



PROJECT CONCEPT NOTE
CARBON OFFSET UNIT (CoU) PROJECT



Title: 10 MW Bagasse based Co-generation by M/s Shreenath Mhaskoba sakhar karkhana limited (SMSKL) Dist. Pune, Maharashtra

Version 1.0

Date of PCN: 14/12/2024

1st CoU Issuance Period: 01/01/2013 to 31/12/2023 (11 years)

1st Crediting Period: 01/01/2013 to 31/12/2023 (11 years)

7 AFFORDABLE AND
CLEAN ENERGY



8 DECENT WORK AND
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



13 CLIMATE
ACTION



BASIC INFORMATION	
Title of the project activity	10 mw Bagasse based Co-generation by M/s Shreenath Mhaskoba sakhar karkhana limited (SMSKL) Dist: Pune, Maharashtra
Scale of the project activity	Small Scale
Completion date of the PCN	14/12/2024
Project participants	<p><u>Project Proponent:</u> M/s Shreenath Mhaskoba sakhar karkhana limited (SMSKL) shreenathnagar Patethan, Post. Rahu Tal. Daund Dist: Pune, Maharashtra</p> <p><u>Aggregator:</u> Climekare Sustainability Pvt Ltd. UCR ID: 336812961</p>
Host Party	India
Applied methodologies and standardized baselines	<p>CDM UNFCCC Small-scale Methodology AMS-I D: Grid connected renewable electricity generation, Ver 18 UCR Standard for Baseline Grid Emission Factor</p>
Sectoral scopes	01 Energy industries (Renewable/Non Renewable Sources)
Estimated total amount of average GHG emission reductions per year (ex-ante)	14,496 CoUs/yr (14,496 tCO/yr)

SECTION A. Description of project activity

A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

SMSKL is situated at Patethan, (Rahu) in between two highways (Namely Pune-Nagar & Pune-Solapur) & two Rivers (Namely Mula-Mutha & Bhima). Therefore water availability for irrigation is not constrained. The area of operation of the factory is spread over the Daund, Haveli & Shirur Tahasil of Pune District. Sufficient Cane availability is strength of our project. Chairman of the sugar factory Hon. Shri. Pandurang Abaji Raut had taken lead in establishment of sugar factory in 2003, after the Central Govt. had declared the Relicensing policy in 1998. The chairman was strongly supported by Mr. Vikas R. Raskar (Executive Chairman) & with the help of shareholders, colleagues & Cane Growers, the factory came into existence.

M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd., (SMSKL) is a progressive sugar mill in Maharashtra, set up in the year 2002-03 and is registered under the Government of Maharashtra, Registration no. 1622100210937. Shri. Pandurang Raut is Chairman and Managing Director of the mill. The present installed capacity of the sugar mill is 5000 TCD along with molasses based distillery unit of 80 KLPD. The management of the mill has undertaken extensive cane development activities in its area of operations, hence sugarcane area has increased over a period of time. Considering the increased availability of sugarcane, the mill has decided to expand its crushing capacity from 2,500 TCD to 5,000 TCD (operating capacity) and it was done.

The product of this sugar factory is Sugar Unit (Considering crushing capacity of 5000 TCD)

- i) White Sugar: ~690 TPD (considering 11.50% on cane)
- ii) Bagasse (generation 28.50 % on cane): ~1710 TPD
- iii) Molasses (4% on cane): 240 TPD
- iv) Press mud (4% on cane): 240 TPD.

M/s Shreenath Mhaskoba Sakhar Karkhana Ltd. commenced operations in 2003-04 with a 3 MW turbine, primarily to meet its own captive demand. In 2012, due to increased self-consumption, the project proponent installed a 10 MW turbine to serve for the self-consumption and remains for the export purposes, enabling the plant to export surplus energy to the Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL). This brought the total plant capacity to 13 MW, with 10 MW synchronized and commissioned with the grid for energy export.

In March 2016, the project proponent executed a Power Purchase Agreement (PPA) with MSEDCL to increase the power export capacity of the existing 10 MW turbine, without any additional capacity. The PPA letter is attached below. Subsequently, the Maharashtra Pollution Control Board (MPCB) granted consent to operate for 13 MW. However, the project's capacity remains 10 MW as per the commissioning certificates and the PPA copy.

The project 10 MW Bagasse based Co-generation by M/s Shreenath Mhaskoba sakhar karkhana Ltd. is a Biomass-based Co-Generation (co-gen) Power Project successfully commissioned by Maharashtra State Electricity Transmission Company Limited (MSETCL) and operational since 21-01-2012. The Project is owned by M/s Shreenath Mhaskoba sakhar karkhana Ltd. (hereby to be called as Project Proponent, PP).

Purpose of the UCR project activity:


The purpose of the project activity is to generate electricity using renewable biomass (i.e. Bagasse) 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. Hence, project activity is displacing the estimated annual net electricity generation i.e., **18,286 MWh** from the Indian grid system, which otherwise would have been generated by the operation of fossil fuel-based grid-connected power plants. The project activity doesn't involve any GHG emission sources. The estimated annual CO₂e emission reductions by the project activity are expected to be **14,496 tCO₂e**, whereas actual emission reductions achieved during the first CoU period shall be submitted as a part of first monitoring and verification.

The PP has set up an integrated sugar mill with sugar crushing capacity of 2500 TCD and installs new 10 MW turbine commissioning on 21/01/2012 Bagasse based Cogeneration power plant. This will remove the dependency of the sugar mill on the power supplied from the state grid. Power generated from this project activity will be used for meeting plant requirement. After fulfilling its captive energy requirement, remaining power will be sold to the state grid as per the Power Purchase Agreement / Energy Purchase agreement.

The Co-gen power project of 10 MW capacities will operate for a period of 160 to 180 days during the cane crushing season of the sugar plant. Actual number of mill operation days will be mentioned in the monitoring period. At designed level, the project will generate clean energy and after meeting the captive requirement export the surplus energy to Maharashtra State Electricity Transmission Company Limited (MSETCL). All the steam and power requirements of the sugar mill and co-gen power plant will be met internally from the project itself.

As per the power purchase agreement (PPA) between the state electricity board (MSETCL) and project proponent, dated **24/01/2011**, the project activity generates a total of 10 MW of power and supplies approximately 6 to 7 mw of this bagasse based power to the grid.

Commissioning certificate of 10 mw:


MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.

BARAMATI CIRCLE OFFICE
Vidya Comer Complex, Above RTO Office, Pencil Square, MIDC, Baramati (Dist-Pune)
☎ 02112-243443 (O), Fax- 02112-243443 (Ext.27), E-Mail: sebaramati@gmail.com


Ref:- SE/BRC/T/HT/ 16-1897 Date:- 16 APR 2012

CERTIFICATE OF SUPPLY

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/S Shreenath Mhaskoba Sakhar Karkhana Ltd, A/P-Shreenathnagar, Patethan, Tal- Daund, Dist.-Pune have commissioned their 10 MW Baggasse based co-generation project. Further they have started power evacuation from 20 Jan 2012 as per EPA agreement dated 24.01.2011 with M.S.E.D.C.Ltd.

This certificate is issued as per their request application dtd.06.04.12.


Superintending Engineer (BRC)
Baramati

Copy to:

M/S Shreenath Mhaskoba Sakhar Karkhana Ltd,
A/P-Shreenathnagar, Patethan, Tal- Daund, Dist.-Pune

The MSEDCL and M/s Shreenath Mhaskoba Sakhar Karkhana Ltd. (M/s SMSKL) have entered into Energy Purchase Agreement on dated 24.01.2011 for power purchase to the tune of 5.455 MW during Season from 10 MW bagasse based co-generation Project of M/s SMSKL located at Shreenathnagar Patethan, Post. Rahu, Tal. Daund, Dist. Pune.

M/s. SMSKL has requested MSEDCL on dated 15.03.2016 to consider the change in power export capacity from their bagasse based Co-generation project. The total installed capacity of the Co-generation will be 10 MW i.e. there will be no capacity addition.

NOW THEREFORE the parties hereto hereby agree as follows:

1. The First Amendment to the agreement dated 24.01.2011 shall come into effect from 15.03.2016.
2. The power generation scenario of M/s SMSKL is as under:

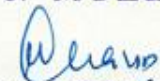
	Installed Capacity	Self Use		Power to Export	
		Season	Off-season	Season	Off-season
Existing	10 MW	3.795 MW	0 MW	5.455 MW (16.76 MUs)	0 MW
Revised	10 MW	3.00 MW	0 MW	7.00 MW (23.02 MUs)	0 MW

3. The tariff as determined by MERC on yearly basis shall be applicable to M/s SMSKL.
4. The Amended agreement shall be governed by and construed in accordance with Orders of Maharashtra Electricity Regulatory Commissions issued from time to time.

For Shreenath Mhaskoba Sakhar Karkhana Ltd.

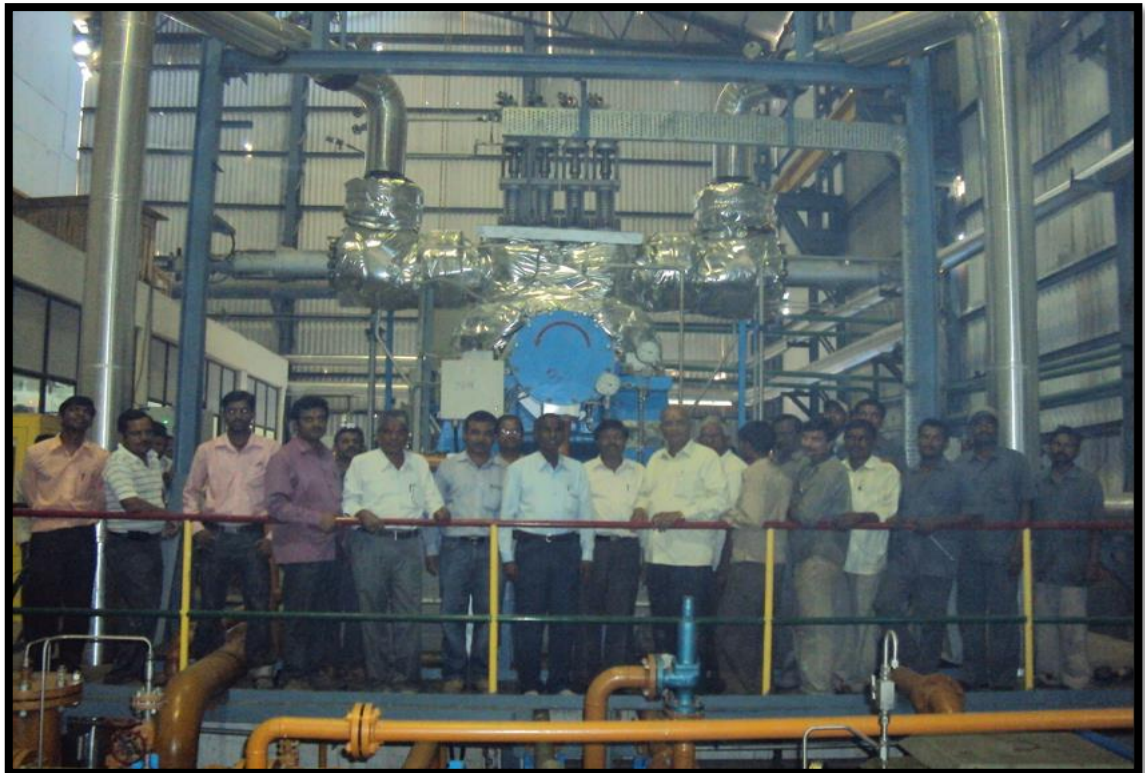

(P. A. Raut)
Chairman & M. D.

For MSEDCL


Executive Director (Comm)

The power generation is synchronization is with the Telewadi substation of MSETCL. 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 this 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 ethanol distillation and power generation.



Site Image

The project activity uses bagasse as fuel for in the cogeneration power unit, which is a renewable bio-mass fuel and does not add any net carbon-dioxide to the atmosphere because of the carbon recycling during growth of sugar cane. Therefore, the project activity leads to zero CO₂ on-site emissions associated with bagasse combustion. The biomass residue is not prepared prior to its use in the boilers, the bagasse is transferred from the crushing process directly to the boiler or to the storage yard, from the storage yard the bagasse is returned to the boiler without any material change.

The project activity also induces environmental and sustainable development benefits. The project activity has introduced efficient high pressure cogeneration technology to the Indian sugar industry; reducing power shortages in the state of Maharashtra India; and fostering sustainable economic growth through promoting energy self-sufficiency and resource conservation in India's sugarcane industry. The policy to grow in a sustainable manner with a commitment towards the environment has been adopted by M/s shreenath mhaskoba sakhar karkhana Ltd. The technology used in the project activity is highly replicable as the country's sugar mills produce large quantities of bagasse that could be efficiently utilized to generate power.

The export of electricity hence reduces GHG emissions by replacing the fossil fuel dominated grid based electricity with a renewable source of electricity. The high pressure boilers are fired by bagasse, a byproduct from the sugar manufacturing process to generate steam, which in turn powers all the steam turbines to generate electricity.

The power generated from the turbine is utilized for captive consumption and the surplus power of approximately 7MWh is exported to the grid.

The UCR project activity is the construction and operation of a power plant/unit that uses renewable energy sources and supplies renewable electricity to the grid. The UCR project activity is thus the displacement of electricity that would be provided to the grid by more-GHG-intensive means and provides long-term benefits to the mitigation of climate change. The UCR project activity qualifies under the environmental additional positive list of pre-approved project types under the UCR carbonincentive model for issuance of voluntary carbon credits.

A.2 Do Not Harm or Negative Impact test of the project activity>>

There are social, environmental, economic and technological benefits which contribute to sustainable development.

Social benefits:

- The project activity contributes to employment generation in the local area for both skilled & unskilled people for operation and maintenance of the equipment's.
- The Indian sugarcane harvesting has been affected amid the COVID pandemic situation

prevailing in the country, and M/s shreenath mhaskoba sakhar karkhana Ltd. has focused on continuing to work closely with the thousands of farmers who rely on this sugar factory for their sustenance and livelihoods. Project proponent has further stepped up efforts towards better cane development and farm management, through adoption of techniques such as intercropping, conservation of energy and water resources through drip irrigation, waste-water management, and rain-water harvesting.

- It has created steady higher value jobs and skilled workers at the facility. The project activity is contributing to the national energy security by reducing consumption of fossil fuels.
- The technology being used in the project is proven and safe for power generation. An increase in such kind of projects shall enable all the technology suppliers to continuously innovate and modernize on the technology front. The local people will know the technological advancement and will help in capacity building.
- M/s Shreenath Mhaskoba Sakhar Karkhana Ltd. organized numerous health campaigns and checking in the surrounding areas to ensure the well-being of the local community.

The factory is providing medical aid to the employees and their dependents at very low cost

It provides primary school educational facilities to the children of workers

The factory also arranges field demonstration to educate the farmers in sugarcane cultivation through application of scientific methods

It provides drip irrigation facilities to the sugarcane growers on subsidized basis

It provides insurance policy facilities for members and workers

To facilitate better transport of sugarcane, the factory has undertaken major program to construct roads in its area of operation



Environmental benefits:

- The project activity is a renewable energy project, which utilizes biomass as a fuel for grid power generation, a move that is voluntary and not mandated under current environmental laws of India. Since this project activity generates green energy in the form of power, it has positively contributed towards the reduction in (demand) use of finite natural resources like coal and oil, minimizing depletion and in turn increasing its availability to other important purposes. Therefore, this project activity helps to environment sustainability by reducing GHG emission in the atmosphere.
- Avoids global and local environmental pollution, leading to reduction of GHG emissions.
- Enabling regional grid to divert the electricity displaced by the project activity to the nearby needy areas.
- Indirect capacity building by providing a case example to other sugar mills in the region for switching to high capacity cogeneration configuration, for exporting electricity to grid.

In addition to the reduction in carbon dioxide (CO₂) emissions the project implementation will result in reduction of other harmful gases (NO_x and SO_x) that arise from the combustion of coal used in power generation. The project activity also leads to reduce ash generation since the ash content in bagasse is lower than that of Indian coal.

M/S Srinath Mhskoba Sugar Factory Ltd. Initiatives like tree plantation on barren land, roadside plantation etc. were initiated by the local community and actively involved in this endeavor.

Economic benefits:

- The project activity creates employment opportunities during the project stage and operation and maintenance of the boiler and turbines. A total of 711 families are dependent on this sugar mill, providing employment opportunities to these local families.
- The project activity helps in conservation of fast depleting natural resources like coal and oil thereby contributing to the economic well being of country as a whole.
- The various other benefits due to the project activity ensure that the project is contributing to the sustainable development of the region by bringing in green technologies and processes to a backward region. The technology is indigenous and by implementing such projects the country is showcasing its GHG mitigation actions in its efforts to combat climate change.

Health and Safety Measures:

SMSKL is committed to the Health and Safety of its all employees. It strives to provide hygienic & safe work place and continually improve the effectiveness of health & safety system.

To meet these objectives the SMSKL has;

- Complies with all relevant laws, regulations, statutory provisions and codes of practice
- Risks and hazards are continuously assessed to establish and correct risk control measures,

emergency preparedness, and risk mitigation and timely identification of deficiencies.

- Ensured safe handling, storage, use and disposal of all substance & materials which are classified as hazardous to health & environment.
- Created awareness amongst employees by providing appropriate training, motivation information's so as to create individual sense of duty, responsibility & participations and an institutionalize culture of continually improvement in safety, health & environment matters
 - The HOD has the responsibility to communicate the security policy to all concerned in his department
 - Empowered the employees at all levels to be responsible & accountable for their personal health & safety
- Fire protection system is provided in accordance to the LPA's regulations. A fire extinguishing system consists of a hydrant network
 - Factory has already a fire protection system including electric driven pump, one diesel engine pump, and one jockey pump, etc.
- Portable fire extinguishers shall be provided in strategic locations in new unit.

Images: Consent to operate

MAHARASHTRA POLLUTION CONTROL BOARD

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E-mail: mpcb@vsnl.net

Kalpataru Point, 2nd - 4th Floor,
Opp. Cine Planet Cinema,
Near Sion Circle, Sion (E)
Mumbai - 400 022

Red/LSI
Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000027324 / R/CAC-1711000970 Date: 28/11/2017.

To,
M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.,
Petethan, Post- Rahu, Tal. Daund,
Dist. Pune.

Subject : Renewal of Consent to Operate of 2500 TCD Sugar & 10 MW Co-generation unit with increase in CI under RED category.

Ref : 1. Consent to operate granted by the Board vide No. BO/CAC-CELL/UAN No. 000005469/R/CAC-1610000277 did. 07.10.2016.
2. Minutes of CAC meeting held on 16.09.2016.

Your application: UAN No. 0000027324.
Dated: 24.05.2017.

For: Renewal of Consent of 2500 TCD Sugar & 10 MW Co-generation unit under RED category, under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (M, H & T M) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

- The consent is granted for a period from 01.08.2017 to 31.07.2018.
- The actual total investment of the industry is Rs. 157.42 Cr. (As per C. A. Certificate submitted by industry)
- The Consent is valid for the manufacture of -

Sr. No.	Product / By-Product Name	Maximum Quantity in MT/M
1	Sugar	7500
2	Molasses	3040
3	Pressmud	2548
4	Bagasse	23000
5	Electric Power (Cogeneration)	10 MW

(The cane crushing Capacity of Sugar Industry shall not exceed 2500 TCD)

- Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	250 (Sugar 200 + Co-gen 50)	As per Schedule-I	50 CMD 100% recycle & 200 CMD on land for irrigation
2.	Domestic effluent	20	As per Schedule-I	On land for irrigation

M/s. Shreenath Mhaskoba SSK Ltd, UAN No. 0000027324 Page 1 of 7

MAHARASHTRA POLLUTION CONTROL BOARD

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Kalpataru Point, 3rd & 4th floor, Sion- Matunga Scheme Road No. 8, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai - 400 022

RED/LSI
Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000033992/E/CAC-1803601133 Date: 27/03/2018

To,
M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.,
Petethan, Post- Rahu,
Tal. Daund, Dist. Pune.

Subject: Consent to Establish for Expansion for proposed 2500 TCD Sugar and 3 MW Co-generation unit under RED category.

Ref : Minutes of CAC meeting held on 31.10.2017.

Your application: 0000033992.
Dated: 24.10.2017.

For: Consent to Establish for Expansion for proposed 2500 TCD Sugar & 3 MW Co-generation unit, under RED category, under Section 25 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 5 of the Hazardous Wastes (M, H & T M) Rules 2008 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

- The consent is granted for a period up to- commissioning of the unit or 5 yrs. whichever is earlier.
- The Proposed capital investment of the industry is Rs. 97.38 Cr. (As per the C. A. certificate submitted by industry)
- The Consent is valid for the manufacture of -

Sr. No.	Product / By-Product Name	Maximum Quantity
1	Crystal Sugar	7500 MT/M
2	Bagasse	23000 MT/M
3	Molasses	3040 MT/M
4	Press Cake (pressmud)	2548 MT/M
5	Electricity (Co-Gen)	3 MW.

(The cane crushing Capacity of Sugar Industry shall not exceed 2500 TCD)


- Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	30 (Sugar-20 + Co-gen-10)	As per Schedule-I	Co-gen. 10 CMD shall be 100% recycle & 20 CMD remaining on land for gardening
2.	Domestic effluent	20	As per Schedule-I	On land for gardening

M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd., UAN No. 0000033992 Page 1 of 8

MAHARASHTRA POLLUTION CONTROL BOARD

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Website: <http://mpcb.gov.in>
Email: cac-cell@mpcb.gov.in



Kalpatur Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

No:- Format 1.0/CAC/CELL/UAN No.MPCB-CONSENT-0000092888/CR: 2008001104 Date: 28/08/2020

To,
M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.,
Gat No. 141, A,B,C,D,Shreenathnagar, Patethan,
Daund,Pune.

Sub: **Renewal of Consent for 5000 TCD & 13 MW Co Generation unit Under L.S.I RED Category**

Ref: 1. Renewal of consent granted by the Board vide no.CAC-CELL/UAN NO. MPCB-CONSENT-0000074581/CO/CAC-1910000493 dtd. 10.10.2019.
2. Minutes of CAC Meeting dtd. 19.06.2020.

Your application No.MPCB-CONSENT-0000092888 Dated 10.06.2020

For: grant of Consent to Renewal under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions as detailed in the schedule I, II, III & IV annexed to this order:

- The Consent to Renewal is granted upto: 31.07.2021
- The capital investment of the industry is Rs.125.43 Crs. (As per C.A Certificate submitted by industry).
- Consent is valid for the manufacture of:

Sr No	Product	Maximum Quantity	UOM
1	White Sugar	15000	MT/M
2	Molasses	6080	MT/M
3	Bagasses	46000	MT/M
4	Pressmud	5096	MT/M
5	Co-generation	13	MW

The Cane crushing capacity of Sugar unit shall not exceed 5000 TCD


Conditions under Water (P&CP) Act, 1974 for discharge of effluent:

Sr No	Description	Permitted in CMD	Standards to be achieved	Disposal
1.	Trade effluent	500	As per Schedule-I	220 CMD is recycled and 280 CMD on land for irrigation

Shreenath Mhaskoba Sakhar Karkhana Ltd./CR/UAN No.MPCB-CONSENT-0000092888 Page 1 of 4

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
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Email: cac-cell@mpcb.gov.in



Kalpatur Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

No:- Format 1.0/CAC-CELL/UAN No.MPCB-CONSENT-0000074581/CO/CAC-1910000493 Date: 10/10/2019

To,
M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.,
Gat No. 141,Shreenathnagar, Patethan.,
Daund,Pune-Pune

Sub: **1st Consent to Operate for expansion for 2,500 TCD crushing & 3 MW Co-gen with renewal of existing Consent to Operate of 2,500 TCD crushing & 10 MW Co-gen i.e. for 5,000 TCD cane crushing capacity and 13 MW Co-Gen Capacity. Under L.S.I RED Category**

Ref: 1. Consent to Operate accorded by Board vide No. Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000050052 /R/CAC-1901001168 dtd 17.01.2019
2. Consent to Establish accorded by Board vide No. Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000033992 /R/CAC-1803001133 dtd 22.03.2018
3. Environmental Clearance vide I No. F.No. J-11011/189/2016-IA-III) dtd. 22/02/2019.

Your application No.MPCB-CONSENT-0000074581 Dated 13.06.2019

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & for: grant of Consent to Operate under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions as detailed in the schedule I, II, III & IV annexed to this order:

- The Consent to Operate is granted upto: 31.07.2020
- The capital investment of the industry is Rs.119.39 Crs. (As per C.A Certificate submitted by industry).
- Consent is valid for the manufacture of:

Sr No	Product/Co-Product Name	Maximum Quantity	UOM
1	White Sugar	15000.00	MT/M
2	Molasses	6080.00	MT/M
3	Bagasses	46000.00	MT/M
4	Pressmud	5096.00	MT/M
5	Co-generation	13.00	MW

The Cane crushing capacity of Sugar Industry shall not exceed 5000 TCD.

Conditions under Water (P&CP) Act, 1974 for discharge of effluent:

Sr No	Description	Permitted	Standards to be achieved	Disposal
1.	Trade effluent	500	As per Schedule-I	(Sugar 440 + Co-Gen-60) CMD shall be recycled 100 % and Remaining on land for irrigation.
2.	Domestic effluent	35	As per Schedule-I	Recycle/Reuse on land for gardening.

5. Conditions under the Air (P&CP) Act, 1981 for air emissions:

Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	Boiler (70 TPH)	1	As per Schedule-II
1	Boiler (32 TPH)	1	As per Schedule-II


6. Conditions about Non Hazardous Wastes:

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	Boiler Ash	25	MT/Day	--	Sale to Brick manufacture

Shreenath Mhaskoba Sakhar Karkhana Ltd./CR/UAN No.MPCB-CONSENT-0000074581 Page 3 of 8

MAHARASHTRA POLLUTION CONTROL BOARD

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Kalpatur Point, 2nd - 4th Floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E) Mumbai - 400 022

Red/LSI
Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000050052/R/CAC-1901001168 Date: 17/01/2019

To,
M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.,
Petethan, Post- Rahu, Tal. Daund,
Dist. Pune.

Subject : **Renewal of Consent to Operate of 2500 TCD Sugar & 10 MW Co-generation unit with increase in CI under RED category.**

Ref : 1. Consent to operate granted by the Board vide No. BO/CAC-CELL/UAN No. 0000027324/R/CAC-1711000970 dtd. 28.11.2017.
2. Minutes of CAC meeting held on 28.11.2018.

Your application: UAN No. 0000050052.
Dated: 02.06.2018.

For: Renewal of Consent of 2500 TCD Sugar & 10 MW Co-generation unit under RED category, under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (M, H & T M) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions as detailed in the schedule I, II, III & IV annexed to this order:

- The consent is granted for a period from 01.08.2018 to 31.07.2019.
- The actual total investment of the industry is Rs. 98.37 Cr. (As per C. A. Certificate submitted by industry)
- The Consent is valid for the manufacture of -

Sr. No.	Product / By-Product Name	Maximum Quantity in MT/M
1	Sugar	7500
2	Molasses	3040
3	Pressmud	2548
4	Bagasse	23000
5	Electric Power (Cogeneration)	10 MW


(The cane crushing Capacity of Sugar Industry shall not exceed 2500 TCD)

4. Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	250 (Sugar 200 + Co-gen 50)	As per Schedule-I	50 CMD 100% recycle & 200 CMD on land for irrigation
2.	Domestic effluent	15	As per Schedule-I	On land for irrigation

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701
Fax: 24024068 /24023515
Website: <http://mpcb.gov.in>
E-mail: mpcb@vsnl.net



Kalpatur Point, 2nd - 4th Floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E) Mumbai - 400 022

Red/LSI
Consent No: Format 1.0/BO/CAC-CELL/UAN No. 000005469 /R/CAC-1610000277 Date: 07/10/2016

To,
M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.,
Petethan, Post- Rahu, Tal. Daund,
Dist. Pune.

Subject : **Renewal of Consent of Consent to Operate of 2500 TCD Sugar & 10 MW Co-generation unit with increase in CI under RED category.**

Ref : 1. Consent to operate granted by the Board vide No. BO/CAC-CELL/EIC-PN-25773-15/R/CAC-14626 dtd. 20.11.2015.
2. Minutes of CAC meeting held on 16.09.2016.

Your application: UAN No. 000005469.
Dated: 29.05.2016.

For: Renewal of Consent of 2500 TCD Sugar & 10 MW Co-generation unit under RED category, under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (M, H & T M) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions as detailed in the schedule I, II, III & IV annexed to this order:

- The consent is granted for a period from 01.08.2016 to 31.07.2017.
- The actual total investment of the industry is Rs. 107.46 Cr. (Existing CI is Rs. 56.83 Cr. + Additional CI is Rs. 50.63 Cr.) (As per C. A. Certificate submitted by industry)
- The Consent is valid for the manufacture of -

Sr. No.	Product / By-Product Name	Maximum Quantity in MT/M
1	Sugar	7500
2	Molasses	3040
3	Pressmud	2548
4	Bagasse	23000
5	Electric Power (Cogeneration)	10 MW

(The cane crushing Capacity of Sugar Industry shall not exceed 2500 TCD)

4. Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	250 (Sugar 200 + Co-gen 50)	As per Schedule-I	50 CMD 100% recycle & 200 CMD on land for irrigation
2.	Domestic effluent	20	As per Schedule-I	On land for irrigation

A.3 Location of project activity >>

Country: India

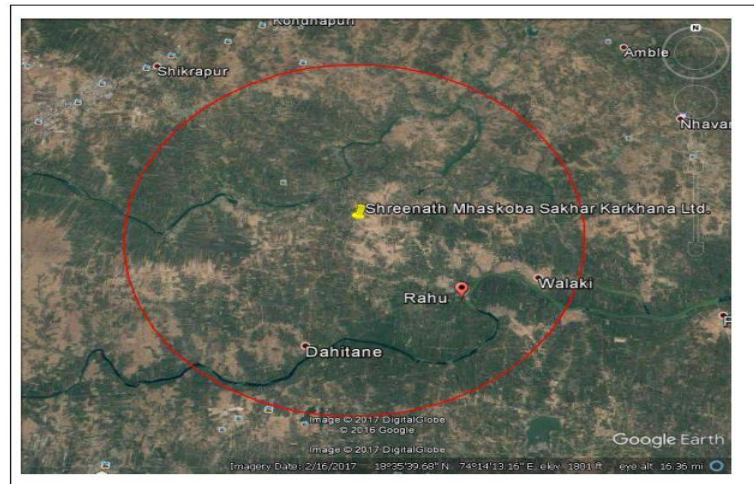
Village: at Shreenathnagar, Patethan,

Tehsil: Daund, District: Pune,

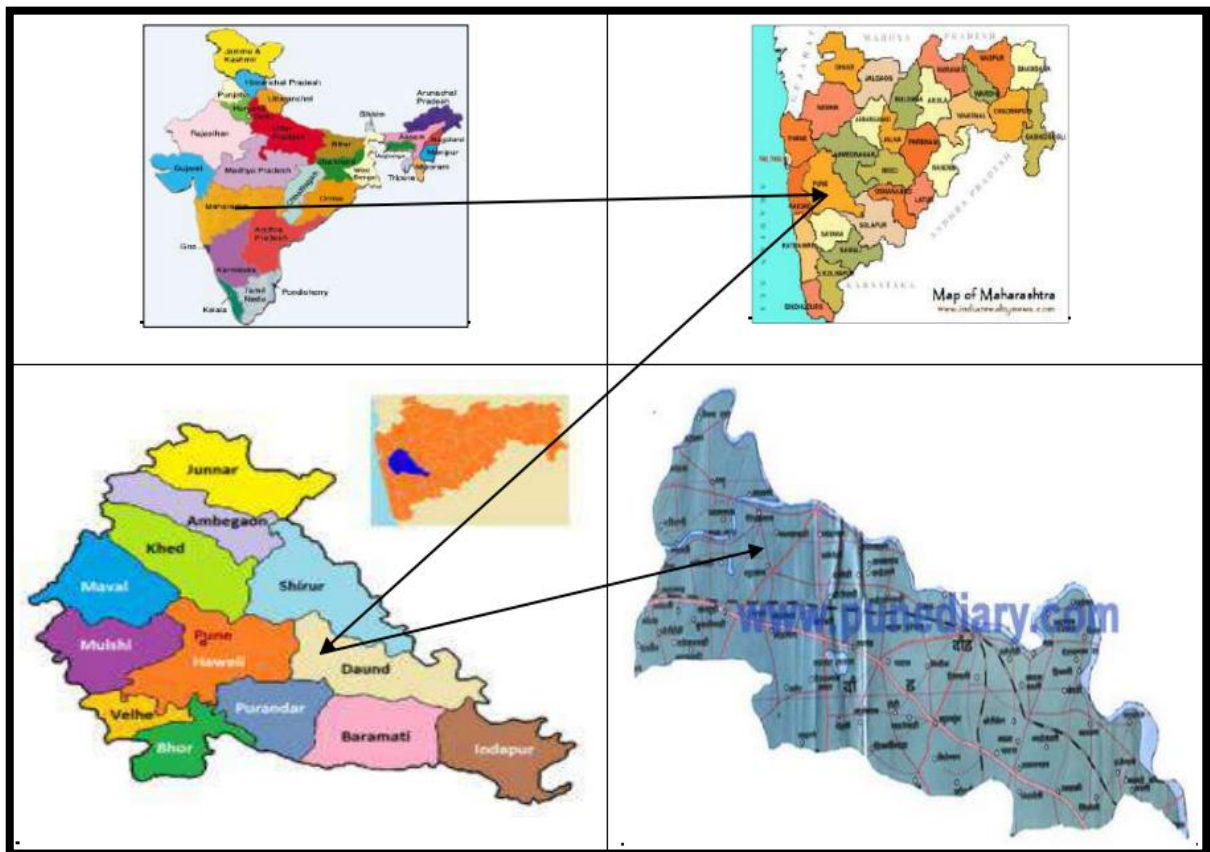
State: Maharashtra,

Latitude: 18°36'20.38"N : Longitude: 74°13'39.60"E

(551 m above mean sea level.)



Satellite image of project site.



A.4 Technologies/measures >>

The UCR project activity is a grid-connected bagasse based cogeneration power plant with a high pressure steam-turbine configuration. The UCR project activity is the electricity generation capacity and the installation of facilities for allowing the export of electricity to the regional grid.

The project activity comprises of the following:

STEAM AND POWER GENERATION	
a) State no. of and type of boiler and each boiler, its working pressure, heating surface, degree of super heater and details of soot blower.	1 No. Make: Walchandnagar Water tube boiler No : T 5120 Hearing surface : 3732 m ² (including economizer) Super Heater Primary HAS : 200 m ² Super Heater Secondary HAS : 216 m ² Degree of super heater : 440+ ₋ 20 ⁰ C Details of soot blower : Rotary type lane blowing Evaporation M.C.R. : 70 T/HR
b) Feed Water treatment give particular arrangement if any for softening feed water	R.O. Plant Make : Nikhil Aquatech Capacity : 10 m ³ /hr. Permitted water: 5.5 m ³ /hr. Rejected water : 4.5 m ³ /hr.
c) Venturi wet scrubber	Airsys Consulting Pvt. Lyd. GAS FLOW = 72 m ³ /sec Inlet temp = 160 ⁰ C Dust Load at inlet = 4000 mg/Nm ³ Outlet emission level = Below 50 mg/ Nm ³ . Pressure drop across scrubber = 170 mmWC Quantity of water = 440-450 m ³ /hr Scrubber shell = dia 6136 *11000 meter height.
d) Economizer and feed water heater	Two number, Type – Integrated coil type. Heating surface – 1210 m ²
Chimney State its of bricks or steel and dia of steel and dia. Height and type of draught.	Type: RCC for 50 TPH and 70 TPH boiler. Dia – 3.5 meter O.D * 2.9 meter, I.D *65 meter height. Draught- Balanced

Details of I.D / F.D Fan			
	H.P/RPM	FAN SPEED	CAPACITY
I.D Fan (2 nos)	250/1487	905	40 m ³ /sec

F.D Fan (1Nos)	150/1482	950 rpm	42.5m ³ /sec
Secondary air fan	100 / 1440	1440 rpm	7 m ³ /hr
Forced Draught : 40 mmWC;		Induced Draught : 135 mmWC	
Boiler Feed water pump-		KSB Pump – 2 Nos Type – HAD 080/010 SR. NO. 99727.37254/100 Q 100 m ³ / H N 2987 RPM Head – 650 Motor drive Output 275 kw RPM - 2971	
Feed water tank		Capacity – 35 m ³	
Condensate transfer tank		2 Nos Drive – 40 H.P / 2900 rpm Capacity – 75 me / HR Head – 65 meter KIRLOSKAR MAKE	
Condensate storage tank		02 Nos Cylindrical steel tank of 150 m ³ cap and 280 m ³ cap.	

a) State no. of and type of boiler and each boiler, its working pressure, heating surface, degree of super heater and details of soot blower.	1 No: Make : Hi-Tech (Bajaj power equipment) Water tube boiler no : MR 16774 Working pressure – 45 kg/cm ² Heating surface – 2345 m ² (Including super heater) Details of soot blower blowing- Retractable and rotary type lane Steam temperature at super heater outlet – 440 +5 °C Evaporation M.C.R – 50 T/ HR.
b) Feed Water treatment give particular arrangement if any for softening feed water	70 TPH Boiler and 50 TPH boiler common RO plant
c) Venturi wet scrubber	Airsys Consulting Pvt. Ltd. GAS FLOW = 48 m ³ /sec Inlet temp = 160°C Dust Load at inlet = 4000 mg/Nm ³ Outlet emission level = Below 50 mg/ Nm ³ . Pressure drop across scrubber = 170 mmWC

	Quantity of water = 310-320 m3/hr Scrubber size = dia 5270 *9500mm height.
e) Economizer and feed water heater	one number, Type – Integrated coil type. Heating surface – 461 m2

Details of I.D / F.D Fan			
	H.P/RPM	FAN SPEED	CAPACITY
I.D Fan OLD	240/1450	750	38 m3/sec
I.D Fan NEW	75/988	988	11 m3/sec
F.D Fan (1Nos)	120/1440	1480 rpm	22m3/sec
P.A Fan (1 Nos)	50/1440	1440 rpm	3 m3/sec
Secondary air fan	30 / 1440	1440 rpm	7 m3/hr
Boiler Feed water pump-	KSB Pump – 2 Nos Type – HAD 065/012 Q - 50 m3 / H N - 2980 RPM Head – 680 rpm Motor drive – 200HP/ 2970 rpm		
Deaerator	Capacity – 110 m3 Type – Spray and tray type Deaerator tank volume – 110 m3 Tank Height – 11m (50 TPH and 70 TPH boiler common)		
Feed water tank	Capacity – 120 m3 Tank height – 11m (32 TPH and 70 TPH boiler common)		
Condensate transfer tank	2 Nos Drive – 20 H.P / 2900 rpm N – 2900 rpm Q – 60 m3/H Head – 60 meter KSB MAKE		
Condensate storage tank	02 Nos Cylindrical steel tank of 150 m3 cap and 280 m3 cap. (50 TPH and 70 TPH boiler common)		

10 MW TG SET	
Turbine	Co—gen use Make : Kirloskar ebara pumps ltd. Type : R 10-3.7 / 0.25 Sr. No. : 11 0005

	Year of manufacture : 2011 Power : 10 MW Rotor / generator speed : 7500 / 1500 rpm Rated temp : 425 °C Inlet steam pressure : 37.7 kg/cm ² Exhaust pressure : 1.5 kg/cm ²
AC GENERATOR	Type : Cylindrical rotor type / TC 145 Type of excitation system : Brushless KW : 10000 KVA : 12500 RPM : 1500 Volts : 11000 +/- 10% Current : 656 Frequency : 50 Hz +/- 5 % No. of phase : 3 Ph Power factor : 0.8 Lag No. of poles : 4 Insulation class : F Exciter Voltage : 173.3 V Exciter Current : 669.5 Amp Frequency : 150 Hz Revoluation : 1500 rpm

The plant is designed with all other auxiliary plant systems like

- Bagasse handling system with storage and processing arrangements,
- High pressure feed water heaters,
- Ash handling system,
- Water treatment plant,
- Compressed air system,
- Air conditioning system,
- Main steam, medium pressure and low pressure steam systems,
- Fire protection system,
- water system which include raw water system, circulating water system, condensate system, De-Mineralized water system and service with potable water system and
- The electrical system for its successful operation.

The technology of biomass residue based high steam pressure power generation itself is known and in use in India. The use of high pressure system allows for increased efficiency levels for electricity generation.

Process: Sugar

♣ *Extraction of Juice*

Sugarcane is passed through preparatory devices like knives for cutting the stalks into fine chips before being subjected to crushing in a milling tandem comprising 4 to 6 roller mills. In the best milling practice, more than 95% of the sugar of cane gets extracted into the juice.

♣ *Clarification*

The treated juice on boiling fed to continuous clarifier from which the clear juice is decanted while the settled impurities known as mud is sent to rotary drum vacuum filter for removal of unwanted stuff called filter cake. It is discarded or returned to the field as fertilizer.

♣ *Evaporation*

Clear Juice is evaporated from 15o Bx. to 60o Bx. in evaporator Distillation • Analyzer column • PR Column • RE Column • Exhaust column • Reboiler Fermentation Yeast propagate with molasses in sterilize separate Vessel Molasses Storage (MS tank) Molasses weighed and diluted Spent wash/ Spentlees Yeast sludge to biocompost CO2 Scrubber RS/ENA/AA & Fusel oil Prefeasibility Report: M/s. Shreenath Mhaskoba Sakhar Karkhana Ltd.

♣ *Pan boiling*

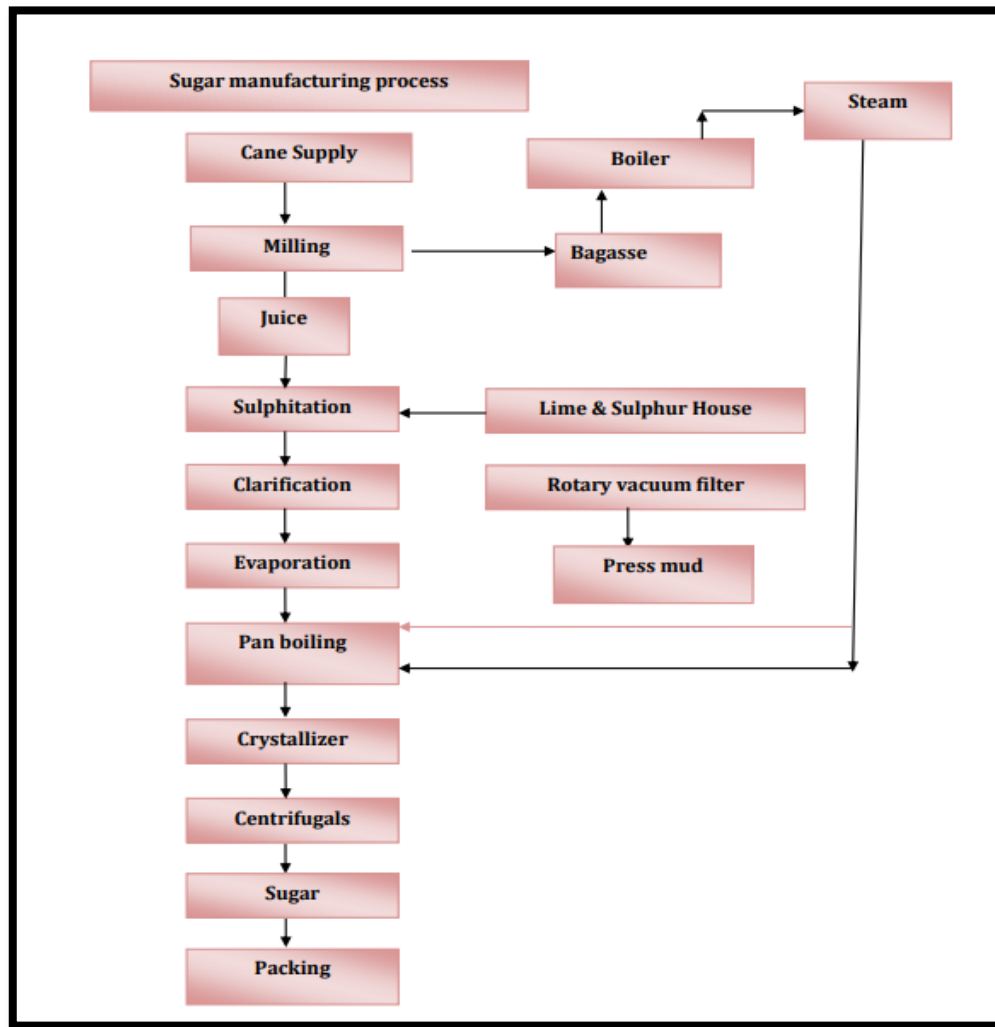
The syrup is again treated with sulphur dioxide before being sent to the pan station for crystallization of sugar. Crystallization takes place in single-effect vacuum pans, where the syrup is evaporated until saturated with sugar. At this point “seed grain” is added to serve as a nucleus for the sugar crystals, and more syrup is added as water evaporates.

♣ *Centrifugation*

The massecuite from crystallizer is drawn into revolving machines called centrifuges. The perforated lining retains the sugar crystals, which may be washed with water, if desired. The mother liquor “molasses” passes through the lining because of the centrifugal force exerted and after the sugar is “purged” it is cut down leaving the centrifuge ready for another charge of massecuite.

♣ *Gradation & Packing*

The final product in the form of sugar crystal is dropped through pan section and this sugar is graded and picked. Gradation of sugar depends on the size of crystal viz. Small (S), Medium (M) and Large (L)



Process Details: Cogeneration.

1. Collection and Preparation of Bagasse

- **Harvesting:** Sugarcane is harvested and transported to the sugar mill.
- **Crushing:** The cane is crushed to extract juice, leaving behind fibrous bagasse.
- **Drying:** Bagasse is dried to reduce moisture content, enhancing its calorific value.

2. Combustion

- **Feeding into Boiler:** The dried bagasse is fed into a specially designed boiler.
- **Combustion:** Bagasse is burned in the boiler, generating heat energy.

Heat Recovery: The heat generated from combustion converts water into high-pressure steam.

3. Power Generation

- **Steam Turbines:** The high-pressure steam drives steam turbines connected to generators.
- **Electricity Production:** The turbines generate electricity, supplying power to the sugar mill and, surplus feeding it into the local power grid.

4. Steam Utilization

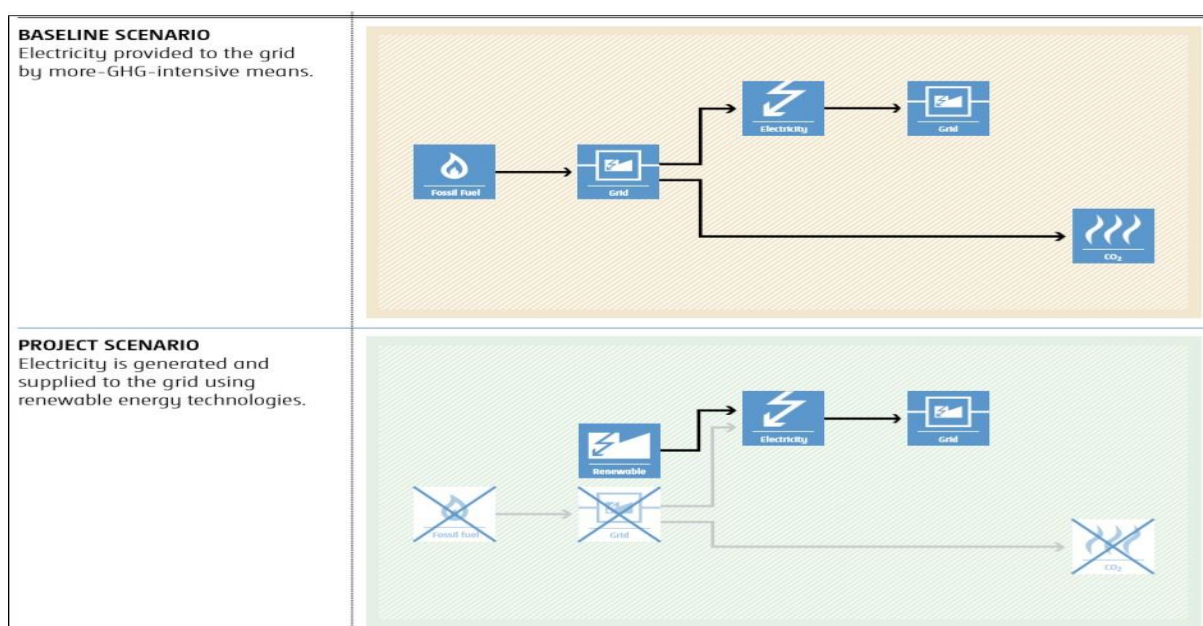
- **Process Steam:** The steam is used for various processes within the sugar mill, such as juice heating, evaporation, and crystallization.

A.5 Parties and project participants >>

Project activity does not involve any public funding from Annex I Party, which leads to the diversion of the official development assistance.

Party (Host)	Participants/Aggregator
India	Project Owner: M/s Shreenath Mhaskoba sakhar karkhana limited (SMSKL) shreenathnagar Patethan, Po. Rahu Tal. Daund Dist: Pune, Maharashtra Aggregator: Climekare sustainability Pvt. Ltd. 336812961

A.6 Baseline Emissions>>



The approved baseline methodology has been referred from the indicative simplified baseline and monitoring methodologies for selected small scale UNFCCC CDM project activities that involve generation and export of power to the local or national grid using biomass.

Typical activities, under AMS ID comprise of renewable energy generation units, such as renewable biomass, including:

- (a) Supplying electricity to a national or a regional grid; or are new plants, capacity expansions, energy efficiency improvements or fuel switch projects.

The applicable methodology and simplified modalities and procedures for small scale CDM project activities is “*the baseline scenario is displacement of more-GHG-intensive electricity generation in grid.*”

Emission coefficient of fuel used in the baseline scenario:

The CO₂ emission factor for grid connected power generation in year y calculated using UCR Standard emission factor is 0.9 tCO₂/MWh for the period 2013-2023.

A.7 Debundling>>

This project is not a debundled component of a larger registered carbon offset project activity.

SECTION B. Application of methodologies and standardized baselines

B.1 References to methodologies and standardized baselines >>

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

TYPE I - Renewable Energy Projects (Small Scale)

UCR Positive List Environmental Additionally.

CATEGORY - *AMS I.D. Small Scale Consolidated Methodology*

“Grid connected renewable electricity generation”, version 18

This methodology is applicable to project activities that comprise renewable energy generation units, such as renewable biomass involving:

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

Applicability 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 utilizes 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 5.6 MW 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.

B.2 Applicability of double counting emission reductions >>

The biomass boilers and turbines are constructed by the project proponent within the project boundary. The biomass boilers, turbine and energy meters have unique IDs, which is visible on the units. The Monitoring Report has the details of the same and will be provided to the UCR verifier during the verification process.

There is no double accounting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the generation/feeding point with the grid.

Hence the UCR project activity has never been issued voluntary carbon credits for the current 2013- 2023 vintage years and there is no double counting of the credits envisioned. Additionally, the same has been stated in the undertaking provided in the Double Counting Avoidance Assurance Document (DAA) by M/s shreenath mhaskoba sakhar karkhana Ltd.(SMSKL)

B.3 Project boundary, sources and greenhouse gases (GHGs)>>

Total land available with the factory = 76 acres Of which ~50 to 55 acres is allocated/reserved for industrial activities,

Land occupied for existing sugar unit;

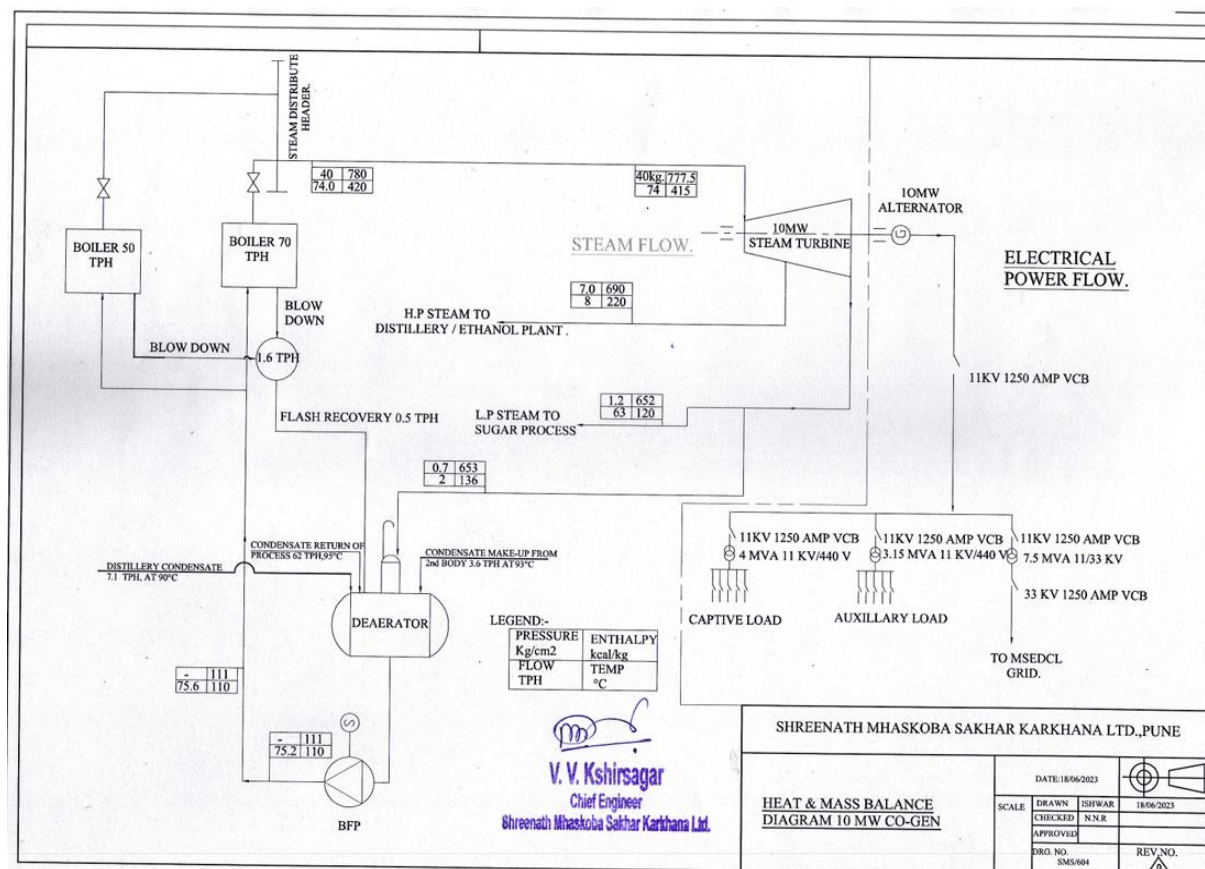
Including ancillary units such as storage, ETP, cane and bagasse yard, etc.= ~ 17 acres

Land occupied by existing distillery (including its ancillary units such as storage, compost yard, etc.)= ~ 10.4 acres (41,602 sq. m.)

Existing Greenbelt: 12 acres.

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 (Bagasse) -based steam generator, steam turbine generators and the Indian grid system.

	Source	GHG	Included?	Justification/Explanation
Baseline	GHG Emissions from fossil fuel in Grid Baseline Power Generation	CO ₂	Included	Major source of GHG emissions
		CH ₄	Excluded	Excluded for simplification. This is conservative
		N ₂ O	Excluded	Excluded for simplification. This is conservative
	Uncontrolled burning or decay of surplus biomass residue	CO ₂	Excluded	Excluded for simplification. This is conservative
		CH ₄	Excluded	Excluded for simplification. This is conservative

		N ₂ O	Excluded	Excluded for simplification. This is conservative
Project Activity	Emissions from Biomass Project Activity	CO ₂	Included	Small amount of fossil fuel (wood) co-fired with biomass (in the beginning of season to fire the boiler) is included as a project emission source and electricity import during the turbine tripping.
	On-site fossil fuel and electricity consumption due to the project activity (stationary or mobile)			
	Off-site transportation of biomass during cultivation	CH ₄	Excluded	No fossil fuel / electricity is consumed at the project site due to the project activity. No biomass residue from off-site will be used for the project activity Excluded for simplification. This is conservative Excluded for simplification. This is conservative
	Combustion of biomass residue for electricity and / or heat generation			
	Storage of biomass residue	N ₂ O	Excluded	Excluded for simplification. This is conservative

B.4 Establishment and description of baseline scenario >>

The baseline scenario identified at the PCN stage of the project activity is:

“The electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.”

The baseline emissions due to displacement of electricity are determined by net quantity of electricity exported 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. Therefore, the baseline scenario is the emission of GHG from the present electricity generation mix of the MSEDCL grid.

Hence baseline emissions include CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid- connected power plants and the addition of new grid-connected power plants.

Emission Reductions (ER_y) 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 (t CO₂e)

As mentioned in the methodology the baseline emissions are calculated as follows:

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

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 for the 2013-2020 period). Also, for the vintage 2021-2023, the combined margin emission factor calculated from CEA database in India results into higher emission than this UCR default value. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.

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

$$BE_y = 18286 * 0.9 = 16,457.$$

Project Emissions (PE_y)

Project Emissions is calculated as follow:

$$PE_y = PE_{Biomass,y} + PE_{FF,y} + PE_{GR1,y} + PE_{GR2,y} + PE_{CBR,y} + PE_{BG2,y}$$

Where,

PE_y	=	Project emissions in year y (tCO ₂)
$PE_{Biomass,y}$	=	Project emissions associated with the biomass and biomass residues in year y (t CO ₂)
$PE_{FF,y}$	=	Emissions during the year y due to fossil fuel consumption at the project site (t CO ₂)
$PE_{GR1,y}$	=	Emissions during the year y due to grid electricity imports to the project site (t CO ₂)
$PE_{GR2,y}$	=	Emissions due to are duction in electricity generation at the project site in year y (t CO ₂)
$PE_{CBR,y}$	=	Emissions from the combustion of biomass during the year y (t CO ₂ e)
$PE_{BG2,y}$	=	Emissions from the production of biogas in year y (tCO ₂ e)

In this project activity electricity is imported from the grid ($PE_{GR1,y}$) which will count as project emissions. This amount will be deducted from the total value of emission reduction post-ante.

CO₂ emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum F_{Ci,j,y} \times COEF_{i,y}$$

Where:

$PE_{FC,j,y}$ = Are the CO₂ emissions from fossil fuel combustion in process j during the year y (tCO₂/yr)

$F_{Ci,j,y}$ = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr)

$COEF_{i,y}$ = Is the CO₂ emission coefficient of fuel type i in year y (tCO₂/mass or volume unit)

i = Are the fuel types combusted in process j during the year y

$$COEF_i = NCV_i \times EFCO2,$$

Where:

$COEF_i$, = Is the CO₂ emission coefficient of fuel type i in year y (tCO₂/mass or volume unit)

NCV_i , = Is the weighted average net calorific value of the fuel type i in year y (GJ/mass or volume unit)

$$= \text{NCV of wood is } 15.5 \text{ TJ/kg (15.5 GJ/tCO}_2\text{)}$$

$EFCO2_{,,}$, = Is the weighted average CO₂ emission factor of fuel type i in year y (tCO₂/GJ)

$$= \text{Co}_2 \text{ emission coefficient For wood is } 100500 \text{ kg/TJ (0.1005 tCO}_2\text{/GJ)}$$

(Confirmed from 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)

i = Are the fuel types combusted in process j during the year y

= fuel type combusted in process is wood.

$$COEF_i = NCV_i \times EFCO2_{,,}$$

$$= 0.1005 \times 15.5$$

$$= 1.557$$

$$PEFC_{j,y} = \sum FCI_{j,y} \times COEF_{i,y}$$

$$= 50 \times 1.557 = 78 \text{ tCO}_2\text{/yr}$$

Project emission due to biomass / Bagasse:

According to the UCR guidelines / standards **For microscale and small-scale project activities**, a default emission factor of **0.0142 tCO₂/tone** of biomass or biomass residue or biomass based briquettes, to determine the final amount of emission reductions that can be claimed per vintage.

$$PE_y = 132580 \times 0.0142 = 1883 \text{ tCO}_2\text{/yr}$$

Leakage Emissions (LE_y)

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.

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

Hence $LE_y = 0$

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

$$ER_y = 16457 - (1961 + 0)$$

$$ER_y = 14,496 \text{ CoU's/yr.}$$

B.5 Prior History>>

The **Bagasse-based Co-generation Power Project by SMSKL** was initially considered under the **Clean Development Mechanism (CDM)** with two separate prior considerations:

1. **9 February 2012:** Named "Bagasse-based Co-generation Power Project by SMSKL."
2. **10 February 2012:** Named "10 MW Bagasse-based Co-generation Power Project by SMSKL."

Despite being identified for CDM, the project was **not formally applied or registered** under CDM.

The project proponents (PP) now seek to register the project under the **Universal Carbon Registry (UCR)** for the issuance of carbon credits. The project's prior consideration under CDM but lack of registration or issuance of credits ensures there is **no overlap** with other mechanisms.

(<https://cdm.unfccc.int/methodologies/ARmethodologies/Projects/PriorCDM/notifications/index.html?s=3800>)

The **Shreenath Mhaskoba Sakhar Karkhana Ltd. (SMSKL)** project in Maharashtra, registered under the bio-fuel/bio-fuel cogeneration category, is identified with project code **002** and has a capacity of **4.545 MW**. The project's commissioning and milestone dates include **28 August 2012** (initial commissioning), **26 October 2012**, and subsequent updates on **22 November 2016**, **26 July 2017**, **11 April 2022**, and **23 June 2023**. The factory is already registered as eligible for **domestic Renewable Energy Certificates (REC)** for self-captive purposes.

(https://www.recregistryindia.nic.in/index.php/publics/registered_regens)

Currently, the project proponents are seeking to secure **carbon credits** for surplus power exported to the grid. As per **UCR guidelines**, the project qualifies for issuing carbon credits based on the net export energy, ensuring the additionality of emission reductions from renewable energy generation.

B.6 Changes to start date of crediting period >>

There is no change in the start date of crediting period (01/01/2013-31/12/2023).

B.7 Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

There are no permanent changes from registered PCN monitoring plan and applied methodology.

B.8 Monitoring period number and duration>>

1st First UCR Issuance Period: 01/01/2013-31/12/2023 (11 years)

1st UCR Crediting Period: 01/01/2013-31/12/2023 (11 years)

1st UCR Monitoring Period: 01/01/2013-31/12/2023 (11 years)

Monitoring plan>>

The monitoring of electricity data revolves around the power generation from the turbine generators and the auxiliary consumption of the power plant. All auxiliary units at the power plant are metered and there are also main meters attached to each turbine generator to determine their total generation.

Operational records and other evidences have been documented, collected and archived in either hard-copies or electronic manners. The energy generation is metered by calibrated meters. The biomass consumption is measured by Weigh Bridge calibrated. Steam quantity, temperature and pressure are measured by calibrated meters. The date of calibration and next due date of calibration can be checked against the calibration certificates. All the values can be checked from the source data i.e. plant records. The calorific value of biomass can be checked against the third party analysis reports.

The total amount of bagasse generated by the sugar plant can be calculated from the amount of cane crushed in the season (monitored variable), which is obtained from the in house records. Therefore, bagasse can be calculated using the formula:

$$\text{Bagasse} = \text{Cane} + \text{Added water} - \text{Juice}$$

This quantity will be cross-checked using an annual energy balance using the monitored steam values. The total heat generated as well as the heat generated by the project activity is monitored using the temperature and pressure values and calculating the enthalpies of the steam generated and the feed water.

The management of the plant has designated one person to be responsible for the collation of data as per the monitoring methodology. The designated person collects all data to be monitored as mentioned in this project concept note document (PCN) and reports to the head of the plant. The overall project management responsibility remains with the Plant Head. The electricity generation from turbines and auxiliary consumption is recorded continuously on an hourly basis by the operators in the shift. At the end of the day this data is collated by the engineer in charge and signed off by the power plant manager. The data is recorded in logbooks by the operators and the engineer in charge collates the data from these log books and stores them electronically. This data is used by engineer in charge to prepare a monthly report and send it to Plant Head for verification. The monthly reports become a part of the Management Information System (MIS) and are reviewed by the management during the quarterly review meeting.

The monthly reports can be made available during the verification of the project activity, to estimate the monthly emission reductions, which are also, included in the MIS. The monitoring personnel are familiar with the process of monitoring and documentation. They have been maintaining and reviewing the factory records pertaining to the sugar manufacturing.

All the meters are checked and calibrated each year by an independent agency i.e. (MSEDCL). Hence there are no uncertainties or adjustments associated with data to be monitored. An internal audit team, comprising of personnel from the factory but from a department other than utility, reviews the daily reports, monthly reports, procedure for data recording and maintenance reports of the meters. This team checks whether all records are being maintained as per the details provided in the PCN. The audit team also enlists the modifications/corrective actions required, if any, in more accurate monitoring and reporting. All the data and reports will be kept at the offices of the sugar mill until 2 years after the end of the crediting period or the last issuance of CoUs for the project activity, whichever occurs later.

Emergency preparedness plans have been laid out to meet with situations leading to unintended emissions. These emergency situations have been identified as:

1. Fire in the fuel yard
2. Fuel spoilage due to water. These emergency situations haven been taken care by putting up a fire safety system and a water drainage system in the fuel yard. T

Parameters	Description
QS,y	Quantity of steam supplied per year measured at recipient's end

T _{steam,y}	Temperature of steam at the recipient's end
P _{steam,y}	Pressure of steam
E _{steam,y}	Enthalpy of the saturated steam supplied to the recipient
T _{Feedwater}	Temperature of boiler feed water
E _{Feedwater}	Enthalpy of feed water
E _{Gthermal,y}	Net quantity of thermal energy supplied by the project activity during the year y
B _{Biomass,y}	Net quantity of biomass consumed in year y (on dry basis)
M _{Cbiomass}	Moisture content of the biomass

Monthly joint meter reading of main meters installed at interconnection points are taken and signed by authorized officials of and MSETCL on the first five day of every month. Records of this joint meter reading are maintained by M/s Shreenath Mhaskoba sakhar karkhana Ltd. and MSETCL. Daily and monthly reports stating the net power export is prepared by the shift in-charge and verified by the plant manager. Power Purchase Agreement (PPA) with MSETCL has been signed. Reliability of energy data is maintained as per PPA. M/s Shreenath Mhaskoba sakhar karkhana Ltd. archives and preserves all the monthly invoices raised against net saleable energy and also archives the complete metering data at generation electronically. All the records are maintained at site. Maharashtra Pollution Control Board (MPCB) and Environment Department of Maharashtra have prescribed standards of environmental compliance and monitor the adherence to the standards. M/s shreenath mhaskoba sakhar karkhana Ltd. has received the 'Consent to Operate' the plant. State's regulatory body of power is Maharashtra State Electricity Transmission Company Limited (MSEDCL) and they have issued consent for the installation of co-generation power plant of 10 MW capacity. As a buyer of the power, the MSEDCL is a major stakeholder in the project and hold the key to the commercial success of the project.

Data/Parameter	NCV _k
Data unit	GJ/t
Description	Net Calorific Value of Biomass Residue Type <i>K</i>
Source of data Value(s) applied	Measurements will be carried out by reputed labs and reported in dry biomass basis.
Measurement methods and procedures	On site and in labs
Monitoring frequency	Every 6 months
Purpose of data	Quality control
Data/Parameter	Q _{biomass,yr}
Data unit	MT/yr

Description	The quantity of bagasse used to generate steam in the boilers each year
Source of data Value(s) applied	Plant records and log books receipts
Measurement methods and procedures	Monitoring: The quantity of biomass fed into the boiler is controlled. Data type: Measured Responsibility: Boiler Operator
Monitoring frequency	Daily / Monthly
QA/QC	The amount of biomass used can be cross checked by the purchase orders and stock inventory. Quantity of biomass has been monitored. Biomass measuring device has an accuracy level of +/-0.5% of full scale, and ranging between 0-120 TPH.


Data/Parameter	EF grid,y
Data unit	MWh Emission Factor
Description	Net quantity of electricity generated in the project plant during the year
Source of data Value(s) applied	YCR CoU Standard Default for Indian grid M/s. shreenath mahaskoba sakhar karkhana Ltd.-factory records (JMR / Credit notes)
Measurement methods and procedures	NA This value will be determined annually from the records maintained at the factory. All auxiliary units at the power plant are metered and there is also a main meters attached to each turbine generator to determine their total generation.
Monitoring frequency	NA
QA/QC	The hourly recordings of data are to be taken from energy meters located at the project activity site. This data is to be recorded hourly by the shift attendant and entered into logbooks on site. This hourly data is to be signed off at the end of every shift by an engineer in charge of the shift and again at the end of each day and signed off by the power plant manager. The energy meters are calibrated annually by an independent third party
QA/QC	Net electricity production has been calculated by deducting auxiliary consumption from gross generation of the plant. Digital meters calibration procedures are planned. Daily productions details are kept in log books and electronic data base. Energy meters are of class 0.2 with tolerance of 0.5%. All Meters are calibrated by accredited external third party, as per standard procedures, periodically.

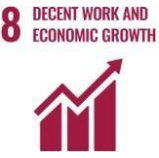


Purpose of data	To estimate baseline emissions
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United Nations Sustainable Development Goals:

The project activity generates electrical power using Biomass, there by displacing non-renewable fossil resources resulting to sustainable, economic and environmental development. In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations. Thus, the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions.

Positive contribution of the project to the following Sustainable Development Goals:

Development Goals Targeted	SDG Target	Indicator (SDG Indicator)
SDG 7: Affordable and Clean Energy 	7.2: By 2030, increase substantially the share of renewable energy in the global energy mix Target: Renewable Power in 18,286MWh/yr	7.2.1: Renewable energy share in the total final energy consumption

<p>SDG 8: Decent Work and Economic Growth</p> 	<p>8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.</p> <p>Target:</p> <ul style="list-style-type: none"> • Training staff annually • Employment of staff 	<p>8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities.</p>
<p>SDG 09: Industries, Infrastructure and Innovation</p> 	<p>9.2: Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries</p>	<p>The project activity provides employment to people 115 villages in the area.</p> <p>9.1.1: It measures the proportion of the rural population who live within 2 km of an all-season road. This indicator helps assess access to infrastructure and connectivity.</p>
<p>SDG 13: Climate Action</p> 	<p>13.2: Integrate climate change measures into national policies, strategies and planning</p> <p>Target:</p> <p>14,496 quantity of tCO2 reduced /yr</p>	<p>13.2.1: Number of countries that have communicated the establishment or Operationalization of an integrated policy/ strategy</p>