EXECUTIVE SUMMARY

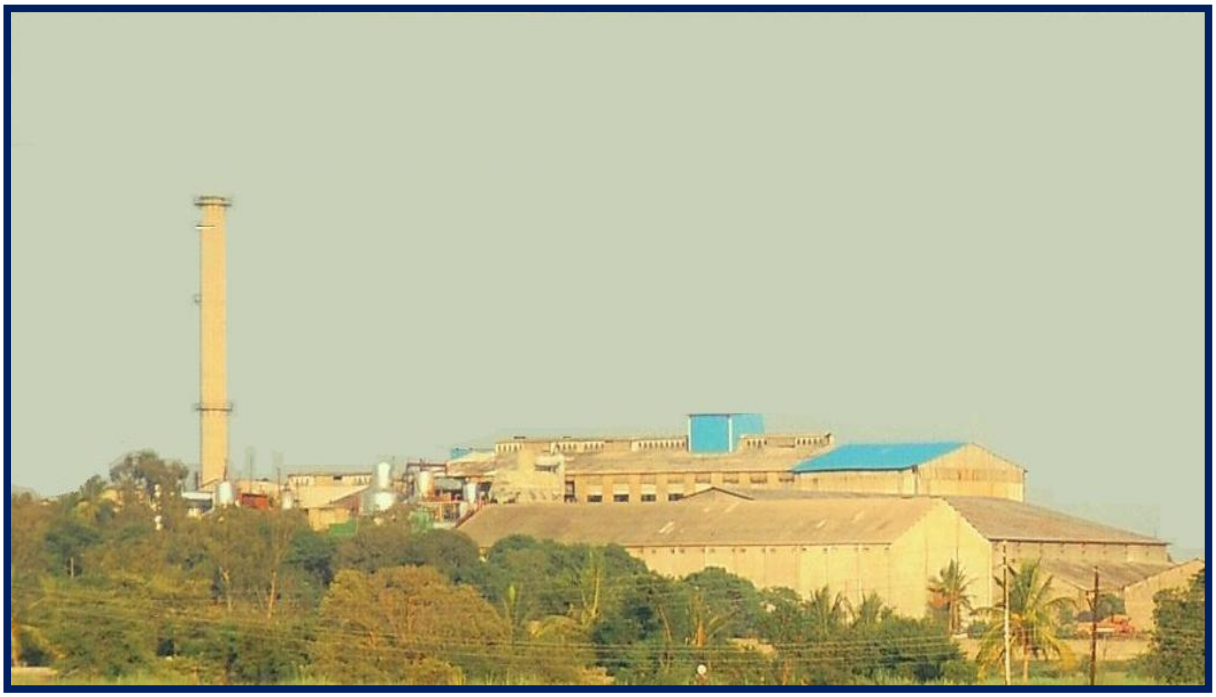
FOR

SHRIGONDA SAHAKARI SAKHAR KARKHANA LTD.

P.O. Shrigonda Factory, (413726) Tal. Shrigonda, Dist. Ahmednagar (M.S.)

PROPOSED CO-GENERATION (26 MW)

Project



PREPARED BY

ULTRA-TECH
(Environmental Consultancy &
Laboratory Gazzeted By MoEF, NABET Approved)
&
MKW BIO SYSTEMS PUNE

September -2014

1. INTRODUCTION

This is a proposal to 26 MW co-gen plant. Agro – based Sector on a mousy land. The Proponents are **M/s Shrigonda Sahakari Sakhar Karkhana Ltd.**at P.O. Shrigonda Factory, (413726) Tal. Shrigonda, Dist. Ahmednagar (M.S.) the proposed products (main & attendant) are –

Table No. 1: Product Details

SL.NO.	Product	Production			Unit
		Existing	New/Expansion	Total	
1	Sugar plant	3500	--	3500	TCD
2	Co-gen power	---	26	26	MW
3	Distillery	30	--	30	KLPD

The Notification no. S. O. 1533 promulgated on 14th September 2006 has covered this No.1 Product and is at Entry 1(d). The proposal is acknowledged by Government of India, Ministry of Commerce and Industry, Entrepreneurial Assistance Unit, New Delhi.

2. Justification for the project

Justification of this Project can be submitted in many ways, namely –

- How this Project is economically strong by converting its own waste in useful product and power generation.
- How the pollution generated from this unit can be successfully managed through EMP implementation, or in fact
- How the pollution generated from this unit can be converted to useful irrigation water with nutrients, and
- How the pollution generated from this unit can be converted to Electricity.

Table No. 2: Justification of Project

- India Needs Electric power
- Saves Petrol (additives)
- Foreign Exchange Saver-Earner
- Condensate water for Boiler/ process
- Irrigation water with nutrients for crop
- Consumes baggasse, which otherwise is an environmental risk

Various Government Departments will also be examining **Justification** and propriety of this venture and permissions will be obtained to establish this unit. Many are already in hand.

- Certificate of incorporation of the company
- Industrial Entrepreneurs Memorandum (IEM), New Delhi for Sugar
- Industrial Entrepreneurs Memorandum (IEM), New Delhi for Co-gen Power
- Industrial Entrepreneurs Memorandum (IEM), New Delhi for Alcohol
- NOC from Local body
- Land Registration, NA permission and Industrial purpose
- Water drawl permission
- On site emergency plan approval
- Central Excise Registration

3. Location and Boundaries

The government has a desire to improve status of this District and has encouraged Tax incentives, subsidies, interalia. In order to have a sustainable development, the pollution generation from this industry is finally made insignificant having taken all the precautions right from raw material selection up to low or no waste generation and more over conversion.

This site of about 80 acres has a connecting road and has approachability. This site is connected with Maharashtra State Electricity Board power. When various sites were seen, this site appeared to be environmentally best as also from the business angle and therefore this option was finally adopted.

The site is located at rural surroundings and it is 2.5 km and 8 km, 60 km away from Shrigonda Railway Station, Shrigonda town, Baramati respectively. It is in the midst of cane growing area but not itself a prime agricultural land. It is geographically located in 18^0 35’19.95" N latitude and 74° 37' 11.62" E longitude. The premises is about 80 acres and from which about 15 acres land used for this co-gen project and as much as about 1/3 of which is already planned to be brought under the honest green-belt and landscaping. A 2.5 meter high perimeter wall in random rubble masonry or fencing will be erected all around the boundary. The site is 23 km away from Pune- Solapur Highway no.NH9. There is no sensitive establishment in the vicinity such as health resort, hospital, archaeological monuments, sanctuaries, etc. The normal wind direction is found to be favorable at this site. All villages are away. All are provided with drinking water from wells or Government Water Supply Schemes RWS.

With all this consideration, this site was ranked first and adopted. The features

SL.NO.	Feature	Particulars
1	Location	At P.O. Shrigonda Factory, (413726) Tal. Shrigonda, Dist. Ahmednagar (M.S.)
2	Latitude/Longitude	Latitude: 18°35'22.81" N Longitude 74°37'21.17" E
3	Average altitude above mean MSL	625 m above sea level
4	Temperature in °C	The highest temperature is usually observed during the months of April–May and lowest temperature during December/ January. Maximum – 42^0 C, Minimum – 17^0 C
5	Rain fall in mm	Total annual average rainfall : 500 mm
6	Wind velocity	This region is characterized by low to moderate wind velocities. The Maximum velocities is 70 km/hr, Minimum velocity 1-3 km/hr, Medium Velocity 4-5 km/hr and especially high during pre monsoon period of April to May.
7	Nearest highway	Pune- Solapur Highway no.NH9 – 23 km to the site.
8	Rail way line	Shrigonda Railway Station- 2.5Km. from site
9	Nearest airport	Pune airport – 104 km
10	Nearest Villages	Madhe vadgaon 5.6 km & Kashti 7.6 km from the site
11	Nearest town	shrigonda :10 km E from the site Daund :20 km S from the site
12	Nearest major city	Shrigonda 10 Kms, Baramati 60Kms and Pune 95 Kms, Ahmednagar 60 Kms from the site.
13	Nearest water body	River Bhima : 11.40km from the site
14	Sensitive locations such as protected forests, monuments, national park, zoos etc.	No

4. Land Utilization:

Less buildings and less roads means saving of rubble, sand, bricks, etc, which otherwise has to be procured by robbing nature. The land utilization is

#	Land Utilization	Land Area, Acre
1	Plantation	20
2	Parking	4
3	Roads	4
4	Buildings	20
5	Proposed Projects (Co-gen)	15
6	Reservoir	3
7	Open land	14
	Total	**80**

PROJECT INVESTMENT,

#	Particulars	Total (Rs. in lac)
1	Land and Site Development	10.00
2	Civil Works	430.90
3	Plant & Machinery	10767.48
4	Preliminary & Pre-operative exp.	676.54
5	Power evacuation arrangement	700.00
6	Contingencies @3%	271.83
7	Margin Money	62.00
8	Supervision charges for evacuation Power	24.75
9	Miscellaneous fixed assets	100.00
	Total (Rs. in lac)	**13043.50**

5. Raw Materials and Products for Cogeneration plant

Material	Quantity	Transportation	Storage
Basic raw material			
Bagasse Alternatively, 30 % sugar cane juice	1475 T/d 329 KLPD	Salt belt conveyor	**Bagasse yard**
Product/By-product			
Yeast sludge	N.A	Tractor	---------
Boiler ash	22 T/d	Tractor	Constructed Yard

6. Resources:

6.1 Plant Capacity:

We have existing 3500 TCD sugar plant, proposed a unit of 26 MW new cogeneration plant. We will convert the waste thermally in co-gen plant, due to which sufficient steam is generated to meet the sugar plant requirement as well as generation of power with available potential. Power generated is utilized for in plant requirement and also exported to the grid at reasonable tariff rate. The estimated operational days of co-gen project are 234 days. The co-gen plant capacity is 17.75 MW (Avg. exportable power, Season 160 days) and 22.89 MW (Avg. exportable power, Off Season 74 days).the requirement of make up water for co-gen project is around 70 m3 /hr.

6.2 Raw Materials:

The capacity of the proposed co-gen project shall be 26 MW. For this the main and sole raw material is Bagasse during crushing season and during non crushing season are Bagasse save during crushing season, biomass like wood chips ,cane trash (about 5% on

availability, but not consider), imported coal of GCV 5500 Kcal/kg or equivalent (not consider)

Item	Quantity	Particulars
Bagasse	1475 TPD	Available in District
Water	70 m3 /hr	Available in District

6.3 Raw Material Availability

Our requirement of Bagasse at the rate of 1475 TPD for 234 working days will be 345150 MTPY. We have many sugar factories in the district with separable Bagasse. Survey is made and MoU obtained. Bagasse in Maharashtra is procured through state excise authority. We shall get the required Bagasse without difficulty.

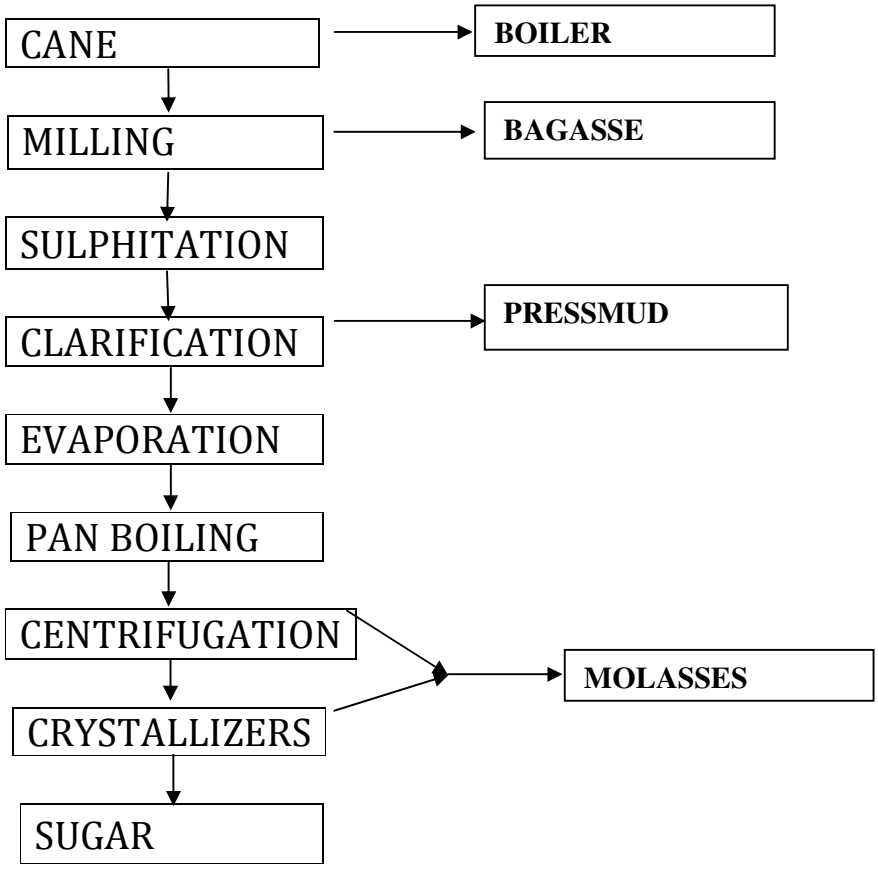
6.4 Utilities

In addition to the raw material, utilities are also required. These are:

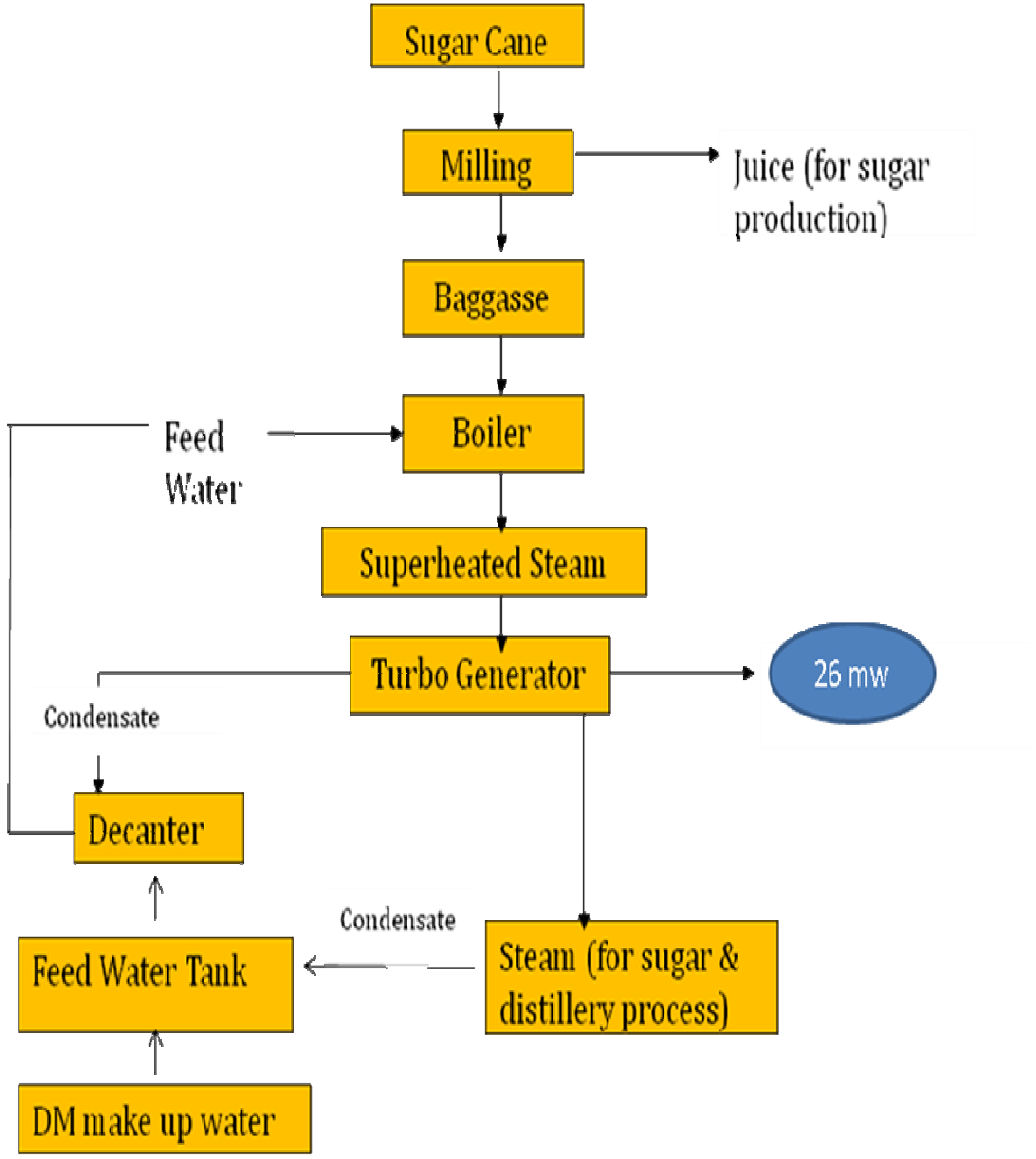
- Power requirement 150 KW, 200 KW and 1500KW for Sugar factory, other administration and co-gen respectively. Available through our own generation.
- Fuel: Available as Bagasse and biomass like wood chips, cane trash.
- Man Power: This is an Agro based type of Industrial activity. The man power required for administration and production purposes will be recruited locally without any difficulty. The unit will need 24 workforce and 16 staff members.
- Construction workers will reside in nearby villages and residential facility will not be required for the construction personnel.)
- In crushing period Make up water for circulating cooling water system is 35 m3 /hr, filtration and DM plant feed is 25 m3 /hr, (including drinking water, filter backwash and RO reject water, MB regeneration waste) service water is 03 m3 /hr, so total water requirement is 63 m3 /hr.
- In non crushing period Make up water for circulating cooling water system is 80 m3 /hr, filtration and RO plant feed is 14 m3 /hr, (including drinking water, filter backwash and RO reject water, MB regeneration waste) service water is 3 m3 /hr, ,so total water requirement is 97 m3 /hr.
- Total steam required for co-gen is 140 TPH, superheated steam pressure is 88 kg /c^{m2} ,require superheated temperature is 515±^{50}C and inlet feed water temperature is 165 ^{0}C

7. Process:-

A) Sugar Manufacturing Process:-



B) Co-Generation Power Plant:-



8.0 Pollution Control

8.1 Water Environment

8.1.1 Raw Water:

The water used for this Unit plant is already available, assured and dependable. Our source is granted by Govt. of Maharashtra from River Bhima about 11.40 kms. From the site. This is treated to a reasonable extent by us, and it has good characteristics. As it is earmarked for this industry, we are not encroaching on anybody else's water source.

Water is used at various stations like heating, cooling, process, floor washing, vessel washing, laboratory, scrubbing etc.

8.1.2 Water Budgeting:

1. Industry & Co-gen unit:-

Table No.4: Details of water balance

#	Step	Water input cum/d	Loss	Wastewater out cum/d
1	domestic	Fresh =6	1	To septic tank=5
2	Regeneration De-min	Fresh = 8	1	Moderate BOD to ETP =7
3	Boiler	Fresh = 350 (Make-up)	150	Sober to ETP =200
4	Cooling	Fresh = 510 (Make-up)	470	Sober to ETP = 40
5	Pump Blower Sealing water	Fresh = 100	3	Sober to ETP =97
6	Floor & vessel washing	Fresh = 15	2	Mod. To ETP = 13
	Total	**989**	**627**	**362**

Input side (Industrial):

a. Fresh Water for (Co-gen) -989 cum/d

Total Input **- 989 cum/d**

Output side:

a. Loss from Industrial Use - 627 cum/d
b. Effluent sober nature sent for ETP - 337 cum/d
c. Effluent Moderately polluted sent to ETP - 25 cum/d

Total Output **- 989 cum/d**

Segregation:

As MoEF desires, TI has decided to bring the segregation principle in practice. Now, the industrial waste water streams are segregated first in three branches as (A) Sober, (B) Moderately Polluted and (C) High BOD polluted. The first two are then combined. It shall help in many ways for ease of treatment.

Stream (A) Sober
The Sober wastewater stream (337 m^3 from co-gen = 337 m^3) comes from boiler blow down, cooling purging water and sealing water. Except temperature, it has little other objectionable characteristic. This can be cooled and used. However, taken for treatment with Stream (B). The quantity and pollution load is small and independent ETP is untenable. Thus with small collection tank, it is allowed to mix with moderately polluted Stream B. This too serves as diluents.

Stream (B) Moderately Polluted
Moderately polluted wastewater (25 m^3 from co-gen = 25 $m^{3)}$ comes from de-min plant regeneration, process and floor- vessel washings. This needs Biological treatment. This is provided by way of extended aeration followed by tertiary treatment, along with stream A

8.2 AIR POLLUTION:

8.2.1 Emission Control Equipments (ECE):

The air pollution caused by this industry is mainly from dust as SPM from fuel. The dust is not predominantly due to the composition and handling of raw materials because those are largely controlled.

The efforts taken by the Industry in this respect are also indicated. Further, regarding the product looking to the description of manufacturing operations and the corresponding flow sheet, **TI** knows from which unit operation or process, air pollutants are expected. For the purpose of arresting and capturing the pollutants, measures are proposed and designed.

Table No.6: Emission Control Equipments

#	Source	Pollutant	In-plant Measures	Control Equipment
1	Bagasse/ Cane Yard	SPM road dust, HC	Leveled Roads & land, rubber tire, slow speed. Less waiting	--
2	Boiler	SPM, CO	Feed Bagasse/husk more dry, also will be used methane. Improved quality of water	ID Fan, CO_2 meter, Fly-ash arrestor (wet scrubber for existing & ESP for proposed) (*), Light ash through very tall stack.
3	Other effluents	H_2O, CO_2	Closed transfer	Fully Aerobic regime.

(*) = The Dust Collector of suitable capacity, with hopper bottom. The dust-free air is sucked and thrown into stack through duct by I.D. Fan. The length of duct is kept very small. Instead of cyclone, ESP will be provided.

As co-gen is of moderate size and Boiler uses three types of fuels, for agro residue & Bagasse long distance haulage is not required.

9.0 Solid Waste
Based on above working, the summary is per day

Table No. 7: Solid Waste per Day

#	Waste	Quantity	Treatment	Disposal	Remark
1	Canteen	10 kg/day	Vermi Composting	Own garden	Organic
2	ETP sludge	12 kg/day	Treated already	Authorized Recycler	Organic, Non-Haz.
3	Sweepings	20 kg/day	segregation	Sales	Non-Haz.
4	Garden trash.	20 kg/day	collection	Mulching	Non-Haz.
5	Ash	12 T/day	collection	Brick klin	Takers available
6	Barrel	3 no /month	collection	Back to vendor	---

Guest House is very small (only nominal) and the labor strength attends in shifts. The municipal waste from the colony and canteen is thus controllable. This will be composted and used in due course on own land as manure. Plastic use is discouraged. STP sludge is organic and digested. Thus after dewatering can be used on land for conditioning. This will be so done. Office and packing trash is kept minimum and disposed by sales or reuse. In addition to above plantation is done for mitigation.

10. Background Study:
This is important part of study.

(A)Natural Environment: We have undertaken to do the sampling as –

1	Surface Water
2	Ground Water
3	Ambient Air
4	Ambient Noise

The stations are selected in all the directions from the factory and in 10 km radius. The Environmental quality is generally found satisfactory.

(B) Manmade environment

This includes existing land-use, demography, employment, socio-economic aspects and community development needed and proposed. This is for entire area both rural and urban in this study zone.

- Socio-Economic Status in Influence Zone will include the study of Non-Workers percentage whether high, from the percentage employed population on Agricultural, how far is the scope for other avenues of livelihood like Live Stock, Forestry, Fishing, Hunting, Orchards, Mining, Trade Commerce.

- Further out of Total Land what percentage is already under Cultivation and Out of Total Land what percentage is already under Irrigation?
- If the land is not likely to support more people, then whether Industrialization is necessary to improve the situation. All this is studied as cost benefit ratio.

It was found that industrialization is the only solution.

11.0 Safety

Safety and Occupational Health will be dealt carefully. A disciplined approach is natural to this industry. Safety policy will be in place. The unit will be Registered under Factory Act and are bound by State Factory Rules. Thus, First aid trained and Fire-fighting trained person will be available in every shift. Safety Officer will be appointed, as also the competent person retained. Where necessary, provisions of other Acts, where required like Petroleum act, Explosive Act, etc. will be obeyed. Fire fighting system is kept as per norms of Insurance Company and CIF.

DMP (Disaster Management Plan) and off-site emergency plan will be in place. Accordingly, Personal protection equipment will be given and use will be insisted. Consulting Physician is retained to attain the factory.

12.0 Benefits

This industry will provide Alcohol as useful material for India, which will not only save but also earn foreign exchange. We shall also generate some power for the State. The liquid CO2 will be produced which is useful for forging industry as well as food preservative. This will not disturb the present land use because our area occupied is already sanctioned by Govt. for industrial purpose, with only small % of Influence zone 10 km and already is in possession. Compatible Architecture will be adopted and No Prime Agriculture Land will be put to this industrial use. Trees will be maintained and not razed down. No Rehabilitation is involved because the land is already in possession of the Industry. The problematic waste materials like solid waste will be reused or taken care of, Wastewater will be reused to grow greenery, and air pollutants will be arrested. Water harvesting will be done and greenery will be increased. People will get some jobs here. Some incidental small employment like eatery, canteen, tyre repairs, and garage too will become available to genuine people.

In the final analysis, it is the endeavor of the Proponents to give benefits --

- To keep transparent relations with the neighbours in the area
- To strengthen the Gram panchayat democratic set up by assistance to community.
- Not to disturb any prime agricultural land
- Not to encroach on others' existing water source
- Not to overload the existing power supply, causing load-shedding to the villagers
- To remove the barren-ness of the land and prevent wasting of rainwater.
- To Recharge the groundwater
- To strengthen the physical infrastructure
- To create greenery within our premises and even outside to some extent

- To reduce the wastewater pollution created by this new activity by utilizing it in our own fields as water to grow plantation and landscaping.
- To reduce the solid waste pollution created by this new activity by utilizing it in the fields of our own community land development.
- This could be a win-win situation with benefit to Proponents, benefit to the Public and no (or low) harm to the environment.
- All this is possible for which Environment Management Plan as worked out in next Chapter is scrupulously obeyed.

13.0 EIA Study Report

This is finally prepared and submitted as per guidelines given by MoEF as –

Table No.8: EIA Study Report

Chapters	Contents	
I	Proponents, ToR, Purpose	
II	Project explained. Why this, Why needed, Why here, What priorities, What options	
III	Environment Setting	Natural & Man-made
	Material, Method, Approach	Delphi technique
IV	High Significant Impact → Low Insignificant Impact & Shield	
	Proper Site → Prevention → Abatement → Treatment → Mitigation → Smooth Disposal	
V	Alternate Analysis	
	Selection of Raw Materials, Site, Process, Machinery-Hardware, Collaborators, Staff & Team	
VI	Monitoring = Stations, Parameters, Frequency, Statistics, Rectify	
VII	Risk	To Environment, To Health, To Bankers
	Public	Community, Rehabilitation, Others- Assistance
VIII	Benefits = Physical, Social, Employment, Other Tangible. Sustainable??	
IX	Cost-Benefit. If Project Done? If No-Project??	
X	EMP = Plan, Cell, Schedule, Watch-dog, Monitoring, Documentation, Reporting	
XI	Summary, Conclusion,.	
XII	EIA Team = Proponent, Consultant, Associates, Future	

The preparatory drill for above was on the background of our thinking --

14.0 Conclusion:

This industry will manufacture Power by using their own waste. Project will not disturb the present land use because our total land majority is already under cultivation. for the employed majority of population is on agriculture and there is no much scope for house hold service employment, live stock ,forestry, fishing ,hunting, mining, trade commerce . Thus industrialization is necessary to improve the situation as well as no Prime agriculture land will be put to this industrial use. Trees will be maintained and not razed down. No Rehabilitation is involved. There will be no problematic waste materials as all will be utilized.

- This project is very necessary in view of making useful material available to Indian developmental activity for community, defense and as a foreign exchange saver/ earner product.
- The local people desire that industries should come here on existing plot.

- The candidate site is suitable from general MoEF expectations.
- Water, power, Raw material, and market is assured and found available with ease.
- Full precautions will be taken for Pollution Control, Resource Conservation and Environmental Protection.
- This is cost effective and Sustainable Development.

The Report gives the details and finds that the impact overall is favorable to the country, to the people and to the environment as a sustainable development.

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