

MONITORING REPORT

Alupola and Badulu Oya Small Hydropower Projects

Version 2

Dated 26th January 2010

Title	Small Hydropower Projects at Alupola and Badulu Oya
UNFCCC Reference No	0100
Registration Date	30th October 2005
Crediting Period	1 June 2004 – 31 May 2014
Verification No.	Four
Monitoring Period	1 October 2008 to 31 December 2009

(i) Implementation Status of Project

The Alupola project was commissioned before the start of the monitoring period under consideration and the plant continued to operate during the entire period.

The Badulu Oya project was commissioned in July 2009.

(ii) Monitoring Systems and Procedures

In respect of electricity supplied to the grid and electricity consumption from the grid, no special procedures were necessary to be implemented because the meter readings to determine this supply/consumption were read by an independent third party, the Ceylon Electricity Board (CEB). The meter recording supply to the grid was recalibrated during the period under consideration. Details are provided under (iv).

In respect of monitoring of environmental parameters (see under (iii) below), the Senior Manager – Operations of the company has been specifically tasked with ensuring the regular checks of erosion and sediment are carried out and also to arrange for the test reports required as part environmental monitoring.

(iii) Parameters Required to be Monitored and Reported

Alupola Plant

Electricity Output – Alupola Plant

Electricity Output - Anapola Plant

Month	Electricity Output (kWh)			Source (Invoice Nos raised for CEB)	Con- sumption from Grid (kWh)	Net Electricity Output (kWh)
	As per Meter Reading	Deduction for Non Calibration of Meter (Note)	Adjusted Electricity Output			
2008						
October	1,096,040	10,960	1,085,080	7036	10	1,085,070
November	878,878	8,789	870,089	7037	10	870,079
December	1,178,550		1,178,550	7038	3	1,178,547
2009						
January	347,520		347,520	7039	4	347,516
February	153,060		153,060	7040	60	153,000
March	553,330		553,330	7041	26	553,304
April	893,455		893,455	7042	1	893,454
May	745,714		745,714	7043	7	745,707
June	1,189,803		1,189,803	7044/7045	1	1,189,802
July	1,356,337		1,356,337	7046	1	1,356,336
August	635,262		635,262	7047	1	635,261
September	1,150,202		1,150,202	7048	0	1,150,202
October	1,193,597		1,193,597	7049	0	1,193,597
November	1,419,710		1,419,710	7050	0	1,419,710
December	1,809,780		1,809,780	7051/7052	1	1,809,779
Total	14,601,238	19,749	14,581,489		124	14,581,364
Note: Section (iv): Calibration of Monitoring Instruments explains the methodological basis for these deductions.						

Employment Details – Alupola Plant

Employee Category	No of Employees
Power Station Operators	3
Power Station Assistants	6

Environmental Parameters – Alupola Plant

Aspect Monitored	Parameters Monitored	Monitoring Location(s)	Monitoring Dates
Surface water	Nutrient levels in terms of phosphates and Total Inorganic Nitrogen (TIN)	Upstream of weir	September 2008 and September 2009
Surface water	BOD and COD levels	Upstream of weir and below the tailrace (water release point to the river after generation)	August 2008 and September 2009
Ecology	Flora and fauna	Within the courses of Rath Ganga below the diversion point.	February 2009
River bank erosion	Erosion level	Below the tailrace and at the bottom of the spill where water is diverted in the event of a plant shut down.	Once a month over entire period
Sediment	Sediment deposits.	Upstream of the weir.	Once a month over entire period

Community Development Expenditure – Alupola Plant

No community development expenditure was incurred during the verification period because funds available for such expenditure for this period was spent in advance during the previous verification period (at the request of the local community) for constructing a foot bridge over Alupola river..

Badulu Oya Plant

Electricity Output – Badulu Oya Plant

Month	Electricity Output (kWh)	Source (Invoice Nos raised for CEB)	Consumption from Grid (kWh)	Net Electricity Output (kWh)
2008				
2009				
January				
February				
March				
April				
May				
June				
July	-		47,824	(47,824)
August	405,662	0001	52,738	352,924
September	16,507	0002	1,245	15,262
October	378,678	0003	1,293	377,385
November	1,319,128	0004	58	1,319,070
December	2,210,287	0005	596	2,209,691
Total	4,330,262		101,807	4,226,508

Employment Details – Badulu Oya Plant

Employee Category	No of Employees
Manager	1
Power Station Operators	3
Power Station Assistants	12

Environmental Parameters – Badulu Oya Plant

Aspect Monitored	Parameters Monitored	Monitoring Location(s)	Monitoring Dates
Surface water	Nutrient levels in terms of phosphates and Total Inorganic Nitrogen (TIN)	Upstream of weir	First monitoring in July 2010 [One year after commissioning]
Surface water	BOD and COD levels	Upstream of weir and below the tailrace (water release point to the river after generation)	First monitoring in July 2010 [One year after commissioning]
Ecology	Flora and fauna	Within the courses of Badulu Oya below the diversion point.	First monitoring in February 2010.
River bank erosion	Erosion level	Below the tailrace and at the bottom of the spill where water is diverted in the event of a plant shut down.	Once a month over entire period
Sediment	Sediment deposits.	Upstream of the weir.	Once a month over entire period

Community Development Expenditure – Badulu Oya

Date	Payee	Nature of Expenditure	Amount (Rs)
12-Sep-09	Sumudu Construction	Construction of bathing spot for villagers	99,663
14-Sep-09	Sumudu Construction	Construction of bathing spot for villagers	47,526

(iv) Calibration of Monitoring Instruments**Alupola Plant**

The electrical meter at the Alupola plant has been recalibrated and found accurate on the following dates: 15/08/2007, 29/11/2008, 24/11/2009

The period between the testing dates of the Alupola meter on 15/08/2007 and 29/11/2008 was more than the 12 months specified in the PDD. Since each meter calibration is valid for 12 months as per the original PDD, the meter operated in an “uncalibrated mode” during the months of October and November 2008 of the period covered by the present monitoring report.

In the case of the verification report for another project by the same developer approved by the Executive Board (Project No. 0085: Hapugastenne and Hulu Ganga Small Hydropower Projects, Third Verification), where a similar delay in meter calibration had occurred, the Executive Board required that a "deduction based on the maximum inaccuracy specification of the meters" should be applied to account for the non calibration months. The meter is in Accuracy Class 1, which allows a maximum inaccuracy specification of + or – 1.0%. Therefore a meter inaccuracy reduction of 1.0% has been applied to the generation numbers for the months of October and November 2008.

Badulu Oya Plant

A pre calibrated factory supplied new meter was originally installed in July 2009 at the time the plant was commissioned. This calibration is valid for a 12 month period.

(v) Emission Factor

The ex ante emission factor as per the PDD which is used for the purpose of monitoring is 0.8496 kgCO₂ per kWh

(vi) Deviation Requests

No deviation requests have been made in respect of this verification period..

(vii) Emissions Calculations

The emissions reductions during the monitoring period are as follows:

Alupola Plant

Baseline emissions reduction (14,581,489*0.8496/1,000)	= 12,388.4 tCO ₂
Project emissions/leakages (124*0.8496/1,000)	= 0.1 tCO ₂
Net emissions reductions	= 12,388.3 tCO ₂

Badulu Oya Plant

Baseline emissions reduction (4,330,262*0.8496/1,000)	= 3,679.0 tCO ₂
Project emissions/leakages (7,135*0.8496/1,000)	= 86.5 tCO ₂
Net emissions reductions	= 3,592.5 tCO ₂

All Plants in PDD

Baseline emissions reduction	= 16,067.4 tCO ₂
Project emissions/leakages	= 86.6 tCO ₂
Net emissions reductions	= 15,980.8 tCO ₂

Net emissions reductions rounded off to the nearest whole number is 15,981 tCO₂.

Notes:

1. Baseline emissions reductions and project emissions/leakages for each project are derived by multiplying the electricity output/consumption from the grid (in kWh) by the emissions factor specified in (v) and dividing by 1,000 to convert to tCO₂.
2. Net emissions reductions for each project are calculated by subtracting the project emissions/leakages from the baseline emissions reduction for the project.
3. Totals for all plants in the PDD is the simple sum of each of the project values.

(viii) Comparison with PDD Estimate of Emissions Reduction

In the original PDD the Alupola plant was projected to result in annual emissions reductions of 10,305 tCO₂. Since the monitoring period under consideration is 1.25 years, the expected emissions reduction during the period (on a pro rated basis) would be 12,881 tCO₂, which is slightly more than the actual emissions reductions during the period.

In the original PDD the Badulu Oya plant was projected to result in annual emissions reductions of 21,147 tCO₂. Since the monitoring period under consideration is 0.5 years, the expected emissions reduction during the period (on a pro rated basis) would be 10,574 tCO₂, which is much more than the actual emissions reductions during the period.

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