



Monitoring report form for CDM project activity
(Version 06.0)

MONITORING REPORT

Title of the project activity	Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited	
UNFCCC reference number of the project activity	5554	
Version number of the PDD applicable to this monitoring report	04	
Version number of this monitoring report	02	
Completion date of this monitoring report	23/07/2018	
Monitoring period number	2	
Duration of this monitoring period	01/01/2013 to 31/10/2015	
Monitoring report number for this monitoring report	NA	
Project participants	M/s Lanco Kondapalli Power Private Limited	
Host Party	India	
Sectoral scopes	Sectoral Scope: 01, Energy industries (renewable - / non-renewable sources)	
Applied methodologies and standardized baselines	AM0029 ver. 3 - Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	-	450,821
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	2,351,664	

SECTION A. Description of project activity

A.1. General description of project activity

The scope of the project activity involves implementation and operation of a new natural gas fired grid connected Combined Cycle Power Plant (CCPP) of 366 MW capacity at Kondapalli near Vijayawada Andhra Pradesh by Lanco Kondapalli Power Private Limited (LKPPL).

The proposed CCPP operates on Brayton Cycle (Compressor & Gas Turbine) at top and Rankine Cycle (Heat Recovery Steam Generator & Steam Turbine) at bottom. The power generated from the project activity is sold on merchant basis to the state utilities in Southern, Western & Northern India. The project employs state of the art technology with estimated project life of 20 years.

The project comprises of the following major equipments

- One advanced F class, heavy duty, Gas turbine generator with a nominal output of about 234 MW at site condition and with Gas turbine Inlet air filter evaporative cooling system under operation.
- One Heat Recovery, natural circulation, three pressure vertical type Steam Generator
- One Steam Turbine Generator of around 132 MW (@ 30 deg C, 60% RH), multistage intermediate injection, condensing, type.

The project activity is designed to use natural gas as main fuel for power generation. Natural gas is sourced from the Krishna Godavari basin of Reliance Industries Limited (RIL). Gas Supply & Transportation Agreements have been executed with Reliance Industries Limited and Reliance Gas Transportation Infrastructure respectively, in this regard The power generated would be stepped up to 400 kV level by using 15/420 kV generator transformers. To enable the process a 400 kV Gas Insulated Switchgear (GIS) type substation is provided. A double circuit 400 kV transmission line has been proposed to export power to 400 kV receiving end substation of the Power Grid Corporation of India Limited (PGCIL) located at Nunna.

The project activity commenced Operation (COD achieved) on 01/08/2010.

Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period: 450,821 tonnes CO₂e

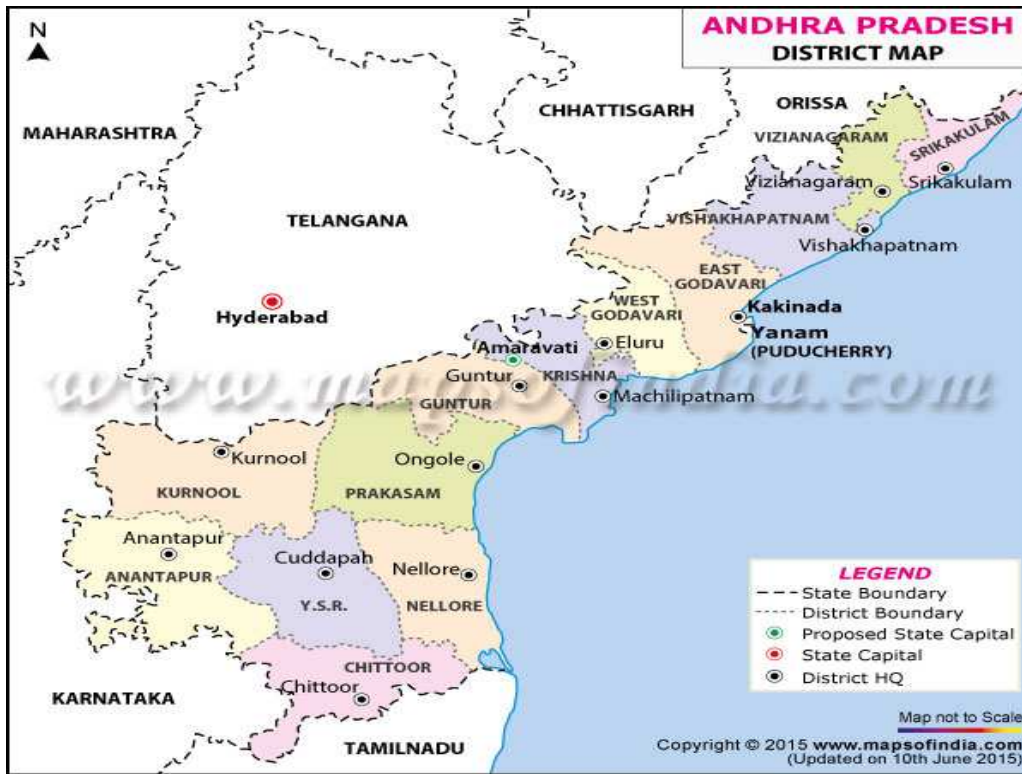
A.2. Location of project activity

(a) Host Party: India

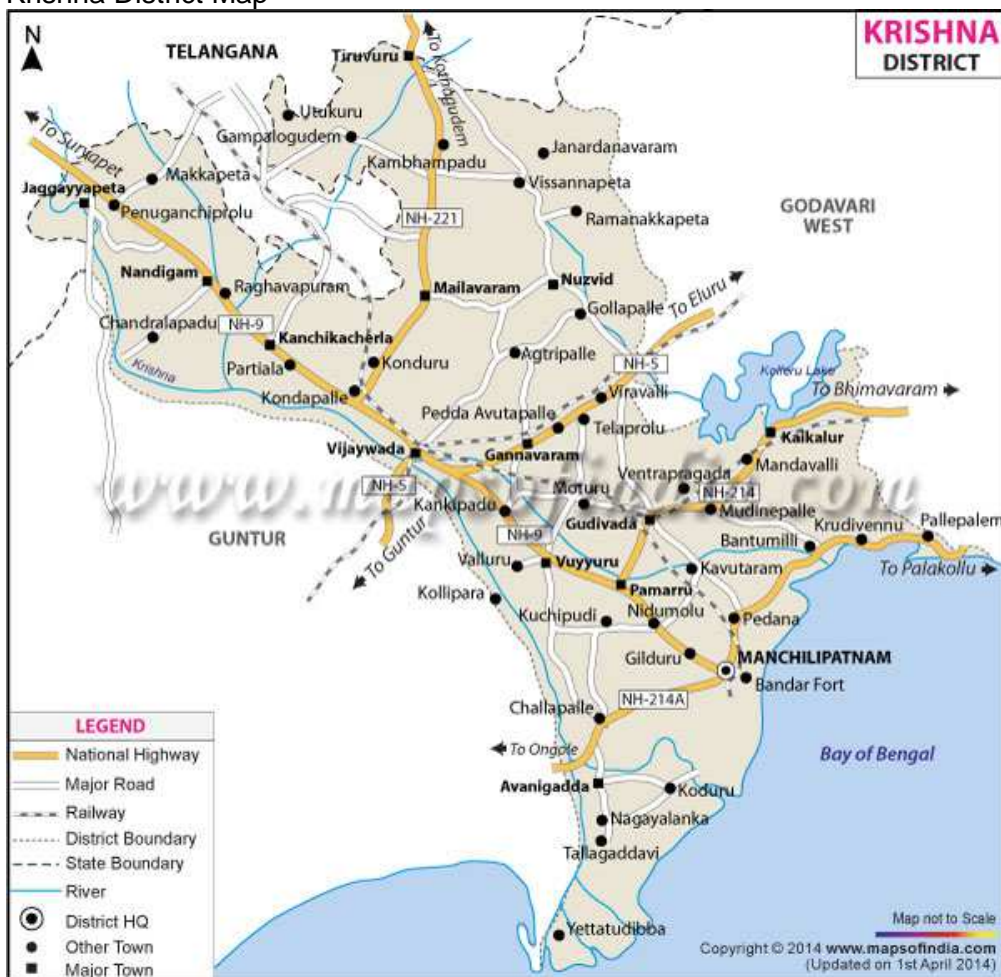
(b) Region/ State/ Province etc; Andhra Pradesh State

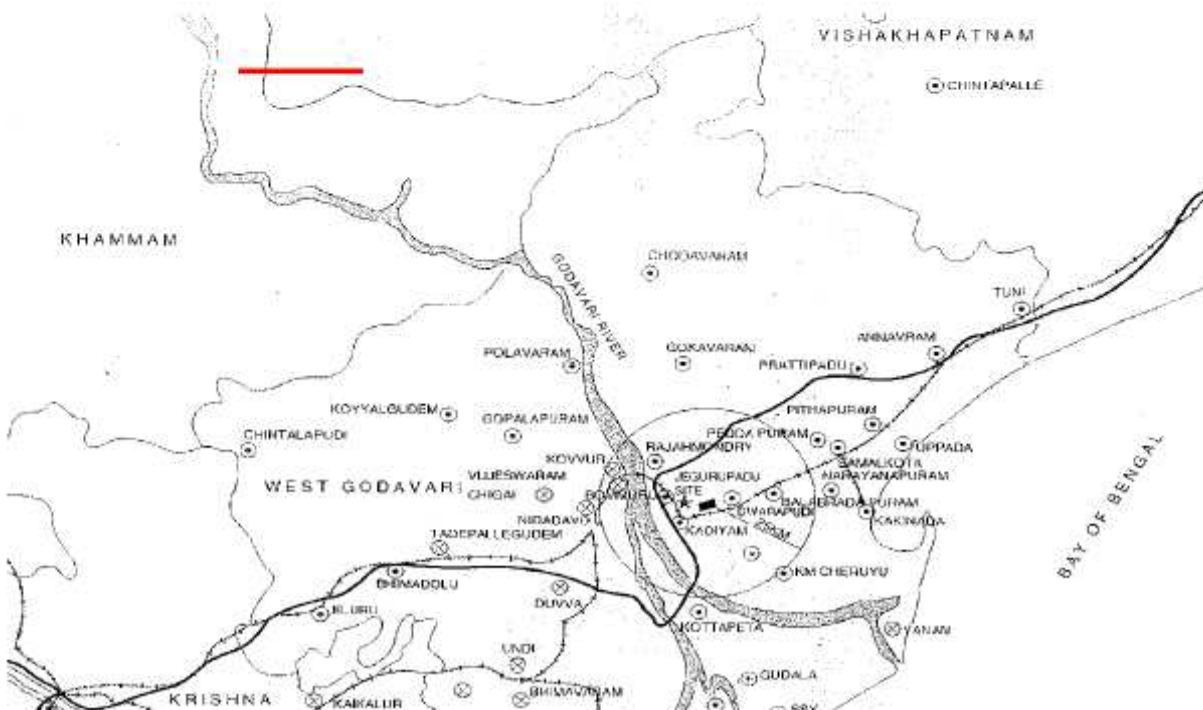
(c) City/ Town/ Community, etc: The project site is located at Village – Kondapalli, Krishna District of Andhra Pradesh

(d) Physical/ Geographical location: latitude 16°38'30.10" N and longitude 80°33'05.33" E)



Krishna District Map





A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India	M/s Lanco Kondapalli Power Private Limited	No

A.4. Reference to applied methodologies and standardized baselines

The approved baseline and monitoring methodologies applied for the project activity are:
AM0029 ver. 3 - Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas

Tools referenced by the methodology and applicable for the project activity:

The project activity also refers to the "Tools to calculate the emission factor for an electricity system" (Version 02.2.1, EB 63 ; Annex-19)

A.5. Crediting period type and duration

Type of crediting period: Fixed

Start date of Crediting period: 05/09/2012 to 04/09/2022

Length of the crediting period: 10 years

SECTION B. Implementation of project activity**B.1. Description of implemented project activity**

The project actual commissioning date 01/08/2010

The spatial extent of the project boundary includes the equipment that constitute the 366 MW CCPP at Kondapalli site of LKPPL as listed below and all power plants connected physically to the baseline grid as defined in "Tool to calculate the emission factor for an electricity system"

The equipments that form part of the project boundary are:

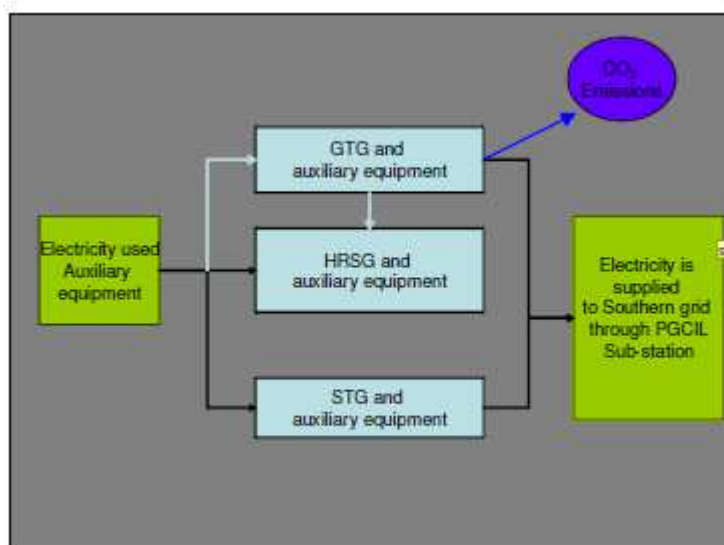
1. Gas Turbine Generator 234 MW capacity
2. Steam Turbine Generator 132 MW
3. GT/ST Generator & Unit aux. transformers
4. Auxiliary equipments of Gas Turbine & Generator - Lube oil system, Air intake system, Evaporative cooling system, Exhaust system, Heat Recovery Steam Generator Circulation Pumps, valves, HP/LP Bypass system, Piping etc.
5. Auxiliary equipments of Steam Turbine & Generator – Hydraulic and lube oil system condenser, Feed Pumps, Condensate extraction pumps

Technical specification of equipments involved in the project activity is as below

S.No	Equipment	Specifications	Special Features
1.	GTG	Make : GE, USA GTG is of advanced class industrial heavy duty type (Model 9FA) with dry low NOx technology capable of operating in combined cycle mode, Nominal output capacity: 234 MW at site condition (Dry Bulb Temperature - 32 deg.C; Design Wet Bulb Temperature- 25 deg. C; Relative Humidity (RH) = 70%) Gas Turbine Speed: 3000 rpm	Low NOx technology along with state of the art cooling. Thermal efficiency close to 53 58% (LHV)
2.	STG	Make: Harbin, China One steam turbine generator of output capacity 132 MW at site condition (Dry Bulb Temperature - 32 deg.C; Design Wet Bulb Temperature- 25 deg. C; Relative Humidity	Multistage, intermediate injection, condensing type steam turbine State of the art DCS control system

		(RH) = 70%) Steam Turbine Speed: 3000 rpm	
3.	HRSG	Make: Thermax , India Capacity: HP/IP/LP Flow 282.79/ 42/34.26 TPH; temperature 567.3/567/286.6 DegC; pressure 98.47/22.4/3.1 Bar	<ul style="list-style-type: none"> • Horizontal flue gas flow and natural circulation. • HRSGs are designed with three pressure stages to improve thermal efficiency, against conventional two pressure stages for similar application. • State of the art DCS control system.

The schematic diagram of project activity is as below



There are no such any event or situation occurred during current monitoring period which impact the applicability of methodology.

B.2. Post-registration changes

B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies or standardized baselines

Not Applicable

B.2.2. Corrections

Not Applicable

B.2.3. Changes to the start date of the crediting period

Not Applicable

B.2.4. Inclusion of monitoring plan

Not Applicable

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools

Not Applicable

B.2.6. Changes to project design

Not Applicable

SECTION C. Description of monitoring system

The Monitoring and Verification (M&V) procedures define a project specific standard against which the project's performance (i.e. GHG reductions) and conformance with all relevant criteria is monitored and verified. It includes developing suitable data collection methods and data interpretation techniques for monitoring and verification of GHG emission with specific focus on technical performance parameters. It also allows scope for review, scrutiny and benchmarking of all this information against reports pertaining to M & V protocols. The monitoring plan is prepared considering in following areas of Project Activity:

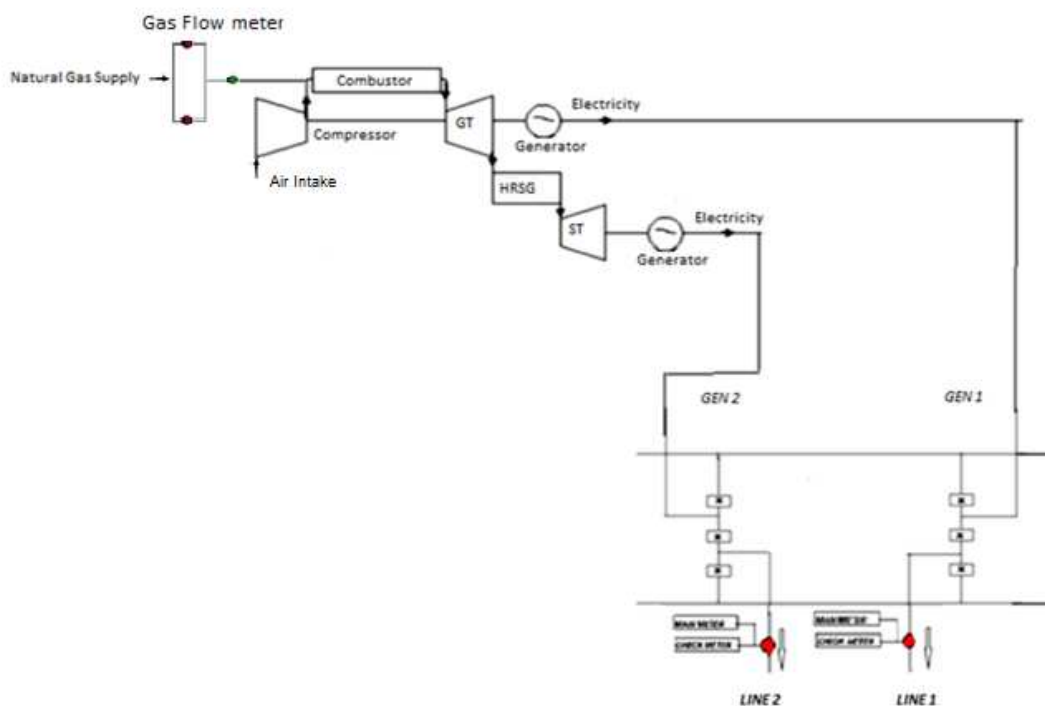
1. Establishing and maintaining the appropriate monitoring systems for consumption of NG and electricity generated by the proposed project.
2. Quality control at Project Activity and measurements.
3. Assigning monitoring responsibilities to personnel.
4. Data storage and filing system

Project Management team structure follows below operations

At the power plant level the project management team is basically engaged performing day to day activities related to operation and maintenance of the project. The team at the power plant level is primarily collecting the CDM data and maintaining all records related to CDM activities of the project.

The shift engineers is primarily responsible for primary data collection at the respective verticals & calibration. Shift engineer reports to Plant shift Manager (Operation). The Plant shift Manager (operation) review the data and reports to the Sr. Manager (operations). If the data reported by the shift engineers are found satisfactory the same is recorded in the Management Information System (MIS). In the event of any discrepancy, Sr. Manager (Operation) proposes the corrections in discussion with General Manager (O&M)-Plant. General Manager (O&M) reports to the Vice President (Operations).

The project management at the corporate level is basically engaged in overall project monitoring. The team at corporate level reviews power plant operations and also the data related to CDM activity of the project. General Manager-Finance (corporate is responsible for overall project co-ordination between the plant level and corporate office. Information pertaining to plant operation including CDM related data is reviewed by GM Finance. GM – Finance reports to whole time Director. In the event of any disconnect, GM – Finance suggest the corrective action to the plant officials in discussion with the whole time Director.

Schematic line diagram for metering locations:

The main meters involved in the project are 2 gas flow meter at supplier side, 1 check gas flow meter of PP, Gas chromatograph under supplier scope, electricity energy meters at substation

The meter and calibration details involved in the project activity are as below

Export/Import Energy Meter calibration details:

Location/Type	Meter Serial Number	Make	Accuracy class	Calibration date	Next calibration due date
Main meter LANCO Line 1 (PGCIL Vijaywada substation)	NP-5533-A	L & T	0.2s	08-05-2012	08-05-2017
Check meter LANCO Line 1 (PGCIL Vijaywada substation)	NP-5627-A	L & T	0.2s	09-05-2012	09-05-2017
Main meter LANCO Line 2 (PGCIL Vijaywada substation)	NP-5543-A	L & T	0.2s	09-05-2012	09-05-2017
Check meter LANCO Line 2 (PGCIL Vijaywada substation)	NP-5489-A	L & T	0.2s	08-05-2012	08-05-2017

The PGCIL substation meters are used for ER calculations and invoice is raised based on PGCIL substation meters. There is no any delay in calibration for energy meters and once in five years calibration frequency is followed during current monitoring period.

Gas flow Meter Calibration details:

Location/Type	Meter Serial Number	Make	Accuracy class	Calibration date	Next Calibration Due date
Reliance Gas Flow Meter Stream 1	08-040024	Emerson Process	±0.23%	20/02/2008, 15/04/2015	15-04-2016
Reliance Gas Flow Meter Stream 2	08-040025	Emerson Process	±0.23%	20/02/2008, 14/04/2015	14-04-2016
PP side Check Meter	9090448	Daniel Measurement	±0.3%	30/03/2009, 17/04/2015	17-04-2016

Considering the annual calibration frequency as mentioned in registered PDD, there is delay in calibration till April 2015. Since plant is not operational from March 2013 to May 2015. The error factor is applied till May 2015 conservatively. Since result of delayed calibration is within permissible limit, the accuracy class of 0.23% is applied conservatively.

Since PP side check meter data is used just as back up purpose and for current monitoring period, only gas supplier meters have been used for invoicing purpose, the error factor is applied to reliance gas flow meters. Since PP side check meter data is not used for current monitoring period in ER calculation sheet, no error factor is applied to PP side check meter.

Pressure Transmitter and Temperature Transmitter and Gas chromatograph calibration Details:

Location/Type	Meter Serial Number	Make	Accuracy class	Calibration Dates	Next Calibration Due date
Pressure Transmitter for Reliance Gas Flow Meter Stream 1	1793074	Rosemount	+/-0.075%	09/01/2013, 22/02/2013, 31/05/2015, 30/06/2015, 30/07/2015, 28/08/2015, 27/09/2015, 26/10/2015,	26-11-2015
Pressure Transmitter for Reliance Gas Flow Meter Stream 2	1793066	Rosemount	+/-0.075%		
Temperature Transmitter Reliance Gas Flow Meter Stream 1	1793065	Rosemount	± 0.1 °C		
Temperature Transmitter Reliance Gas Flow Meter Stream 2	1793985	Rosemount	± 0.1 °C		

Location/Type	Meter Serial Number	Calibration Dates	Next Calibration Due date
Gas Chromatograph	214842-1	09/01/2013, 22/02/2013, , 31/05/2015, 30/06/2015, 30/07/2015, 28/08/2015, 27/09/2015, 26/10/2015,	26-11-2015

As per registered PDD, there is no any calibration frequency mentioned for Pressure Transmitter, Temperature Transmitter and Gas chromatograph. Thus gas supplier follows calibration once in a month and for operational period only. The above calibration details are for project activity

operational period only. Gas data and NCV of gas is taken directly from Gas Supplier. The NCV of gas is measured by using online gas chromatograph installed by gas supplier. As per OEM guidelines, the metering equipment's are installed and maintained. Since PDD does not mention any specific calibration frequency, The calibration is in supplier scope and PP do not have any control on it.

As explained above no any calibration delay is applicable for current monitoring period.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	-
Unit	-
Description	-
Source of data	-
Value(s) applied	-
Choice of data or measurement methods and procedures	-
Purpose of data/parameter	-
Additional comments	-

Note –

All parameters of the section B.6.2 in the registered PDD are not reported or mentioned in the monitoring report as they are not part of ex ante parameters used for ER calculations as per monitoring plan and were only used to determine the most conservative baseline calculation approach in line with applied methodology. The carbon emission factor of Natural gas and oxidation factor of natural gas are part of monitoring plan as mentioned in section D.2 of MR.

Hence Table in section D.1 is kept as blank.

D.2. Data and parameters monitored

Data/Parameter	FCf,y
Unit	sm3 (million scum)
Description	Total volume of natural gas combusted in the project plant
Measured/calculated/default	Measured
Source of data	Fuel supplier data
Value(s) of monitored parameter	Please refer ER spreadsheet for monthly values of parameter
Monitoring equipment	Flow meters. Please refer the section c for meter details like make , serial number, accuracy class, calibration date and validity etc
Measuring/reading/recording frequency	Measuring Frequency: continuously Recording Frequency: daily (refer the ER sheet)
Calculation method (if applicable)	Not Applicable
QA/QC procedures	The value will be taken from gas tickets received from RGTIL, fuel flow meter shall be installed at plant site (RGTIL) and reading shall be recorded daily. The values will be correlated with fortnight joint ticket received from RGTIL fortnightly. The meters will be calibrated on annual basis and details are mentioned in section C of this MR.
Purpose of data/parameter	This data is used to calculate the project emissions

Additional comments	100% data will be monitored.
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Data/Parameter	NCV _{f,y}
Unit	kCal/scum
Description	The net calorific value (energy content) per volume unit of natural gas
Measured/calculated/default	Measured
Source of data	Fuel supplier data
Value(s) of monitored parameter	Please refer ER spreadsheet for monthly values of parameter
Monitoring equipment	The average net calorific value of natural gas consumed would be provided by gas supplier and recorded by LKPPL for verification.
Measuring/reading/recording frequency	Measuring Frequency: continuously Recording Frequency: Daily (refer the ER sheet)
Calculation method (if applicable)	Not Applicable
QA/QC procedures	Since this parameter is supplied by gas supplier, no any QA/QC procedure is required
Purpose of data/parameter	This data is used to calculate the project emissions
Additional comments	The data will be archived electronically

Data/Parameter	EF _{CO₂,f,y}
Unit	tCO ₂ /GJ
Description	CO ₂ emission factor of natural gas
Measured/calculated/default	Default
Source of data	IPCC 2006 Default values for carbon emission factor
Value(s) of monitored parameter	0.0561
Monitoring equipment	Default values for Carbon Emission Factor of Natural Gas as per Table 1.3 2006 IPCC Guidelines for National Greenhouse Gas Inventories, (Chapter 1, Volume 2, Energy) has been considered. This is also in conformity with the recommendations of the Initial National Communication (Chapter 2) where in it is mentioned that in the case of petroleum products and natural gas, the use of default emissions would be fairly accurate due to relatively low variation in quality of these fuels across the globe, as compared to coal. This data will be recorded annually based on latest IPCC information available and will be archived in electronic/paper form. Archived data will be kept up to two years from the end of crediting period or the last issuance, which ever occurs later.
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	-
QA/QC procedures	No additional QA/QC procedures are planned.
Purpose of data/parameter	This data is used to calculate the project emissions
Additional comments	Carbon Emission factor of natural gas will be updated as per the latest guidelines available from IPCC on national greenhouse gas inventory on year to year basis

Data/Parameter	OXID _f
Unit	Nil

Description	Oxidation factor of Natural Gas
Measured/calculated/default	Default
Source of data	IPCC
Value(s) of monitored parameter	1.0
Monitoring equipment	Default values as per Table 1.4 Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual has been considered. This is also in conformity with the recommendations of the GHG inventory information report submitted by India's Initial National Communication (Chapter 2) where in it is mentioned that in the case of petroleum products and natural gas, the use of default emissions would be fairly accurate due to relatively low variation in quality of these fuels across the globe, as compared to coal. This data will be recorded annually based on latest IPCC information available and will be archived in electronic/paper form. Archived data will be kept up to two years from the end of crediting period or the last issuance, whichever occurs later.
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	-
QA/QC procedures	No additional QA/QC procedures are planned.
Purpose of data/parameter	Calculation of project emissions
Additional comments	Oxidation factor of natural gas will be updated as per the latest guidelines available from IPCC on national greenhouse gas inventory on year to year basis.

Data/Parameter	$EG_{PJ,y}$
Unit	MWh
Description	Net electricity generated in the project plant
Measured/calculated/default	Measured
Source of data	From the electronic meters installed at the grid inter connection point at 400 kV PGCIL Nunna sub-station
Value(s) of monitored parameter	Please refer ER spreadsheet for monthly values of parameter
Monitoring equipment	As per actual meter readings taken jointly by LKPPL and PGCIL. The daily reading will be archived electronically. Monthly joint meter reading will be archived in paper form.
Measuring/reading/recording frequency	Measuring & Recording Frequency: Monthly
Calculation method (if applicable)	-
QA/QC procedures	The meters will be calibrated as per the standard procedures and documents for the same will be maintained throughout. The accuracy of energy meter is 0.2 class
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Data/Parameter	$EF_{BM,y}$
Unit	tCO ₂ /MWh
Description	Build Margin Emission factor for Southern grid
Measured/calculated/default	Measured

Source of data	"CO ₂ Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO ₂ Baseline Database for Indian Power Sector" version 12 dated May 2017
Value(s) of monitored parameter	0.9083
Monitoring equipment	Build Margin Emission Factor will be taken from the CO ₂ Baseline database published by CEA. In case the CEA database is not updated, the project proponent will calculate the Build Margin number using the available CEA data. This data will be computed annually based on latest available information and will be archived in electronic/paper form. Archived data will be kept up to two years from the end of crediting period or the last issuance which ever occurs later Though year specific emission factor is mentioned in CEA database, the lower value of build margin emission factor is considered as a conservative approach.
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	-
QA/QC procedures	No additional QA/QC procedures are planned.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Data/Parameter	EF _{BL,upstream,CH4}
Unit	tCO ₂ e/ MWh
Description	Emission factor for upstream fugitive methane emissions occurring in the absence of the project activity electricity generation
Measured/calculated/default	Calculated
Source of data	CEA CO ₂ baseline database or calculated value based on available CEA data in case the database is not updated
Value(s) of monitored parameter	0.01424
Monitoring equipment	EF _{BL,upstream,CH4} is calculated for power plants included in the Build Margin Inline with the baseline emission factor selection. Therefore in line with the AM0029 requirement of ex post determination of the Build Margin, the Emission factor for upstream fugitive methane emissions occurring in the absence of the project activity electricity generation (tCH ₄ or tCO ₂ e/ MWh) will also be determined ex post. This data will be computed annually based on latest available information and will be archived in electronic/paper form. Archived data will be kept up to two years from the end of crediting period or the last issuance, which ever occurs later.
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	-
QA/QC procedures	No additional QA/QC procedures are planned.
Purpose of data/parameter	Calculation of leakage emissions
Additional comments	-

Data/Parameter	COEF _{f,y}
Unit	tCO ₂ /m ³
Description	CO ₂ emission factor of Natural Gas - Quantity (COEF _{f,y})

Measured/calculated/default	Calculated
Source of data	Plant data and default value
Value(s) of monitored parameter	0.001974
Monitoring equipment	-
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	CO2 emission factor of Natural Gas Quantity (COEF f, y) is calculated using (i) calorific value of natural gas (ii) CO2 Emission coefficient for natural gas in energy units as follows: COEF f, y : CO2 emission factor of Natural Gas energy (tCO2e/TJ) * Calorific value of Natural Gas (KJ/SCM)
QA/QC procedures	No additional QA/QC procedures are planned.
Purpose of data/parameter	Calculation of project emissions
Additional comments	-

Data/Parameter	PE _y
Unit	t CO ₂
Description	Project emissions due to combustion of fuel
Measured/calculated/default	Calculated
Source of data	Calculated
Value(s) of monitored parameter	Please refer ER Spreadsheet for the same
Monitoring equipment	Project emission due to combustion of fuel is calculated using (i) Total volume of natural gas combusted in the project plant and (ii) CO2 Emission coefficient for natural gas as follows: $PE_y = \sum_f FC_{f,y} \times COEF_{f,y}$
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	-
QA/QC procedures	No additional QA/QC procedures are planned.
Purpose of data/parameter	Calculation of project emissions
Additional comments	-

D.3. Implementation of sampling plan

Not Applicable

SECTION E. Calculation of emission reductions or net anthropogenic removals

E.1. Calculation of baseline emissions or baseline net removals

The baseline emissions are calculated as below

$$\begin{aligned}
 BE_y &= EG_{PJ,y} * EF_{BL,CO_2,y} \\
 &= 952,067.33 \text{ MWh} * 0.9083 \text{ tCO}_2 / \text{MWh} \\
 &= 864,762.75 \text{ tCO}_2
 \end{aligned}$$

E.2. Calculation of project emissions or actual net removals

As per registered PDD, the project emissions are calculated as below

$$\begin{aligned}\text{COEF}_{f,y} &= \text{NCV}_{f,y} * \text{EFCO}_{2,f,y} * \text{OXID}_f \\ &= 0.035198 \text{ GJ/m}^3 * 0.0561 \text{ tCO}_2/\text{GJ} * 1 \\ &= 0.001974628 \text{ tCO}_2/\text{m}^3\end{aligned}$$

$$\begin{aligned}\text{PE}_y &= \text{FC}_{f,y} * \text{COEF}_{f,y} \\ &= 191268654.67 \text{ m}^3 * 0.001974628 \text{ tCO}_2/\text{m}^3 \\ &= 377,684.53 \text{ tCO}_2\end{aligned}$$

E.3. Calculation of leakage emissions

As per registered PDD, The total leakage emissions are Leakage emissions due to fugitive upstream CH₄ emissions (LE CH₄,_y) and Leakage emissions due to fossil fuel combustion / electricity consumption associated with the liquefaction, transportation, re -gasification and compression of LNG into a natural gas transmission or distribution system (LE LNG,CO₂,_y) are calculated as below

Thus,

$$\text{LE}_y = \text{LE CH}_{4,y} + \text{LE LNG,CO}_{2,y}$$

As per registered PDD, Leakage emissions due to fugitive upstream CH₄ emissions are calculated as below

$$\begin{aligned}\text{LECH}_{4,y} &= [\text{FC } f,y * \text{NCV } f,y * \text{EF NG, upstream,CH}_4 - \text{EG PJ,y} * \text{EF BL, upstream, CH}_4] * \text{GWPC}_{\text{CH}_4} \\ &= [191268654.67 \text{ m}^3 * 0.03519837 \text{ GJ/m}^3 * 0.000296 \text{ tCH}_4/\text{GJ} - 952,067.33 \text{ MWh} * 0.00056983 \text{ tCH}_4/\text{MWh}] * 25 \\ &= 36,256.44 \text{ tCO}_2\end{aligned}$$

Leakage emissions due to fossil fuel combustion / electricity consumption associated with the liquefaction, transportation, re -gasification and compression of LNG into a natural gas transmission or distribution system (LE LNG,CO₂,_y) is calculated as below

$$\begin{aligned}\text{LE LNG,CO}_{2,y} &= \text{FC LNG } y * \text{EF CO}_2, \text{ upstream,LNG} \\ &= 0 \text{ TJ} * 6 \text{ t CO}_2/\text{TJ} \\ &= 0 \text{ tCO}_2\end{aligned}$$

$$\begin{aligned}\text{LE}_y &= \text{LE CH}_{4,y} + \text{LE LNG,CO}_{2,y} \\ &= 36,256.44 \text{ tCO}_2 + 0 \text{ tCO}_2 \\ &= 36,256.44 \text{ tCO}_2\end{aligned}$$

E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)		
				Before 01/01/2013	From 01/01/2013	Total amount
Total	864,762.75	377,684.53	36,256.44	0	450,821 ¹	450,821

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante (t CO ₂ e)
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¹ This value is rounded down

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante (t CO ₂ e)
450,821	2,351,664

E.6. Remarks on increase in achieved emission reductions

Emission Reduction value estimated in ex-ante calculation of registered PDD is 830,133 tCO₂e per annum, whereas the estimated emission reduction from this monitoring period for 1034 days is 2,351,664 tCO₂e. Actual achieved emission reduction by this project during the same period is 450,821 tCO₂e. The net emission reduction for the reported period is 80.83% less than the estimated in the registered PDD. This difference has occurred due to less availability of NG gas during monitoring period and hence the project activity couldn't generate the estimated power. Therefore, less amount of power has been exported to the grid which resulted in lower number of emission reductions from project activity.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		