



Monitoring Report

Maduru Oya Left Bank Main Canal at 24+140 Drop 9 Mini Hydro Power Project

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Report ID	SLCCS/REG/0008/MR/08
Project Title	Maduru Oya Left Bank Main Canal at 24+140 Drop 9 Mini Hydropower
Project Version	04

Report Title	Monitoring Report of Maduru Oya Left Bank Main Canal at 24+140 Drop 9 Mini Hydropower Project
Pages	26
Date of Issue	02.05.2025
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CONTENT

1. Description of Project Activity	4
1.1. Objective of the Monitoring	4
1.2. Summary Description of the Implementation of this Project	4
1.3. Sectoral Scope and Project Type	6
1.4. Project Proponent	6
1.5. Other Entities Involved in the Project	7
1.6. Project Start Date	7
1.7. Project Crediting Period	7
1.8. Registration date of the project activity	7
1.9. Project track and credit use	8
1.10. Title and Reference of Methodology	9
1.11. Participation under other GHG Programs	9
1.12. Other Forms of Credits	9
1.13. Sustainable Development	10
2. Implementation Status	10
2.1 Implementation Status of the Project Activity	10
2.2 Deviations	11
2.2.1 Methodology Deviations	11
2.2.2 Project Description Deviations	11
3. Safeguards	12
3.1 No Net Harm	12
3.2 Local Stakeholder Consultation	13
3.3 AFOLU-Specific Safeguards	14
4. Data and Parameters	14
4.1 Data and Parameters Available at verification	14
4.2 Data and Parameters Monitored	16
4.3 Description of the Monitoring Plan	18
5. Quantification of GHG Emission Reductions and Removals	20
5.1 Baseline Emissions	20
5.2 Project Emissions	21
5.3 Leakage	23
5.4 Net of GHG Emission Reductions and Removals	23
5.5 Comparison of actual emission reductions with estimates in the CMA	24
APPENDIX: Contact information on participants in the project activity	25

1. Description of Project Activity

1.1. Objective of the Monitoring

The purpose of a monitoring is to have a quantification the amount of actual GHG reduction for the period of 2023/2024 years. This project developer has authority to specify the period to be monitored. Monitoring report is the supporting document to independent verification of net GHG reduction during specific period to obtain Sri Lanka Certified Emission Reduction units (SCER).

1.2. Summary Description of the Implementation of this Project

Maduru Oya drop 9 project is located at the 24+240 m location of the left bank main canal. Discharge of the location is approximately 22.0 m³/sec and a fixed head of 11.0 meters. Capacity of the project is 2.0 MW, and the output in average is 10,336.8 MWh annually.

The existing drop structure is having 2 regulator gates for water level operations of the canal for a given discharge. LB canal is a well maintained concrete lined canal. The project was commissioned successfully on 19th December 2013.

Location	Capacity	Average Energy Production	Costs of the Project
Regulator cum drop structure 9, at 24 + 140 of LB Main Canal	2000 kW	10,336.8 MWh/year	130 MSLRs

Parameters relating to the implemented project activity

Hydrology

Maximum discharge observed	19.3	cumecs
Minimum discharge observed	1.01	cumecs
Average mean discharge	11.55	cumecs
Rainfall	1000 – 4000	mm

Canal regulator cum drop head

Maximum	11.5	m
Designed head	11.0	m
Outlet canal water level	78.0	m

power plant

Installed Capacity	2 MW (as in LOI)
Energy Output	8.32 GWh annually
Type of the turbine	Dual operation Kaplan – Vertical Bulb turbine or K-tec
Efficiency of the flow variation	60%
Generation	Synchronous/semi umbrella type
Generating Voltage	6.6 kV
Frequency	50 Hz
Line of connectivity and Voltage	500 m/ 33 kV

Cost and financial status

Total Project Cost	130 m SLRs
Equity of the Project Proponent	40 %
Lending Banks	60 %
Internal Rate of Return	> 18.46%
Royalty to MASL	27 % from generated power

Operational Conditions

Water operations - as per MASL seasonal operating plans/RPM sys 'B' directives

Parameter of Project and E & M equipment

Hydrology

Reservoir full supply level	96.0 m msl
Minimum operating level	84.5 m msl
Maximum observed discharge	36.11 m ³ /sec
Designed discharge	22.0 m ³ /sec
Head variation	18 ~ 6 m

Turbine Inlet valve

Type	Butterfly
Diameter	2.6 m

Turbine

Type	vertical shaft – Kaplan
Maximum net head	18.0 m
Minimum net head	06.0 m
Rated net head	16.0 m
Rated speed	350 rpm

Runaway speed	750 rpm
Power at rated head	2500 kW
Power at the maximum loading	3000 kW
Sense of rotation	anti clockwise

Generator

Phase	Three
Frequency	50 Hz
Rated Voltage	6600 V
Maximum output	3000 kVA
Power factor	0.9 lead or lag
Synchronous speed	350 rpm
Runaway speed	750 rpm

Main transformer

Frequency	50 Hz
Phase	three
Rated voltage	6.6 kV/33kV
Rated output	3000 kVA
Power factor	0.9 lead or lag
Off load tap changer	- 10% to + 10% in steps of 5%

Prior to this project activity, there was no hydropower plant belonging to project participant in that region. Hence the project should be considered as a Greenfield project activity. The project operates with irrigation water released from the Left Bank canal of Maduru Oya reservoir. The implementation project activity has not resulted in any increase of reservoir capacity or water level. Hence the project activity does not cause to emit methane emission from the seasonal flooding of the reservoir. Further, during the implementation of project activity, the project proponent has not changed the initial design validated by the SLCCS GHG programme. This project commenced in 2013 and, to date, has not been affected by any flooding.

1.3. Sectoral Scope and Project Type

Sectoral scope 1, Type I, AMS-I.D "Grid connected renewable electricity generation.

1.4. Project Proponent

Organization Name	Eagle Power (Pvt) Ltd
Contact Person	Kapila Wjsekara
Title	No 09, Modarawila Industrial Zone, Panadura

Address	Director / General Manager
Telephone	0773822454
Fax	038 4282780
E-mail	kapila@ethimale.lk

1.5. Other Entities Involved in the Project

Organization Name	Anunine Holding (Pvt) Ltd
Role in the project	Mother company of Eagle power (Pvt) Ltd
Contact Person	K.H.Sathsarani
Title	77 Sri Saranankara Rd, Dehiwala-Mount Lavinia 00600
Address	Junior Sustainability Data Analyst
Telephone	0703672748
Fax	
E-mail	hashini.s@anunine.com

1.6. Project Start Date

Starting date of the Maduru Oya Left Bank Main Canal Drop at 24+140 small-scale Hydropower project activity is **12th August 2008** (This was the date when first real action was taken by PP and Letter of Award for construction of access road to the power house was made along with the advance payment to the contractor)

1.7. Project Crediting Period

The project crediting period is 01st January 2021 to 28th of February 2028 and totally 2 years renewable.

1.8. Registration date of the project activity

The project registration date was specified after obtaining approval for the project verification opinion. The project registration date was 2023.08.21.

1.9. Project track and credit use

The Maduru Oya Left Bank Main Canal at 24+140 Drop 9 Mini Hydropower registered under track II and issued carbon credits from the project will only be used for internal offsetting of emissions.

Project falls within System B of Mahaweli Project and;

- Authorised Officer - Resident Project Manager (System B)
- Mahaweli Unit Manager office – Medagama
- Mahaweli Block Manager office – Sevanapitiya & the general information is as;
- Province – North Central Province
- District – Polonnaruwa
- DS office – Dimbulagala
- GN office – 256, Medagama
- Village – Medagama

The project site is located at 324 km from Colombo.

Location of Project Activity	Maduru Oya Left Bank Main Canal Sliuce
Province	North Central Province
District	Pollonnaruwa
DS Division	Maduru Oya
City/Town	Aralaganwilla
Community	Medagama
Coordinates	Latitudes - 7° 86' 11 52" N Longitudes - 81° 16' 37" E

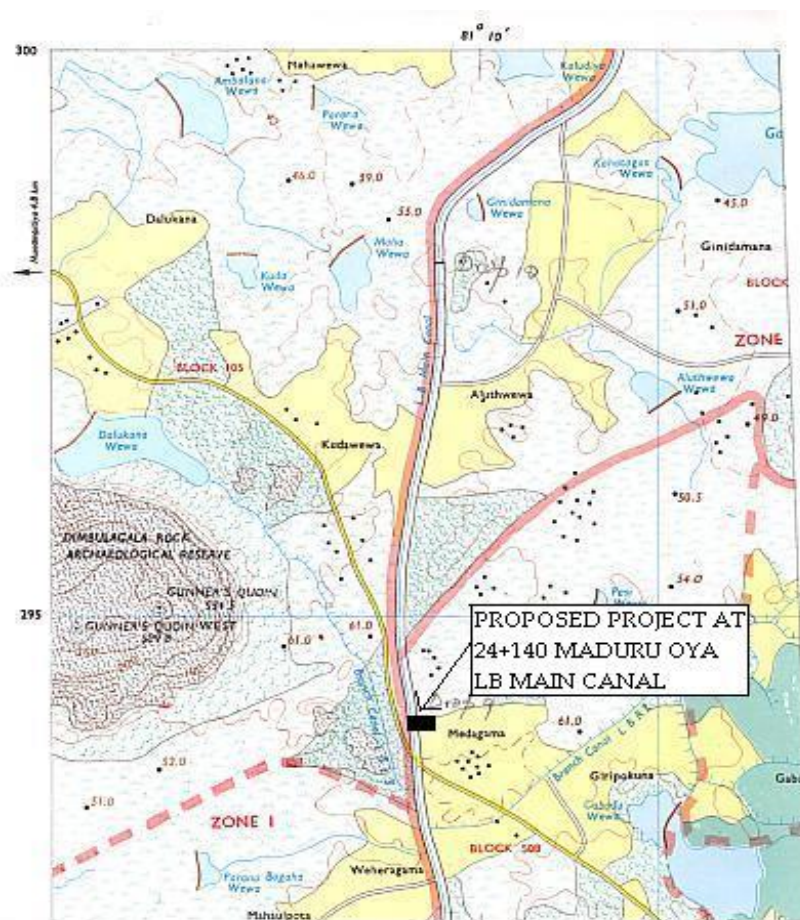


Figure SEQ Figure 1* ARABIC 2: Location map on 1:50000 scale map (Source – Survey Department)

1.10. Title and Reference of Methodology

AMS-1.D "Grid connected renewable electricity generation" Version 18.0 & Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion And CO₂ fire extinguishers refilling version 03.3.

1.11. Participation under other GHG Programs

This project is not registered under any other GHG programs.

1.12. Other Forms of Credits

This project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates.

1.13. Sustainable Development

This renewable electricity generation facility is able to reduce the contribution from thermal electricity generation to meet the electricity demand. Unlike in thermal power plants, this project will positively contribute to the electricity demand without compromising the ability of future generations to meet their own needs. Therefore, this renewable energy project is a positive step toward sustainable development. The national sustainable development criteria are,

- 1) Environmental well-being
- 2) Economic well-being
- 3) Social well-being
- 4) Technological well-being

Environmental well-being

The project contributes to an improvement of the local environment through reducing emissions such as SO_x and NO_x from thermal power plants which have to be operated to generate an equal amount of power using thermal sources if this project is not implemented.

Economic well-being

Discontinuing the use of fossil fuel saves foreign exchange since the entire quantity of fossil fuel requirement is imported to the country.

Social well-being

Good amount of employment opportunities had been created for the local workforce during the project construction phase. The project after implementation provides employment opportunities for the local populace in a sustained manner over the project life time. The enhanced employment opportunities created by this project activity will lead to alleviation of poverty, and eradicate unemployment.

Technological well-being

This power plant has been erected as a fully automated power plant. The project activity has used of the reliable and proven technology available locally to ensure that an environmentally safe technology is only being implemented in this project activity.

2. Implementation Status

2.1 Implementation Status of the Project Activity

Eagle Power (Pvt) Ltd, developed a 2.0 MW grid connected hydro power project in Maduru Oya, Medagama, Dimbulagala, Polonnaruwa District in Sri Lanka and this project was registered as a renewable energy generation project under Sri Lanka Carbon Crediting Scheme (SLCCS). The project activity received all national and regional approval needed for the operation and subsequently commissioned successfully on 19th December 2013. The entire power generated from this project is being sold to Ceylon Electricity Board through a power purchase agreement with CEB. During the monitoring period, project has

generated and exported 14,110.14 MWh of electricity to the national grid. As a result of this contribution, the project has effectively reduced emissions by 9,145 tCO₂e, which would have otherwise been released into the environment in the absence of the project activity.

Eagle Power Project	Technical specification		
General	Catchment Area		453 km ²
	Average Annual Catchment Rainfall		1000 mm – 4000mm
	Average Flow		22 m ³ /s
	Gross Head		11.5 m
	Installed Capacity		2 MW
	Mean Annual energy generation		10.5 GWh
Outlet Channel	Type		Reinforced concrete,
	Length		100m
	Height		4300mm
	Inner Width		6000mm
	Flow depth at design flow		
	Hydraulic slope		0.001
Penstock	Type		Single welded steel pipe
	Length		15m
	Inner diameter		3120mm
	Gross Head		11.5 m
Powerhouse	Size of Building		13 m x 25 m x 30 m
	Hydraulic Turbine	Type	Horizontal – Kaplan, 2000kW
		Rated Flow	22 m ³ /s
	Generator	Type	Synchronous, 2500kVA
		Operating Speed	250RPM

2.2 Deviations

2.2.1 Methodology Deviations

No any methodological deviations to be reported for this project activity

2.2.2 Project Description Deviations

Not Applicable

3. Safeguards

3.1 No Net Harm

This project has not any potential negative environmental and socio-economic impacts.

Analysis of environmental impacts

The small hydropower project has obtained all necessary approvals required under Sri Lankan regulations. This includes approval from the Central Environmental Authority (CEA), which reviews environmental and social aspects after assessing the Environmental Assessment Report. Additionally, the project has received Provisional Approval from the Sustainable Energy Authority (SEA), a Water Use License from the Irrigation Department, and land clearance from the relevant Divisional Secretariat. It has also secured a Power Purchase Agreement (PPA) with the Ceylon Electricity Board (CEB) and obtained the required approvals from local government authorities.

Then this project has received the Environmental Clearance from the CEA.

Table 1: Date of Environment Clearance by CEA

Hydropower plant	Capacity rating (MW)	Date of environment approval received from CEA
Maduru Oya drop at 24 + 140	2	31st December 2007

These clearances by CEA reflect the finding that the environment impacts of this project is negligible.

The general and specific conditions of approvals of the EAs are in most instances generic, i.e., guidance on minimizing impacts of site preparation. Also, all projects require an environmental monitoring plan that covers surface water (not relevant in practice for run-of-river projects), flora and fauna within the river and below the diversion point, river bank erosion, and sediments upstream of the weir.

The noteworthy specific condition to the project site is summarized below.

Environmental impact assessment

- No damage to the rock boulder deposits in the upstream area from the weir
- Maintain the downstream in proper condition, a continuous uninterrupted flow of 30 litres/sec shall be maintained
- Adhere to the approved trace of the transmission line route identified by the CEB
- Solid waste associated with the work force shall be disposed of in consultation with the local authority
- Shall adapt appropriate conservation methods to stabilize any disturbed slopes

- Sediments collected at the weir site and accumulated in the setting basin disposed in controlled manner
- This project utilized soil conversion technology in conjunction with tree planting to enhance soil health and support long-term environmental sustainability.
- Should be incorporated in the design at the mouth of intake to prevent entry of fish into conveyances system and build overpass of the open head race canal to facilitate movement of small terrestrial

The environmental impacts of this project are not considered significant.

3.2 Local Stakeholder Consultation

Stakeholder Consultation Process

There should be some public involvement to ensure that critical issues are identified and that local information about the project area is gathered and that alternative ways of achieving the project objectives are considered. Public involvement could be used to avoid biases inaccuracies in analysis to identify local values and preferences to assist in the consideration of mitigation measures and to select the best practicable alternative.

Eagle Power (Pvt) Ltd had expressed their plan to develop the proposed 2 MW grid connected project and called for the suggestions/comments of the local stakeholders. In line with the public notice, a meeting was held on 7th November 2008. Stakeholder consultation for the project activity has been conducted to account for the views of the people impacted either directly or indirectly due to the project activity as well as impact to the environment. This has been carried out at all levels of stakeholders

The stakeholder consultation process of Maduru Oya LB Main Canal Drop at 24+140 Hydropower project started with the identification of most relevant stakeholders to the project. It was found that the several types of stakeholders with different social status were interested in the project

Summary of Comments Received

Director and consultant of Eagle Power (Pvt) Ltd. made a detailed description of the project activity. A series of questions were raised by the participants and majority of them were focused on the possible environmental impacts. In response to them, consultant of project activity described the actions planned to be taken to prevent possible negative environmental impacts. Further the participants were presented with the credentials of stipulated environmental clearance obtained from the relevant authorities. Then villagers were more curious in knowing the advantages and benefits of the project. The participant were convinced that job creation and infrastructure development would be a key outcome of this project. With that insight, participants did not raise any objection against the development and implementation of the project.

3.3 AFOLU-Specific Safeguards

Not applicable

4. Data and Parameters

4.1 Data and Parameters Available at verification.

Following data and parameters were available at the validation and those were utilized in calculating the net emission reduction, in accordance with the methodology specified in the validated CMA

Data / Parameter	$EF_{CM,Grid,y}$
Data unit	tCO ₂ e/MWh
Description	Combined margin CO ₂ emission factor for grid connected power generation in year y
Source of data	Energy balance 2022 - Sri Lanka Sustainable Energy Authority
Value applied	0.6482 tCO ₂ e/MWh
Justification of choice of data or description of measurement methods and procedures applied	Methodological tool published by UNFCCC to calculate the emission factor for an electricity system
Purpose of Data	Calculate the emission reduction
Comments	This factor was applied to calculate baseline emission reduction of the project activity.

Data / Parameter	$\rho_{i,y}$
Data unit	Mass unit/ Volume unit
Description	Weighted average density of generator fuel (Diesel)
Source of data	Values provided by national fuel supplier, Ceylon Petroleum Corporation (CEYPETCO)
Value applied	840 kg/m ³
Justification of choice of data or description of measurement methods and procedures applied	CEYPETCO conducts periodic testing of the specifications of Auto Diesel (A0013L99), which it supplies itself, and publishes the results on its official website for public access and reference. As declared by CEYPETCO, the fuel testing are conducted by selected professionals in its laboratories

	adhering to international best practice guidelines, standards, and protocols.
Purpose of Data	Calculate the mass of fuel consumed by the on-site diesel generator
Comments	This value is provided as a range (820-860 kg/m ³) of which average was applied in the calculation of project emissions.

Data / Parameter	$NCV_{i,y}$
Data unit	GJ/kg
Description	Weighted average net calorific value of diesel
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
Value applied	0.043 GJ/kg
Justification of choice of data or description of measurement methods and procedures applied	IPCC is an organization attached to UNFCCC publishing periodic reports on climate change and guidelines on national inventory development. As a technical body, IPCC reviews the latest global research findings of scientific communities and consolidate them into usable format through simplified reporting framework. The NCV values for fuel type are periodically published by IPCC for the use of reporting emissions from fossil fuels. Though these values are presented with an uncertainty range, they are recommended to be used in the emission offset calculation in the absence of local data. The locally published fuel calorific value is given by CEYPETCO on a gross basis. As this value needs to be converted into NCV using a conversion factor, the default value given in IPCC was used to minimize the uncertainty.
Purpose of Data	To estimate the energy content of fuel
Comments	

Data / Parameter	$EF_{CO_2,i,y}$
Data unit	tCO ₂ e/GJ

Description	Weighted average CO ₂ emission factor of fuel type (diesel)
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
Value applied	0.0741
Justification of choice of data or description of measurement methods and procedures applied	As per the CDM methodological tool; <i>Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, version 03.3</i> , this value can be applied in the emission accounting of fossil fuel combustion.
Purpose of Data	To estimate the energy content of fuel
Comments	

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{p,j,y}$
Data unit	MWh/year
Description	Quantity of net electricity exported to the CEB grid
Source of data	Monthly electricity export and import vouchers (bills) issued by CEB
Description of measurement methods and procedures to be applied	This parameter was continuously monitored by project participants using an electronic energy meter supplied by CEB. The meter is a bidirectional meter and capable of measuring import and export data at the same time.
Frequency of monitoring/recording	Daily and monthly
Value applied	14,110,140 MWh
Monitoring equipment	Energy meters Accuracy class of the meters- class 01 From the developer side there were two meters installed (of the same accuracy class). One has been installed before the transformer and one after, so that the losses can be recorded. These meters were used to track the electricity generation. While CEB meters were utilized to track both import and export of electricity.

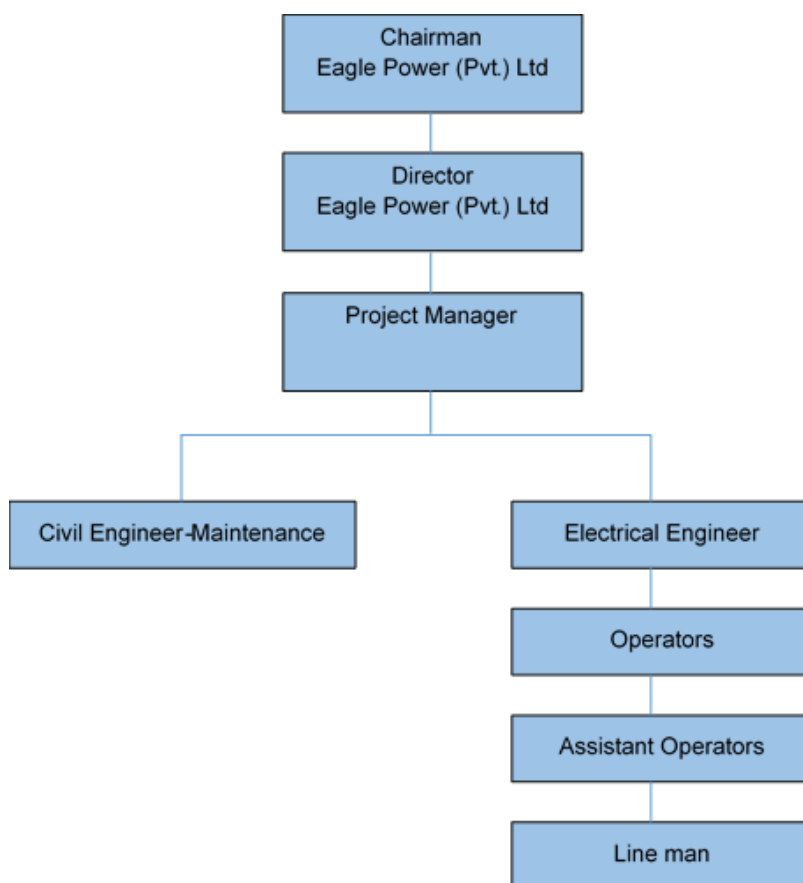
QA/QC procedures to be applied	The meter was properly calibrated and maintained in order to ensure accuracy. Testing/Calibration interval : Annually by CEB Cross checking of the data with the cheque received from CEB for import electricity to the grid
Purpose of data	Calculate baseline emission
Calculation method	The parameter was calculated by deducting the import energy from the export energy
Comments	Monitoring data is archived for two years after the crediting period.

Data / Parameter	$FC_{i,j,y}$
Data unit	L/year
Description	Diesel burnt in the back-up generator
Source of data	Onsite measurements
Description of measurement methods and procedures to be applied	Fuel consumed by generator was measured by a ruler gauge fixed to the fuel tank. Power plant operators/ technicians are responsible for taking monthly measurements of the fuel consumption. A log book is maintained for recording monthly fuel consumption
Frequency of monitoring/recording	Measurements were taken on monthly basis
Value applied	200 L
Monitoring equipment	Ruler gauge is used to measure fuel consumption
QA/QC procedures to be applied	The fuel gauge was properly calibrated by the responsible party for achieving required accuracy level. The fuel quantities consumed by generator was cross-checked with the purchased quantities in the monitoring period.
Purpose of data	Calculate project emission for the operation of on-site diesel generator
Calculation method	N/A
Comments	The recorded data were periodically reviewed and authorized by the project manager.

4.3 Description of the Monitoring Plan

The authority and responsibility for registration and overall monitoring rested with the Director of the Eagle Power (Pvt.) Ltd. Subsequently, the management of the power plant delegated the authority to the Project Manager, who was tasked with ensuring the proper operation of the power plant and its monitoring activities. The project Manager is assisted by a group of staff including engineers and operators. Power house operating staff are responsible for maintaining records and formats required for the monitoring mechanism. The responsibility of review, storage and archiving of information in good condition lies with the Plant Manager. Also it is the responsibility of the Plant Manager to make sure that routine maintenance of plant equipment are carried out in line with the instructions given in operations and maintenance manuals provided by the suppliers of respective equipment and recorded in given formats.

Organization Structure



Parameters Requiring Monitoring

As indicated in the validated monitoring plan, the plant has monitored data and parameter required for the net emission reduction of the project activity. The energy export and import data are

obtained from the CEB vouchers/ bills and recorded for the verification. In addition to the main meter installed by CEB, the plant has installed a check meter at the output side of the transformer. Export energy metered through this meter is routinely recorded and used for cross-checking purposes. Fuel consumption in on-site diesel generators is another critical parameter to be monitored during the crediting period. This was measured and monitored through a ruler gauge installed in the generator. CO₂ fire extinguishers is another critical parameter to monitoring during the credit period.

Training of monitoring team

The top management of the project is highly concerned with the integrity of monitoring system validated for this project activity. The project has employed qualified and experienced persons for plant operations. As indicated in the validated CMA, the responsible officers and plant operators have been using the proper log sheets and format for the data recording. The project Manager has functioned as the designated person to verify, compile and archive all the monitored data. The parameters monitored during the crediting period have been provided in approved tabular format to the designated person for verification purpose. Following the implementation of the project, the management has provided necessary training to the personnel in engaging data reading and reporting. The training modules have specifically covered the monitoring procedures of following parameters.

- Electricity Export
- Electricity Import
- Grid emission factors and other coefficients
- Fuel consumption of the on-site diesel generator
- Gross electricity generated
- Parameter of the plant, such as bearing temperature, electrical properties, etc
- Fault/Breakdown recording

Procedures for documentation and storage

Recorded data in monitoring sheets carried out by operators was periodically checked by the Plant manager to identify any abnormalities. During the monitoring period considered for this monitoring period, any abnormality was not found to be reported. In ensuring the accuracy and completeness of data, as per the validated CMA, electronic data reporting system was adopted. This is kept as a back-up of monitoring data in case loss of the physically reported data. This system was also periodically checked by the Project Manager.

Procedures for Corrective actions

The parameters monitored during the crediting period was compiled as internal report and submitted to the Designated Director for review. The parameters included the Gross generation, Auxiliary consumption, Energy export and Import, generator fuel consumption, Fire extinguisher refilling, A/C refrigerant refilling. Following each review, the director has recommended actions for improvements in the data recording and reporting.

QA & QC Procedures

The project has employed equipment and instruments that measure, record, report, monitor and control of various key parameters of the plant. For measuring the energy exported / imported main meter and a check meter as required installed by the power plant. The check meter reading is used to measure electricity export/import in case of failure of the main meter. As per the contractual arrangement entered into with CEB, the responsible officials replaces the main meter immediately on PP request.

Data Storage & Archiving

Export & Import readings from main meter was collected under the supervision of the project Manager. Export and Import data were recorded and stored in logs as well as in electronic form. The records are checked periodically by the Project Manager. The period of storage of the monitored data is for 2 years after the end of crediting period or till the last issuance of SCERs for the project activity whichever occurs later. The baseline emission factor was obtained from the Energy Balance report of SLSEA available at [Energy%20Balance/energy-balance-2022_updated.pdf](#). The third party assurance required for the monitored data and parameters are requested from the verification team serving for SLCCS.

Maintenance of Equipment

All the equipment used in the project activity have been undergone scheduled maintenance as specified in the operational manual of the equipment supplier. During the monitoring period, meters were periodically tested for defects, there were not any defects to be reported in the metering equipment. Further, the meters and rulers used to measure the data and parameters were calibrated at the frequency recommended by the supplier.

5. Quantification of GHG Emission Reductions and Removals

5.1 Baseline Emissions

The baseline emissions are the product of electrical energy baseline $EG_{p,j,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor "

$$BE_y = EG_{p,j,y} \times EF_{grid,y} \quad \text{Equation (1)}$$

Where:

- BE_y = Baseline emissions in year y (t CO₂)
- $EG_{p,j,y}$ = 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)
- $EF_{grid,y}$ = Combined margin CO₂ 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" (t CO₂/MWh)

Calculation of baseline emission factor

As per paragraph 22 of AMS I.D. Ver18.0, for project activities that do not displace captive electricity generated by an existing plant but displace grid electricity import and/or supply electricity to a grid, the emission factor of the grid shall be calculated as per the procedures detailed in AMS-I.D.

As per AMS I.D, the grid emission factor was calculated using the latest approved version of “Tool to calculate the emission factor for an electricity system” CDM methodology. The updated grid emission factor calculated and published by the Sustainable Energy Authority in Sri Lanka is used.

Baseline Emission Calculation

Baseline Emission –year 2023

Parameter	Value	Units	Source
Net Energy Output(After reducing import amount)	6,663.73	MWh/year	Calculated
Emission Factor	0.6482	tCO ₂ e/MWh	Energy Balance-2021, SLSEA
Emission Reduction	4,319	tCO ₂ e/year	Calculated

Baseline Emission –year 2024

Parameter	Value	Units	Source
Average Energy Output(After reducing import amount)	7446.41	MWh/year	Calculated
Emission Factor	0.6482	tCO ₂ e/MWh	Energy Balance-2021, SLSEA
Emission Reduction	4,826	tCO ₂ e/year	Calculated

5.2 Project Emissions

As per the validated CMA, project emissions was calculated using the methodological guidance of CDM tool: *Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, version 03.0*

Project Emissions –year 2023

Parameter	Value	Units	Source
Quantity of fuel combustion	100	L	Calculated
	0.	m ³	
Mass unit/volume unit (Fuel Density)	840	Kg/ m ³	Ceylon Petroleum Corporation (CEYPETCO)
Net Calorific Value (NCV)	0.043	GJ/kg	IPCC Guideline, 2006
CO ₂ emission factor	0.0741	tCO ₂ e/GJ	IPCC Guideline, 2006

Project emission from combustion of diesel	0.27	tCO ₂ e/year	Calculated
Rounded emission for conservativeness	0.3	tCO ₂ e/year	Calculated

Project Emissions –year 2024

Parameter	Value	Units	Source
Quantity of fuel combustion	100	L	Calculated
	0.	m ³	
Mass unit/volume unit (Fuel Density)	840	Kg/ m ³	Ceylon Petroleum Corporation (CEYPETCO)
Net Calorific Value (NCV)	0.043	GJ/kg	IPCC Guideline, 2006
CO ₂ emission factor	0.0741	tCO ₂ e/GJ	IPCC Guideline, 2006
Project emission from combustion of diesel	0.27	tCO ₂ e/year	Calculated
Rounded emission for conservativeness	0.3	tCO ₂ e/year	Calculated

Project emission 2024

EMISSION CALCULATION		
CO ₂ Gas Refilling	13	kg/Year
Emission from CO₂ Consumption(tons of CO₂ equivalent)	0.013	t CO₂-e/Year

Hence, P_{Ey} = 0 tCO₂e

Overview of project emissions as per paragraph 39 & 40 of AMS I.D. Ver18.0 and their relevance for the project

Para 39 & 40 of AMS I.D. Ver18.0: Project emissions include:	Relevance for project activity
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For most renewable energy project activities, $PE_y=0$. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002. ○ Emissions related to the operation of geothermal power plants (e.g. non condensable gases, electricity/fossil fuel consumption); ○ Emissions from water reservoirs of hydropower plants.	No. As per the latest version of ACM0002, version 10, <i>Consolidated baseline methodology for grid-connected electricity generation from renewable sources</i>, the hydro power project activities that result in new reservoirs and hydro power project activities that result in the increase of existing reservoirs, project proponents requires to account for CH_4 and CO_2 emissions from the reservoir. The Maduru Oya Left Bank Main Canal at 24+140 Drop 9 Mini Hydro Power Project located in the Maduru Oya Left Bank Main Canal Regulator 09, at 24 + 140 has not changed or altered the capacity of the reservoir. In this backdrop, emission from water reservoir is not required to be accounted under the project emissions.
CO_2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the tool to calculate project or leakage CO_2 emissions from fossil fuel combustion. CO_2 emissions from CO_2 fire extinguishers due to the project activity were calculated using the latest version of the applicable tool for estimating project.	Yes. A back-up generator has been installed at the power plant to cater to essential power demands in the event of grid failure or sudden power outages. The emission arising from this source has been duly estimated and is reported as a project emission.

5.3 Leakage

As per the paragraph 42 of selected methodology, leakage emission is typically attributable to the operation and processes relating to the biomass project activities. The current project activity does not involve biomass plantation, processing and any treatment after harvesting, hence, no leakage emissions applicable to this project activity. No fossil fuels consumption for the project activity.

Hence,

$$LE_y = 0$$

5.4 Net of GHG Emission Reductions and Removals

Emissions reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Since $LE_y = 0$;

$$ER_y = BE_y - PE_y$$

Table 5: Summary of emission reduction calculation

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2023	4,319	0	0	4,319
Year 2024	8,826	0	0	8,826
Total	9,145	0	0	9,145

5.5 Comparison of actual emission reductions with estimates in the CMA

Item	Values applied in ex-ante calculation of the registered CMA	Actual values reached during the monitoring period
Emission reductions (tCO ₂ e)	9,028	9,145

APPENDIX: Contact information on participants in the project activity

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Document Information

Title of document	Monitoring Report
Document No	SLCCS-MON-FRM
Document Type	Form
Business Function	Monitoring the Project Activity
Version	03.0

Revisions

Version	Date	Description
01.0	25-12-2024	Initial issuance
02.0	25-02-2025	Editorial changes
03.0	12-03-2025	Editorial changes