

MONITORING REPORT OF DATONG RIVER ZHUCHAXIA HYDROPOWER STATION



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Project Title	Datong River Zhuchaxia Hydropower Station
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1 PROJECT DETAILS

1.1 Summary Description of Project

The Datong River Zhuchaxia Hydropower Station (hereafter referred to as the project) developed by GEPIC Darong Electric Power Company Ltd. (hereafter referred to as the project owner) is a run-of-river hydropower project located in Tibetan Autonomous County of Tianzhu, Gansu Province, P.R. China. Total installed capacity of the project is 34MW, consisting of two 13.5MW and one 7 MW turbine generators. The key technical parameters of the equipments installed in the project are shown on **Table 1** as below:

Table 1 Key technical parameters of the equipments installed in the project

Water turbine		
Manufacturer	Tianjin Tianfa Heavy Hydropower equipment Co., Ltd.	
Type	HLA551C-LJ-230	HLA551C-LJ-165
Quantity	2	1
Rated power	13.9 MW	7.3 MW
Rated water head	38 m	38 m
Rated speed	39.67 m ² /s	20.88 m ² /s
Generator		
Manufacturer	Tianjin Tianfa Heavy Hydropower equipment Co., Ltd.	
Type	SF13.5-28/4870	SF7000-20/3250
Quantity	2	1
Rated power	13.5 MW	7 MW
Rated voltage	10.5 kV	10.5kV
Rated current	873.3 A	452.8 A
Rated speed	214.3 r/min	300 r/min

The purpose of the project is to utilize the hydrological resources of the Datong River through construction of a run-of-river hydro project to generate zero emissions electricity for the Gansu Power Grid, which is a part of the Northwest China Power Grid (hereafter, the NWCPG). The electricity currently generated by the NWCPG is relatively carbon intensive. The project is therefore expected to reduce emissions of greenhouse gases by reducing the need of thermally generated power and reducing needed capacity expansion of fossil fuel-based generation of the NWCPG.

The project started construction on 13/04/2006 and commissioned on 24/03/2008. The operation time of the project will be 25 years. The project has been registered as a CDM project on 18/12/2009 (The version of the registered PDD is version 02, dated 03/08/2009), and the emission reduction achieved during this monitoring period ((24/03/2008-17/12/2009) is 180,792 tCO₂.

1.2 Sectoral Scope and Project Type

Sectoral Scope 1: energy industries (renewable sources)

Project Activity: Grid-connected renewable power generation;

The project is not a grouped project.

1.3 Project Proponent

Roles/Responsibilities	Project Owner
Organization:	GEPIEC Darong Electric Power Company Ltd.
Address:	16 Jiuquan Road, Chengguan District, Lanzhou, Gansu Province
Post fix/ZIP:	730030
Country:	People's Republic of China
Telephone:	+86 931 8408 389 ext. 6119
Fax:	+86 931 8460 065

1.4 Other Entities Involved in the Project

Roles/Responsibilities	VER buyer
Organization:	Climate Bridge Ltd.
Address:	91-93 Buckingham Palace Road, London, UK
Post fix/ZIP:	SW1W 0RP
Country:	United Kingdom
Telephone:	+44 207 821 1603
Fax:	+44 207 100 9963

1.5 Project Start Date

24/03/2008

1.6 Project Crediting Period

24/03/2008-17/12/2009, totally covered one year and 269 days.

1.7 Project Location

The proposed project activity is located in Tibetan Autonomous County of Tianzhu, Gansu Province, P.R. China.

The geographical coordinates of the dam are 102°35'32" E and 36°52'19" N, and the geographical coordinates of the powerhouse are 102°38'14" E and 36°51'12" N.

1.8 Title and Reference of Methodology

1. ACM0002 (Version 07) – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
2. “Tool to calculate the emission factor for an electricity system” (Version 01.1)
3. “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (Version 02)
4. “Tool for demonstration and assessment of additionality” (Version 05.2)

For more information regarding the methodology, please refer to the link:

<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The project started construction on 13/04/2006, and put into operation since 24/03/2008. Please refer to **Table 2** for details.

Table 2 Timeline of the project implementation status

Activity	Date
Start of construction	13/04/2006
The generator #1 started operation	24/03/2008
The generator #2 started operation	28/04/2008
The generator #3 started operation	02/06/2008

No events that may impact the GHG emission reductions or removals and monitoring occurred during the current monitoring period.

2.2 Deviations from the Monitoring Plan

N/A.

2.3 Grouped Project

N/A.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data Unit / Parameter:	$EF_{grid,CM,y}$
------------------------	------------------

Data unit:	tCO ₂ e/MWh
Description:	Combined margin CO ₂ emission factor for grid connected power generation in year y
Source of data:	The registered PDD
Value applied:	0.8498
Purpose of the data:	Used for baseline emission calculations
Any comment:	N/A

Data Unit / Parameter:	A_{BL}
Data unit:	m ²
Description:	Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full. For new reservoirs, this value is zero
Source of data:	The registered PDD
Value applied:	0
Purpose of the data:	Used for project emission calculations
Any comment:	N/A

Data Unit / Parameter:	Cap _{BL}
Data unit:	MW
Description:	Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero
Source of data:	The registered PDD
Value applied:	0
Purpose of the data:	Used for project emission calculations
Any comment:	N/A

3.2 Data and Parameters Monitored

Data Unit / Parameter:	$EG_{out,y}$
Data unit:	MWh
Description:	Annual on-grid electricity supplied to NWCPG by the proposed project during the year y
Source of data:	On-site measurement
Description of measurement methods and	Use electric meters

procedures to be applied:			
Frequency of monitoring/recording:	Measured continuously and recorded monthly		
Value monitored:	212,807.950 during the monitoring period, see Table 2 for details.		
Monitoring equipment:	The main meters for monitoring of this parameter are M1 and M1':		
		M1	M1'
	Type	SL7000	SL7000
	Accuracy class	0.2s	0.2s
	Serial number	36145166	36145167
	Calibration frequency	Yearly	Yearly
	Calibration date	07/03/2008 06/03/2009	07/03/2008 06/03/2009
	The check meters for this parameter are M2 and M2':		
		M2	M2'
	Type	SL7000	SL7000
	Accuracy class	0.2s	0.2s
	Serial number	36145165	36145164
	Calibration frequency	Once every three years	Once every three years
	Calibration date	07/03/2008	07/03/2008
	QA/QC procedures to be applied:	The consistency of metered electricity supplied to NWCPG is cross-checked with receipts from electricity sales; Data record and relevant documents will be archived for a period of 2 years after the crediting period.	
Calculation method:	N/A		
Any comment:	N/A		

Data Unit / Parameter:	$EG_{in,y}$
Data unit:	MWh
Description:	Annual on-grid electricity purchased from NWCPG by the proposed project for the plant operation during the year y
Source of data:	On-site measurement

Description of measurement methods and procedures to be applied:	Use electric meters		
Frequency of monitoring/recording:	Measured continuously and recorded monthly		
Value monitored:	60.234 during the monitoring period, see Table 2 for details.		
Monitoring equipment:	The main meters for monitoring of this parameter are M1 and M1':		
		M1	M1'
	Type	SL7000	SL7000
	Accuracy class	0.2s	0.2s
	Serial number	36145166	36145167
	Calibration frequency	Yearly	Yearly
	Calibration date	07/03/2008 06/03/2009	07/03/2008 06/03/2009
	The check meters for this parameter are M2 and M2':		
		M2	M2'
	Type	SL7000	SL7000
	Accuracy class	0.2s	0.2s
	Serial number	36145165	36145164
	Calibration frequency	Once every three years	Once every three years
	Calibration date	07/03/2008	07/03/2008
QA/QC procedures to be applied:	The consistency of metered electricity supplied to NWCPG is cross-checked with receipts from electricity sales; Data record and relevant documents will be archived for a period of 2 years after the crediting period.		
Calculation method:	N/A		
Any comment:	N/A		

Data Unit / Parameter:	EG _y
Data unit:	MWh
Description:	Net electricity exported to the NWCPG by the project during the year y
Source of data:	Calculated

Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording:	N/A
Value monitored:	212,747.716 during the monitoring period, see Table 2 for details.
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	$EG_y = EG_{out,y} - EG_{in,y}$
Any comment:	N/A

Data Unit / Parameter:	TEG _y				
Data unit:	MWh				
Description:	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y				
Source of data:	On-site measurement				
Description of measurement methods and procedures to be applied:	Use electric meters				
Frequency of monitoring/recording:	Measured continuously and recorded monthly				
Value monitored:	223,449.252 during the monitoring period, see ER spreadsheets for details.				
	Period	Electricity produced by G1 (M3)	Electricity produced by G2 (M4)	Electricity produced by G3 (M5)	Total electricity produced by the project activity(TEG_y)
		MWh	MWh	MWh	MWh
	24/03/2008-31/03/2008	105.336	0.000	0.000	105.336
	01/04/2008-30/04/2008	2,953.692	153.720	0.000	3,107.412
	01/05/2008-31/05/2008	6,176.268	5,484.276	0.000	11,660.544
	01/06/2008-30/06/2008	5,041.008	2,889.180	1,059.033	8,989.221
	01/07/2008-29/07/2008	7,649.208	2,820.636	2,590.938	13,060.782
	30/07/2008-29/08/2008	7,674.408	7,298.172	4,562.584	19,535.164
	30/08/2008-28/09/2008	7,799.400	7,264.404	2,667.042	17,730.846
	29/09/2008-29/10/2008	290.052	6,661.872	3,595.284	10,547.208
	30/10/2008-28/11/2008	3.024	751.212	3,601.836	4,356.072
	29/11/2008-29/12/2008	265.104	0.000	4,635.414	4,900.518
	Subtotal (24/03/2008-29/12/2008)	37,957.500	33,323.472	22,712.131	93,993.103
	30/12/2008-29/01/2009	1,667.448	108.480	2,475.000	4,250.928

	30/01/2009-26/02/2009	6.240	0.000	674.400	680.640
	27/02/2009-29/03/2009	0.000	0.000	0.000	0.000
	30/03/2009-28/04/2009	399.600	4,591.200	1,470.720	6,461.520
	29/04/2009-29/05/2009	1,669.660	3,514.080	1,920.960	7,104.700
	30/05/2009-28/06/2009	3,567.840	4,587.120	2,521.560	10,676.520
	29/06/2009-29/07/2009	8,944.080	9,348.000	4,530.840	22,822.920
	30/07/2009-29/08/2009	9,352.800	9,359.520	4,576.921	23,289.241
	30/08/2009-28/09/2009	9,495.360	9,464.400	4,800.840	23,760.600
	29/09/2009-29/10/2009	9,559.920	6,663.600	3,930.720	20,154.240
	30/10/2009-28/11/2009	1,764.720	3,567.360	2,011.680	7,343.760
	29/11/2009-17/12/2010	0.000	1,465.440	1,445.640	2,911.080
	Subtotal (30/12/2008-17/12/2009)	46,427.668	52,669.200	30,359.281	129,456.149
	Total (24/03/2008-17/12/2009)				223,449.252
Monitoring equipment:	The main meters for monitoring of this parameter are M3, M4 and M5:				
	M3	M4	M5		
Type	DTSD341	DTSD341	DTSD341		
Accuracy class	0.5s	0.5s	0.5s		
Serial number	20070701070015	20070724040044	20070724040070		
Calibration frequency	Once every three years	Once every three years	Once every three years		
Calibration date	15/03/2008	15/03/2008	15/03/2008		
QA/QC procedures to be applied:	The consistency of metered electricity supplied to NWCPG is cross-checked with receipts from electricity sales; Calibration frequency for electric meters: once every three years				
Calculation method:	N/A				
Any comment:	N/A				

Data Unit / Parameter:	Cap _{PJ}
Data unit:	MW
Description:	Installed capacity of the hydro power plant after the implementation of the project activity
Source of data:	Nameplate of the equipment
Description of measurement methods and procedures to be applied:	Check the nameplate of the equipment on the site
Frequency of monitoring/recording:	Yearly

Value monitored:	34
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Any comment:	N/A

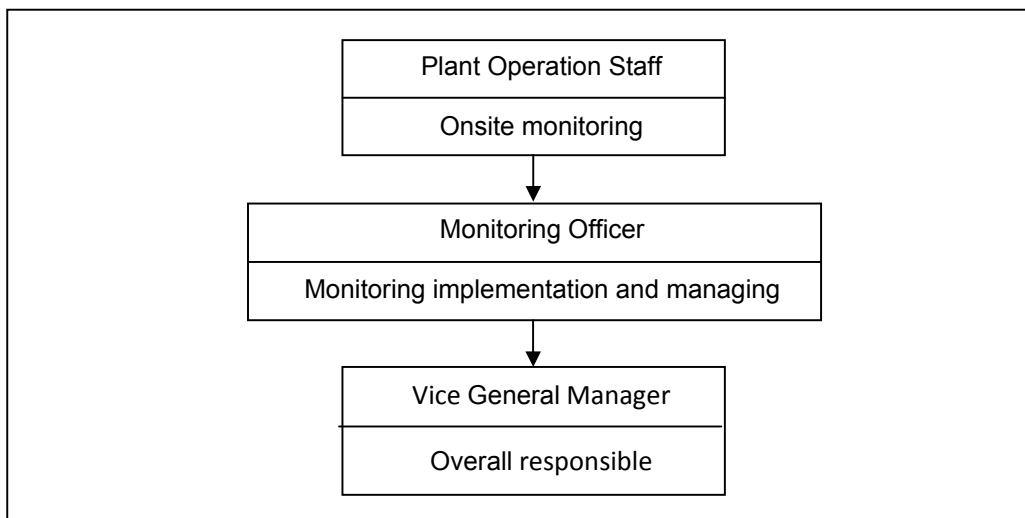
Data Unit / Parameter:	A _{PJ}
Data unit:	m ²
Description:	Area of the reservoir measured at the surface of the water, after the implementation of the project activity, when the reservoir is full
Source of data:	Measured
Description of measurement methods and procedures to be applied:	Survey Report on Surface Area of the Reservoir, by Northwest Hydro Consulting Engineers, CHECC.
Frequency of monitoring/recording:	Yearly
Value monitored:	60,900 (2008) 60,900 (2009)
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Any comment:	N/A

3.3 Description of the Monitoring Plan

1) Organizational structure, responsibilities and competencies

In order to ensure monitoring of the project is in accordance with the monitoring plan and methodology, the project owner set up a monitoring team responsible for the monitoring plan, the structure of the monitoring team is outlined in **Figure 1**.

Figure 1 Structure of the monitoring team



The responsibilities of the team are briefly described as following:

Vice General Manager: hold the overall responsibility for the monitoring process and approval of the monitoring report.

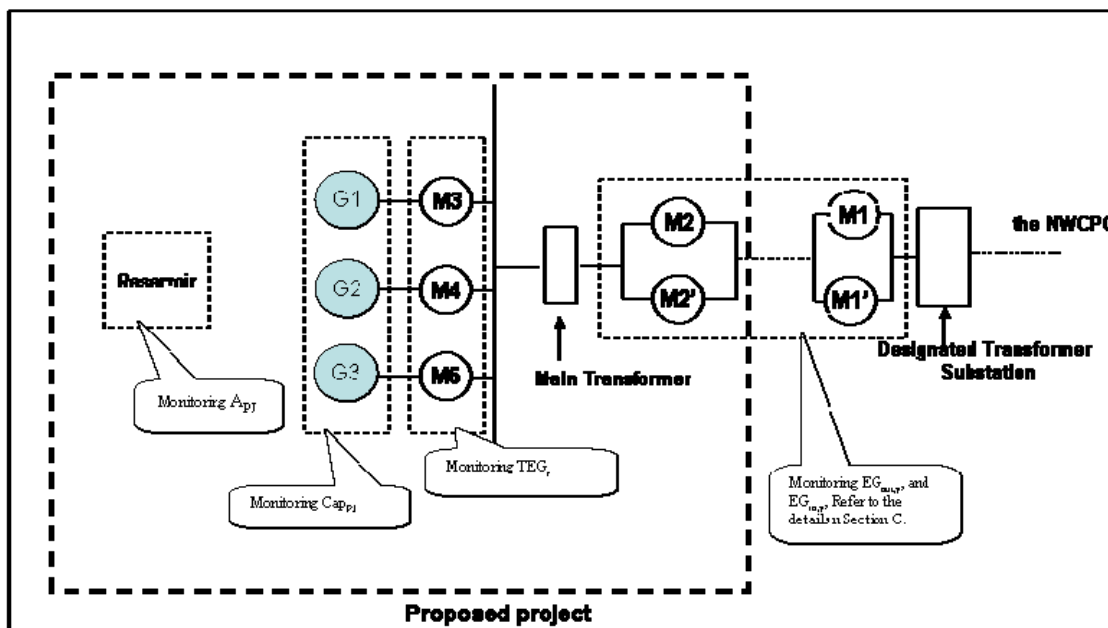
Monitoring Officer: charge of all relevant matters with the monitoring activity, including but not limited to supervision and verification of metering and recording; collection of additional data, sales / billing receipts; Calibration; Calculation of emission reductions; Preparation of monitoring report.

Plant Operation Staff: is responsible for the measurement of the monitored data, and assisted the monitoring officer on the plant site.

2) Monitoring system and procedures

As per the registered PDD, net electric power exported to the grid (EG_y) is calculated as the difference of the electricity supplied by the project to NWCPG ($EG_{out,y}$) and the electricity imported from the NWCPG to the project ($EG_{in,y}$). **Figure 2** below shows the monitoring points and meters:

Figure 2 Diagram of monitoring points



$EG_{out,y}$, the electricity supplied by the project to NWCPG, is measured by two metering systems, a main metering system (M1 and M1') and a check metering system (M2 and M2') to backup. The main metering system which measured the electricity supplied by the project to NWCPG is installed at Designated Transformer Substation. The check metering system is installed at the project site as a reference and backup to the main metering system. The meters are monitored continuously. The operator of Grid Company reads and records the meters of the main metering system once every month. The plant operation staff reads and records the meters of the check metering system once every day.

As there is only 8 operation days in the first month of operation (March of 2008), and the quantity of the electricity generation in this month is very small, so the staff at grid company didn't record the meters in this month, the electricity generated in this month has been incorporated into the next month (April of 2008) for calculation. During April to June 2008, the first a few months of the project operation, staff at the grid company read and record the meters at 24:00 on the last day of every month, and since July 2008, the meters are read at 24:00 on the third last day of each month. The grid company provides the monthly reading records to the project owner in the form of Electricity Trading Notes (ETN). The project owner confirms the ETN and issues invoices to the grid company. The invoices copying book or ETN, serving as sales receipts, can be used for double check.

$EG_{in,y}$, the electricity imported from the NWCPG, is measured by the same systems as the systems to monitor $EG_{out,y}$, as the meters are bidirectional. The meters are monitored continuously. The operator of Grid Company reads and records the meters of the main metering system once every month. The plant operation staff reads and records the meters of the check metering system once every month. The grid company provides monthly records and invoices for the electricity imported from the NWCPG to the project owner. The invoices, serving as sales receipts, can be used for double check.

TEG_y , total electricity produced by the project activity, is measured by the sum of the three meters (M3, M4, M5) at the outlet of generators. The data of each meter will be automatically measured

continuously and be read and recorded daily by the plant operation staff on the Operation Log. The sum of the three meters is also recorded on the Operation Log. The monthly data will be recorded electronically.

Cap_{PJ}, installed capacity of the hydro power plant after the implementation of the project activity, is checked and recorded from nameplate of the equipment on the site yearly.

A_{PJ}, the surface area of full reservoir level, is measured by the Northwest Hydro Consulting Engineers, CHECC yearly.

3) QA/QC procedures

All data collected as part of the monitoring will be archived electronically and be kept for at least 2 years after the end of the last crediting period.

In case metering equipment is damaged and no reliable readings can be recorded the project owner will use the following procedure:

- In case two meters (i.e. M1 and M1') recorded by the grid company are in malfunction only:

If only M1 exceeds the allowable tolerance or otherwise the meter malfunctioned, M1' will be used to monitor the data. If both M1 and M1' are in malfunction, the monitoring data logged by the project owner, will be used to calculate the data for the sales receipts/billing invoices.

- In case meters recorded by project owner are in malfunction only:

If only M2 exceeds the allowable tolerance or otherwise the meter malfunctioned, M2' will be used to play the check role. If both M2 and M2' are in malfunction, the monitoring data by the M3, M4 and M5 will be used to play the check role.

- In case all meters are in malfunction:

The project owner and the grid company will jointly calculate a conservative estimate of all the data. If the project owner and the Grid Company fail to reach an agreement concerning the correct reading, then the matter will be submitted for arbitration according to agreed procedures.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

$$BE_y = (EG_y - EG_{baseline}) \cdot EF_{grid,CM,y} \quad (1)$$

Where:

BE_y = Baseline emissions in year y (tCO₂/yr).

EG_y = Net electricity exported to the grid by the project activity (MWh), as indicated in the Table E.1.

$EG_{baseline}$ = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero, for this project is zero, i.e. $EG_{baseline} = 0$.

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the “Tool to calculate the emission factor for an electricity system”. The value has been calculated ex ante as 0.8498tCO₂/MWh and there is no need for monitor and recalculation.

The detailed calculation of the baseline emissions are list in **Table 3** as below:

Table 3 Calculation of the baseline emissions during current monitoring period (24/03/2008-17/12/2009)

Period	Electricity exported (MWh)	Electricity imported (MWh)	Net electricity exported (MWh)	Baseline emission (tCO ₂ e/MWh)
	$EG_{out,y}$	$EG_{in,y}$	$EG_y = EG_{out,y} - EG_{in,y}$	$BE_y = EG_y \times 0.8498$
24/03/2008-30/04/2008	3,034.582	23.438	3,011.144	2,558.87
01/05/2008-31/05/2008	10,836.614	5.460	10,831.154	9,204.31
01/06/2008-30/06/2008	8,449.122	3.300	8,445.822	7,177.26
01/07/2008-29/07/2008	12,976.124	7.100	12,969.024	11,021.08
30/07/2008-29/08/2008	17,934.840	0.000	17,934.840	15,241.03
30/08/2008-28/09/2008	15,671.964	0.000	15,671.964	13,318.04
29/09/2008-29/10/2008	10,110.936	0.000	10,110.936	8,592.27
30/10/2008-28/11/2008	3,584.988	0.000	3,584.988	3,046.52
29/11/2008-29/12/2008	4,730.936	4.300	4,726.636	4,016.70
Subtotal (24/03/2008-29/12/2009)	87,330.106	43.598	87,286.508	74,176
30/12/2008-29/01/2009	4,054.644	1.320	4,053.324	3,444.51
30/01/2009-26/02/2009	381.678	1.990	379.688	322.66
27/02/2009-29/03/2009	0.000	1.426	-1.426	-1.21
30/03/2009-28/04/2009	6,328.410	9.500	6,318.910	5,369.81
29/04/2009-29/05/2009	6,907.560	2.400	6,905.160	5,868.00
30/05/2009-28/06/2009	10,394.340	0.000	10,394.340	8,833.11
29/06/2009-29/07/2009	22,173.690	0.000	22,173.690	18,843.20
30/07/2009-29/08/2009	22,627.242	0.000	22,627.242	19,228.63
30/08/2009-28/09/2009	23,058.420	0.000	23,058.420	19,595.05
29/09/2009-29/10/2009	19,599.756	0.000	19,599.756	16,655.87
30/10/2009-28/11/2009	7,205.814	0.000	7,205.814	6,123.50
29/11/2009-17/12/2010	2,746.290	0.000	2,746.290	2,333.80
Subtotal (30/12/2008-17/12/2009)	125,477.844	16.636	125,461.208	106,616
Total (24/03/2008-17/12/2009)	212,807.950	60.234	212,747.716	180,792

4.2 Project Emissions

The power density (PD) of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad (2)$$

Where:

PD = Power density of the project activity (W/m^2).

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W).

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero.

A_{PJ} = Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2).

A_{BL} = Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero.

During the current monitoring period, $Cap_{PJ} = 34,000,000W$, $A_{PJ} = 60,900m^2$, $Cap_{BL} = A_{BL} = 0$,

So $PD = 34,000,000/60,900 = 558 W/m^2$, which is greater than $10 W/m^2$. According to the ACM0002, if the power density of the power plant is greater than $10 W/m^2$, the project emission is zero, therefore,

Project emissions (PE_y) = 0.

4.3 Leakage

According to the ACM0002, the leakage in the project can be neglected, therefore,

Leakage emissions (LE_y) = 0

4.4 Summary of GHG Emission Reductions and Removals

The emission reductions (ER_y) are the deduction of the project emission (PE_y) and the leakage (LE_y) from the baseline emission (BE_y) in year y , as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (3)$$

Where:

ER_y = Emission reductions in year y (t CO₂e/yr).

BE_y = Baseline emissions in year y (t CO₂e/yr).

PE_y = Project emissions in year y (t CO₂e/yr), for the project, $PE_y=0$.

LE_y = Leakage emissions in year y (t CO₂e/yr), for the project, $LE_y=0$.

The emission reductions of the project activity during the monitoring period (24/03/2008 – 17/12/2009) are summarized in **Table 4**.

Table 4 Calculation of the emission reductions during current monitoring period (24/03/2008-17/12/2009)

Period	Baseline emission (tCO ₂ e/MWh)	Project emissions (tCO ₂ e/MWh)	Leakage emissions (tCO ₂ e/MWh)	Emission reductions (tCO ₂ e)
	BE_y	PE_y	LE_y	$ER_y = BE_y - PE_y - LE_y$
24/03/2008-30/04/2008	2,558.87	0	0	2,558.87
01/05/2008-31/05/2008	9,204.31	0	0	9,204.31
01/06/2008-30/06/2008	7,177.26	0	0	7,177.26
01/07/2008-29/07/2008	11,021.08	0	0	11,021.08
30/07/2008-29/08/2008	15,241.03	0	0	15,241.03
30/08/2008-28/09/2008	13,318.04	0	0	13,318.04
29/09/2008-29/10/2008	8,592.27	0	0	8,592.27
30/10/2008-28/11/2008	3,046.52	0	0	3,046.52
29/11/2008-29/12/2008	4,016.70	0	0	4,016.70
Subtotal (24/03/2008-29/12/2009)	74,176	0	0	74,176
30/12/2008-29/01/2009	3,444.51	0	0	3,444.51
30/01/2009-26/02/2009	322.66	0	0	322.66
27/02/2009-29/03/2009	-1.21	0	0	-1.21
30/03/2009-28/04/2009	5,369.81	0	0	5,369.81
29/04/2009-29/05/2009	5,868.00	0	0	5,868.00
30/05/2009-28/06/2009	8,833.11	0	0	8,833.11
29/06/2009-29/07/2009	18,843.20	0	0	18,843.20
30/07/2009-29/08/2009	19,228.63	0	0	19,228.63
30/08/2009-28/09/2009	19,595.05	0	0	19,595.05
29/09/2009-29/10/2009	16,655.87	0	0	16,655.87
30/10/2009-28/11/2009	6,123.50	0	0	6,123.50
29/11/2009-17/12/2010	2,333.80	0	0	2,333.80
Subtotal (30/12/2008-17/12/2009)	106,616	0	0	106,616
Total (24/03/2008-17/12/2009)	180,792			180,792

5 ADDITIONAL INFORMATION

Comparison of actual emission reductions with estimates during validation:

This project has been registered as a CDM project, according to the registered CDM PDD, the estimated annual emission reductions are 121,617 tCO₂e, and for this monitoring period (1 year

and 269 days) the estimated emission reductions should be 211,247 tCO₂e. But the actual emission reductions are 180,792 tCO₂e as calculated before, much lower than the estimation. It is mainly because of the unstable performance due to the initial operation of the project.

ANNEX 1 VCS REQUIREMENT¹

DATONG RIVER ZHUCHAXIA HYDROPOWER STATION



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Project Title	Datong River Zhuchaxia Hydropower Station
Version	01
Date of Issue	03-03-2012
Prepared By	Ms. Huang Shanfeng, Climate Bridge Ltd.
Contact	Suite 19D, Sanhe Centre, 121 Yanping Road, Jing'an District, Shanghai, China, 200042

¹ Since this project has been registered as a CDM project, according to requirements of VCS Standard (version 03.0), for projects validated under the CDM, the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS *Project Description Template* (version 03.0) shall be completed for further validation. As sections 1.2, 1.3, 1.5, 1.6 and 1.9 have been completed as above, the cover page and the description of sections 1.7, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 are addressed here.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

This project has been registered as a CDM project, the CDM registered date is 18/12/2009. The estimated GHG emission reductions and crediting period during validation are shown as below:

Project	√
Mega-project	

Years	Estimated GHG emission reductions or removals (tCO ₂ e)
01/10/2009-30/09/2010	121,617
01/10/2010-30/09/2011	121,617
01/10/2011-30/09/2012	121,617
01/10/2012-30/09/2013	121,617
01/10/2013-30/09/2014	121,617
01/10/2014-30/09/2015	121,617
01/10/2015-30/09/2016	121,617
01/10/2016-30/09/2017	121,617
01/10/2017-30/09/2018	121,617
01/10/2018-30/09/2019	121,617
Total estimated ERs	1,216,170
Total number of crediting years	10
Average annual ERs	121,617

1.10 Conditions Prior to Project Initiation

The conditions existing prior to this project initiation is that the electricity requirement was satisfied by Gansu Power Grid which is an integral part of NWCPG, and this project has not been implemented to generate GHG emission for the purpose of their subsequent reduction, removal or destruction.

1.12.1 Proof of Title

The project owner is GEPIC Darong Electric Power Company Ltd. who owns the right of use of the project, which can be proved in the China DNA's LoA issued under CDM (<http://cdm.unfccc.int/UserManagement/FileStorage/2TXHFPIJKQ6N18WSOV5LRA43M79CY0>).

1.12.2 Emissions Trading Programs and Other Binding Limits

The project is a registered CDM project, but the crediting period of CDM is from 18/12/2009 to 17/12/2019 (fixed), and the current VCU monitoring period is from 24/03/2008 to 17/12/2009, so the GHG emission reductions generated by the project during current monitoring period have not

and will not be used for compliance with emissions trading program other than VCS or to meet binding limits on GHG emissions.

1.12.3 Participation under Other GHG Programs

The project has been registered as a CDM project on 18/12/2009, the reference number is 2845, please refer to <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1249311745.95/view> for more details.

1.12.4 Other Forms of Environmental Credit

No other form of GHG-related environmental credit for GHG emission reductions or removals has been or will be claimed under the VCS Program.

1.13 Additional Information Relevant to the Project

Eligibility Criteria

N/A, the project is not a grouped project.

Leakage Management

N/A, the leakage of the project is zero.

Commercially Sensitive Information

N/A, all information stated in this report is public.

Further Information

N/A.