

First Monitoring Report

12 MW Hydropower Plant in Bhandardara in Maharashtra, India

Dodson –Lindblom Hydro Power Private Limited, INDIA

UNFCCC Ref. No. 0430

Project Advisor

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Monitoring Report of 12 MW Hydropower plant in Bhandardara, Maharashtra, India

1.Introduction

Dodson-Lindblom Hydro Power Private Limited (Project Proponent) has **registered** a small scale project activity of 12 MW hydropower plant as a Clean Development Mechanism (CDM) project, hereinafter referred to as the small scale project activity, with CDM Executive Board of United Nations Framework Convention on Climate Change (UNFCCC). Subsequent to the registration of the project, the project proponent proposes to verify the emission reductions generated by the project activity and request for issuance of Certified Emission Reductions (CERs). This monitoring report is prepared for verification of the emission reductions generated by the project activity.

2. Project Reference

Title of the small scale project activity	:	12 MW hydropower plant in Bhandardara in Maharashtra, India.
UNFCCC reference no. of the project	:	0430
Date of registration	:	30/09/2006
Version of the monitoring report	:	01
Date of the report	:	08/10/2006

3. Location of the project activity

The small scale project activity is located in Bhandardara in Akola Taluk in Ahmed Nagar District in Maharashtra state in India.

4. Brief Process description

The project activity is construction and commissioning of a 12 MW hydro electric project at the foot of a hill adjacent to the Bhandardara dam. The project utilises water released from Bhandardara reservoir for irrigation purposes and generates electricity. The net electricity after auxiliary consumption is connected to state electricity grid owned and operated by Maharashtra State Transmission Company Ltd (MSTCL).

5. Type of Project

Type : I. Renewable energy projects

Category : I.D. Grid connected renewable electricity generation

The small scale project activity has applied Version 09 of the Approved small scale methodology I.D. (AMS I.D) - Grid connected renewable electricity generation.

6. Period of verification

Period of verification of emission reductions : **27/07/2001 - 30/08/2006**

(27/07/2001 is the starting date of the crediting period)

7. Monitoring plan

As per monitoring report in the PDD, the data to be monitored for estimation of the emission reductions are the following :

- (i.) Electricity generated by the project activity in kWh
- (ii.) Net electricity exported to the grid in kWh.
- (iii.) Electricity imported from the grid in kWh

The gross electricity generated by the project activity is monitored in kWh and are recorded regularly by the project proponents. The yearly gross generation of the project activity are given for the monitoring period in Table 8.1 in the subsequent section. The monthwise generation data are given in Appendix 1.

The net electricity exported to the grid is measured monthly and a Joint meter reading statement is made which gives the net electricity exported to the grid by the project activity in kWh. The net electricity exported to the grid, the baseline emission factor of the grid and therefore the emission reductions for the monitoring period are given *yearwise* in Table 8.1 in the subsequent section. The monthwise data are given in Appendix 1.

The electricity imported from the grid in kWh would contribute the project emissions. As per registered PDD, the electricity imported from the grid would be considered as project emissions when these emissions are equal to or more than 1 % of baseline emissions. The details of electricity imported by the grid and the emissions due to this electricity are given in the table 8-2. It may be seen

that the emissions due to electricity imported from the grid ranges from 0.13 –0.25 %. Since, the same are less than 1%, they are not considered.

The calibration reports of the meters shall be submitted to DOE during verification.

8. Emission Reductions of the small scale project activity

The emission reductions of the small scale project activity is the net electricity exported to the grid (TP_{Exp}) in kWh multiplied by the baseline emission factor in kg CO₂/kWh.

8.1 Baseline emission factor

The Baseline emission factor (EF_B) is **0.755 kg CO₂ /kWh** has been estimated and validated for Western regional grid of India, the applicable grid for the project activity.

$$\begin{array}{lclclcl} \text{Emissions reductions} & = & TP_{Exp} & * & EF_B & * & 1/1000 \\ (\text{t CO}_2) & & (\text{kWh}) & & (\text{kg CO}_2/\text{kWh}) & & \text{ton/kg} \end{array}$$

The emission reductions of the project activity for the monitoring period is shown in the table 8-1 below:

Table 8-1 – Emission reductions of the small project activity

S. No.	Year	Gross Electricity generated ('000 kWh)	Electricity supplied to the grid TP_{exp} ('000 kWh)	Baseline emission factor EF_B (kgCO ₂ /kWh)	Emission Reductions (ton CO ₂ eq)
1	27/07/2001 – 31/12/2001	20,094.85	19,714.8	0.755	14,884.67
2	01/01/2002 to 31/12/2002	36,771.37	36,110.4	0.755	27,263.35
3	01/01/2003 to 31/12/2003	46,070.94	45,268.8	0.755	34,177.94
4	01/01/2004 to 31/12/2004	30,641.32	30,105.6	0.755	22,729.73
5	01/01/2005 to 31/12/2005	49,499.4	48,574.8	0.755	36,673.97
	01/01/2006 to 30/08/2006	28,630.69	28,076.4	0.755	21,197.68
Total		211,708.57	207,850.8		156,927 t CO₂ eq

Table 8.2 - Export and Import details of the project activity

Year	Net Export ('000 kWh)	Import ('000 kWh)	% Import v/s Export
2001	19,714.8	28.761	0.15
2002	36,110.4	83.898	0.23
2003	45,268.8	73.374	0.16
2004	30,105.6	74.244	0.25
2005	48,574.8	64.314	0.13
Upto30/08/2006	28,076.4	54.321	0.18

Since it is less than 1%, the electricity imported from the grid are not considered.

Appendix 1 – Month wise Gross generation, net generation, emission reductions

Year 2001(27/07/2001 – 31/12/2001)				
Month	Gross Generation (kWh)	Net export to grid (kWh)	Baseline emission factor (kgCO2/kWh)	Emission Reduction (t CO ₂)
Jul-01 & Aug-01	8,358,690	8,196,000	0.755	6,188
Sep-01	1,802,710	1,770,000	0.755	1,336
Oct-01	3,037,620	2,984,400	0.755	2,253
Nov-01	3,145,830	3,086,400	0.755	2,330
Dec-01	3,750,000	3,678,000	0.755	2,777
Total	20,094,850	19,714,800	0.755	14884.67

Year 2002 (01/01/2002-31/12/2002)				
Month	Gross Generation (kWh)	Net export to grid (kWh)	Baseline emission factor (kgCO2/kWh)	Emission Reduction (t CO ₂)
January	4,933,740	4,845,600	0.755	3658.43
February	5,180,530	5,088,000	0.755	3841.44
March	1,512,660	1,492,800	0.755	1127.06
April	4,294,180	4,208,400	0.755	3177.34
May	74,870	73,200	0.755	55.27
June	0	0	0.000	0.00
July	403,190	394,800	0.755	298.07
August	5,942,940	5,838,000	0.755	4407.69
September	4,285,190	4,209,600	0.755	3178.25
October	4,393,710	4,314,000	0.755	3257.07
November	4,440,550	4,360,800	0.755	3292.40
December	1,309,810	1,285,200	0.755	970.33
Total	36,771,370	36,110,400	0.755	27263.35

Monitoring Report of Emission Reductions

Year 2003(01/01/2003-31/12/2003)				
Month	Gross Generation (kWh)	Net export to grid (kWh)	Baseline emission factor (kgCO ₂ /kWh)	Emission Reduction (t CO ₂)
January	6,601,380	6,483,600	0.755	4,895.12
February	1,488,320	1,462,800	0.755	1,104.41
March	3,108,760	3,054,000	0.755	2,305.77
April	990,670	973,200	0.755	734.77
May	0	0	0.755	0.00
June	0	0	0.755	0.00
July	1,165,140	1,144,800	0.755	864.32
August	9,399,550	9,235,200	0.755	6,972.58
September	8,081,350	7,940,400	0.755	5,995.00
October	1,651,370	1,622,400	0.755	1,224.91
November	8,179,490	8,038,800	0.755	6,069.29
December	5,404,910	5,313,600	0.755	4,011.77
Total	46,070,940	4,5268,800	0.755	34,177.94

Year 2004(01/01/2004-31/12/2004)				
Month	Gross Generation (kWh)	Net export to grid (kWh)	Baseline emission factor (kgCO ₂ /kWh)	Emission Reduction (t CO ₂)
January	1,022,560	1,005,600	0.755	759.23
February	3,788,370	3,723,600	0.755	2811.32
March	1,249,510	1,226,400	0.755	925.93
April	2,756,230	2,706,000	0.755	2043.03
May	0	0	0.755	0.00
June	0	0	0.755	0.00
July	973,090	956,400	0.755	722.08
August	9,690,390	9,520,800	0.755	7188.20
September	2,687,820	2,642,400	0.755	1995.01
October	1,854,610	1,821,600	0.755	1375.31
November	3,463,210	3,402,000	0.755	2568.51
December	3,155,530	3,100,800	0.755	2341.10
Total	30,641,320	30,105,600	0.755	22729.73

Monitoring Report of Emission Reductions

Year 2005 (01/01/2005-31/12/2005)				
Month	Gross Generation (kWh)	Net export to grid (kWh)	Baseline emission factor (kgCO ₂ /kWh)	Emission Reduction (t CO ₂)
January	6,249,090	6,141,600	0.755	4636.91
February	3,321,120	3,264,000	0.755	2464.32
March	2,118,110	2,079,600	0.755	1570.10
April	2,942,640	2,887,200	0.755	2179.84
May	1,617,180	1,585,200	0.755	1196.83
June	321,600	315,600	0.755	238.28
July	5,767,870	5,658,000	0.755	4271.79
August	10,817,140	10,610,400	0.755	8010.85
September	7,610,420	7,466,400	0.755	5637.13
October	924,850	907,200	0.755	684.94
November	2,698,080	2,644,800	0.755	1996.82
December	5,111,300	5,014,800	0.755	3786.17
Total	49,499,400	48,574,800	0.755	36673.97

Year 2006 (01/01/2006-31/08/2006)				
Month	Gross Generation (kWh)	Net export to grid (kWh)	Baseline emission factor (kgCO ₂ /kWh)	Emission Reduction (t CO ₂)
January	6,136,440	6,020,400	0.755	4545.40
February	307,880	302,400	0.755	228.31
March	4,268,270	4,185,600	0.755	3160.13
April	3,591,250	3,517,200	0.755	2655.49
May	0	0	0.755	0.00
June	0	0	0.755	0.00
July	3,498,330	3,430,800	0.755	2590.25
August	10,828,520	10,620,000	0.755	8018.10
Total	28,630,690	28,076,400	0.755	21,197.68