

SECOND MONITORING REPORT

DATED 11th JANUARY, 2008

FOR THE PERIOD

01ST APRIL 2006 TO 30TH APRIL 2007

“Babanpur, Killa and Sahoke Mini Hydroelectric Projects”

Kotla Hydro Power Private Limited

Reference No.UNFCCC00000329 - CDMP

Project Location:

**Kotla Branch Canal, District Sangrur,
Punjab, India**

Kotla Hydro Power Private Limited

B-37, Sector-1, Noida – 201301

Uttar Pradesh, India

Fax No. 91-0120-2443723



Current Status of the Project

Three Mini Hydroelectric Power projects aggregating to 3.75 MW at Babanpur, Killa and Sahoke on the Kotla Branch canal, District Sangrur, Punjab, India have been commissioned and operating successfully. Mini Hydroelectric Project at Babanpur (1MW) was commissioned in July 2004, Killa (1.75MW) was commissioned in November 2005 and Sahoke (1MW) was commissioned in October 2006.

The projects were completed with major equipment supplied by the suppliers as under:

Table 1: Project Details

S.No.	MHP	Equipment	Qty	Supplier
1	Babanpur	Turbine & its accessories	2	HPP Energy India Private Limited, New Delhi
		Induction Generator	2	
2	Killa	Turbine & its accessories	2	Boving Fouress Limited, Bangalore
		Induction Generator	2	
3	Sahoke	Turbine & its accessories	1	Boving Fouress Limited, Bangalore
		Induction Generator	1	

The promoters to the Company provided the entire equity and loan was funded by Indian Renewable Energy Development Agency Limited (IREDA).

The name of the Company has been changed from "Kotla Hydro Power Limited" to "Kotla Hydro Power Private Limited". The fresh certificate of incorporation and Host Country approval for the same has been received by the project activity.



The records at CDM Registry with respect to the revised modalities of communication signed by all Project Participants have been updated.

During the present monitoring period i.e. 01st April 2006 to 30th April 2007, all the three (3) Plants achieved net energy generation of 20.44 Million kWh.



Statement to What Extent the Project has been Implemented as Planned

The projects were completed as planned and described in the Project Design Document (PDD).

All the three schemes are in operation continuously (with outages – forced & planned) since commissioning. The project Babanpur started generation on 1st July 2004, Killa on 1st November 2005 and Sahoke on 31st October 2006.

The purpose of the projects is to generate electricity by utilizing water flowing through the existing canal system.



Monitoring Period

This is the second monitoring report associated with the project activity. The previous monitoring report covered the period from 1/07/2004 to 31/3/2006 (Both days included) and the CERs for the same have already been issued.

The period covered in this monitoring report is from 01/04/2006 to 30/04/2007 (Both days included). This monitoring report does not cover any period of time covered by the previous monitoring report.



Sustainability – Economic and Social Well-being

The project activity has resulted in sustainable development in the region as follows:

1. Generating clean power by utilizing water has helped in eliminating an equivalent carbon dioxide, sulphur dioxide, nitrogen oxides, SPM *etc.* which would have been otherwise generated to produce electricity.
2. Power generation from a renewable source like water has helped to substitute & conserve considerable amount of finite, non-renewable energy resource (coal & natural gas).
3. Project activity has resulted in creation of direct and in-direct employment in the vicinity.
4. Additional economic benefits have accrued by creation of business opportunity for local stakeholders such as villagers, local shop owners, small contractors, schools, hospitals, etc.
5. Project Area has been lighted with road reflectors and flash lights 24 hours a day which has provided security for the local people commuting in odd hours.
6. Project activity has contributed its share in reducing the demand-supply gap in the power deficit state of Punjab.
7. Helped in Up-gradation of old rural grids and strengthening of country's rural electrification coverage.
8. Helped in strengthening of existing irrigation canals, bridges, roads by up-gradation of these structures.
9. Mechanical Trash racks and trash cleaning machines helped remove trash in the canal resulting in flow of clean water in the canal for irrigation and drinking purposes.
10. Project activity serves a small demonstrative project for clean renewable energy generation in the state. (As these projects are being the first private sector small hydropower projects in the state)
11. Project activity would also contribute to the state exchequer.



Obtained Parameters According to Monitoring Plan

For the project, following parameters were monitored on a continuous basis.

Energy:

- i. The Energy exported (kWh) and Energy imported (kWh) at the interconnection point have been measured from the electronic energy meters installed at the interconnection points at all 3 (three) project schemes.
- ii. The Net saleable energy has been calculated as a difference between energy exported and energy imported. It is based on monthly joint meter readings.
- iii. Monthly joint meter readings were taken at interconnection point and certified by representatives of Kotla Hydro Power Private Limited (KHPPL) and the purchaser i.e. Punjab State Electricity Board (PSEB).
- iv. The joint meter readings were used to raise invoice for sale of net energy to PSEB.
- v. The gross energy generated have been measured by the energy meters installed at the generation end on an hourly basis.
- vi. The auxiliary energy consumption have been measured by the auxiliary energy meters installed at the plant on an hourly basis.
- vii. The data of the aforesaid parameters are recorded on hourly bases which are summed into a daily reading.
- viii. The daily readings were aggregated to monthly readings.
- ix. Monthly reports stating the energy exported, energy imported, gross energy generated and auxiliary energy consumption were prepared by shift-in-charge and verified by plant managers.
- x. The finance department cross checked the data provided by plant managers.



The month-wise data on gross energy generated is given in Table 2 below:

Table 2: Gross Energy Generation (kWh)

Billing Month	Year	Babanpur	Killa	Sahoke	Total
Apr	2006	286739	466825	0	753564
May	2006	679608	1110225	0	1789833
Jun	2006	705700	1173630	0	1879330
Jul	2006	747020	1306820	0	2053840
Aug	2006	762130	1349060	0	2111190
Sep	2006	479632	765087	0	1244719
Oct	2006	326239	540904	3974	871117
Nov	2006	640182	1087420	421108	2148710
Dec	2006	625878	1020214	616810	2262902
Jan	2007	502908	846390	449492	1798790
Feb	2007	203362	367538	245538	816438
Mar	2007	403678	681948	473978	1559604
Apr	2007	487072	831099	595122	1913293
Total		6850148	11547160	2806022	21203330

The month-wise data on auxiliary energy consumption is given in Table 3 below:

Table 3: Auxiliary Energy Consumption

Billing Month	Year	Babanpur	Killa	Sahoke	Total
Apr	2006	12129	15355	0	27484
May	2006	27328	33965	0	61293
Jun	2006	27780	36120	0	63900
Jul	2006	31780	38720	0	70500
Aug	2006	31030	39590	0	70620
Sep	2006	19902	21207	0	41109
Oct	2006	13429	13874	114	27417
Nov	2006	24692	26540	15828	67060
Dec	2006	25058	25824	26430	77312
Jan	2007	20818	48190	21072	90080
Feb	2007	8172	11048	10298	29518
Mar	2007	16008	16138	14538	46684
Apr	2007	20702	19569	17602	57873
Total		278828	346140	105882	730850



The gross energy generation data and auxiliary energy consumption data is not used for calculation of emission reductions since energy exported and energy imported data is available for the project activity.

Power Generation:

Month-wise data on Net Energy Exported for the monitoring period is given in Table 4 below:

As per the Project Design Document, Emission reductions are to be calculated based on the energy exported to the grid minus energy imported from the grid during shut-down and start-ups by the power plant.

During the period covered under this monitoring report, the accuracy check for energy meters installed at two sites (MHP Babanpur & MHP Killa) was performed only once a year as against twice a year (i.e. once in six months) defined in the registered PDD. Therefore, as per the EB guidance, (http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_2MCH7V9WA1BE7NLUILA19797UU1341), the energy exported to the grid has been reduced by applying a deduction based on maximum inaccuracy specification of the meters i.e. 0.5% and energy imported from the grid has been enhanced by applying a same factor based on the maximum inaccuracy specification of the meters i.e. 0.5%.

The Carbon emission reductions are zero at MHP Sahoke for the period - April 2006 to September 2006 as the plant was not commissioned due to unavailability of Canal Closure for completing the In-canal works and additional time-period spent in the strengthening / raising of canal banks and remodeling of three village road bridges.



Table 4: Net Energy Exported (kWh)

Billing Month	Year	Energy Exported to Grid				Energy Imported from Grid				Net Energy Exported
		Babampur	Killa	Sahoke	Total	Babampur	Killa	Sahoke	Total	
Apr	2006	274610	451470	0	726080	2160	2560	0	4720	721360
May	2006	652280	1076260	0	1728540	140	230	0	370	1728170
Jun	2006	677920	1137510	0	1815430	210	340	0	550	1814880
Jul	2006	715240	1268100	0	1983340	220	80	0	300	1983040
Aug	2006	731100	1309470	0	2040570	190	40	0	230	2040340
Sep	2006	459730	743880	0	1203610	1580	1190	0	2770	1200840
Oct	2006	312810	527030	3860	843700	2310	2140	200	4650	839050
Nov	2006	615490	1060880	405280	2081650	80	20	1320	1420	2080230
Dec	2006	600820	994390	590380	2185590	80	90	160	330	2185260
Jan	2007	482090	798200	428420	1708710	170	140	1740	2050	1706660
Feb	2007	195190	356490	235240	786920	1750	2480	3080	7310	779610
Mar	2007	387670	665810	459440	1512920	1350	1450	1680	4480	1508440
Apr	2007	466370	811530	577520	1855420	1110	1510	1340	3960	1851460
Total		6571320	11201020	2700140	20472480	11350	12270	9520	33140	20439340



Emission Reductions

Baseline Emissions

Sn	Description	Formula	Unit	Value
A	Energy exported to the Grid		kWh	20472480.00
B	Maximum Inaccuracy specification of the meters		%	0.50%
C	Less: Maximum Inaccuracy specification of the meters	$C=A*B$	kWh	102362.40
D	Energy exported based on maximum inaccuracy specification of the meters	$D=A-C$	kWh	20370117.60
E	Energy exported based on maximum inaccuracy specification of the meters - Considered		kWh	20370117.00
F	Energy imported from the Grid		kWh	33140.00
G	Maximum Inaccuracy specification of the meters		%	0.50%
H	Add: Maximum Inaccuracy specification of the meters	$H=F*G$	kWh	165.70
I	Energy imported based on maximum inaccuracy specification of the meters	$I=F+H$	kWh	33305.70
J	Energy imported based on maximum inaccuracy specification of the meters - Considered		kWh	33305.00
K	Net Energy Exported based on maximum inaccuracy specification of the meters	$K=E-J$	kWh	20336812.00
L	Carbon Emission Factor as per the baseline adopted		kg CO ₂ /kWh	0.942
M	Baseline Emissions	$M=(K*L) / 1000$	ton CO ₂	19157.28

Baseline Emissions : 19157.28

Project Emissions : NIL

Emission Reductions : Baseline emissions – Project emissions
= 19157.28 - NIL
= 19157 tCO₂



Measures to Ensure the Results/Uncertainty Analysis

As per the Power Purchase Agreement (PPA), the energy exported to Punjab State Electricity Board (PSEB) is recorded from two independent set of meters – Main Meters and Check Meters. Reading of Main Meter is used for arriving at the figures of power exported after deducting auxiliary power.

In the event, the Main Meter is not in operation, then reading from Check Meter installed at the grid substation of PSEB is used for billing. Till date the main meter only has been used for billing purposes.

Gross power generation, auxiliary consumption, energy exported and energy imported are being recorded daily and the same is being verified by Plant Incharge. Since the hourly data logging is carried out along with daily reporting, the uncertainty level of the monitored data used for calculating emission reductions is low. The accuracy of the meters gets further automatically checked at the time of joint meter reading which is being taken every month by PSEB.

The following table indicates the details of Main Meter including their accuracy levels and calibration dates, Gross energy generation meter and Auxiliary energy meter for all three plants:

Table 4: Details of Trivector Meter, Generator Panel Meter and Auxiliary Meter

Description	Babanpur	Killa	Sahoke
Type	Electronic Bidirectional Trivector Meter	Electronic Bidirectional Trivector Meter	Electronic Bidirectional Trivector Meter
S.No.	5271088	4223074	4223078
Capacity; C.T. Ratio	100/5 A; 100/5 A; M.F - 1	200/5 A; 200/5 A; M.F - 1	100/5 A; 200/5 A; M.F - 2



Accuracy level	(±) 0.50%	(±) 0.50%	(±) 0.50%
Make	L&T	L&T	L&T
Date of Calibration	01/07/2006	18/07/2006	01/11/2006
Calibration Authority	ME Lab Patiala (PSEB) / L&T	PSEB Meter Mobile Testing Squad (MMTS), Patiala	ME Lab Patiala (PSEB) / L&T
Accuracy Level observed during calibration	Within permissible limits	(+) 0.16%	Within permissible limits
Gross Energy Generation Meter			
Model	Unit 1&2: 244-InWW	Unit 1: 882-332 Unit 2: TM 7400	882-332
Make	Unit 1&2: Rish Integra 2000	Unit 1: Minsun Unit 2: Elecon Measurement (P) Ltd.	Minsun
Serial No	Unit 1: 12/04/2288 Unit 2 : 04-01-1300A	Unit 1: 6851019 Unit 2 : 23653 TMD 107	68B0511
Accuracy Level observed during calibration	(±) 1.00%	(±) 1.00%	(±) 1.00%
Auxiliary Energy Meter			
Model	24-INWW	EM 6400	EM 6400
Make	Rishabh Integra 2000	Enercon	Enercon
Serial No	04/01/1302	57343/1598-3804	54760/977-3004
Accuracy Level observed during calibration	(±) 1.00%	(±) 1.00%	(±) 1.00%

No change has taken place in the Main Meter(s) installed at Killa and Sahoke since initial verification. The Main Meter installed at Babanpur was replaced / changed on 1st July 2006 as the 'kvah meter' was giving the same reading at all loads as that of 'kwh



meter', resulting in a unit power factor at all loads. There was no loss of meter reading due to the change.

Installation of Meters:

The Trivector meters have been installed in a temper proof strong steel compartment sealed at every open end. These compartments are again being kept under a completely closed & locked Meter Room made of RCC. The area where the meter room is located is completely fenced and protected by a barbed wire.

Calibration of Meters:

At the time of installation of the meters, the accuracy and other parameters are checked thoroughly by the manufacturer i.e. L&T and a test report is issued by L&T. The Trivector Meters are also checked for accuracy by PSEB Metering Equipment (ME) Laboratory, Patiala before installation at the site. The Meters which are within the permissible accuracy limits are jointly sealed by 2 officers of the rank of Sr. XEN (One from Sr. Ex. Engr., ME Division, Patiala and second from Sr. Ex. Engr., MMTS, Patiala).

Calibration of the Meters already in operation is carried out at site by PSEB Meter Mobile Testing Squad (MMTS), Patiala. The MMTS officer visits the site and issue a challan in respect to the confirmation of the accuracy of the meters. The date of calibration and signature of officer is indicated on the challan. These challans are laminated by a cellophane material and pasted as a seal on to the Meter Box itself.

In the event, the officer observes any fault in the meter, then the same is being replaced by the officer and a spare tested meter is installed. The faulty meter is then sent to the PSEB Metering Equipment (ME) Laboratory, Patiala wherein the same is tested and a test report is generated. The meter is again reinstalled by the engineer at the site.



Roles and Responsibilities

KHPPL was the sole agency responsible for implementation and monitoring plan given above.

