



Verification Report for

Project : TEIL Biomass Grid Supply Power Project, Chandanpur,
Uttar Pradesh

UCR Project ID : 264

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	September 07, 2023
Project Proponent	Triveni Engineering and Industries Ltd. (TEIL)
UCR Project Aggregator	Carbon Equalizers, Katni
Work carried by	Mr. Santosh Nair
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has performed verification of the “TEIL Biomass Grid Supply Power Project, Chandanpur, Uttar Pradesh, India”. The purpose of the project activity is to generate electricity using renewable biomass and thereby reduce GHG emissions by displacing fossil fuel dominated grid based electricity with biomass based renewable electricity.

Verification for the period: **01/01/2013 to 31/12/2022**

The GHG emission reductions were calculated on the basis of UCR Standard for Baseline Grid Emission Factor, CDM UNFCCC Small-scale Methodology, AMS-ID: Grid connected renewable electricity generation, Ver 18. The verification was done remotely by way of video calls / verification, phone calls and submission of documents for verification through emails.

SQAC is able to certify that the emission reductions from TEIL Biomass Grid Supply Power Project, Chandanpur, Uttar Pradesh, India, (UCR ID – 264) for the period **01/01/2013 to 31/12/2022** amounts to **66,046 tCO₂ (66,046 CoUs)**

Detailed Verification Report:

Purpose:

The project activity is the construction and operation of a power plant/unit that uses renewable energy sources and supplies electricity to the grid.

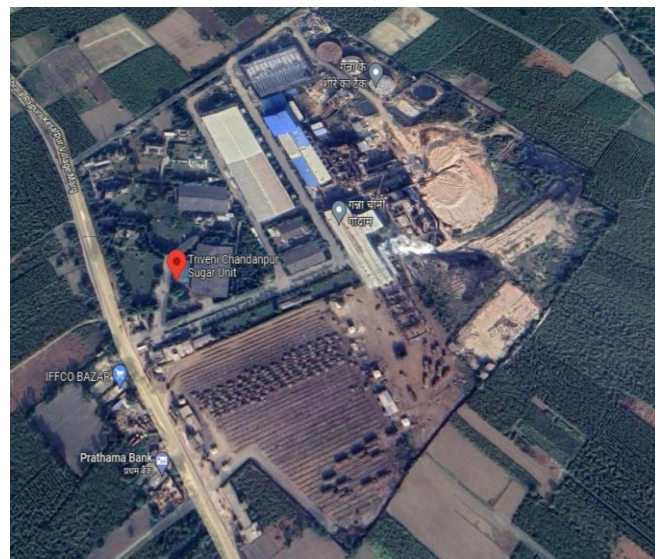
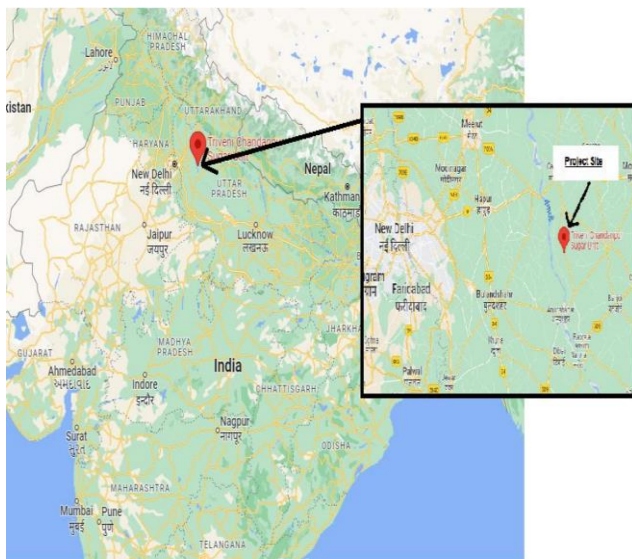
All the biomass used at the site qualifies under the definition of biomass residues as outlined in the methodology, i.e., the biomass residue is a by-product of agricultural activities and no other types of biomass is used. In the case of the project activity, the biomass residue is bagasse, which is generated from the crushing of sugar cane. Hence, the project activity is a grid-connected biomass (bagasse based) cogeneration power plant with a high pressure steam-turbine configuration. The high pressure boilers are fired by bagasse, a biomass byproduct from the sugar manufacturing process, to generate steam which in turn is fed to the steam turbine to generate power. The overall business is integrated with alcohol distillation and power generation. The power co-generation units generate biomass based power for captive consumption of the sugar plant and the sale of surplus power to the state grid. The project plant exports power to the Uttar Pradesh Power Corporation Limited (UPPCL), in absence of the project activity, UPPCL would have withdrawn electricity from northern regional grid.





Location of project activity:

Country : India
Village : Chandanpur,
Tehsil : Hasanpur,
District : Amroha,
State : Uttar Pradesh (UP)
Pin : 244241
Latitude : 28° 34' 20.496" N
Longitude : 78° 17' 25.512" E



**Scope:**

The scope covers verification of emission reductions from the project - TEIL Biomass Grid Supply Power Project, Chandanpur, Uttar Pradesh, India, (UCR ID – 264).

Criteria:

Verification criteria is as per the requirements of UCR Standard.

Description of project:

The project TEIL Biomass Grid Supply Power Project, Chandanpur, Uttar Pradesh is located at Village: Chandanpur, Tehsil: Hasanpur, District: Amroha, State: Uttar Pradesh (UP), Country: India (Pin: 244241).

The purpose of the project activity is to generate electricity using renewable biomass and thereby reduce GHG emissions by displacing the fossil fuel dominated grid based electricity with biomass based renewable electricity. The electricity produced by the project is directly contributing to climate change mitigation by reducing the anthropogenic emissions of greenhouse gases (GHGs) into the atmosphere by displacing an equivalent amount of fossil power at grid.

As per the power purchase agreement (PPA) between the state electricity board (UPPCL) and project proponent, dated 25/06/2012, the project activity generates a total of 10MW of power and supplies approximately 3 MW of this bagasse based power to the grid. The power generation is 11 KV, stepped up to 33 KV and synchronization is with the 132 KV substation of UPPCL (substation at Saidnagli, Ujhari).

The project activity comprises of the following:

BOILER DETAILS		
1	CAPACITY	90 TPH
	WORKING PRESSURE	45 KG/SQCM
	TEMPERATURE	440°C
	MAKE	IJT
	TYPE	DUMPING GRATE
	YEAR OF INSTALLATION	2006
2	CAPACITY	20 TPH
	WORKING PRESSURE	10.5 KG/SQCM
	TEMPERATURE	180°C
	MAKE	THEMOFAB
	TYPE	DUMPING GRATE
	YEAR OF INSTALLATION	2017



TG SET DETAILS	
TURBINE	10 MW
STRAIGHT BACK PRESSURE	
PRESSURE	44 KG/SQ CM
TEMPERATURE	440°C
EXT PRESSURE	2.5 ATA
RPM	8303
SR. NO.	TST-1100-27
ALTERNATOR	12500 KVA TYPE-TC145
VOLT	11000 VOLT 3 PHASE
CURRENT	656 AMP
FREQUENCY	50 Z
RPM	1500
MAKE	TDPS

Level of Assurance:

The verification report is based on the information collected through interviews conducted over video calls / phone calls, supporting documents provided during the verification, Project Concept Note (PCN) / Monitoring Report (MR), submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

Review of the following documentation was done by SQAC Verifier, Mr. Santosh Nair, who is experienced in such projects.

Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- JMR's
- Month wise Quantity of biomass residue combusted in the project plant.
- Commissioning Certificate
- Calibration Certificates
- Daily Manufacturing Report
- Data provided upon request of all the documents of the related project.
- Power Purchase Agreement

**Sampling:**

Not applicable

Person interviewed:

- | | |
|-----------------------|---|
| 1. Mr. Ashish Awasthi | : Triveni Engineering and Industries Ltd. |
| 2. Mr. Manish Saxena | : Triveni Engineering and Industries Ltd. |
| 3. Mr. Vipin Jindal | : Triveni Engineering and Industries Ltd. |
| 4. Mr. Amarnath | : Triveni Engineering and Industries Ltd. |

Corrective Action Requests (CARs)

Corrective Action Requests (CARs) and their resolutions are listed below:

There is only 1 CAR:

CAR 1:

The Net quantity of electricity supplied to the grid as per JMR & Invoice is not matching with the ER statement.

Response from Project Participant

The correction has been made in the ER sheet and accordingly Monitoring Report (V03) has been released after incorporating the related corrections.

Conclusion by Verification Team

Verified Monitoring Report (V03) for correction and found to be matching as per requirement.

Hence

Corrective Action Request CAR-1 is closed.



BILLING METER (JMR)

BILL METER READING OF GENERATING MILL
READING TO BE TAKEN ON THE FIRST WORKING DAY OF EVERY MONTH

No. _____

NAME OF THE GENERATING PLANT: **Triveni Engineering & Industries Ltd, Chandanpur**
Village : Chandanpur
Tehsil : Hasanpur
District : Amroha (Formerly J.P. Nagar) - 244255
State : Uttar Pradesh
UPPCL 132 KV S/S SAIDNAGLI, UHARI
District - Amroha (Formerly J.P. Nagar)

PLACE OF THE METER READING : _____
C.T. RATIO AVAILABLE/CONNECTED : _____
P.T. RATIO AVAILABLE/CONNECTED : _____
SCALE FACTOR IF ANY : _____
MULTIPLYING FACTOR (M.F.) : **0.06**
BILLING METER MAKES : **SECURE (APEX)**
METER NO. : **UPP 35479**
Reading Date : **01.03.2016** Time: 10:00 AM

DESCRIPTION	IMPORT METER READING (Mill to UPPCL)	EXPORT METER READING (UPPCL to Mill)
CURRENT READING (01.03.2016)	585910	35104
PREVIOUS READING (01.02.2016)	545893	35090
DIFFERENCE	40025	14
TOTAL MWH = DIFFERENCE x M.F. (0.06)	2401.5 MWH	0.84 MWH
TOTAL KWH = TOTAL MWH x 1000	2401500 KWH	840 KWH

OLD SEAL : B 3195807
NEW SEAL : B 2250302
MT 4115956

For Triveni Engg. & Industries Ltd.
(Sugar Unit, Chandanpur)
Authorised Signatory
(Triveni Engg. & Industries Ltd.)
Sugar Unit, Chandanpur

Note:
1. UPPCL shall maintain a daily logbook record hourly reading of the bill meter and check meter.
2. The Mill shall maintain a daily logbook to record hourly Co-generation and supply in KWH along with the schedule given by UPPCL Dispatcher.
3. If the Meter is changed, the reason, Date, Time of meter change and new Meter make and number must be recorded by both parties.

Triveni
ENGINEERING & INDUSTRIES LTD.
Sugar Unit- Chandanpur, P.O. Chagana- 244255, Tehsil - Hasanpur, Distt. Amroha (U.P.)
Telephone No. : 05924-267004- 05, 06 & 07830220828 Fax No. 05924- 267001, 267019
Correspondence Address : JINDAL COURIER SERVICE, Near Gurudwara, N.H. 24, Delhi Road,
Chaulpa Gajraula, Distt. Amroha (U.P.) Mob. No. : 9637057932

INVOICE OF POWER PURCHASE BY DISCOM/UPPCL FROM COGENERATION

For the Month of **FEBRUARY - 2017**
Monthly Purchase Bill No. Ref./Date : **7945 JCHP/TE&I. DL: 02/03/2017**

Name of Buyer : **U.P. Power Corporation Limited
11th Floor, Shakti Bhawan
14, Ashok Marg
Lucknow (UP)**

Name of Generating Plant : **M/s TRIVENI ENGINEERING & IND. LTD., VIII-
Chandanpur, Tehsil - Hasanpur, Distt - Amroha
(Formerly J.P. Nagar) (UP) - 244255**

Sl. No.	Description	Unit	Details
A	Energy Supplied as per JMR	Kwh	512520
B	M F as per UPERC Regulation		1.000376041
C	Energy Supplied including Line Losses (A*B)	Kwh	512712.73
D	Energy for Banking	Kwh	75000
E	Net Energy (C-D)	Kwh	437712.73
F	Rate of Energy	Rs./Kwh	4.59
G	Net Amount for Payment (E*F)	Rs.	2009101

Sl No	Banking Account	Unit	Details
A	Opening Balance	Kwh	180708.00
B	Energy Banked during month	Kwh	75000.00
C	Less 12.5% Banking Charges (B*0.125)	Kwh	9375.00
D	Balance (A+B+C)	Kwh	246333.00
E	Less Energy consumed during the month	Kwh	1260.00
F	Balance B/F (D-E)	Kwh	245073.00

(Rs Twenty Lakh, Nine Thousand, One Hundred, One)

Verified by : _____
Executive Engineer, Division
Electricity Distribution Division
Gajraula, Amroha (U.P.)

For Triveni Engg. & Industries Ltd.
(Sugar Unit, Chandanpur)
Authorised Signatory
Authorised Signatory of
Cogenerator

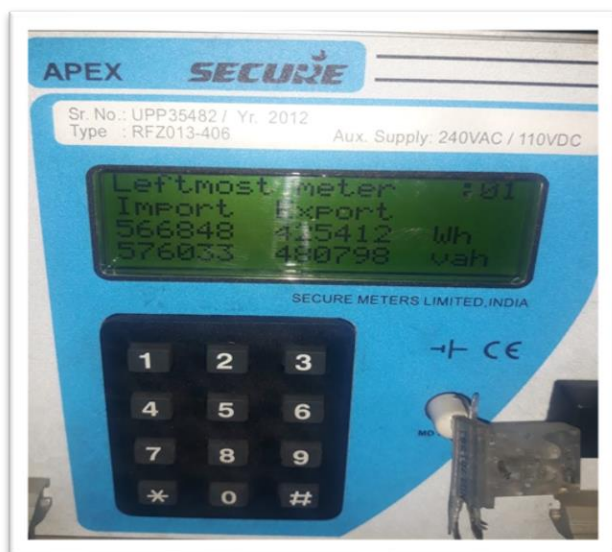
REGD. OFFICE : DEOBAND - 247554 DISTT. SAHARANPUR, UTTAR PRADESH

TRIVENI ENGINEERING & INDUSTRIES LTD., SUGAR UNIT- CHANDANPUR (AMROHA)
BOILER LOG BOOK
90 TPH BOILER

Sl. No.	Service Name	Unit	A-SHIFT	B-SHIFT	C-SHIFT	REMARKS
1	Steam Temp. at 100% Load	°C	180	180	180	
2	Steam Temp. at 50% Load	°C	180	180	180	
3	Water Temp. at 100% Load	°C	180	180	180	
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TRIVENI ENGINEERING & INDUSTRIES LTD., SUGAR UNIT- CHANDANPUR (AMROHA)
BOILER LOG BOOK
30 TPH BOILER

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64	Feed Water Temp. at 50% Load	°C				



Applied methodologies and standardized baselines:

UCR Protocol Standard Baseline

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-renewable sources)

TYPE I - Renewable Energy Projects (Small Scale)
UCR Positive List Environmental Additionality

SCALE - Small Scale

CATEGORY- **AMS I.D. Small Scale Consolidated Methodology**
"Grid connected renewable electricity generation", version 18.

This methodology is applicable to project activities that comprises renewable energy



generation units, such as renewable biomass involving:

(a) Supplying electricity to a national or a regional grid;

UCR CoU Standard is used to determine the baseline grid emission factor for the 2013-2022 period.

Application of methodologies and standardized baselines

- The project activity is a power generation project using a biomass (bagasse) and displaces CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. Since the project activity utilises biomass (bagasse) for the generation of power and supplies it to the local grid, it displaces fossil fuel (coal), and hence it meets the primary applicability criteria of the methodology.
- The project activity is included in the Positive List of UCR Approved Scope under the UCR CoU Standard.
- The total installed capacity of project activity is 10 MW, of which 3MW is supplied to the grid, which is acceptable as per the applied small-scale methodology, since the eligibility limit of 15 MW has been applied under this methodology.
- The installation of a new biomass residue fired power generation unit, which replaces or is operated next to existing power generation capacity fired with either fossil fuels or the same type of biomass residue as in the project plant (power capacity expansion projects) is also included in this methodology.
- The project activity is not a hydro power project. The project activity does not recover methane from landfill gas, waste gas, wastewater treatment and agro-industries.
- For the purposes of this methodology, heat does not include waste heat, i.e., heat that is transferred to the environment without utilization, for example, heat in flue gas, heat transferred to cooling towers or any other heat losses.
- The biomass used by the project plant is not stored for more than one year. The biomass used by the project plant is not processed chemically or biologically (e.g., through esterification, fermentation, hydrolysis, pyrolysis, bio- or chemical degradation, etc.) prior to combustion.



- The Project Activity uses biomass residues from a production process (e.g., production of sugar), and the implementation of the project does not result in an increase of the processing capacity of (the industrial facility generating the residues) raw input (e.g., sugar) or in other substantial changes (e.g., product change) in this process.
- The project activity unit does not co-fire fossil fuel and/or does not exceed the limit of 25% co-firing fossil fuel criteria as per the UCR Protocol for such projects.
- Biomass generated power is used for direct grid supply and for meeting the captive needs at the facility. The project activity involves the grid-connected bagasse-based electricity generation capacity involving the installation of facilities for allowing the export of electricity to the regional grid.
- Biomass is not sourced from dedicated plantations. The existing installed boilers are fired by bagasse, a byproduct of the sugarcane processing and a biomass residue.
- Bagasse is burnt in boilers as generated from the sugar mill and does not require any specific technology for its preparation before combustion. No fuel preparation equipment has been installed at site for preparation of bagasse. Hence no significant energy quantities are required to prepare the biomass residues for fuel combustion.
- The project activity also does not include any GHG emissions related to the decomposition or burning of biomass. The baseline heat emissions for the project activity are not included in the project boundary nor does it claim for emission reductions from heat.

Applicability of double counting emission reductions

The biomass boiler and condensing turbo-generator unit have unique IDs, which are visible on the unit. The calibration of Meters & Metering for electricity exported to the grid is implemented according to national standards and rules. All the records are documented and maintained by the project proponent.

The biomass boilers and turbines are constructed by the project proponent within the project boundary. The biomass boilers, turbines and meters have unique IDs, which is visible on the units.



The UCR project activity has never been issued voluntary carbon credits for the current 2013-2022 vintage years and there is no double counting of the credits. Additionally, the same has been stated in the undertaking provided in the Double Counting Avoidance Assurance Document (DAA) by TEIL dated 01.08.2023.

Project boundary, sources and greenhouse gases (GHGs)

The project boundary includes the physical, geographical site(s) of:

(a) the project power plant and all power plants connected physically to the electricity system that the project activity is connected to.

Thus, the project boundary includes the biomass-based steam generator, steam turbine generators and the Indian grid system.

Leakage Emissions (LE_y)

Leakage emissions is not applicable as the project activity does not use technology or equipment transferred from another activity.

Hence $LE_y = 0$



	Source	GHG	Included?	Justification/Explanation
Baseline	Grid connected fossil fuel-based electricity Generation	CO ₂	Yes	Main emission source.
		CH ₄	No	Minor emission source.
		N ₂ O	No	Minor emission source.
		Other	No	No other GHG emissions were emitted from the project.
Project	Greenfield Biomass Power Project Activity	CO ₂	No	No CO ₂ emissions are emitted from the project.
		CH ₄	No	Project activity does not emit CH ₄
		N ₂ O	No	Project activity does not emit N ₂ O
		Other	No	No other emissions are emitted from the project.

Project Emissions (PE_y)

The project activity has not considered and never used any fossil fuel (as can be verified from the given data during verification) to meet any requirement in the project activity; hence there is no emissions due to usage of fossil fuel.

Based on the biomass availability, there is sufficient biomass available in the region in less than 50 km surrounding the site of the project activity. It confirms that there is no such leakage anticipated. There is no other relevant source of leakage emission applicable to the project activity. Accordingly, the project activity does not result in any leakage emission.

Establishment and description of baseline scenario (UCR Protocol)

The baseline scenario identified is:

Renewable energy technologies that displace technologies using fossil fuels, wherein the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.



The baseline emissions due to displacement of electricity are determined by net quantity of electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh times the CO₂ emission factor for the electricity displaced due to the project activity during the year y in tons CO₂/MWh

Given that steam and electric power generation for internal consumption is part of the present project activity, emission reductions are only claimed from on-site incremental power generation that is injected to the grid. Therefore, the baseline scenario is the emission of GHG from the present electricity generation mix of the UPPCL grid in the northern region.

Emission Reductions (ER_y) is the emission reduction due to the project activity is calculated as the difference between the baseline emissions and the sum of the project emissions and the leakage:

$$ER_y = BE_y - (PE_y + LE_y)$$

BE_y= Baseline emissions in year y (tCO_{2e})

$$BE_y = EG_{grid,y} * EF_{grid,y}$$

Where:

EG_{grid,y} = Quantity of net electricity generation that is fed into the local grid as a result of the implementation of the project activity in year y (MWh)

EF_{grid,y} = The CO₂ emission factor for grid connected power generation in year y calculated using UCR Standard emission factor (0.9 tCO₂/MWh).

PE_y = Project activity emissions = 0

However, as per paragraph 31 under Section 5.2 of the given methodology, the PP must “For microscale and small-scale project activities, apply a default emission factor of 0.0142 tCO₂/tonne of biomass.

LE_y = Leakage emissions = 0

For this methodology, it is assumed that transmission and distribution losses in the electricity grid are not influenced significantly by the project activity and are therefore not accounted for and also the UCR grid emission factor is itself conservative.



Year	TOTAL POWER GENERATION (MWH)	TOTAL POWER EXPORT (MWH)	NET BAGASSE CONSUMPTION (TON)	B.E (tCO ₂)	PROJECT EMISSIONS (tCO ₂)	E.R (tCO ₂)
2013	24480.7	8227.2	91378.2	7404	1298	6106
2014	28115.54	10530.6	103269.68	9477	1467	8010
2015	29809.38	10384.98	108558.68	9346	1542	7804
2016	31506.56	10187.28	148668.3	9168	2112	7056
2017	32103.34	5803.106	208898.06	5222	2967	2255
2018	43808.29	14201.94	196771.98	12781	2795	9986
2019	43020.562	13482.42	201945.17	12134	2868	9266
2020	39669.386	7778.76	178402.14	7000	2534	4466
2021	31225.44	8731.146	172164.13	7858	2445	5413
2022	39914.48	9208.38	183279.6	8287	2603	5684
Total	303739.198	98535.812	1593335.94	88677	22631	66046

Total emission reductions (ER_y) = 66,046 tCO₂ (66,046 CoUs)

Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Standard for Baseline Grid Emission Factor, CDM UNFCCC Methodology ACM0006: Grid connected renewable electricity generation (Ver.16.0), the documents submitted during the verification including the Data, Project Concept Note (PCN) / Monitoring Report (MR), SQAC is able to certify that the emission reductions from the project - TEIL Biomass Grid Supply Power Project, Chandanpur, Uttar Pradesh, India (UCR ID – 264) for the period **01/01/2013 to 31/12/2022** amounts to **66,046 tCO₂ (66,046 CoUs)**

Santosh Nair
Lead Verifier (Signature)



Praful Shinganapurkar
Senior Internal Reviewer (Signature)

Date: 07/09/2023