category 1 are buildings in a part of the area supplied by a sub-station, during the project activity, that were connected to an existing isolated heat distribution network (i.e. to an existing a boiler house) before the start of the project activity; category 2 are recently constructed buildings (i.e. built after the start of the project activity either next to existing buildings or in place of a demolished building) that are connected to sub-stations that, as a result of the project activity, replace old boiler houses, supplying to existing isolated heat distribution network, should be treated as existing buildings; category 3 are Buildings in a part of the area supplied by a sub-station, during the project activity, which are constructed after the start of the</p>	CL-15	OK

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			<p>implementation of the project activity. These are buildings constructed in an area which prior to project activity did not have any heat distribution network.</p> <p>Due to the limited by Chinese law, information regarding some buildings included in the Project are treated as confidential information and cannot be specified in the PDD, dedicate document have been checked by BVC and will be provided to EB. CL-15 was closed.</p>		
4.3.2.2. Are the choices of categories justified by referring to relevant documentary evidence?	AM0058	Ver. 03.1	<p>The Urumqi City Urban Planning Bureau is the government authority responsible for the heat/urban planning. The heating supply schematic plan diagrams of southern Urumqi City worked out by the Urumqi City Urban Planning Bureau has been cross checked with the "Heat Supply Boundary Sketch Map" enclosed to the FSR which was the basis for completing the FSR, and found the categories of building in these two documents are consistent.</p> <p>Pending on CL-15</p> <p>The classification of categories in the final version of PDD was consistent with the evidences.</p>	pending	OK

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4.3.2.3. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionality” and the “Combined tool to identify the baseline scenario and demonstrate additionality”) to establish the baseline scenario?	VVM	81	Yes. As required by the methodology AM0058, the “Combined Tool to Identify the Baseline Scenario and Demonstrate Additionality” (version 02.2) (hereinafter referred to as “Combined Tool”) was used to identify the baseline scenario.	OK	OK
4.3.2.4. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	81	Yes.	OK	OK
4.3.2.5. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario? Is there any scenario considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed CDM project activity?	VVM	82	The methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario. No supplementary scenario was considered in the PDD. Pending on CL-15 to CL-26 All alternative scenarios required by the Project have been considered to identify the baseline scenario.	Pending	OK
4.3.2.6. Are outputs or services (i.e. heat supply) of the proposed CDM project activity identified?	AM0058	Ver. 03.1	The heat supply services provided by the Project is as following: ➤ The area of building groups is 14.09 million		

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			<p>m²;</p> <ul style="list-style-type: none"> ➤ There are 144 isolated boiler plants supplying heat for buildings in the covered area and there are more than 340 boilers in total; ➤ The efficiency of heating supply is not higher than 55%. <p>CL-16 The quantities of boilers and boiler houses and their efficiency are not the service for identifying alternative scenarios.</p> <p>The heating area, quantities of boiler and boiler houses and efficiency of boilers have been revised to consistent with evidences in the final version of PDD.</p> <p>The output and services regarding heating service as the Project in terms of:</p> <ul style="list-style-type: none"> - The heating area of building category 1 is 14,130,000 m²; the area of building category 2 is 840,000m², the area of building category 3 is 2,520,000m², the total heating area is 17,490,000m². - The mean temperature during heating period is -7.4°C, the total heating period is 	GL-16	OK

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			181 days, and heating target for the indoor temperature is not lower than 18°C. Which is consistent with the evidences, hence CL-16 closed.		
4.3.2.7. Sub-step 1a: Are all alternatives scenarios provided by the methodology considered? Has any unreasonable alternative scenario been excluded? (Sub step 1a)	VVM AM 0058	82 Ver. 03.1			
4.3.2.7.1. Introduction of a new integrated district heating system(s) connected by a new primary network: (a) The proposed project activity undertaken without being registered as a CDM project activity; (b) The introduction of a new district heating system, but with a different configuration for heat generation; (c) The replacement of the heat-only boilers in the existing network(s) by new heat-only boilers.	AM00 58	Ver. 03.1	Yes. The alternatives have been considered. Introduction of a new integrated district heating system(s) connected by a new primary network: The Project activity undertaken without being registered as a CDM project activity; The introduction of a new district heating system, but with a different configuration for heat generation; The replacement of the heat-only boilers in the existing network(s) by new heat-only boilers. Alternatives 1a (the Project undertaken without being registered as a CDM project activity) is realistic and credible. CL-17 The reasons for excluding the alternatives	CL-17	OK



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			<p>1b and 1c are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents.</p> <p>As for scenarios 1(b) and 1(c), since Xinjiang Huadian Hongyanchi Power Plant has enough heating capacity, to use the heat from other power plants far away or large heating only plants for heating source for Southern District Heating Network in Urumqi City is not realistic and credible. And as common sense in China, oil and gas are more expensive than coal in China, and using these two types of fuel to replace coal for heating in Urumqi is not realistic. Other heat generation configurations, such as ground source heat pump or geothermal resources, are not commercially available in Urumqi. As discussed above, alternatives 1(b) and 1(c) are not realistic and credible scenarios. The clarification has been checked against relevant evidences and found substantial; hence CL-17 closed.</p>		
4.3.2.7.2. Continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be	AM00 58	Ver. 03.1	<p>Yes. The alternatives have been considered.</p> <p>Continued operation or rehabilitation of an existing [isolated] district heating network(s) (both</p>		OK

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<p>connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the following technologies:</p> <p>(a) Coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network;</p> <p>(b) Natural gas fired boilers in boiler houses, supplying several buildings through a small heat distribution network;</p> <p>(c) Oil fired boilers in boiler houses, supplying several buildings through a small heat distribution network;</p> <p>(d) Small decentralized cogeneration plants;</p> <p>(e) Renewable energy sources, such as biomass or solar thermal collectors, connected to a small heat distribution network.</p>			<p>existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the following technologies:</p> <ul style="list-style-type: none"> ➤ Coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network; ➤ Natural gas fired boilers in boiler houses, supplying several buildings through a small heat distribution network; ➤ Oil fired boilers in boiler houses, supplying several buildings through a small heat distribution network; ➤ Small decentralized cogeneration plants; ➤ Renewable energy sources, such as biomass or solar thermal collectors, connected to a small heat distribution network. <p>Alternatives 2a (continue operation decentralized coal-fired boilers to supply [isolated] district heating network) is realistic and credible since it is</p>		

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			<p>the current practice in Urumqi City.</p> <p>For alternatives 2b and 2c, the costs of using oil-fired or gas-fired boilers for heating supply are much higher than coal-fired boilers' in China. Therefore, these two alternatives are not realistic and excluded.</p> <p>CL-18 The PDD just discussed the alternatives of “continued operation or rehabilitation of an existing [isolated] district heating network”, the alternatives of “establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the Project boundary without the introduction of a primary heating network” should be discussed.</p> <p>The alternative “establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the Project boundary without the introduction of a primary heating network” has been discussed in the final version of PDD; it is a part of realistic and credible scenario. Hence CL-18 closed.</p>	CL-18	
			CL-19 As mentioned in the PDD, using small	CL-19	

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			<p>coal-fired, gas-fired and oil-fired boilers for heat supplying is the current operating situation; please specify why alternatives 2b and 2c are not realistic and credible.</p> <p>According to the survey of boilers of the Project, no gas-fired and oil-fired boilers were involved in the Project; and according to the relevant research on energy price, price of gas and oil are far higher than coal in China, using gas and oil for heating is unacceptable, only few gas-fired and oil-fired boilers are used in Urumqi for specific purpose and these boilers are not involved in the Project, which has been confirmed by checking the initial survey forms and by on-site visit. Hence CL-19 closed.</p> <p>CL-20 The reasons for excluding the alternatives 2d and 2e are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents.</p> <p>According to report issued by government, small cogeneration plants are not economic feasible and face loses in China.</p> <p>Solar and geothermal energy for heating are</p>	CL-20	

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			incredible alternatives because their immature technology development; and using biomass as energy for heating is also incredible as its difficulty and cost on collection, storage, transport and combustion. Scenario 2 (d) and (e), are not realistic and credible, which has been clearly discussed in the final version of PDD; hence CL-20 closed.		
4.3.2.7.3. Continued use or introduction of building isolated heating networks using: (a) Coal fired boilers for individual buildings; (b) Natural gas fired boilers for individual buildings; (c) Oil fired boilers for individual buildings.	AM0058	Ver. 03.1	The following alternative scenarios have been considered: ➤ Coal fired boilers for individual buildings; ➤ Natural gas fired boilers for individual buildings; ➤ Oil fired boilers for individual buildings. CL-21 The reasons for excluding the alternative scenarios of "Continued use or introduction of individual heat supply solutions" are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents. And, since centralized heating supply in a large scale is the most suitable solution for southern district of	CL-21	OK

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			<p>Urumqi City, please specify why the baseline is not centralized heating supply?</p> <p>According to the mandatory regulation, no individual coal fired boiler for heating can be constructed for new buildings in city. The initial survey forms shown that no individual boiler for heating was included in the Project. As discussed above, gas-fired and oil-fired are too expensive for heating in China and unacceptable. The clarification has been checked against relevant evidences and found substantial; hence CL-21 closed.</p>		
<p>4.3.2.7.4. Continued use or introduction of individual heat supply solutions:</p> <p>(a) Coal fired stoves for individual apartments;</p> <p>(b) Natural gas fired stoves for individual apartments;</p> <p>(c) Oil fired stoves for individual apartments;</p> <p>(d) Electricity (e.g. off-peak storage heating);</p> <p>(e) Individual heating devises using renewable energy sources, e.g. solar thermal collectors;</p> <p>(f) Individual heating devises using non-renewable</p>	AM00 58	Ver. 03.1	<p>Yes, the following alternative scenarios have been considered in the PDD.</p> <ul style="list-style-type: none"> ➤ Continued use or introduction of individual heating supply solutions: ➤ Coal fired stoves for individual apartments; ➤ Natural gas fired stoves for individual apartments; ➤ Oil fired stoves for individual apartments; ➤ Electricity (e.g. off-peak storage heating); ➤ Individual heating devises using renewable 		

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biomass.			<p>energy sources, e.g. solar thermal collectors;</p> <p>➤ Individual heating devises using non-renewable biomass.</p> <p>CL-22 As stated in the summary of the stakeholder consultant ("answer to issue 2 in the table" in page 51, Section E.2, PDD version 01), there are 20% stakeholders using stoves or furnace for heating in winter, it should be considered in the identification of baseline scenario. Considering the results of stakeholder survey, the reasons for excluding the alternative scenarios of "Continued use or introduction of building isolated heating networks using coal-fired boilers, natural gas fired boilers and oil-fired boilers" are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents.</p> <p>The buildings using individual boilers, stoves or furnace for heating existed prior to the publishing of mandatory regulation issued by government, they did not have district heating conditions and were not included in existing buildings connected</p>	CL-22	OK

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			to existing boiler houses of the Project. If these buildings are demolished and new buildings are constructed in those areas, the new buildings will be connected to small isolated heating system in the absence of the Project, which has been confirmed by national regulation and by local authorized government. All scenarios of alternative 4 are not realistic and credible, which has been confirmed by checking the regulation; hence CL-22 closed.		
4.3.2.7.5. Outcome of sub-step 1a: Has a list of identified realistic and credible alternative scenarios for all buildings or subareas been presented?	AM00 58	Ver. 03.1	<p>Two realistic and credible alternative scenarios have been listed in the PDD:</p> <p>1. the Project undertaken without being registered as a CDM project activity;</p> <p>2. Continued operation or rehabilitation of an existing [isolated] district heating network(s) without the introduction of a primary heating network.</p> <p>CL-23 In the outcome of Sub-step 1a, the alternative "Continued operation or rehabilitation of an existing [isolated] district heating network(s) without the introduction of a primary heating network"</p>	CL-23	OK

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			<p>includes several sub alternatives depending on technologies they employed; please specify what technologies will be employed by the heating networks in the outcome.</p> <p>In the final PDD, the remaining alternative 2(a) has been revised to: Continued operation or rehabilitation of the existing isolated district heating networks (both existing and new buildings can be connected to an existing network) or establishment of a new isolated district heating networks (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such isolated district heating networks will employ coal based technology such as coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network. This is in line with the methodology, hence CL-23 closed.</p>		
4.3.2.8. Sub-step 1b: Are all mandatory applicable legal and regulatory requirements identified? Is there any alternative does not comply with all mandatory applicable legislation and regulations?	AM0058	Ver. 03.1	The two realistic and credible alternative scenarios identified in the sub step 1a of the PDD are consistent with compelling laws and regulations in China.	OK	OK

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4.3.2.9. Step 2: Does the PDD establish a complete list of realistic and credible barriers that may prevent alternative scenarios to occur?	AM00 58 EB 28	Ver. 03.1 Ann 14			
4.3.2.9.1. Investment barriers, other than insufficient financial returns as analyzed in Step 3	EB 28	Ann 14	<p>The investment barriers stated in the PDD are lacking in funding and low benefit of investment finance.</p> <p>CL-24 The investment barriers and the system barriers should be clarified more clearly with supporting evidences. The elimination of the alternative should be put into sub step 2b; and the benefit of investment finance should be discussed in step 3 "Investment Analysis" as per the methodology and the "Combined Tool".</p> <p>Due to lack of evidences required by the Guidelines for objective demonstration and assessment of barriers version 01, (EB50 Annex13), the final version of PDD did not use investment barrier and system barriers. Hence CL-24 closed.</p>	CL-24	OK
4.3.2.9.2. Technological barriers:	EB	Ann	The technical barriers identified in the PDD as		



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	28	14	<p>follow:</p> <p>The highest altitude difference of the Project is 163m, which is the biggest fall in China for district heating supply network. There is no technology in China to solve this technical barrier and the PP had to import essential equipment from Denmark. Dynamic waterpower analysis ability is unavailable in China for such a large heating supply project with highest altitude difference; it costs more for construction and supporting technical support.</p> <p>Since no dynamic waterpower analysis ability in China, the staffs of the Project need to be trained abroad. The maintaining of the Project cost more than normal heating supply project in China.</p> <p>The technical barriers can be proved by the approved FSR, the Equipment Purchase Agreement signed between the PP and the equipment supplier. These evidences have been checked and found consistent.</p> <p>CL-25 Further evidences in line with the methodology should be provided.</p> <p>A Statement on the Technical Barrier of the Southern District Heating Network in Urumqi City</p>	CL-25	OK

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			was issued by the Beijing Gas & Heat Power Project Design Institute, which is a qualified entity with A class level in the district heating in China. According to the statement, the Project faces a 163m altitude difference which is the largest one in China, subsequently a three-level network was used in the Project; the isolated heating network do not face so large altitude difference and use two-level heating network which is common in China. Therefore, the technical barrier will prevent the implementation of the Project but will not impact the utilization of isolated networks. BVC has checked the statement and the certificate of the entity and found substantial therefore can conclude that the technical barrier has been objective demonstrated as per "Guidelines for objective demonstration and assessment of barriers"; hence CL-25 closed.		
4.3.2.9.3. Lack of prevailing practice:	EB 28	Ann 14	No. The PDD did not mention the lack of prevailing practice.	OK	OK
4.3.2.9.4. Other barriers, preferably specified in the underlying methodology as examples.	EB 28	Ann 14	System barriers are identified in the PDD. The system barriers include: ➤ High price of heat purchase caused by		

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			<p>detached heating supply from electricity generation.</p> <ul style="list-style-type: none"> ➤ Difficulties in charging heating fee. ➤ Cogeneration industry policies executed deficiently. <p>CL-26 As for the system barrier, please specify whether the scenario of existing decentralized isolated heating network face the heat fee charging difficulties. If yes, it would prevent the current situation practice as well. And the price of heat from the cogeneration power plant is high in the reason 1, while the current price of heat selling for the cogeneration power plant is low in reason 3. They are contradictory.</p> <p>Due to lack of evidences required by the Guidelines for objective demonstration and assessment of barriers version 01, (EB50 Annex13), the final version of PDD did not use investment barrier analysis. Hence CL-26 closed.</p>	CL-26	OK
4.3.2.9.5. Is any alternative scenario prevented by the identified barriers and eliminate?	EB 28	Ann 14	<p>Pending on CL-24 to CL-26</p> <p>The alternative scenario 1 (a), i.e. the Project not</p>	Pending	OK

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			undertaken as CDM Project will be prevented by the identified barrier, was eliminated; which has been objective demonstrated.		
4.3.2.9.6. Is there only one alternative scenario not prevented by any barrier?	EB 28	Ann 14	There is only one alternative scenario not prevented by any barrier identified above in the PDD. Pending on CL-24 to CL-26 Yes, only scenario 2(a) not prevented by the identified barrier.	Pending	OK
4.3.2.9.7. If yes, is the alternative scenario the proposed project activity undertaken without being registered as a CDM project activity?	EB 28	Ann 14	The alternative scenario prevented by barriers is the proposed project activity undertaken without being registered as a CDM project activity. Pending on CL-24 to CL-26 The conclusion substantial.	Pending	OK
4.3.2.9.8. If no, is the proposed project activity undertaken without being registered as a CDM project activity included in several alternative scenarios remaining?	EB 28	Ann 14	There is only one alternative scenario not prevented by any barrier as the PDD. Pending on CL-24 to CL-26 NA, only one scenario remained.	Pending	OK
4.3.2.9.9. Is the Step 3 Investment Analysis of the "Combined Tool" used to identify the baseline scenario?	EB 28	Ann 14	Since there is only one alternative scenario remain, the Investment Analysis was not used in the PDD.	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>Pending on CL-24 to CL-26.</p> <p>The baseline scenario has been identified by using the technical barrier analysis, according to the methodology and the Combined Tool, the Step 3 Investment analysis was unnecessary.</p>		
4.3.3. Is the baseline scenario identified?	EB 28	Ann 14	<p>The remaining alternative scenario in the Barrier Analysis was “continued operation or rehabilitation of an existing [isolated] district heating network(s) mainly supplied by coal-fired boilers without the introduction of a primary heating network”, which was identified as the baseline scenario.</p> <p>Pending on CL-15 and CL-26</p> <p>The baseline has been correctly identified, i.e. continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler</p>	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			houses, supplying several buildings through a small heat distribution network.		
4.3.4. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	83	Pending on CL-15 and CL-26 Yes, all documents and sources referred in the PDD have been correctly quoted and interpreted.	Pending	OK
4.3.5. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available?	VVM	83	Pending on CL-15 and CL-26. Yes, the information provided in the PDD has been cross checked with other verifiable and credible sources.	Pending	OK
4.3.6. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	84	Pending on CL-15 and CL-26. All applicable requirements have been taken into account.	Pending	OK
4.3.7. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	84	The two realistic and credible scenario alternatives, i.e. 1a and 2a identified in sup step 1a, are consistent with compelling laws and regulations. Pending on CL-15 and CL-26 All relevant policies and circumstances have been identified and considered in the PDD.	Pending	OK
4.3.8. Does the PDD provide a verifiable description of the identified baseline scenario, including a description	VVM	85	The baseline scenario identified in the PDD is "continued operation or rehabilitation of an	Pending	OK

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of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?			<p>existing [isolated] district heating network(s) mainly supplied by coal-fired boilers without the introduction of a primary heating network".</p> <p>Pending on CL-15 and CL-26</p> <p>The final version of PDD has provided a verifiable description of the identified baseline scenario, i.e. continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network.</p>		
4.4. Algorithms and/or formulae used to determine emission reductions					
4.4.1. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and	VVM	88	The PDD applied the methodology ACM0058 and the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion" ver. 02 (referred to as "Tool-Project Emissions" in the	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
monitoring?			<p>report), the steps taken as follow:</p> <ul style="list-style-type: none"> ➤ Baseline emissions; ➤ Project emissions; ➤ Leakage; ➤ Emission reductions. <p>As required by the AM0058 version 03.1, the “Tool to calculate the emission factor for an electricity system” version 02 was used to determine the emission factor of the grid, which was used to determine the leakage.</p>		
4.4.2. Baseline emissions	VVM AM 0058	88 Ver. 03.1	<p>The baseline emissions include emissions from fossil fuels fired for the production of heat and emissions from the generation of electricity:</p> $BE_y = BE_{HG,y} + BE_{EL,y}$	OK	OK
4.4.2.1. Baseline emissions from heat generation	AM00 58	Ver. 03.1	<p>Baseline emissions from heat generation is calculated as follow:</p> $BE_{HG,y} = \sum_i \sum_j Q_{j,i,y} \times EF_{BL,HG,j,i}$ <p>The value of heat supplied in the Project year y to category j building supplied by substation i is estimated as:</p>		OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			$Q_{j,i,y} = \frac{A_{j,i}}{\sum_j A_{j,i}} \times Q_{i,y}$ <p>$A_{j,i}$ is the total carpet area of buildings in category j connected to substation i, which has been listed in the Annex 3 of the PDD.</p> <p>$Q_{i,y}$ is the measured quantity of heat supplied by substation 'i' in year y, it adopted the value in the FSR in the PDD and will be monitored ex-post, it is reasonable.</p> <p>For the cases where the category j consists of existing buildings, as per the definition provided earlier in the procedure for the identification of the baseline scenario, the quantity of heat supplied to this category from sub-station i should be estimated as follows:</p> $Q_{j,i,y} = \min \{Q_{inst_cap,j,i}, Q_{j,i,y}\}$ <p>CAR-7 In the PDD, the quantity of heat supplied is the target of heating supplied, it is not in line with the methodology. The $Q_{inst_cap,j,i}$ should be calculated by multiplying a nameplate capacity of the existing boiler supplying heat to building type j at sub-station i by the number of</p>	CAR-7	

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>operational hours per year as per the methodology.</p> <p>In Urumqi, the heating fee is charged by heating area but not by heating quantity, therefore, the quantity of heat supplied was unavailable in the boilers initial survey form of the Project. The quantity of heat supplied was determined by the formula given by the industrial standard:</p> $Q_{i,y} = \sum_j W_{j,i} \times A_{j,i} \times T \times 0.0036$ <p>Where:</p> <p>$W_{j,i}$ is the index of mean load for heating of building (W/m^2), it was determined by the formula following;</p> <p>$A_{j,i}$ is the heating area (m^2)</p> <p>T is the number of operational hours per year; the value is 181 days (4344hours), which was regulated by the government.</p> $W_j = w_j \times \frac{T_N - T_P}{T_N - T_W}$ <p>➤ w_j is the index of design load for heating of building. The value for existing buildings category 1 is $77W/m^2$, which was determined</p>		



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			<p>by the Beijing Gas & Heat Power Project Design Institute and Urumqi Heating Engineering Design Institute based on the historic data from 1993 to 2002 in Urumqi City, and the index of design load for heating of category 2 and category 3 is 70W/m^2. The evidences have been checked and found consistent and the value is reliable.</p> <p>➤ T_N is the indoor mean air temperature during heating period, the value is 18°C in the FSR, which has been cross checked with national standard, local regulations and Congregation Planning of Urumqi City approved by Urumqi DRC and found consistent.</p> <p>T_P is the mean outdoor temperature during heating period, the value is -7.4°C sourced from the FSR, which has been cross checked with the Congregation Planning of Urumqi City approved by Urumqi DRC and found substantial.</p> <p>➤ T_W is the outdoor design temperature during heating period, the value is the value is -22°C, sourced from the FSR, which has been cross checked with the Congregation Planning of</p>		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>Urumqi City approved by Urumqi DRC and found substantial.</p> <p>According to the Heating Supplied Engineering published by China Machine Press in 2008, the heat supplied determined by the two formulae above is accurate and the error are not exceed 1%, which has been proved by lots of district heating experience.</p> <p>Furthermore, the heat supplied by the Project will be monitored ex-post.</p> <p>Therefore, BVC can confirm that the heat supplied determined by the formulae given by the industrial standard is reasonable.</p> <p>The $Q_{inst_cap,j,i}$ has been calculated by multiplying a nameplate capacity of the existing boilers supplying heat to building type j at sub-station i by the number of operational hours per year as per the methodology.</p> <p>The PDD also specified the determination of heat supplied and $Q_{inst_cap,j,i}$ of four situations of existing buildings, which is reasonable.</p> <p>Hence CAR-7 closed.</p> <p>For the cases where category j consists of new</p>		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>buildings,</p> <p>If $Q_{\text{extracted},y} < Q_{\text{HOB},y}$, then $Q_{j,i,y} = 0$;</p> <p>If $Q_{\text{extracted},y} > Q_{\text{HOB},y}$, then $Q_{j,i,y}$ is estimated using the equation for existing buildings.</p> <p>The heating area of each category and the heat extracted from CHP and HOBs will be monitored, and then the heat supplied to new buildings can be determined.</p>		
4.4.2.2. CO ₂ emission factor for heat supply in the baseline	AM00 58	Ver. 03.1	<p>CO₂ emission factor for heating supply in the baseline is calculated as follow and in line with the methodology:</p> $EF_{BL,HG,j,i} = \frac{COEF_{BL,HG,j,i}}{\mathcal{E}_{BL,HG,j,i}}$	OK	OK
4.4.2.3. Emission factor of fuel(s) used	AM00 58	Ver. 03.1	<p>The COEF_{BL,HG,j,i} corresponding to the fuel type identified in the selection of the baseline scenario.</p> <p>Pending on the identification of baseline scenario, i.e. CL-15 to CL-26.</p> <p>As the baseline identified above, only coal-fired boilers are identified as baseline fuel.</p> <p>For all categories j of new buildings that are</p>	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>attached to a network that is predominantly (more than 50%) supplied by heat from heat-only boilers (rather than from the power plant):</p> <p>$\text{COEF}_{\text{BL,HG},j} = 0 \text{ tCO}_2/\text{GJ}$.</p> <p>The heat extracted from the CHP and HOBs will be monitored, and then the emission factor for new buildings can be determined.</p> <p>CAR-8 As mentioned in Section B.4, the current operating situation is to use small coal-fired, gas-fired or oil-fired boilers for heating supply, but in the sub-step 2b of Section B.6.1, the gas-fired boilers were not mentioned, and the PDD adopt the coal fired emission factor as the $\text{COEF}_{\text{BL,HG},j,i}$ is not conservative.</p> <p>As discussed above, there are neither gas-fired boilers nor oil-fired boilers involved in the Project, therefore, using emission factor of coal from IPCC, i.e. $0.0997 \text{ tCO}_2/\text{GJ}$, is in line with methodology and appropriate; hence CAR-8 closed.</p>	CAR-8	
4.4.2.4. Efficiency of boilers used in the absence of the			Efficiency of boilers used in the absence of the		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
project activity			<p>project activity ($\epsilon_{BL,HG,j,i}$) should be determined for each category j and each sub-station i and be documented in the PDD. Once determined, $\epsilon_{BL,HG,j,i}$ remains fixed for the duration of the crediting period.</p> <p>CAR-9 The $\epsilon_{BL,HG,j,i}$ in the PDD was sourced from the “Report of Urumqi Southern District Heating Network Construction Project environmental impact”, it is not in line with the methodology. The $\epsilon_{BL,HG,j,i}$ should be determined by the approaches given by the methodology. The measurement procedures and results and manufacturer’s information should be documented transparently in the PDD.</p> <p>In the final version of PDD, the efficiencies of existing boilers were determined by the approach given by the methodology, i.e. historical fuel consumption data. The historical fuel consumption data was available in the initial boiler survey forms issued by each boiler house owner.</p> <p>It was hard to separate the heat supplied by each individual boiler, so the efficiency of boiler house should be determined instead of the efficiency of</p>	CAR-9	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>individual boiler, which is reasonable and did not impact the determination of emission reductions.</p> <p>For existing boilers houses No. 144 and No. 145, the efficiencies were determined by their historic coal consumption and the heat supplied</p> <p>For other existing boilers, the efficiencies were determined by the following formulae:</p> $\varepsilon_{BL,HG,j,i} = \frac{Q_{BL,HG,out,j,i}}{Q_{BL,HG,im,j,i}} = \frac{(W_{j,i} \times A_{j,i} \times T \times 3.6 \times 10^{-6}) \times 1.01}{FC_{coal,j,i} \times NCV_{fuel,j,i}}$ <p>Where:</p> <ul style="list-style-type: none"> ➤ $Q_{BL,HG,out,j,i}$ is the annual historic heat supplied by the boiler house; (GJ) ➤ $Q_{BL,HG,im,j,i}$ is the annual historic energy input to the boiler houses generated by the fuel consumed. (GJ) ➤ $W_{j,i}$ is the annual heating load per unit heating area (W/m^2); the value for existing buildings was determined by the formula for determining heat supplied above, the result was $48.895 W/m^2$. ➤ $A_{j,i}$ is the area existing prior to the Project heated by the boiler house (m^2); 		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<ul style="list-style-type: none"> ➤ T is the annual heating period (hours), the value is 4344hours. ➤ $FC_{coal,j,i}$ is the quantity of fuel combusted in the boiler house (tons standard coal), the historical quantity of coal consumed by each boiler house was sourced from the initial boilers survey forms issued by each owner. (tons standard coal) ➤ $NCV_{fuel,j,i}$ is the net calorific value of the fuel type i in year y (GJ/tons standard coal). The coal consumed by all the boiler houses (except two large heat only boiler houses, No. 144 and No. 145, was the raw coal with NCV of 20.908GJ/ton sourced from the China Energy Statistic Yearbook 2008) was provided in standard coal equivalent, the NCV of standard coal was 29.27GJ/t source from the China Energy Statistic Yearbook 2008. The China Energy Statistic Yearbook 2008 and has been checked and found substantial. ➤ According to the Heating Supply Engineering, the supplied heat determined by the formulae is accurate and the error will not exceed 1%, a conservative factor of 1.01 has been taken 		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>into account.</p> <p>Subsequently, the PDD specified the efficiency of four situations regarding different correspondences between the existing boiler houses and substations, the best efficiency of boiler house was chosen for all situations.</p> <p>For new boilers, the efficiency was sourced from the methodology, i.e. 85%, the justification was reasonable and appropriate.</p> <p>BVC has checked relevant standard, industrial textbook, authorized data sources, and then can confirm the determination of the efficiencies of boilers was in line with the methodology and conservative. Hence CAR-9 closed.</p>		
4.4.2.5. Lifetime of existing heat only boiler(s)			<p>Lifetime of existing heat only boilers in the PDD is determined as follow:</p> <ul style="list-style-type: none"> ➤ Technical lifetime of boilers is 30years. ➤ The longest age of boilers is 19 years. ➤ The remaining lifetime of the boilers is more than 11 years, exceeding the 10 years crediting period. <p>CAR-10 The typical technical lifetime of boilers should be estimated as per the</p>	CAR-10	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>methodology and relevant guidance, the supporting documents of technical lifetime and average age of the boilers should be provided.</p> <p>In the final version of PDD, the technical lifetime of the existing boilers was determined as per Tool to determine the remaining lifetime of equipment, EB50 Annex15. According to the mandatory Special Equipment Safety Supervision Regulations, all boilers must be tested and inspected for safe by authorized entity; therefore, the default value of technical lifetime of 25 years for boilers given by the “Tool to determine the remaining lifetime of equipment” was applicable to the Project.</p> <p>The average remaining lifetime of the existing boilers have been determined weighted by their heat generation, and the remaining lifetime of the existing boilers was longer than the crediting period.</p> <p>BVC has checked the regulation and found substantial, hence CAR-10 closed.</p>		
4.4.2.6. Baseline emissions from the power generation			Baseline emissions from the power generation		

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			$BE_{EL,y} = \text{Min} \{EG_{\max, \text{hist}}, EG_{PA,y}\} \times EF_{BL,EL}$ <p>The maximum historic annual amount of electricity supplied to the grid over the three most recent years prior to the start of implementation of the project activity ($EG_{\max, \text{hist}}$) in the PDD is the value in 2007.</p> <p>CL-27 The generation of the 3 years prior to the start of the implementation of the project should be presented to identify the maximum historic annual amount of electricity generated.</p> <p>The Xinjiang Huadian Hongyanchi Power Plant started operation in 2000, and started extraction heat on 15/10/2005, the generation data prior to the extraction has been specified in the final version of PDD, and the maximum historic generation was that Oct. 2004 to Sep. 2005, the value is 4,526,364,000kWh, lower than that value of 2005 in the PDD version 01, the reason is the generation in the final version of PDD covered the period from Oct. 2004 to Sep. 2005; while the generation of 2005 in the PDD version 01 covered the calendar year; the supporting documents have been checked and found substantial. Hence</p>	Ref-27	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>CL-27 closed.</p> <p>The actual quantity of electricity supplied to the grid in the year y ($EG_{PA,y}$) will be monitored; the value from the FSR was used in the PDD for ex-ante emission reductions calculation, it is reasonable.</p> <p>As for the baseline emission factor for the electricity production ($EF_{BL,EL}$)</p> $EF_{BL,EL} = \frac{44}{12} \times \frac{3.6}{1000} \times \frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL} \times \eta_{BL,EL}}$ <p>The value of $\frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}}$ is 25.8 tC/TJ, which is the IPCC default value coking coal, and larger than the value at the uncertainty at a 95% confidence interval guided by the methodology.</p> <p>CL-28 The values provided by the fuel supplier in invoices are prefer source according to the methodology, please specify whether the values provided by the fuel supplier in invoices available.</p> <p>Since the $EF_{FF,BL,EL}$ in tCO₂/t is unavailable, in the final version of PDD, the default value of IPCC for</p>	Ref-28	

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			$\frac{44}{12} \times \frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}}, 99.7\text{tCO}_2/\text{TJ}, \text{ was applied,}$ <p>which was conservative and in line with the methodology. Relevant evidences have been checked and found substantial. Hence CL-28 closed.</p> <p>Efficiency of the power plant ($\eta_{BL,EL}$) used prior to the start of the implementation of the Project is 38.31%.</p> <p>CL-29 It should be specify the efficiency of the power plant ($\eta_{BL,EL}$) in the PDD is measured according to the manufacturers' procedures to measure efficiency at the commissioning of the plant, or taken from the manufacturer's specification of efficiency at optimum load. It also need to be noted in the PDD that if the efficiency of the power plant improves, the value of $\eta_{BL,EL}$ should be updated accordingly.</p> <p>Efficiency of the power plant used prior to the start of the implementation of the project activity was</p>	CL-29	

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>the design value provided by Xinjiang Huadian Hongyanchi Power Plant, which was the efficiency at optimum load in the Manufacturer Manual of the Turbine Generator Units and conservative than the value measured according to the to the manufacturers procedures, the evidence has been checked by BVC and found substantial. Hence CL-29 closed.</p> <p>However, to guarantee the conservative, a Forward Action Request was raised for monitoring this parameter.</p> <p>FAR 1:</p> <p>The energy efficiency for power generation of Xinjiang Huadian Hongyanchi Power Plant should be monitored, if an actual efficiency higher than the design efficiency is discovered, the higher value should be used for determination of emission reductions.</p>		
4.4.3. Project emission					
4.4.3.1. Are the project emissions calculated using the latest approved version of the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion"?	AM 0058 EB 41	Ver. 03.1 Ann 11	Yes. The Project emissions are calculated using the latest approved version of the "Tool to Calculate Project or Leakage CO ₂ Emissions from Fossil Fuel Combustion" version 02.2.	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
4.4.3.2. Are CO ₂ emissions from fossil fuel combustion calculated using the formula in the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”?	EB 41	Ann 11	<p>Yes.</p> <p>The Project emissions (PE_y) comprise:</p> <ul style="list-style-type: none"> ➤ CO₂ emissions from fossil fuel combustion associated with the production of heat and electricity in the CHP power plant; ➤ CO₂ emissions from fossil fuel combustion in heat-only boilers. <p>These emissions are calculated using the latest approved version of the “Tool to Calculate Project or Leakage CO₂ Emissions from Fossil Fuel Combustion”.</p> $PE_y = \sum_j PE_{FC,j,y}$ <p>According to the “Tool-Project Emissions”, the CO₂ emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels:</p> $PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$ <p>The quantity of coal combusted in CHP during the year y in the PDD version 01 adopted the record of the power plant in 2007; and the quantity of</p>	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>coal consumed by the HOBs were determined by heat supplied; the actual values will be monitored ex-post.</p> <p>The quantities of coal consumed by the CHP and HOBs in the final version of PDD were determined by the Beijing Gas & Heat Power Project Design Institute based on the past 5 years operation data, and will be monitored ex-post.</p>		
4.4.3.3. Is the CO ₂ emission coefficient calculated as per the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion"?	EB 41	Ann 11	<p>The CO₂ emission coefficient (COEF_{i,y}) is determined by the option B given in "Tool-Project Emissions":</p> $\text{COEF}_{i,y} = \text{NCV}_{i,y} \times \text{EF}_{\text{CO}_2,i,y}$ <p>The weighted average net calorific value of the fuel type i (NCV_{i,y}) 20.908GJ/t is sourced from the China Energy Statistic Yearbook and has been checked by BVC and found consistent.</p> <p>The weighted average CO₂ emission factor of fuel type i (EF_{CO₂,i,y}) in year y is 0.0946tCO₂/GJ, which is the IPCC default value (2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 - Energy, table 1.4). It is not conservative.</p> <p>CL-30 According to the "Tool-Project Emissions", Option A should be the</p>	CL-30	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>preferred approach, please specify why the Option A was not selected.</p> <p>Due to data unavailable, the Option A was not chosen, and Option B was selected, which has been specified in the final version of PDD and in line with the tool, hence CL-30 closed.</p> <p>CAR-11 IPCC values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC for weighted average CO₂ emission factor of coal ($EF_{CO_2,i,y}$) is 99.7tCO₂/TJ, this value should be used in determination of Project emissions as per the “Tool - Project Emissions”; and the NCV from national energy yearbook was not applicable to the Project.</p> <p>The default value of IPCC at 95% confidence interval, 99.7tCO₂/TJ, has been applied in the final version of PDD; the historic NCV_{i,y} measured by the PP, 20.591GJ/t, was used for ex-ante calculation, which will be monitored ex-post; hence CAR-11 closed.</p>	CAR-11	

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
4.4.4. Leakage	AM 0058	Ver. 03.1			
4.4.4.1. Has the leakage due to decrease in electricity supply to the grid from the power plant been calculated?	AM 0058	Ver. 03.1	<p>No.</p> <p>CAR-12 Leakage due to decrease in electricity supply to the grid from the power plant should be considered according to the methodology AM0058 version 03.1, and the latest version of the "Tool to calculate the emission factor for an electricity system" should be used for calculating the emission factor of the electricity grid system.</p> <p>The leakage emissions from the decrease in the electricity supply has been specified in the final version of PDD. The determination was listed as follow:</p> <p>If $EG_{PA,y} < EG_{min,hist}$, and $EF_{grid} > EF_{BL,EL}$</p> <p>Then:</p> $LE_{EL,y} = (EG_{min,hist} - EG_{PA,y}) \times (EF_{grid} - EF_{BL,EL})$ <p>The $EG_{min,hist}$ has been determined since the historical data of 3 years prior to the heat extract from the CHP of the Project has been specified.</p>	CAR-12	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>The EF_{grid} has been determined using the “Tool to calculate the emission factor for an electricity system” version 02; the EF_{grid} was determined ex-ante and will be fixed for the crediting period. The most recent data available at the time submission of PDD for validation has been applied, the historic data of the CHP and data sources published by China DNA has been checked and found substantial.</p> <p>Hence CAR-12 closed.</p>		
4.4.4.2. Has the leakage due to fuel switch been calculated?	AM 0058	Ver. 03.1	The Project uses the same fuel as the baseline scenario, no leakage due to fuel switch need to be considered.	OK	OK
4.4.5. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	89	<p>The equations of methodology AM0058 and “Tool-Project Emissions” are used.</p> <p>Pending on CAR-7 to CAR-12 and CL-27 to CL-33.</p> <p>All equations and parameters in the final version of PDD have been correctly applied with respect those in the methodology and tools.</p>	Pending	OK
4.4.6. Does the methodology provide for selection between different options for equations or	VVM	89			

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
parameters?					
4.4.6.1. If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	89	Pending on CAR-7 to CAR-12 and CL-27 to CL-33. The justification has been cross checked with relevant evidences and found substantial.	Pending	OK
4.4.6.2. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	89	Pending on CAR-7 to CAR-12 and CL-27 to CL-33. Equations and parameters have been used in accordance with the methodology and tools.	Pending	OK
4.4.7. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	90			
4.4.7.1. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	90	The tabular format provided in the Annex 12 of EB41 should be used.	Pending	OK
4.4.7.2. Average remaining lifetime of boilers for category j	AM 0058	Ver. 03.1	Pending on CAR-10. Average remaining lifetime of existing boilers have been determined in accordance with the methodology, the initial data sources and regulation has been checked, the result has been	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			specified in the PDD.		
4.4.7.3. Nameplate capacity of existing boiler(s) in category j at sub-station i	AM 0058	Ver. 03.1	No. CL-31 The nameplate capacity of existing boilers should be presented, and relevant evidences are required. The nameplate capacity of all existing boilers have been presented in the PDD and checked against the evidences and found substantial; hence CL-31 closed.	CL-31	OK
4.4.7.4. Maximum annual amount of electricity supplied by the power plant to the grid prior to the start of the project activity during the last 3 years before project implementation ($EG_{\max, \text{hist}}$)	AM 0058	Ver. 03.1	Pending on CL-27 The maximum annual amount of electricity supplied to the grid prior to the start of the Project during the last 3 years before the Project implementation has been correctly presented, and the evidences have been checked and found substantial.	Pending	OK
4.4.7.5. Minimum annual amount of electricity supplied by the power plant to the grid prior to the start of the project activity during the last 3 years before project implementation ($EG_{\min, \text{hist}}$)	AM 0058	Ver. 03.1	No. CL-32 The parameter $EG_{\min, \text{hist}}$ should be presented in Section B.6.2. The minimum annual amount of electricity supplied to the grid prior to the start of the Project during the last 3 years before the Project	CL-32	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			implementation has been correctly presented, and the evidences have been checked and found substantial; hence CL-32 closed.		
4.4.7.6. CO ₂ emission factor of the baseline fuel(s) of the heat production in the categories of j (COEF _{BL,HG,j,i})	AM 0058	Ver. 03.1	<p>The default values of the IPCC 2006 have been presented;</p> <p>Coal: 0.0946tCO₂/GJ</p> <p>Oil: 0.07740946tCO₂/GJ</p> <p>Gas: 0.05610946tCO₂/GJ</p> <p>In the final version of PDD, since oil and gas not involved in the Project, the emission factors of gas and oil were not presented.</p> <p>The emission factor of coal for heat production is 0.0997tCO₂/GJ, which is the IPCC default value at the upper limit of the uncertainty at the 95% confidence interval as provided in table 1.4 of Chapter 1 of vol. 2 (Energy) of 2006 IPCC Guidelines on National GHG Inventories. This is in line with the methodology.</p>	OK	OK
4.4.7.7. Efficiency of the heat supply system that would have been used in the absence of the project activity for category j and sub-station i ($\epsilon_{BL,HG,j,i}$)	AM 0058	Ver. 03.1	<p>Pending on CAR-9</p> <p>The efficiencies of existing boilers have been presented in the PDD.</p>	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
4.4.7.8. CO ₂ emission factor for the fossil fuel fired in the power plant used prior to the start of the implementation of the project activity (EF _{FF,BL,EL})	AM 0058	Ver. 03.1	<p>No.</p> <p>CL-33 The CO₂ emission factor for the fossil fuel fired in the power plant used prior to the start of the implementation of the project activity should be presented in the Section B.6.2</p> <p>EF_{FF,BL,EL} is CO₂ emission factor for the fossil fuel fired in the power plant used prior to the start of the implementation of the project activity; NCV_{FF,BL,EL} is Net calorific value of fossil fuel fired in the power plant used prior to the start of the implementation of the project activity. Because EF_{FF,BL,EL} in unit tC/mass or volume is unavailable, but the result of $\left(\frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}}\right)$ i.e. EF of effective CO₂ emission factor in unit tCO₂/TJ is listed in the Table 1.4, Chapter 1, Vol. 2 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories, this result was employed in the PDD. The value is 99.7tCO₂/TJ. The justification is reasonable and appropriate, hence CL-33 closed.</p>	CL-33	OK
4.4.7.9. Net calorific value of fossil fuel fired in the power plant used prior to the start of the implementation	AM 0058	Ver. 03.1	Yes. The value of 20.908GJ/tc is sourced from the	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
of the project activity ($NCV_{FF,BL,EL}$)			<p>China Energy Statistic Yearbook 2006.</p> <p>Pending on CL-33</p> <p>The result of ($\frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}}$) was used instead of $NCV_{FF,BL,EL}$, the justification is reasonable and appropriate, hence CL-33 closed.</p>		
4.4.7.10. Categories grouped by (i) type of buildings (new/existing), (ii) type of technology used and (iii) fuel type used in the absence of the project activity. For each category j, all connected buildings should be clearly identified.	AM 0058	Ver. 03.1	<p>Pending on CL-15</p> <p>The categories have been specified, the detail information of buildings will be provided to EB.</p>	Pending	OK
4.4.7.11. Sub-station (Subscript i)	AM 0058	Ver. 03.1	<p>Pending on CL-15</p> <p>The substations and their corresponding heating area, existing boilers have been presented in the PDD.</p>	Pending	OK
4.4.7.12. Efficiency of the power plant used prior to the start of the implementation of the project activity ($\eta_{BL,EL}$)	AM 0058	Ver. 03.1	<p>The value of $\eta_{BL,EL}$ is 38.31%, which is provided by the power plant.</p> <p>As per the FAR 1 above, this parameter will be monitored ex-post.</p>	Pending	OK
4.4.8. Appropriate and correct?	VVM	90			

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
4.4.8.1. Applicable to the proposed CDM project activity?	VVM	90	<p>Pending on CAR-7 to CAR-12 and CL-27 to CL-33.</p> <p>The data and parameters are applicable to the Project. In addition to the parameters required by the methodology and tools, there are some other parameters sourced from the historic information, authorized report and industrial standard used in determining emission reductions, which are available for validation:</p> <p>w_j is the index of design load for heating of building, the value is 77W/m^2 for existing building category 1, which was determined base on the historic data in Urumqi City by qualified entity; the value for buildings category 2 and category 3 is 70W/m^2.</p> <p>T_N is the indoor mean air temperature during heating period, the value is 18°C, sourced from industrial standards in China.</p> <p>T_p is the mean outdoor temperature during heating period, the value is -7.4°C, sourced from the Cogeneration Planning of Urumqi City, approved by Urumqi Development and Reform Commission in 2007;</p> <p>T_p is the outdoor design temperature during</p>	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			heating period, the value is -22°C sourced from the Cogeneration Planning of Urumqi City, approved by Urumqi Development and Reform Commission in 2007.		
4.4.8.2. Resulting in a conservative estimate of the emission reductions?	VVM	90	Pending on CAR-7 to CAR-12 and CL-27 to CL-33. Conservative data and options have been taken into account, therefore the data and parameter will result in a conservative estimation of emission reductions.	Pending	OK
4.4.9. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	90	No. All data and parameters were available at time of validation, however, for conservative, the efficiency of the power plant was requested to be monitored, as FAR-1.	OK	OK
4.4.9.1. If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	90	Not applicable since all parameters were available.	OK	OK
5. Additionality of a project activity					
General checklist for additionality					
5.1. Does the PDD describe how a proposed CDM project	VVM	93	Yes.	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
activity is additional?					
5.2. Whether the CDM-PDD use the steps provided in the methodology or the latest version of the additionality tool being used to assess the additionality?	VVM	94	<p>Yes.</p> <p>The Investment Analysis of the “Tool for the Demonstration and Assessment of Additionality” version 05.2 was used. However, the PDD adopted the Step 1 given by the methodology AM0058 to demonstrate the additionality of the Project.</p> <p>CAR-13 As stated in the PDD, the procedures given by the methodology AM0058 were used to demonstrate the additionality. However, the procedures of the methodology were not correctly followed and the step 2 given by the “Tool for the Demonstration and Assessment of Additionality” was used. The procedures of the methodology and the Additionality Tool cannot be mixed, only one of them can be used.</p> <p>The final version of PDD chosen the “Tool for the Demonstration and Assessment of Additionality” to demonstrate the additionality of the Project, which is in accordance with the methodology;</p>	CAR-13	OK



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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			hence CAR-13 closed.		
5.3. Were the steps taken from the “Tool for the Demonstration and Assessment of Additionality” to assess additionality used?	EB 28	Ann 14	Three steps were used to assess additionality. Pending on CAR-13 The steps given by the Tool for the Demonstration and Assessment of Additionality were used in the final version of PDD.	Pending	OK
5.3.1. Identification of alternatives to the project activity?	EB 39	Ann 10	The alternatives were identified in Section B.4 of the PDD version 01. Pending on CAR-13 The alternatives have been identified and discussed in the Section B.4 of the PDD, and the two realistic and credible scenarios remained.	Pending	OK
5.3.2. Barriers analysis?	EB 39	Ann 10	Not used in Section B.5 of the PDD. The barrier analysis was used to identify the baseline scenario, but not used to demonstrate the additionality.	Pending	OK
5.3.3. Investment analysis	EB 39	Ann 10	Investment analysis is used. Option III (benchmark analysis) is chosen for investment analysis. CAR-14 If the procedures of the methodology AM0058 was used to demonstrate the additionality, according to the	CAR-14	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>methodology AM0058, if the CDM alleviates the identified barriers that prevent the proposed project activity from occurring, it should be proceed to common practice analysis step; otherwise the project activity is not additional. The Investment analysis was improperly used.</p> <p>In the final version of PDD, the Tool for the demonstration and assessment of additionality was used; subsequently the investment analysis was used, which is in line with the methodology and Tool for the demonstration and assessment of additionality; hence CAR-14 closed.</p>		
5.3.4. Common practice analysis?	EB 39	Ann 10	Yes, common practice analysis was used.	OK	OK
5.4. In step 1 (i) have all the sub-steps as below been followed?	EB 39	Ann 10	<p>No.</p> <p>CL-34 If the “Additionality Tool” is used, the corresponding procedures should be followed.</p> <p>In the final version of PDD, the procedures given by the “Additionality Tool” was used, hence CL-34 closed.</p>	CL-34	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
5.4.1. Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	The alternatives were identified in Section B.4 of the PDD; please refer to section 4.3 above. Pending on CL-15 to CL-23 Yes, all alternatives required by the methodology have been considered, and two alternatives were left for further analysis.	Pending	OK
5.4.2. Sub-step 1b: Consistency with mandatory laws and regulations	EB 39	Ann 10	Pending on CL-15 to CL-23 The two remaining alternatives are consistent with compelling laws and regulations in China.	Pending	OK
5.5. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	Only Step 2 (Investment analysis) was selected. Pending on CAR-14 and CL-34 In the final version of PDD, only the Step 2 “Investment Analysis” of the “Additionality Tool” was used.	Pending	OK
5.6. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10			
5.6.1. Sub-step 2a: Determine appropriate analysis method;	EB 39	Ann 10	Yes. The three analysis methods suggested by “Additionality Tool” are simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III).	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			The Option III was adopted.		
5.6.2. Sub-step 2b: Option I. Apply simple cost analysis;	EB 39	Ann 10	It is considered not applicable to the Project	OK	OK
5.6.3. Sub-step 2b: Option II. Apply investment comparison analysis;	EB 39	Ann 10	<p>It is considered not applicable to the Project.</p> <p>CL-35 Please clarify more clearly why the Option II “investment comparison analysis” is not applicable to the Project.</p> <p>Because one of the remaining alternative was to continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network, the existing boiler houses owned by many different owners; for the PP, it was the choice to invest or not to invest. According to the “Guidelines on the Assessment of Investment Analysis”, the investment</p>	CL-35	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			comparison analysis was not suitable but the benchmark analysis was used. This is in accordance with the Guidelines on the Assessment of Investment Analysis; hence CL-35 closed.		
5.6.4. Sub-step 2b: Option III. Apply benchmark analysis;	EB 39	Ann 10	Yes. The benchmark analysis method based on IRR is chosen.	OK	OK
5.6.5. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);	EB 39	Ann 10	Yes.	OK	OK
5.6.6. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).	EB 39	Ann 10	Yes.	OK	OK
5.6.7. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10	Yes.	OK	OK
5.6.8. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I).	EB 39	Ann 10	Yes. Excluded as the Project generates financial benefits heat supply other than CER revenue.	OK	OK
5.6.9. Otherwise, use the investment comparison analysis	EB 39	Ann	The Option III is chosen.	Pending	OK

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(Option II) or the benchmark analysis (Option III). Specify option used with justification.		10	Pending on CL-35 The justification was reasonable; the benchmark analysis was applicable to the Project.		
5.6.10. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.	EB 39	Ann 10	Not applicable.	OK	OK
5.6.11. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	EB 39	Ann 10	Not applicable.	OK	OK
5.6.12. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10			
5.6.12.1. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.	EB 39	Ann 10	Yes. IRR was identified as the financial indicator. CL-36 Please specify the financial indicator is project IRR or equity IRR. Project IRR was chosen as financial indicator,	CL-36	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			therefore CL-36 was closed.		
5.6.12.2. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.	EB 39	Ann 10	Yes. The financial analysis was based on parameters standard in the market.	OK	OK
5.6.12.3. Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project	EB 39	Ann 10	Yes. Derived from (b): the bank interest rate of 5.76% was used as the benchmark IRR in the PDD. Website: http://www.pbc.gov.cn/detail.asp?col=462&ID=2480 By checking the "Economic Evaluation Method and Parameters for Project Construction" (version 3) issued by the NDRC and the former Ministry of Construction of China in 2006 after the FSR of the	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in 2. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decisions; (e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified. Please specify benchmark and justify.			Project was finished, BVC found that the benchmark IRR of district heating is 8%, which is higher than the interest rate used in the PDD; therefore, BVC can confirm that the benchmark of 5.76% used in the PDD was conservative.		
5.6.13. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10			
5.6.13.1. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives.	EB 39	Ann 10	Yes, the project IRR has been calculated.	OK	OK

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Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.					
5.6.13.2. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	Yes. IRR calculation spread sheet has been provided.	OK	OK
5.6.13.3. Justify and/or cite assumptions.	EB 39	Ann 10	Yes. All input values were sourced from the approved FSR. The planned heating area was sourced from the FSR and cross checked with Heating Supply Schematic Plan Diagrams in Southern Urumqi and found substantial, the total heating area of the Project was 17.49 million m ² in the final version of the PDD, 40,000 m ² higher than that in the PDD version 01, which has been checked with the	Pending	OK

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			initial boiler survey form and found consistent.		
5.6.13.4. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	Yes. Relevant costs are included.	OK	OK
5.6.13.5. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	Not applicable as Option III is used.	OK	OK
5.6.13.6. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	Yes. 3.49% VS benchmark of 5.76% in PDD ver 01. Pending on CAR-3 The project IRR was change to 3.56% after the heating area change to 17.49 million m ² from 17.45 million m ² , which is reasonable.	Pending	OK
5.6.13.7. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 51	Ann 58	No, the assessment period was 22 years, which was the operation period of the Project and in accordance with the Guidelines on the Assessment of Investment Analysis.	OK	OK
5.6.13.8. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these	EB 51	Ann 58	Yes, the maintenance cost was included; it counted for about 1.8% of the total value of fixed	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
are expected to be incurred during the period of assessment?			assets, which is reasonable.		
5.6.13.9. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	Yes, 5% of the total fixed assets was treated as residual value and included in the cash flow at the end of assessment period, which is in line with tax regulation valid at time of FSR was preparing.	OK	OK
5.6.13.10. Is the depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator?	EB 51	Ann 58	Yes, the depreciation has been deducted in tax calculation and added back to the net profits for calculating project IRR.	OK	OK
5.6.13.11. Is pre-tax benchmark or post tax benchmark applied in the investment analysis? If a post tax benchmark is applied, is the actual interest payable taken into account in the calculation of income tax? If yes, is the interest calculated according to the prevailing commercial interest rate in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous	EB 51	Ann 58	A post tax benchmark was applied in the investment analysis, and the actual interest payable has been taken into account, the interest rate was the prevailing commercial interest rate, and the debt-equity ratio was consistent with the one in the FSR, and confirmed by checking the lending agreement and found consistent.	OK	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
three years.					
5.6.14. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	<p>Two variable factors are identified for sensitivity analysis of the Project, including Total static investment and Other O&M costs with a variation range from -10% to 10%.</p> <p>CL-37 The variable factors for sensitivity analysis should be identified as per the latest version of "Guidelines on the Assessment of Investment Analysis". And a further elaboration to show whether the variables will exceed -10% or +10% so as to the IRR of the Project could reach the benchmark is required.</p> <p>Six variable factors, that all factors constitute more than 20% of either the total cost or total investment, have been considered in the sensitivity analysis.</p> <p>In the following situation, the project IRR of the Project will reach the benchmark:</p> <ul style="list-style-type: none"> ➤ Total static investment decreased by 17.8%, ➤ Heating price increased by 8.3% ➤ Heat purchase price decreased by 19.3% 	CL-37	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<ul style="list-style-type: none"> ➤ Heating area increased by 35.1% ➤ O & M costs (excluded the heat purchase cost) decreased by 17.8% ➤ Quantity of heat purchased decreased by 29.3% <p>All situations above were impossible, the justification and relevant evidences have been checked and found substantial; hence CL-37 closed.</p>		
5.6.15. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	<p>The Project is not financially feasible without the revenue of CERs.</p> <p>Pending on CL-35 to CL-37</p> <p>The conclusion was substantial, that the Project was not financially feasible without CDM revenue.</p>	Pending	OK
5.7. In step 4: Common practice analysis has all the sub-steps as below followed?	EB 39	Ann 10		OK	OK
5.7.1. Sub-step 4a: Analyze other activities similar to the proposed project activity;	EB 39	Ann 10	<p>CL-38 Please define the criteria of similar project and discuss any project activity similar to the Project as per the Additionality Tool.</p> <p>The criteria has been defined in the final version of PDD, as follow:</p>	CL-38	OK

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			<ul style="list-style-type: none"> ➤ Primary district heating system using heat from cogeneration power plant ➤ Located in Xinjiang Uygur Autonomous Region ➤ project with heating area similar in the range of 6 million m² to 27 million m² <p>The criteria were in accordance with the Tool for the demonstration and assessment of additionality; following these criteria, two similar projects were identified based on the information provided by industrial association, Western District Heating Project in Shihezi City and Southern District Heating Project in Shihezi City; the evidence have been checked and found substantial; hence CL-38 closed.</p>		
5.7.2. Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10	<p>Pending on CL-38</p> <p>Two projects were identified in the region. The essential distinctions between the Project and the similar projects have been identified: the Project faces an objective technical barrier with 163m altitude difference and had to employ three-level heating network, while the two similar projects do not have such barrier and they use two-level</p>	Pending	OK

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			network which is common in China. Therefore, the Project is not common practice in the region.		
5.7.3. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	EB 39	Ann 10	Pending on CL-38. The guidelines have been followed; two similar projects were identified according to information provided by industrial association.	Pending	OK
5.7.4. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? If similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that	EB 39	Ann 10	Pending on CL-38 The essential distinctions were discussed; relevant supporting documents have been checked and found substantial.	Pending	OK

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explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.					
5.7.5. Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	Pending on CL-38 Yes, the outcome has been stated in the PDD that the Project was not common practice.	Pending	OK
5.8. Has it been proved that the project is additional?	EB 39	Ann 10	Pending on close above CARs and CLs. The Project was additional, which has been demonstrated by the procedures given by the Tool for the demonstration and assessment of additionality.	Pending	OK
Prior consideration of the clean development mechanism					
5.9. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	97	The starting date of the Project is October 2004. It is prior to the date of publication of the PDD for global stakeholder comments on 02 Sep 08.		



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			<p>CAR-15 A detailed implementation timeline of the Project is required to include in the Section B.5, in addition to the implementation timeline, events and actions which have been taken to achieve CDM registration should be presented. The timeline should allow the DOE to assess the serious consideration of the CDM in the Project decision making process and Project implementation. Relevant evidences are required as well.</p> <p>A detail timeline has been specified in the PDD, include the events related to the implementation of the Project, the events related to consideration of CDM, continue and real actions that have been taken to secure CDM status for the project in parallel with its implementation; supporting documents have been checked and found substantial; the starting date of the Project was correctly identified in accordance with the latest version of Glossary of CDM terms, i.e. 14/01/2005 on which the first equipment contract was signed; the project started before the PDD was published</p>	CAR-15	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			for global stakeholders' consultation; hence CAR-15 closed.		
5.10. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	97	<p>Yes. The CDM revenue was considered in the investment consideration.</p> <p>The PDD list a schedule of the consideration of CDM during the decision-making process of the Project:</p> <p>Pending on CAR-15</p> <p>The CDM benefits have been seriously considered in making the investment decision to proceed with the Project; supporting documents have been checked and found substantial.</p>	Pending	OK
5.11. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins"?	VVM	98	<p>Not clear.</p> <p>Pending on CAR-15</p> <p>The starting date has been correctly identified in accordance with the latest version of Glossary of CDM terms, i.e. "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins".</p>	Pending	OK
5.12. Does the project activity require construction, retrofit or other modifications?	VVM	98	Yes.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			The project activity requires construction.		
5.13. If yes, is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	98	Yes, the date of commissioning will not be considered as the project activity start date.	OK	OK
5.14. Is it a new project activity (project activities with starting date on or after 02 August 2008) or an existing project activity (project activities with a start date before 02 August 2008)?	VVM	99	It is an existing project activity.	OK	OK
5.15. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the Executive Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from Host Party DNA and/or UNFCCC secretariat).	VVM	100	N/A	OK	OK
5.16. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	101	<p>The PP provided relative evidences to prove that the CDM revenue has been seriously considered during the investment decision.</p> <p>Pending on CAR-15</p> <p>The starting date of the Project was prior to the publication of the PDD for global stakeholders'</p>	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			consultation; all supporting documents have been checked and found substantial.		
5.17. evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including, inter alia:	VVM	101			
5.17.1. Minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?	VVM	101	Yes, the board meeting minute on 15/04/2004 has been provided and checked. Pending on CAR-15 The board meeting minutes and other supporting documents have been provided and checked.	Pending	OK
5.17.2. reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, including, inter alia:	VVM	101			
5.17.3. Contract with consultants for CDM/PDD/methodology services?	VVM	101	Yes. The CDM Consulting Contract was signed on 08/07/2004, and the PDD service contract was signed in Apr. 2005, the supporting documents have been checked and found substantial.	OK	OK
5.17.4. Emission Reduction Purchase Agreements or other	VVM	101	Pending on CAR-15	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)?			ERPA signed with Carbon Resource Management Ltd has been provided and checked.		
5.17.5. Evidence of agreements or negotiations with a DOE for validation services?	VVM	101	Yes. Kept by BVC.	OK	OK
5.17.6. Submission of a new methodology to the CDM Executive Board?	VVM	101	No. However, the experts of the PP communicate with the COWI Company, who conducted the methodology AM0058 (NM0181), and attend to the preparing progress of baseline methodology. Relevant evidences of communication have been provided and checked.	Pending	OK
5.17.7. Publication in newspaper?	VVM	101	No.	OK	OK
5.17.8. Interviews with DNA?	VVM	101	Yes. Bulletin on 49th Meeting of National CDM Board issued by China's DNA on 17/06/2008 provided. http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1843.pdf	OK	OK
5.17.9. Earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	101	N/A	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
Identification of alternatives					
5.18. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	104	No.	OK	OK
5.19. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	104	Yes. Refer to section 4.3 above.	OK	OK
5.20. Does the list of alternatives given in the PDD ensure that:	VVM	105			
5.20.1. The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	VVM	105	Refer to section 4.3 Above The list included the Project not undertaken as CDM.	OK	OK
5.20.2. The list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	VVM	105	Refer to section 4.3. above Pending on to CL-16 to CL-17 The list contains all plausible alternatives that can supply the services comparable to the Project.	Pending	OK
5.20.3. The alternatives comply with all applicable and enforced legislation?	VVM	105	Refer to section 4.3. above The alternatives comply with applicable and enforced legislation.	Pending	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
Investment analysis					
5.21. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	107	Yes.	OK	OK
5.22. If yes, does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	107			
5.22.1. The most economically or financially attractive alternative?	VVM	107	Not applied.	OK	OK
5.22.2. Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	107	Concluded based on the IRR calculation (3.49% less than the benchmark of 5.76%). Pending on CAR-13 to CAR-14 and CL-34 to CL-37 The Project was financial unfeasible without CDM revenue.	Pending	OK
5.23. Was this shown by one of the following approaches?	VVM	108	Yes.	OK	OK
5.23.1. Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project	VVM	108	Not applicable.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
activity.					
5.23.2. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	108	Not applicable.	OK	OK
5.23.3. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	108	Yes.	OK	OK
5.23.3.1. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 51	Ann 58	No. The period of assessment is 22 years plus, limited to the crediting period of the Project.	OK	OK
5.23.3.2. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	The operation period is 22 years as per the FSR. The fair value has been recovered at the end of assessment period.	OK	OK
5.23.3.3. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 51	Ann 58	Yes. The maintenance cost was included.	OK	OK
5.23.3.4. Do the project participants justify the	EB 51	Ann	The 22 years used in the PDD is conservative	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?		58	according to "Tool for the demonstration and assessment of additionality" version 05.2.		
5.23.3.5. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	Yes.	OK	OK
5.23.3.6. Is pre-tax benchmark or post tax benchmark applied in the investment analysis? If a post tax benchmark is applied, is the actual interest payable taken into account in the calculation of income tax? If yes, is the interest calculated according to the prevailing commercial interest rate in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years.	EB 51	Ann 58	A post tax benchmark was applied, and the actual interests have been taken into account.	OK	OK
5.23.3.7. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB 51	Ann 58	Yes.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
5.23.3.8. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	110	<ol style="list-style-type: none"> 1. The total investment of the proposed project was cross-checked with the value of main equipment contracts and construction services contract, and the Financial Audit Report of the Project was checked and found substantial. 2. The heating area was confirmed by checking the Heating Supply Schematic Plan Diagrams in Southern Urumqi. 3. The heating price was checked against the price notification issued by the local government; 4. The heat purchase price was fixed by the government, and checked against the heat purchase agreement; 5. The O&M cost was checked against relevant account and tax regulation, and the main component such as electricity tariff, water price and manpower cost have been checked against relevant regulations valid at that time and found substantial; 6. The total quantities of heat purchased and coal consumption was estimated by the qualified entity and checked against the 	Pending	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>heating area and found reasonable.</p> <p>7. The taxes have been checked against relevant taxes regulation and found consistent.</p> <p>8. The heating fee charge rate has been checked against the report conducted by government and university and found substantial;</p> <p>Therefore, BVC can confirm that all input values were valid and applicable to the Project at time of FSR was preparing, and conservative.</p>		
5.23.4. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM	110	<p>Refer to section 5.23.3 above.</p> <p>Yes, all parameters have been checked against reliable evidences.</p>	OK	OK
5.23.5. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	110	<p>The FSR provided has been reviewed; the public price regulations, annual financial auditing report and research report conducted by government /university have been checked.</p>	OK	OK
5.23.6. Was the correctness of computations carried out and documented by the project participants assessed?	VVM	110	Yes	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
5.23.7. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur and the likelihood of these conditions assessed?	VVM	110	No. Pending on CL-37 The sensitivity analysis has been presented and supporting documents have been checked.	Pending	OK
5.23.8. To determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:	VVM	111			
5.23.9. Assessing previous investment decisions by the project participants involved?	VVM	111	No previous investment decision made by the PP, the decision was made once only after the FSR was finished, and the decision has been checked by BVC.	OK	OK
5.23.10. Determining whether the same benchmark has been applied?	VVM	111	NA	OK	OK
5.23.11. Determining if there are verifiable circumstances that have led to a change in the benchmark?	VVM	111	NA	OK	OK
5.24. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities?	VVM	112	Yes. All input values are sourced from the FSR which was approved by the local government, and confirmed by checking relevant supporting documents.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
If yes: (EB38 para.54)	VVM	112			
5.24.1. has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	112	Pending on the CAR-15. The FSR was the basis to proceed with the investment in the Project, which has been confirmed by checking the timeline and relevant supporting documents.	Pending	OK
5.24.2. Are the values used in the PDD and associated annexes fully consistent with the FSR? If not, was the appropriateness of the values validated?	VVM	112	All input values are sourced from the approved FSR.	OK	OK
5.24.3. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	112	BVC can confirm that all input values were valid and applicable to the Project, and reasonable and conservative.	OK	OK
Barrier analysis					
5.24.4. Has barrier analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	114	Not applied in the PDD. Pending on CAR-14 In the final version of PDD, the investment analysis given by the "Tool for the demonstration	Pending	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			and assessment of additionality” was used		
Common practice analysis					
5.24.5. Is this a large-scale or first-of-its kind small-scale project activity?	VVM	118	It is a large-scale project activity.	OK	OK
5.24.6. If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	118	No. Pending on CL-38 Common practice analysis have been checked against relevant documents and found substantial.	Pending	OK
5.24.7. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity’s technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be trans-national/global.)	VVM	119	Pending on CL-38 Primary district heating system using heat from cogeneration power plant located in Xinjiang Uygur Autonomous Region was chosen as the geographical boundary for common practice analysis.	Pending	OK
5.24.8. Was a region other than the entire host country chosen?	VVM	119	Yes. Pending on CL-38. Xinjiang Uygur Autonomous Region was chosen.	Pending	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
5.24.9. If yes, was the explanation why this region is more appropriate assessed?	VVM	119	No. Pending on CL-38. Xinjiang Uygur Autonomous Region is large enough for common practice analysis.	Pending	OK
5.24.10. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, and have been undertaken in the defined region?	VVM	119	No. Pending on CL-38. Information provided by local industrial association has been checked.	Pending	OK
5.24.11. Are similar and operational projects, other than CDM project activities, already “widely observed and commonly carried out” in the defined region?	VVM	119	Not clear. Pending on CL-38. Two similar projects were identified.	Pending	OK
5.24.12. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	119	Pending on CL-38 Two similar projects were identified; however, since essential distinctions were objective demonstrated, the Project was not common practice in the region.	Pending	OK
6. Monitoring plan					
6.1. Does the PDD include a monitoring plan?	VVM	121	Yes.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
6.2. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	121	Yes.	OK	OK
6.3. Was the list of parameters required by the selected methodology identified?	VVM	122			
6.3.1. Status of the district heating system and capacity	AM 0058	Ver. 03.1	Yes.	OK	OK
6.3.2. Quantity of heat extracted from the cogeneration plant during the year y ($Q_{\text{extracted},y}$)	AM 0058	Ver. 03.1	CL-39 The quantity of heat extracted from the power plant ($Q_{\text{extracted},y}$) cannot be cross checked with the heat meter readings of substations and peak load boiler houses since they are not the same parameter. The quantity of heat extracted from the power plant plus the heat from HOBs will be cross checked with the heat supplied by all substations, which is feasible; hence CL-39 closed.	CL-39	OK
6.3.3. Quantity of heat extracted from all heat only/peak load boilers during the year y ($Q_{\text{HOB},y}$)	AM 0058	Ver. 03.1	CL-40 As mentioned in the Section A.4.3, there will be four heat-only boilers, please specify why there are only two heat-only boilers will be monitored in Section B.7.1. There will be four HOBs in the Project, the heat from the four HOBs will be monitored; hence	CL-40	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			CL-40 closed.		
6.3.4. Total carpet area of all the building in category j supplied by substation i ($A_{i,i}$)	AM 0058	Ver. 03.1	Yes.	OK	OK
6.3.5. Quantity of heat supplied from sub-station i to category j buildings ($Q_{i,y}$)	AM 0058	Ver. 03.1	Yes	OK	OK
6.3.6. Actual quantity of electricity supplied to the grid in the year y ($EG_{PA,y}$)	AM 0058	Ver. 03.1	The $EG_{PA,y}$ will be monitored. Pending on CAR-6 The meters for monitoring the $EG_{PA,y}$ are in line with industrial standard.	Pending	OK
6.3.7. Project emissions from fossil fuel combustion in process j during the year y ($PE_{FC,j,y}$)	AM 0058	Ver. 03.1	The Project emissions will be calculated based on the parameters given by the "Tool-Project Emissions", and the parameters required by the "Tool-Project Emissions" will be monitored.	OK	OK
6.3.8. Quantity of fuel type i combusted in process j during the year y ($FC_{i,j,y}$)	EB 41	Ann 11	The quantity of coal consumed at the boiler houses and the power plant will be monitored. Pending on CL-40 The quantity of coal consumed at the four HOBs and the CHP will be monitored.	Pending	OK
6.3.9. Weighted average net calorific value of fuel type i in year y ($NCV_{i,y}$)	EB 41	Ann 11	The $NCV_{i,y}$ is sourced from the China Energy Statistic Yearbook.	Pending	OK

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CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			Pending CAR-11 The $NCV_{i,y}$ will be monitored as per the "Tool-Project Emissions".		
6.3.10. Weighted average CO2 emission factor of fuel type i in year y ($EF_{CO2,i,y}$)	EB 41	Ann 11	The $EF_{CO2,i,y}$ is sourced from IPCC 2006. Pending on CAR-11 The $EF_{CO2,i,y}$ was the default value of IPCC 2006, and the future revision of the IPCC Guidelines will be taken into account	Pending	OK
6.3.11. Emission factor of the electricity grid system (EF_{grid})	AM 0058	Ver. 03.1	No. CL-41 The emission factor of the electricity grid system should be monitored according to the methodology AM0058 version 03.1. According to the "Tool to calculate the emission factor for an electricity system", the emission factor of the grid system will be determined ex-ante and fixed for the crediting period, the determination process and the basic data have been checked during validation stage; hence CL-41 closed.	CL-41	OK
6.4. Does the monitoring plan contain all necessary parameters?	VVM	122	No. Pending on CL-41	Pending	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			<p>The emission factor of the grid system needs not to be monitored.</p> <p>However, the efficiency of the power plant was required to be monitored in addition to the parameters required by the methodology, and has been listed in the B.7.1 of the PDD.</p>		
6.5. Are the parameters clearly described?	VVM	122	<p>Pending on CL-39 to CL-41</p> <p>All parameters have been clearly described in the final version of PDD.</p>	Pending	OK
6.6. Do the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	122	<p>Pending on CL-39 to CL-41</p> <p>Yes, the means of monitoring complied with the methodology and tools.</p>	Pending	OK
6.7. Specific questions per methodology regarding parameters.	VVM	122	<p>Pending on CL-39 to CL-41</p> <p>The efficiency of power plant during non-heating period will be monitored.</p>	Pending	OK
6.8. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	122	Yes.	OK	OK
6.9. Are the following means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and	VVM	122			

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
verified:					
6.9.1. Data management procedures?	VVM	122	Yes.	OK	OK
6.9.2. Quality assurance procedures?	VVM	122	Yes. The procedures are appropriate and practicable.	OK	OK
6.9.3. Quality control procedures?	VVM	122	Yes. The procedures are appropriate and practicable.	OK	OK
7. Sustainable development					
7.1. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	124	Yes. It has been checked against the LoA issued by China DNA.	OK	OK
7.2. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	125	Yes. It has been checked against the LoA issued by China DNA.	OK	OK
8. Local stakeholder consultation					
8.1. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity)	VVM	127	Yes. Please refer to section 3.29 above.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?					
8.2. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	128	Yes. All of the investigated stakeholders support the implementation of the proposed project.	OK	OK
8.3. Is the summary of the comments received as provided in the PDD complete?	VVM	128	Yes. All 50 questionnaires have been provided. Pending on CL-10 The summary of the comments has been provided in the PDD, and checked against the initial questionnaires.	Pending	OK
8.4. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	128	Yes. The stakeholders concerned about the heat-supplying quality, and they hope that the conversion of heat supplying system would not change the indoor temperature. The PP planned circumspect heating programs to deal with various cases and ensure the heat supply temperature of the proposed project and the quality of residents' life. This has been checked against the approved FSR	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	Comments	Draft Concl.	Final Concl.
			and its approval.		
9. Environmental impacts					
9.1. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	130	Yes. EIA and its approval issued by Environmental Protection Bureau of Xinjiang Uygur Autonomous Region have been presented. Please refer to section 3.27 above.	OK	OK
9.2. Have the project participants undertaken an analysis of environmental impacts?	VVM	131	Yes. The Environmental Impact Assessment (EIA) of the Project was finished by Urumqi Environmental Protection Institute	OK	OK
9.3. Does the host Party require an environmental impact assessment?	VVM	131	Yes.	OK	OK
9.4. If yes, have the environmental impact assessment approved by local government?	VVM	131	Yes. The EIA has been approved by Environmental Protection Bureau of Xinjiang Uygur Autonomous Region on 17/06/2004	OK	OK

VALIDATION REPORT

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CAR-1 The LoA from China DNA is required.	1.1	The LoA from China has been provided.	The LoA from China's DNA code [2008] No. 2255 dated Aug. 2008 has been checked by BVC; hence CAR-1 closed.
CAR-2 The LoA from UK DNA is required.	1.1	The LoA from UK has been provided.	The LoA from UK's DNA code CRML/20/2009 dated 24/08/2009 has been checked by BVC, hence CAR-2 closed.
CAR-3 The quantities of the boilers and boiler houses and heating area are not consistent with the result of the initial boiler survey.	3.5.1	Totally 333 small boilers in 142 boiler houses will be replaced by the Project and demolished, 15 boilers in 3 existing large boiler houses (No. 140, No.144 and No. 145) and 3 boiler in Weihuliang boiler house (put into operation after extraction heat from the CHP) will be supplementary heat source for the Project. There was a mistake in the PDD version 01 regarding to the heating area; the total heating area will reach 17.49 million m ² which is 40,000m ² larger than the value in the PDD version 01. The total thermal capacity of the Project (CHP plus four HOBs) is 1445MW.	The quantity and capacity of boilers and the heating area have been checked against the evidences and found consistent, hence CAR-3 closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CAR-4 Please provide the estimation of emission reductions in the tabular format.	3.10	The tabular format has been used	The tabular format has been used, hence CAR-4 closed.
CAR-5 The latest version of the methodology and tools required by the methodology should be used.	3.12.1	The latest version of the methodology AM0058 version 03.1, and the relevant tools required by the methodology have been used in the PDD.	The latest version of the methodology AM0058 version 03.1, and the relevant tools required by the methodology have been used in the PDD, hence CAR-5 closed.
CAR-6 The accuracy of the electricity meters is not in line with national industry standard.	3.21.2.2	The accuracy of the electricity meters is 0.2s.	The accuracy of the electricity meters is 0.2s, which is in line with the national standard: Technical administrative code of electric energy metering (DL/T 448-2000). Hence CAR-6 closed.
CAR-7 In the PDD, the quantity of heat supplied is the target of heating supplied, it is not in line with the methodology. The $Q_{inst_cap,j,i}$ should be calculated by multiplying a nameplate capacity of the existing boiler supplying heat to building type j at sub-station i by the number of operational hours per	4.4.2.1	<p>In Urumqi, the heating fee is charged by heating area but not by heating quantity, therefore, the quantity of heat supplied was unavailable in the boilers initial survey form of the Project. The quantity of heat supplied was determined by the formula given by the industrial standard:</p> $Q_{i,y} = \sum_j W_{j,i} \times A_{j,i} \times T \times 0.0036$ <p>Where:</p>	BVC has checked the relevant evidences, including the FSR, the industrial standard: Design Code of District Heating Network (standard code: CJJ 34-2002), the District Heating Design Manual, the Heating Supply Engineering and the National Standard: Design code for residential buildings (code: GB50096-1999), the

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
year as per the methodology.		<p>W_{j,i} is the index of mean load for heating of building (W/m²), it was determined by the formula following; A_{j,i} is the heating area (m²) T is the number of operational hours per year; the value is 181 days (4344hours), which was regulated by the government.</p> $W_j = w_j \times \frac{T_N - T_P}{T_N - T_W}$ <p>w_j is the index of design load for heating of building. The value for existing buildings category 1 is 77W/m², which was determined by the Beijing Gas & Heat Power Project Design Institute and Urumqi Heating Engineering Design Institute based on the historic data from 1993 to 2002 in Urumqi City, and the index of design load for heating of category 2 and category 3 is 70W/m². T_N is the indoor mean air temperature during heating period, the value is 18°C in the FSR. T_P is the mean outdoor temperature during heating period, the value is -7.4°C sourced from the FSR; T_W is the outdoor design temperature during heating period, the value is the value is -22°C,</p>	<p>Management Regulation on the Heating Supply in Urumqi City and the Congregation Planning of Urumqi City approved by Urumqi DRC, and then can confirm that the heat supplied determined by the formulae given by the industrial standard is reasonable. The PDD also specified the determination of heat supplied and Q_{inst_cap,j,i} of four situations of existing buildings, which is reasonable. The evidences have been checked and found consistent and the value is reliable. Hence CAR-7 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
		<p>sourced from the FSR;</p> <p>According to the Heating Supplied Engineering published by China Machine Press in 2008, the heat supplied determined by the two formulae above is accurate and the error are not exceed 1%, which has been proved by lots of district heating experience.</p> <p>Furthermore, the heat supplied by the Project will be monitored ex-post.</p> <p>The $Q_{inst_cap,j,i}$ has been calculated by multiplying a nameplate capacity of the existing boilers supplying heat to building type j at sub-station i by the number of operational hours per year as per the methodology.</p>	
<p>CAR-8</p> <p>As mentioned in Section B.4, the current operating situation is to use small coal-fired, gas-fired or oil-fired boilers for heating supply, but in the sub-step 2b of Section B.6.1, the gas-fired boilers were not mentioned, and the PDD adopt the coal fired emission factor as the $COEFBL_{HG,j,i}$ is not conservative.</p>	4.4.2.3	<p>The description in the PDD version 01 was incorrect; there are neither gas-fired boilers nor oil-fired boilers involved in the Project, therefore, the emission factor of coal is sourced from IPCC, i.e. $0.0997tCO_2/GJ$</p>	<p>By checking the relevant evidences, BVC can confirm that there are neither gas-fired boilers nor oil-fired boilers involved in the Project, therefore, using emission factor of coal from IPCC, i.e. $0.0997tCO_2/GJ$, is in line with methodology and appropriate; hence CAR-8 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CAR-9</p> <p>The $\varepsilon_{BL,HG,j,i}$ in the PDD was sourced from the “Report of Urumqi Southern District Heating Network Construction Project environmental impact”, it is not in line with the methodology. The $\varepsilon_{BL,HG,j,i}$ should be determined by the approaches given by the methodology. The measurement procedures and results and manufacturer’s information should be documented transparently in the PDD.</p>	4.4.2.4	<p>The efficiencies of existing boilers have been determined by the approach given by the methodology, i.e. historical fuel consumption data. The historical fuel consumption data was available in the initial boiler survey forms issued by each boiler house owner.</p> <p>It was hard to separate the heat supplied by each individual boiler, so the efficiency of boiler house should be determined instead of the efficiency of individual boiler, which is reasonable and did not impact the determination of emission reductions. For existing boilers houses No. 144 and No. 145, the efficiencies were determined by their historic coal consumption and the heat supplied</p> <p>For other existing boilers, the efficiencies were determined by the following formulae:</p> $\varepsilon_{BL,HG,j,i} = \frac{Q_{BL,HG,out,j,i}}{Q_{BL,HG,im,j,i}} = \frac{(W_{j,i} \times A_{j,i} \times T \times 3.6 \times 10^{-6}) \times 1.01}{FC_{coal,j,i} \times NCV_{fuel,j,i}}$ <p>Where:</p> <p>$Q_{BL,HG,out,j,i}$ is the annual historic heat supplied by the boiler house; (GJ)</p> <p>$Q_{BL,HG,im,j,i}$ is the annual historic energy input to the boiler houses generated by the fuel consumed. (GJ)</p>	<p>BVC has checked relevant standard, industrial textbook, authorized data sources, and then can confirm the determination of the efficiencies of boilers was in line with the methodology and conservative. Hence CAR-9 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
		<p>$W_{j,i}$ is the annual heating load per unit heating area (W/m^2); the value for existing buildings was determined by the formula for determining heat supplied in response to CAR-7 above, the result was $48.895 W/m^2$.</p> <p>$A_{j,i}$ is the area existing prior to the Project heated by the boiler house (m^2);</p> <p>T is the annual heating period (hours), the value is 4344hours.</p> <p>$FC_{coal,j,i}$ is the quantity of fuel combusted in the boiler house (tons standard coal), the historical quantity of coal consumed by each boiler house was sourced from the initial boilers survey forms issued by each owner. (tons standard coal)</p> <p>$NCV_{fuel,j,i}$ is the net calorific value of the fuel type i in year y (GJ/tons standard coal). The coal consumed by all the boiler houses (except two large heat only boiler houses, No. 144 and No. 145, was the raw coal with NCV of 20.908GJ/ton sourced from the China Energy Statistic Yearbook 2008) was provided in standard coal equivalent, the NCV of standard coal was 29.27GJ/t source from the China Energy Statistic Yearbook 2008. According to the Heating Supply Engineering, the supplied heat determined by the formulae is</p>	

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
		<p>accurate and the error will not exceed 1%, a conservative factor of 1.01 has been taken into account.</p> <p>The efficiency of four situations regarding different correspondences between the existing boiler houses and substations has adopted the best efficiency of boiler houses involved.</p> <p>For new boilers, the efficiency was sourced from the methodology, i.e. 85%.</p>	
<p>CAR-10</p> <p>The typical technical lifetime of boilers should be estimated as per the methodology and relevant guidance, the supporting documents of technical lifetime and average age of the boilers should be provided.</p>	4.4.2.5	<p>The technical lifetime of the existing boilers was determined as per Tool to determine the remaining lifetime of equipment, EB50 Annex15. According to the mandatory Special Equipment Safety Supervision Regulations, all boilers must be tested and inspected for safe by authorized entity; therefore, the default value of technical lifetime of 25 years for boilers given by the "Tool to determine the remaining lifetime of equipment" was applicable to the Project.</p> <p>The average remaining lifetime of the existing boilers have been determined weighted by their heat generation, and the remaining lifetime of the existing boilers was longer than the crediting period.</p>	<p>The determination of remaining lifetime has been specified in the PDD. BVC has checked the evidences and regulations and found substantial; hence CAR-10 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CAR-11</p> <p>IPCC values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC for weighted average CO₂ emission factor of coal (EFCO_{2,i,y}) is 99.7tCO₂/TJ, this value should be used in determination of Project emissions as per the “Tool - Project Emissions”; and the NCV from national energy yearbook was not applicable to the Project.</p>	4.4.3.3	<p>The default value of IPCC at 95% confidence interval, 99.7tCO₂/TJ, has been applied in the final version of PDD; the historic NCV_{i,y} measured by the PP was used for ex-ante calculation, which will be monitored ex-post.</p>	<p>BVC has checked the IPCC and the historic operation data of the Project and found substantial; hence CAR-11 closed.</p>
<p>CAR-12</p> <p>Leakage due to decrease in electricity supply to the grid from the power plant should be considered according to the methodology AM0058 version 03.1, and the latest version of the “Tool to calculate the emission factor for an electricity system” should be used for calculating the emission factor of the electricity grid system.</p>	4.4.4.1	<p>The EG_{min,hist} has been determined since the historical data of 3 years prior to the heat extract from the CHP of the Project has been specified. The EF_{grid} has been determined using the “Tool to calculate the emission factor for an electricity system” version 02; the EF_{grid} was determined ex-ante and will be fixed for the crediting period. The most recent data available at the time submission of PDD for validation has been applied.</p>	<p>BVC has checked the historic data of the CHP and data sources published by China DNA and found substantial. Hence CAR-12 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CAR-13 As stated in the PDD, the procedures given by the methodology AM0058 were used to demonstrate the additionality. However, the procedures of the methodology were not correctly followed and the step 2 given by the "Tool for the Demonstration and Assessment of Additionality" was used. The procedures of the methodology and the Additionality Tool cannot be mixed, only one of them can be used.	5.2	"Tool for the Demonstration and Assessment of Additionality" was chosen to demonstrate the additionality of the Project	The final version of PDD chosen the "Tool for the Demonstration and Assessment of Additionality" to demonstrate the additionality of the Project, which is in accordance with the methodology; hence CAR-13 closed.
CAR-14 If the procedures of the methodology AM0058 was used to demonstrate the additionality, according to the methodology AM0058, if the CDM alleviates the identified barriers that prevent the proposed project activity from occurring, it should be proceed to common practice analysis step; otherwise the project activity is not additional. The Investment analysis was improperly used.	5.3.3	Investment analysis of Tool for the demonstration and assessment of additionality instead of procedures of methodology AM0058 was used.	In the final version of PDD, the Tool for the demonstration and assessment of additionality was used; subsequently the investment analysis was used, which is in line with the methodology and Tool for the demonstration and assessment of additionality; hence CAR-14 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CAR-15 A detailed implementation timeline of the Project is required to include in the Section B.5, in addition to the implementation timeline, events and actions which have been taken to achieve CDM registration should be presented. The timeline should allow the DOE to assess the serious consideration of the CDM in the Project decision making process and Project implementation. Relevant evidences are required as well.	5.9	A detail timeline has been specified in the PDD, include the events related to the implementation of the Project, the events related to consideration of CDM, continue and real actions that have been taken to secure CDM status for the project in parallel with its implementation. The starting date of the Project was 14/01/2005.	Supporting documents have been checked and found substantial; the starting date of the Project was correctly identified in accordance with the latest version of Glossary of CDM terms, i.e. 14/01/2005 on which the first equipment contract was signed; the project started before the PDD was published for global stakeholders' consultation; hence CAR-15 closed.
CL-1 Please present a brief description of the Project according to the EB42 Annex12 -"Guidelines for Completing the Project Design Document (CDM-PDD) and The Proposed New Baseline and Monitoring Methodologies (CDM-NM)" (hereinafter referred to as "Guidelines - Completing PDD").	3.5.1	The brief of baseline scenario, project scope and other information required by the Guidelines for Completing the PDD has been specified in the PDD.	The brief description of the Project in line with the Guideline -Completing PDD has been specified in the PDD. Hence CL-1 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-2 The geographical coordinates of the Project in the PDD version 01 was not consistent with those in the FSR.	3.7.2	The geographical coordinates of the Project have been revised to consistent with the FSR, i.e. E87°36'20"~ E87°39'25" and N43°43'56"~N43°49'31".	The coordinates of the Project have been checked against the FSR and found substantial; hence CL-2 closed.
CL-3 Please specify how environmentally safe and sound technology, and know-how, is transferred to the Host Party.	3.9.1	The project involves technology transfer from abroad, since a pressure isolated heat exchange station equipment and dynamic hydraulic analysis technology are imported from Denmark.	The description regarding the technology has been specified in the PDD, hence CL-3 closed.
CL-4 Please describe the project activity, the project scenario and the baseline scenario clearly as per the "Guidelines -Completing PDD"	3.9.2	The scenario existing prior to the implementation of the Project was same as the baseline, i.e. the buildings heated by the Project would have been heated by small heating boilers or isolated heating networks. And the Project is a new primary district heating system to replace the existing inefficient and isolated coal-fired boilers.	The information required by the Guidelines -Completing PDD has been specified in the PDD and consistent with the evidences, hence CL-4 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-5 List and arrangement of the main manufacturing /production technologies, systems and equipments involved of the scenario existing prior to the start of the implementation of the project activity, the Project activity and the baseline scenario should be described as per the "Guidelines -Completing PDD".	3.9.3	List and arrangement of the main manufacturing/ production technologies, systems and equipments involved in the Project has been specified in the PDD.	The information required by the Guidelines -Completing PDD has been specified in the PDD and consistent with the evidences, hence CL-5 closed.
CL-6 The emission sources and the greenhouse gases involved in the project activity are required to be presented in the Section A.4.3	3.9.4	The emission sources of the baseline scenario and the Project include CO ₂ emissions from the heat and electricity generation.	The emission sources and the greenhouse gases involved in the Project have been specified in the PDD, hence CL-6 closed.
CL-7 The operational lifetime should be sated both in years and months.	3.25	The operation lifetime is 22 years and 0 month.	The operation lifetime has been stated both in years and months; hence CL-7 was closed.
CL-8 The starting date of the crediting period should be estimated properly.	3.26.2.1	The starting date of the crediting period has been change to 15/10/2011.	The starting date of the crediting period has been revised to 15/10/2011, which is reasonable and hence CL-8 was closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-9 The length of the crediting period should be stated both in years and months.	3.26.2.2	The length of the crediting period is 10 years and 0 month.	The length of the crediting period has been stated both in years and months; hence CL-9 was closed.
CL-10 The summary of the stakeholder consultation in the PDD did not consistent with the initial questionnaires.	3.29.2	The summary of the stakeholder has been revised.	The summary of the stakeholder has been revised and consistent with the evidences; hence CL-10 was closed
CL-11 According to the methodology AM0058 version 03.1, the PDD should specify whether there is heat extraction from the power plant, other than the required for the operation of the power plant auxiliary systems, prior to the project activity. And the proportion of the heat supplied by the heat-only boilers in the total heat supplied by the Project should be presented in the PDD.	4.1.1	There was no heat extracted from the CHP prior to the project activity	There was no heat extracted from the CHP prior to the project activity, which has been checked against the Monthly Operation Records of the Xinjiang Huadian Hongyanchi Power Plant and found consistent; hence CL-11 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-12 The PDD should specify the location and interconnections of heat extraction units at the power plant for feeding the project primary district heating system.	4.1.3.2	The location and interconnections of heat extraction units at the power plant has been specified in the PDD as required by the methodology.	The location and interconnections of heat extraction units at the power plant has been specified in the PDD as required by the methodology; hence CL-12 closed.
CL-13 The PDD should specify whether the power plant has in operation for at least 3 years prior to the project activity. The technical lifetime and the major integrated production of the power plant before and after the implementation of the Project should be presented in the PDD.	4.1.3.3	The Xinjiang Huadian Hongyanchi Power Plant has commissioned in 2000, and started extract heat in 2005, 5 years after its commissioning, the technical lifetime of the CHP is both 30 years before and after the implementation of the Project.	The Xinjiang Huadian Hongyanchi Power Plant has commissioned in 2000, and started extract heat in 2005, 5 years after its commissioning, which has been confirmed by checking the Monthly Operation Records of the power plant. BVC has checked the statement on basic data issued by the power plant, and then can confirm that the technical lifetime and the major integrated production of the power plant before and after the implementation of the Project will not be impacted, which has also been specified in the PDD. Hence CL-13 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-14 As mentioned in the Section A of the PDD, there are four heat only boiler houses in the primary heating network, the application of the criteria about emission reductions resulting from new residential buildings should be re-assessed.	4.1.3.5	The heat supplied by the CHP and the HOBs will be monitored, in case the heat from CHP is less than that from the HOBs, the emission reductions resulting from new buildings will not be counted for.	The description has been specified in the PDD and in line with the methodology; hence CL-14 closed.
CL-15 Please present the classification of types of buildings and transparently document which buildings belong to which category j as per the methodology.	4.3.2.1	The buildings included in the Project are classified into three categories: category 1 are buildings in a part of the area supplied by a sub-station, during the project activity, that were connected to an existing isolated heat distribution network (i.e. to an existing a boiler house) before the start of the project activity; category 2 are recently constructed buildings (i.e. built after the start of the project activity either next to existing buildings or in place of a demolished building) that are connected to sub-stations that, as a result of the project activity, replace old boiler houses, supplying to existing isolated heat distribution network, should be treated as existing buildings; category 3 are Buildings in a part of the area supplied by a sub-station, during the project	BVC can confirm that the detail information was confidential information according to Chinese law, dedicate document have been checked by BVC and will be provided to EB, this is in line with paragraph 6 of the CDM modalities and procedures; hence CL-15 was closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
		<p>activity, which are constructed after the start of the implementation of the project activity. These are buildings constructed in an area which prior to project activity did not have any heat distribution network.</p> <p>Due to the limited by Chinese law, information regarding some buildings included in the Project is treated as confidential information and cannot be specified in the PDD.</p>	
<p>CL-16</p> <p>The quantities of boilers and boiler houses and their efficiency are not the service for identifying alternative scenarios.</p>	4.3.2.6	<p>The heating area, quantities of boiler and boiler houses and efficiency of boilers have been revised to consistent with evidences in the final version of PDD.</p> <p>The output and services regarding heating service as the Project in terms of:</p> <ul style="list-style-type: none"> - The heating area of building category 1 is 14,130,000 m²; the area of building category 2 is 840,000m², the area of building category 3 is 2,520,000m², the total heating area is 17,490,000m². - The mean temperature during heating period is -7.4°C, the total heating period is 181 days, and heating target for the indoor temperature is not lower than 18°C. 	<p>The baseline information has been specified in the PDD, and consistent with the evidences, hence CL-16 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CL-17</p> <p>The reasons for excluding the alternatives 1b and 1c are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents.</p>	4.3.2.7.1	<p>As for scenarios 1(b) and 1(c), since Xinjiang Huadian Hongyanchi Power Plant has enough heating capacity, to use the heat from other power plants far away or large heating only plants for heating source for Southern District Heating Network in Urumqi City is not realistic and credible. And as common sense in China, oil and gas are more expensive than coal in China, and using these two types of fuel to replace coal for heating in Urumqi is not realistic. Other heat generation configurations, such as ground source heat pump or geothermal resources, are not commercially available in Urumqi. As discussed above, alternatives 1(b) and 1(c) are not realistic and credible scenarios.</p>	<p>The clarification has been checked against relevant evidences and found substantial; hence CL-17 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CL-18</p> <p>The PDD just discussed the alternatives of “continued operation or rehabilitation of an existing [isolated] district heating network”, the alternatives of “establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the Project boundary without the introduction of a primary heating network” should be discussed.</p>	4.3.2.7.2	<p>The alternative “establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the Project boundary without the introduction of a primary heating network” has been discussed in the final version of PDD; it is a part of realistic and credible scenario.</p>	<p>The alternative has been included in the PDD as per methodology; hence CL-18 closed.</p>
<p>CL-19</p> <p>As mentioned in the PDD, using small coal-fired, gas-fired and oil-fired boilers for heat supplying is the current operating situation; please specify why alternatives 2b and 2c are not realistic and credible.</p>	4.3.2.7.2	<p>According to the survey of boilers of the Project, no gas-fired and oil-fired boilers were involved in the Project; and according to the relevant research on energy price, price of gas and oil are far higher than coal in China, using gas and oil for heating is unacceptable, only few gas-fired and oil-fired boilers are used in Urumqi for specific purpose and these boilers are not involved in the Project.</p>	<p>The clarification has been checked against relevant documents and found substantial; hence CL-19 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-20 The reasons for excluding the alternatives 2d and 2e are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents.	4.3.2.7.2	According to report issued by government, small cogeneration plants are not economic feasible and face losses in China. According to the survey of boilers of the Project, no gas-fired and oil-fired boilers were involved in the Project; and according to the relevant research on energy price, price of gas and oil are far higher than coal in China, using gas and oil for heating is unacceptable, only few gas-fired and oil-fired boilers are used in Urumqi for specific purpose and these boilers are not involved in the Project	The clarification of has been confirmed by checking report issued by NDRC, the initial survey forms and by on-site visit. Hence CL-19 closed.
CL-21 The reasons for excluding the alternative scenarios of "Continued use or introduction of individual heat supply solutions" are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents. And, since centralized heating supply in a large scale is the most suitable solution for southern district of Urumqi City, please specify why the baseline is not centralized heating supply?	4.3.2.7.3	According to the mandatory regulation, no individual coal fired boiler for heating can be constructed for new buildings in city. The initial survey forms shown that no individual boiler for heating was included in the Project. As discussed above, gas-fired and oil-fired are too expensive for heating in China and unacceptable.	The clarification has been checked against relevant evidences and found substantial; hence CL-21 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CL-22</p> <p>As stated in the summary of the stakeholder consultant ("answer to issue 2 in the table" in page 51, Section E.2, PDD version 01), there are 20% stakeholders using stoves or furnace for heating in winter, it should be considered in the identification of baseline scenario. Considering the results of stakeholder survey, the reasons for excluding the alternative scenarios of "Continued use or introduction of building isolated heating networks using coal-fired boilers, natural gas fired boilers and oil-fired boilers" are insufficient; please clarify clearly why these alternatives are not realistic and credible with supporting documents.</p>	4.3.2.7.4	<p>The buildings using individual boilers, stoves or furnace for heating existed prior to the publishing of mandatory regulation issued by government, they did not have district heating conditions and were not included in existing buildings connected to existing boiler houses of the Project. If these buildings are demolished and new buildings are constructed in those areas, the new buildings will be connected to small isolated heating system in the absence of the Project, which has been confirmed by national regulation and by local authorized government.</p>	<p>The clarification has been confirmed by checking the regulations and the initial boiler survey of the Project and found substantial; hence CL-22 closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CL-23</p> <p>In the outcome of Sub-step 1a, the alternative “Continued operation or rehabilitation of an existing [isolated] district heating network(s) without the introduction of a primary heating network” includes several sub alternatives depending on technologies they employed; please specify what technologies will be employed by the heating networks in the outcome.</p>	4.3.2.7.5	<p>The remaining alternative 2(a) has been revised to: Continued operation or rehabilitation of the existing isolated district heating networks (both existing and new buildings can be connected to an existing network) or establishment of a new isolated district heating networks (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such isolated district heating networks will employ coal based technology such as coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network.</p>	<p>The remaining alternative 2(a) is in line with the methodology, hence CL-23 closed.</p>
<p>CL-24</p> <p>The investment barriers and the system barriers should be clarified more clearly with supporting evidences. The elimination of the alternative should be put into sub step 2b; and the benefit of investment finance should be discussed in step 3 “Investment Analysis” as per the methodology and the “Combined Tool”.</p>	4.3.2.9.1	<p>Due to lack of evidences required by the Guidelines for objective demonstration and assessment of barriers version 01, (EB50 Annex13), the final version of PDD did not use investment barrier and system barriers.</p>	<p>The investment barriers and system barriers were not used in the final version of PDD; hence CL-24 closed</p>

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-25 Further evidences in line with the methodology should be provided.	4.3.2.9.2	A Statement on the Technical Barrier of the Southern District Heating Network in Urumqi City was issued by the Beijing Gas & Heat Power Project Design Institute, which is a qualified entity with A class level in the district heating in China. According to the statement, the Project faces a 163m altitude difference which is the largest one in China, subsequently a three-level network was used in the Project; the isolated heating network do not face so large altitude difference and use two-level heating network which is common in China. Therefore, the technical barrier will prevent the implementation of the Project but will not impact the utilization of isolated networks.	BVC has checked the statement and the certificate of the entity and found substantial; therefore can conclude that the technical barrier has been objective demonstrated as per "Guidelines for objective demonstration and assessment of barriers"; hence CL-25 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-26 As for the system barrier, please specify whether the scenario of existing decentralized isolated heating network face the heat fee charging difficulties. If yes, it would prevent the current situation practice as well. And the price of heat from the cogeneration power plant is high in the reason 1, while the current price of heat selling for the cogeneration power plant is low in reason 3. They are contradictory.	4.3.2.9.4	Due to lack of evidences required by the Guidelines for objective demonstration and assessment of barriers version 01, (EB50 Annex13), the final version of PDD did not use investment barrier analysis.	The system barriers were not used in the final version of PDD; hence CL-26 closed.
CL-27 The generation of the 3 years prior to the start of the implementation of the project should be presented to identify the maximum historic annual amount of electricity generated.	4.4.2.6	The Xinjiang Huadian Hongyanchi Power Plant started operation in 2000, and started extraction heat on 15/10/2005, the generation data prior to the extraction has been specified in the final version of PDD, and the maximum historic generation was the value from Oct. 2004 to Sep. 2005	The historic data has been checked and found substantial; hence CL-27 closed.

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Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-28 The values provided by the fuel supplier in invoices are prefer source according to the methodology, please specify whether the values provided by the fuel supplier in invoices available.	4.4.2.6	Since the $EF_{FF,BL,EL}$ in tCO_2/t is unavailable, in the final version of PDD, the default value of IPCC for $\frac{44}{12} \times \frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}}$, 99.7tCO ₂ /TJ, was applied,	Relevant evidences have been checked and found substantial, hence CL-28 closed.
CL-29 It should be specify the efficiency of the power plant ($\eta_{BL,EL}$) in the PDD is measured according to the manufacturers' procedures to measure efficiency at the commissioning of the plant, or taken from the manufacturer's specification of efficiency at optimum load. It also need to be noted in the PDD that if the efficiency of the power plant improves, the value of $\eta_{BL,EL}$ should be updated accordingly.	4.4.2.6	Efficiency of the power plant used prior to the start of the implementation of the project activity was the design value provided by Xinjiang Huadian Hongyanchi Power Plant	The evidence has been checked by BVC and found substantial; hence CL-29 closed. However, a Forward Action Request was raised for monitoring this parameter.
CL-30 According to the "Tool-Project Emissions", Option A should be the preferred approach, please specify why the Option A was not selected.	4.4.3.3	Due to data unavailable, the Option A was not chosen, and Option B was selected, which has been specified in the final version of PDD	The justification is in line with the tool, hence CL-30 closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-31 The nameplate capacity of existing boilers should be presented, and relevant evidences are required.	4.4.7.3	The nameplate capacity of all existing boilers have been presented in the PDD	The baseline information has been checked against the evidences and found substantial; hence CL-31 closed.
CL-32 The parameter $EG_{min,hist}$ should be presented in Section B.6.2.	4.4.7.5	The minimum annual amount of electricity supplied to the grid prior to the start of the Project during the last 3 years before the Project implementation has been presented	The baseline information has been checked against relevant documents and found substantial; hence CL-32 closed.
CL-33 The CO ₂ emission factor for the fossil fuel fired in the power plant used prior to the start of the implementation of the project activity should be presented in the Section B.6.2	4.4.7.8	<p>$EF_{FF,BL,EL}$ is CO₂ emission factor for the fossil fuel fired in the power plant used prior to the start of the implementation of the project activity; $NCV_{FF,BL,EL}$ is Net calorific value of fossil fuel fired in the power plant used prior to the start of the implementation of the project activity. Because $EF_{FF,BL,EL}$ in unit tC/mass or volume is unavailable, but the result of $(\frac{EF_{FF,BL,EL}}{NCV_{FF,BL,EL}})$ i.e. EF of effective</p> <p>CO₂ emission factor in unit tCO₂/TJ is listed in the Table 1.4, Chapter 1, Vol. 2 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories, this result was employed in the PDD. The value is 99.7tCO₂/TJ.</p>	The justification is reasonable and appropriate, hence CL-33 closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-34 If the “Additionality Tool” is used, the corresponding procedures should be followed.	5.4	The procedures given by the “Additionality Tool” instead of the procedures in methodology were used.	The justification is in line with the Guidelines on the Assessment of Investment Analysis; hence CL-34 closed.
CL-35 Please clarify more clearly why the Option II “investment comparison analysis” is not applicable to the Project.	5.6.3	Because one of the remaining alternative was to continued operation or rehabilitation of an existing [isolated] district heating network(s) (both existing and new buildings can be connected to an existing network) or establishment of a new [isolated] district heating network(s) (for new buildings) covering all buildings within the project boundary without the introduction of a primary heating network. Such [isolated] district heating network(s) employ the coal fired boilers in boiler houses, supplying several buildings through a small heat distribution network, the existing boiler houses owned by many different owners; for the PP, it was the choice to invest or not to invest. According to the “Guidelines on the Assessment of Investment Analysis”, the investment comparison analysis was not suitable but the benchmark analysis was used.	The justification is in accordance with the methodology; hence CL-35 closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-36 Please specify the financial indicator is project IRR or equity IRR.	5.6.12.1	Project IRR was chosen as financial indicator	Project IRR was chosen as financial indicator, therefore CL-36 was closed.
CL-37 The variable factors for sensitivity analysis should be identified as per the latest version of "Guidelines on the Assessment of Investment Analysis". And a further elaboration to show whether the variables will exceed -10% or +10% so as to the IRR of the Project could reach the benchmark is required.	5.6.14	<p>Six variable factors, that all factors constitute more than 20% of either the total cost or total investment, have been considered in the sensitivity analysis.</p> <p>In the following situation, the project IRR of the Project will reach the benchmark:</p> <ul style="list-style-type: none"> ➤ Total static investment decreased by 17.8%, ➤ Heating price increased by 8.3% ➤ Heat purchase price decreased by 19.3% ➤ Heating area increased by 35.1% ➤ O & M costs (excluded the heat purchase cost) decreased by 17.8% ➤ Quantity of heat purchased decreased by 29.3% <p>All situations above were impossible.</p>	The justification and relevant evidences have been checked and found substantial; hence CL-37 closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
<p>CL-38</p> <p>Please define the criteria of similar project and discuss any project activity similar to the Project as per the Additionality Tool.</p>	5.7.1	<p>The criteria has been defined in the final version of PDD, as follow:</p> <ul style="list-style-type: none"> ➤ Primary district heating system using heat from cogeneration power plant ➤ Located in Xinjiang Uygur Autonomous Region ➤ project with heating area similar in the range of 6 million m² to 27 million m² <p>Two similar projects were identified: Western District Heating Project in Shihezi City and Southern District Heating Project in Shihezi City. There are essential distinctions between the Project and the two similar projects: The Project faces an objective technical barrier with a 163m altitude difference and had to employ three-level heating network, while the two similar projects do not have such barrier and they use two-level network which is common in China. Therefore, the Project is not common practice.</p>	<p>The criteria were in accordance with the Tool for the demonstration and assessment of additionality; the information provided by industrial association has been checked by local industrial association and found substantial; hence CL-38 closed.</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
CL-39 The quantity of heat extracted from the power plant ($Q_{\text{extracted},y}$) cannot be cross checked with the heat meter readings of substations and peak load boiler houses since they are not the same parameter.	6.3.2	The quantity of heat extracted from the power plant plus the heat from HOBs will be cross checked with the heat supplied by all substations	The cross check method is feasible; hence CL-39 closed
CL-40 As mentioned in the Section A.4.3, there will be four heat-only boilers, please specify why there are only two heat-only boilers will be monitored in Section B.7.1.	6.3.3	There will be four HOBs in the Project, the heat from the four HOBs will be monitored; hence CL-40 closed.	The quantity of HOBs was consistent with the FSR; hence CL-40 closed.
CL-41 The emission factor of the electricity grid system should be monitored according to the methodology AM0058 version 03.1.	6.3.11	According to the "Tool to calculate the emission factor for an electricity system", the emission factor of the grid system will be determined ex-ante and fixed for the crediting period	According to the "Tool to calculate the emission factor for an electricity system", the emission factor of the grid system will be determined ex-ante and fixed for the crediting period, the determination process and the basic data have been checked during validation stage; hence CL-41 closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. in table 1	Summary of project owner response	Validation team conclusion
FAR 1: The energy efficiency for power generation of Xinjiang Huadian Hongyanchi Power Plant should be monitored, if an actual efficiency higher than the design efficiency is discovered, the higher value should be used for determination of emission reductions.	4.4.2.6		