



**MONITORING REPORT FORM (CDM-MR)  
Version 01**

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**MONITORING REPORT**

Version number: 01 Dated: 22/07/2010

Title project activity: Pingwu Renjiaba 12.6 MW Small Hydropower Project, P.R.China

UNFCCC ref: 1190

Monitoring period number: the 3<sup>rd</sup> (21/08/2009 - 20/07/2010, first and last days included)**SECTION A. General description of the project activity****A.1. Brief description of the project activity: >>**

&gt;&gt;

Pingwu Renjiaba 12.6 MW Small Hydropower Project, P. R. China is a run-of-river hydropower project located in Shuijing Town of Pingwu County, Sichuan Province. P. R. China.

The purpose of the project activity is to utilize the hydro potential energy available in the river to generate electricity which would otherwise have been produced by fossil fuel-fired power plants. With total installed capacity of 12.6 MW (6.3 MW \*2), the proposed project is expected to generate 81,400 MWh of electricity in a year, and the net electricity exported to the grid is expected to be 77,458 MWh/yr. The generated electricity is exported to the Central China Power Grid (CCPG) via Sichuan Provincial Power Grid. By displace equal amount of electricity generated by CCPG which is dominated by fossil fuel-fired power plants, greenhouse gas (GHG) emission reductions can be achieved. The estimated annual GHG emission reductions are 73,089 tCO<sub>2</sub>e/yr.

The project started commissioning from Feb. 14, 2007. In this monitoring period (from 21 Aug. 2009 to 20 Jul. 2010, both days included), the total emission reduction achieved is 62,280 tCO<sub>2</sub>e.

**A.2. Project Participants**

&gt;&gt;

Name of party involved	Private and/public entity (ies) Project participants	If the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (the host)	Pingwu Chuanjiang Hydropower Development Co. Ltd.	No
Netherlands	Carbon Asset Management Sweden AB	No

**A.3. Location of the project activity:**

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The proposed project is located at Shuijing Town, Pingwu County, Sichuan Province, People's Republic of China.

The GPS coordinates of the powerhouse is:

Longitude: 104°33'09" E, Latitude: 32°24'33" N

**A.4. Technical description of the project**

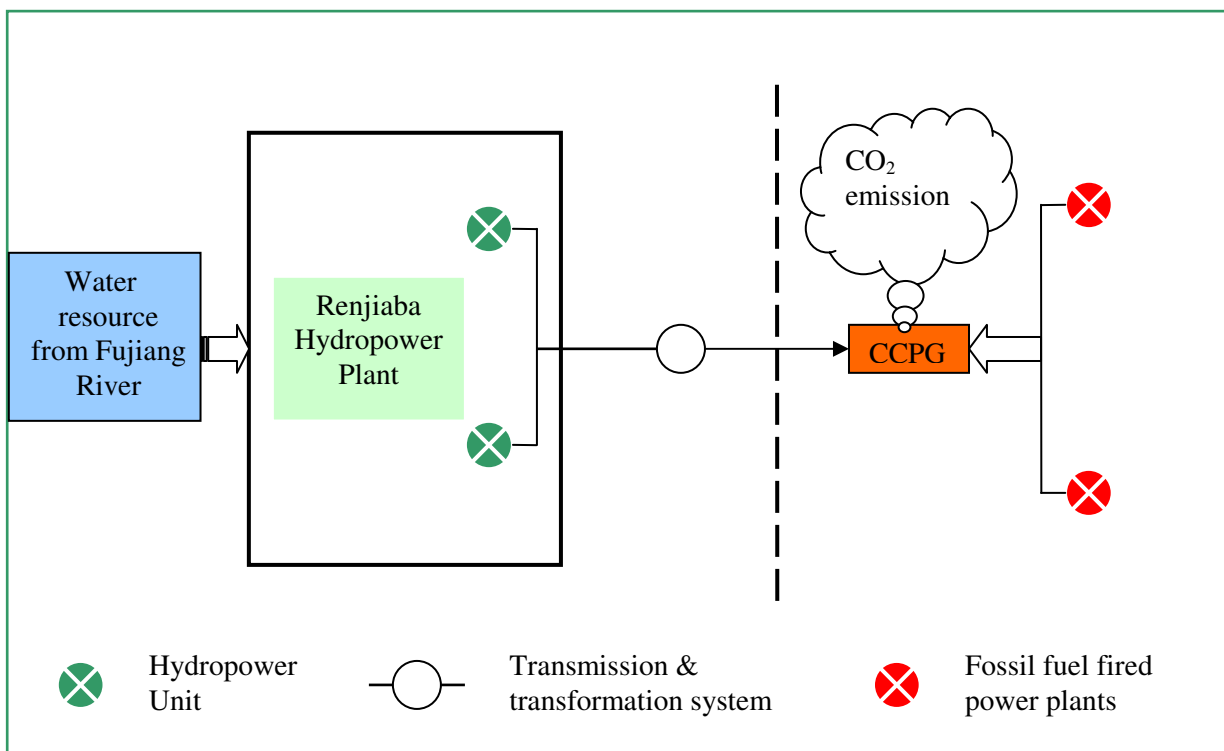
&gt;&gt;

The proposed project uses well established hydropower generation technology for electricity generation

and transmission. The proposed project is a run-of-river hydropower project. The main construction buildings include an intake system, tunnel, pressure adjustment pool, penstock and a powerhouse. The electricity generated by the project is transmitted to the CCPG via 35kV Renjiaba Transformer Substation. The technology process was shown in the diagram below. Key technical specifications of the proposed project are listed in Table A-I below.

**Table A-I Key technical specifications of the proposed project**

Turbines		
Parameter	Unit	Value
Type	-	HLTF30-LJ-170
Quantity	-	2
Rated water head	m	33.7
Rated flow	m <sup>3</sup> /s	21.65
Rated rotation speed	r/min	300
Generator		
Type	-	SF6300-20/3250
Quantity	-	2
Rated capacity	kVA	7875
Rated rotation speed	r/min	300
Power factor	-	0.8



**A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:**



&gt;&gt;

Title of the baseline and monitoring methodology applied to the project activity is: Simplified baseline and monitoring methodologies for selected small-scale CDM project activity category AMS-I.D.  
Version number: 10

For more information, refers to: <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

**A.6. Registration date of the project activity:**

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The registration date of the project activity is: 17 September 2007

**A.7. Crediting period of the project activity and related information (start date and choice of crediting period):**

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The first crediting period of the project activity is from 17 September 2007 to 16 September 2014. A renewable crediting period was chosen.

**A.8. Name of responsible person(s)/entity(ies):**

&gt;&gt;

Dr. Hongyu LIU  
Unit: College of Environmental Science & Engineering, Hunan University  
Email: hyluhnu@126.com

**SECTION B. Implementation of the project activity**

**B.1. Implementation status of the project activity**

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The construction of the proposed project was started in June 2004. And the Project started commercial operation from February 2007. The Project owner implements and operates the Project as per the registered CDM-PDD.

During this monitoring period (from 21 Aug. 2009 to 20 Jul. 2010, both days included), no special event occurred which may impact the applicability of the methodology. And total emission reduction achieved is 62,280 tCO<sub>2</sub>e. The key milestones of the proposed project were listed in Table B-1 below:

**Table B-I Key milestones of the proposed project**

	<b>Date</b>	<b>Milestone</b>
1	June 2004	The project started
2	February 2007	Operation started
3	17 September 2007	Registered as a CDM project
4	From 17 Sep. 2007 to 16 Sep. 2014 (renewable)	First crediting period
5	17 Sep. 2007 – 20 Aug. 2008	1 <sup>st</sup> monitoring period
6	21 Aug. 2008 – 20 Aug. 2009	2 <sup>nd</sup> monitoring period
7	21 Aug. 2009 – 20 Jul. 2010	3 <sup>rd</sup> monitoring period

**B.2. Revision of the monitoring plan**

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The monitoring plan was not revised.

**B.3. Request for deviation applied to this monitoring period**

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No request for deviation was applied to this monitoring period.

**B.4. Notification or request of approval of changes**

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The proposed project has been implemented according to the registered CDM-PDD, so no such notification or request of approval of changes are made.

**SECTION C. Description of the monitoring system**

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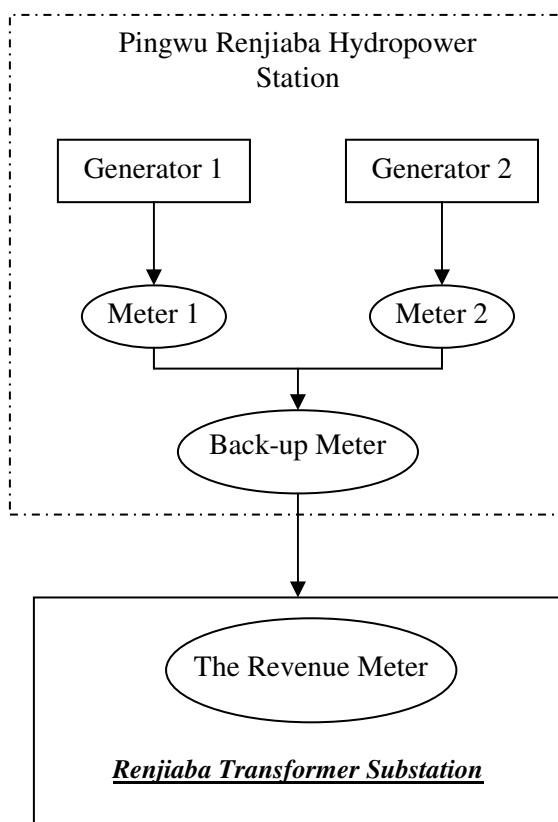
**Data generation**

The revenue meter, which is also the main data source for CER calculation, locates at Renjiaba Transformer Substation which is owned and managed by the grid company.

To ensure maximum availability of CDM data and to introduce quality controls of the CDM data, a backup meter is installed in addition to the Revenue Meter. The back-up meter is located in the Centre Control Room of the proposed project, measuring the electricity exported from the proposed project to the grid, as well as the import electricity amount. Allowing for transmission losses, this meter can provide a useful back up of the Revenue Meter.

In addition, another 2 meters are installed at the output point of each generator named Meter 1 and Meter 2, respectively. The function of these 2 meters is monitoring the generator running condition. And these 2 meters are owned and maintained by the project owner. The data recorded by these 2 meters will not be used for CER calculation. And these 2 meters are calibrated annually by a qualified third party to ensure the credibility of meter readings.

Please see the diagram below for details.

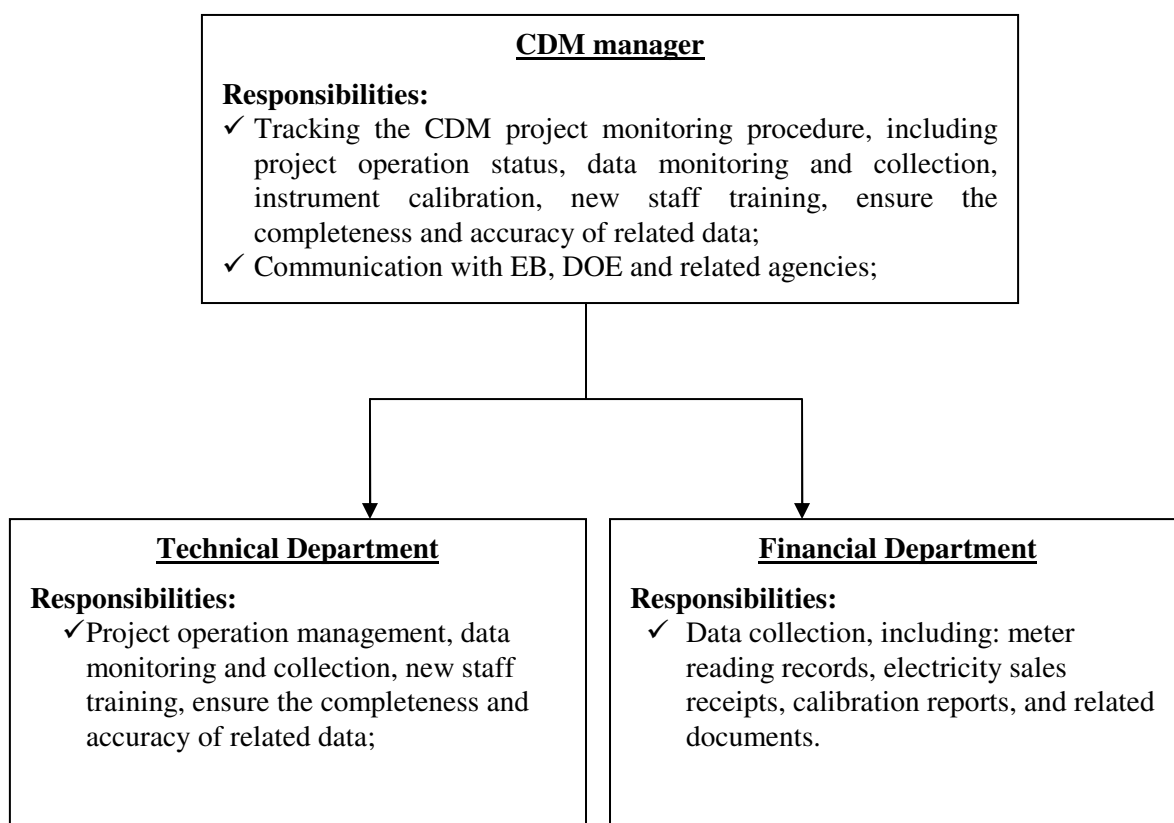


### **Data Aggregation, Recording, Calculation and Reporting:**

All of the meters are bi-direction type. They can measure the exported and imported electricity in the meantime. The Revenue Meter measure electricity and aggregates data hourly. Grid Company, together with the project owner reads the Revenue Meter and records data at 8 o'clock 20<sup>th</sup> of every month. Grid Company supplies electricity sales receipts to the project owner and project owner provides invoice to the grid company. Project owner records the data of net electricity delivered to the grid. Project owner provides the readings of the Revenue meter to DOE for verification. And copies of electricity sales receipts were also provided to DOE.

### **Organizational structure**

Overall responsibility for daily monitoring and reporting lies with the project owner. A CDM group has been established by the project owner to carry out the monitoring work. Its staffs have been trained by the experts of the CDM consultancy.



### **Roles and responsibilities of personnel**

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with Pingwu Chuanjiang Hydropower Development Co. Ltd.

Mr. Lianggui Yue, Operation Department Manager of Pingwu Renjiaba 12.6 MW Small Hydropower Project, P.R.China, is responsible for the operation and maintenance, which includes the monitoring of the project.

Mr. Li Li, Project Manager of Operation Department Manager, is responsible for the implementation and management of the monitoring plan overall; check and supervise the activities such as recording, collecting and archiving of the monitoring data; be responsible for communicating with EB, DOE and the CDM consultant.

Ms. Hongyu LIU, Professor of Hunan University, CDM consultant, is responsible for the CER calculation and the monitoring report writing.

### **Emergency procedures for the monitoring system**

When any reading of the Revenue Meter be inaccurate by more than the allowable error, or otherwise functioned improperly, Grid Company with project owner should install a new calibration meter at once and record the period of changing meter and the process. The installation of the new meter should also meet the relevant local standards.

**SECTION D. Data and parameters**

<b>D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors</b>	
<b>Data / Parameter:</b>	<b>EF<sub>v</sub></b>
Data unit:	<b>tCO<sub>2</sub>/MWh</b>
Description:	The emission factor of Central China Power Grid (CCPG)
Source of data used:	The registered CDM-PDD of the proposed project
Value(s) :	0.9436
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Used for the baseline emission calculation
Additional comment:	The EF <sub>v</sub> is ex-ante decided in the registered CDM-PDD
<b>D.2. Data and parameters monitored</b>	
<b>Data / Parameter:</b>	Electricity quantity ( EG <sub>output,y</sub> )
Data unit:	<b>MWh</b>
Description:	Electricity supplied to the grid measured by the Revenue Meter
Measured /Calculated /Default:	Measured directly by Revenue Meter.
Source of data:	Monthly electricity sales receipts
Value(s) of monitored parameter:	66008.250 MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	The data was used for baseline emission calculate.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Revenue Meter Type: DSSD566 Accuracy class: 0.5s Serial number: 0606941181 Calibration frequency: once a year Date of last calibration: 21 Apr. 2010 Validity: Valid until 20 Apr. 2011 Calibration entity: Pingwu County Electric Power (Group) Co. Ltd. Measurement Office
Measuring/ Reading/ Recording frequency:	Measuring frequency: hourly Recording frequency: monthly. The meter reading time is fixed at 8:00 O'clock 20 <sup>th</sup> of each month.
Calculation method (if applicable):	Meter reading



QA/QC procedures applied:	<p>The Revenue Meter is jointly read by the project owner and the grid company. Data measured by Revenue Meter is cross checked by electricity sales receipts.</p> <p>In case the Revenue Meter is wrong, the readings in the Backup Meter will be adopted with transmission loss deducted based on historic records.</p> <p>Both the Revenue Meter and the Backup Meter have been calibrated once a year by a qualified third party. The calibration results showed that the meters run OK!</p> <p>All the electronic and paper documents will be archived during the crediting period and two years after the end of the crediting period or the last issuance of CERs for this project activity.</p>
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<b>Data / Parameter:</b>	<b>EG<sub>import,y</sub></b>
Data unit:	<b>MWh</b>
Description:	Electricity imported from the Grid to the proposed project measured by Revenue Meter
Measured /Calculated /Default:	Measured directly by Revenue Meter.
Source of data:	Monthly electricity sales receipts
Value(s) of monitored parameter:	5.950 MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	The data was used for baseline emission calculate.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Revenue Meter Type: DSSD566 Accuracy class: 0.5s Serial number: 0606941181 Calibration frequency: once a year Date of last calibration: 21 Apr. 2010 Validity: Valid until 20 Apr. 2011 Calibration entity: Pingwu County Electric Power (Group) Co. Ltd. Measurement Office
Measuring/ Reading/ Recording frequency:	Measuring frequency: hourly Recording frequency: monthly. The meter reading time is fixed at 8:00 O'clock 20 <sup>th</sup> of each month.
Calculation method (if applicable):	Meter reading
QA/QC procedures applied:	<p>The Revenue Meter is jointly read by the project owner and the grid company. Data measured by Revenue Meter is cross checked by electricity sales receipts.</p> <p>In case the Revenue Meter is wrong, the readings in the Backup Meter</p>



	<p>will be adopted with transmission loss deducted based on historic records.</p> <p>Both the Revenue Meter and the Backup Meter have been calibrated once a year by a qualified third party. The calibration results showed that the meters run OK!</p> <p>All the electronic and paper documents will be archived during the crediting period and two years after the end of the crediting period or the last issuance of CERs for this project activity.</p>
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## SECTION E. Emission reductions calculation

### E.1. Baseline emissions calculation

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Base on the methodology AMS I.D., baseline emission include only CO<sub>2</sub> emission from electricity generation in fossil fuel fired power plants that are displaced due to the proposed project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_y * EF_y$$

Where:

$BE_y$  = Baseline emission in year y (tCO<sub>2</sub>/yr)

$EG_y$  = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr) , which is calculated as :

$$EG_y = EG_{output,y} - EG_{import,y}$$

$EF_y$  = Combines margin CO<sub>2</sub> emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO<sub>2</sub>/MWh)

During this monitoring period, the  $EG_y$  is 66002.300 MWh, the  $EF_y$  is ex-ante determined in the registered CDM-PDD which is 0.9436 tCO<sub>2</sub>/MWh. Thus,  $BE_y$  is calculated as:

$$\begin{aligned} BE_y &= EG_y * EF_y \\ &= 66002.300 * 0.9436 = 62280 \text{ (tCO}_2\text{e)} \end{aligned}$$

### E.2. Project emissions calculation

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The proposed project is a run-of-river hydro project, and the power density is higher than 10 W/m<sup>2</sup>, hence, the project emission is zero.

### E.3. Leakage calculation

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According to ASM-I.D. (Version 10), there are no expected project emissions related to the generation of electricity, as generation is based on a renewable resource. Also, given that there is no flooded area associated with the project activity, consequently it is not necessary to calculate the power density.



Therefore,  $PE = 0$

According to the applicable methodology ASM-I.D. (Version 10), the project emission is 0.

#### E.4. Emission reductions calculation / table

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According to ASM-I.D. (Version 10), Emission Reduction ( $ER_y, tCO_2e/y$ ) =  $BE_y - PE_y - L_y$

Where:

$BE_y$  is the baseline emission during year y.

$PE_y$  is the project emission during year y.

$L_y$  is the leakage of the project during year y.

As the project emission and leakage is zero as in the registered PDD.

So the above formula is  $ER_y (tCO_2/y) = BE_y - 0 - 0$

#### Summary of the emission reduction:

Date	EG <sub>y</sub>	Baseline Emissions	Project Emissions	Leakage	Emission Reductions
	MWh	(tCO <sub>2</sub> e)	(tCO <sub>2</sub> e)	(tCO <sub>2</sub> e)	(tCO <sub>2</sub> e)
Aug.21-Sep.20,2009	6789.300	6406	0	0	6406
Sep.21-Oct.20,2009	8168.300	7708	0	0	7708
Oct.21-Nov.20,2009	8660.400	8172	0	0	8172
Nov.21-Dec.20,2009	5601.750	5286	0	0	5286
Dec.21,2009-Jan.20,2010	4744.250	4477	0	0	4477
Jan.21-Feb.20,2010	3935.750	3714	0	0	3714
Feb.21-Mar.20,2010	3228.050	3046	0	0	3046
Mar.21-Apr.20,2010	4012.400	3786	0	0	3786
Apr.21-May.20,2010	5359.550	5057	0	0	5057
May.21-Jun.20,2010	8432.200	7957	0	0	7957
Jun.21-Jul.20,2010	7070.350	6672	0	0	6672
<b>Total</b>	<b>66002.300</b>	<b>62280</b>	<b>0</b>	<b>0</b>	<b>62280</b>

#### E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

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The annual emission reduction estimated in the registered CDM-PDD is 73089 tCO<sub>2</sub>e/y. The comparison of the actual emission reduction during this monitoring period (from 21 Aug. 2009 to 20 Jul. 2010, both day included) with that estimated in the CDM-PDD was shown in the table below. The result showed that the actual emission reduction achieved during this monitoring period is less than that estimated in the CDM-PDD by 6.88%<sup>1</sup>.

<sup>1</sup> This monitoring period (from 21 Aug. 2009 to 20 Jul. 2010, both day included) is 334 days. The actual CERs is 62280 tCO<sub>2</sub>, which is less than that estimated in the CDM-PDD (66882 tCO<sub>2</sub> for 334 days) by 6.88%.



To better compare the difference between the actual emission reductions with that estimated in the registered CDM-PDD, an annual period was chosen which started from 21 Jul. 2009, and ended by 20 Jul. 2010.

According to the calculation, total 70322 tCO<sub>2</sub>e<sup>2</sup> has been reduced. Comparing with estimates in the CDM-PDD, the actual achieved emission reduction was lower by 3.79%<sup>3</sup>.

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO <sub>2</sub> e)	66882 <sup>4</sup>	62280

#### E.6. Remarks on difference from estimated value in the PDD

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This monitoring period (from 21 Aug. 2009 to 20 Jul. 2010, both day included) is 334 days. The actual CERs is 62280 tCO<sub>2</sub>, which is less than that estimated in the CDM-PDD (66882 tCO<sub>2</sub> for 334 days) by 6.88%. No remarks are needed.

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<sup>2</sup> The calculation process refers to the spreadsheet of Renjiaba-CER-Calculation

<sup>3</sup> The calculation process as follow:  $(73089-70322)/73089*100\%=3.79\%$

<sup>4</sup> The calculation process refers to the spreadsheet of Renjiaba-CER-Calculation



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**History of the document**

<b>Version</b>	<b>Date</b>	<b>Nature of revision</b>
01	EB 54, Annex 34 28 May 2010	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Guideline, Form <b>Business Function:</b> Issuance		