BIO BHARAT Ltd.

Business plan

Principals:

1. Ashrith Arun(3058577)
2. ChandraKanth Kosuru(3055352)
3. Meenakshi Gondyala(3055363)

Business Administration WS 2015-2016

P.S: All the Costs and Investments are considered according to Indian market prices and converted to Euro for convenience.

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Description Of Company

- Energy is the primary need for everyday life. Here at Bio Bharat we produce environmental friendly fuels such as Biodiesel, which is renewable and an important supplement for conventional fossil fuels.
- Our company aims to produce in a cost efficient way and supply at competitive prices.
- The raw material for producing biofuel is JATROPHA oil seeds.
- The jatropha plant can yield four times higher than the other biodiesel crops. So a hectare of Jatropha cultivation can produce 1,892 litres of biodiesel.

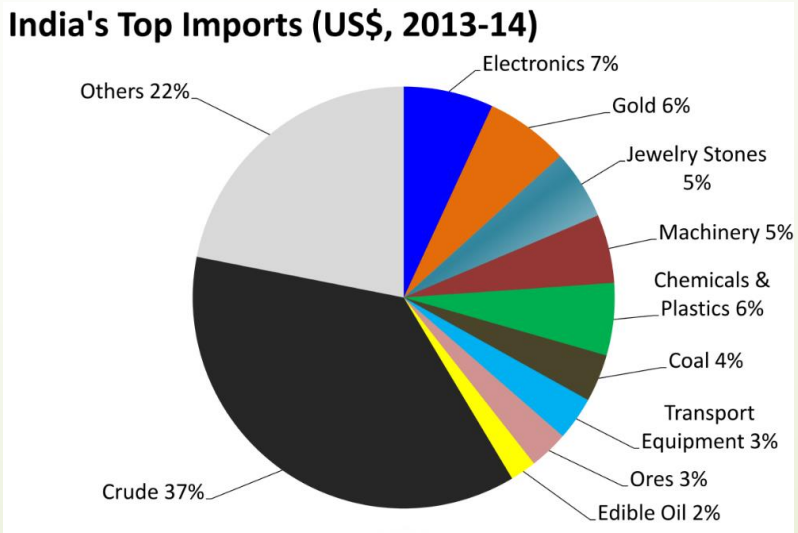
Description Of Company

- We are Located in Andhra Pradesh, India where the cultivation of jatropha is high and ever increasing.
- The plant is spread over 14,500 Sq. Meters near Vishakhapatnam. The Port in Vishakhapatnam would help in transportation purposes.
- Biofuel can be blended with conventional diesel and use it without any modification in automotive engines. B10 is expected to be more stable and efficient than conventional diesel.

Market factors

- At current levels of extraction the entire crude oil reserves of the world are projected to be exhausted by 2067. Consequently, the demand for bio fuels is only going to increase.

- Currently 37% of India's top imports is crude oil. Bio fuels certainly play a role in improving the Indian economy and ensures a more secure energy portfolio. Hence we expect the government policies to be certainly favorable to our company.



Market factors

- With an ambitious goal of cultivating Jatropha plants over a whopping 400,000 Square km area, the price of oils seeds is expected to reduce, additionally with current research in the field of bio fuels we certainly expect a drop in production costs in the years to come.
- With The National Biofuel Policy, Indian Govt. aims to meet 20% of its Diesel demand with fuel derived from Plants. Hence, we expect a continuous growth in demand for our product in India.
- Life Cycle analysis studies have shown favorable energy balance for production of jatropha based Biofuel in India and also has a potential GHG emission savings of 33-40% compared to fossil based fuels. Our product helps in meeting the ambitious GHG emission targets set by the government of India.

Ownership and Management

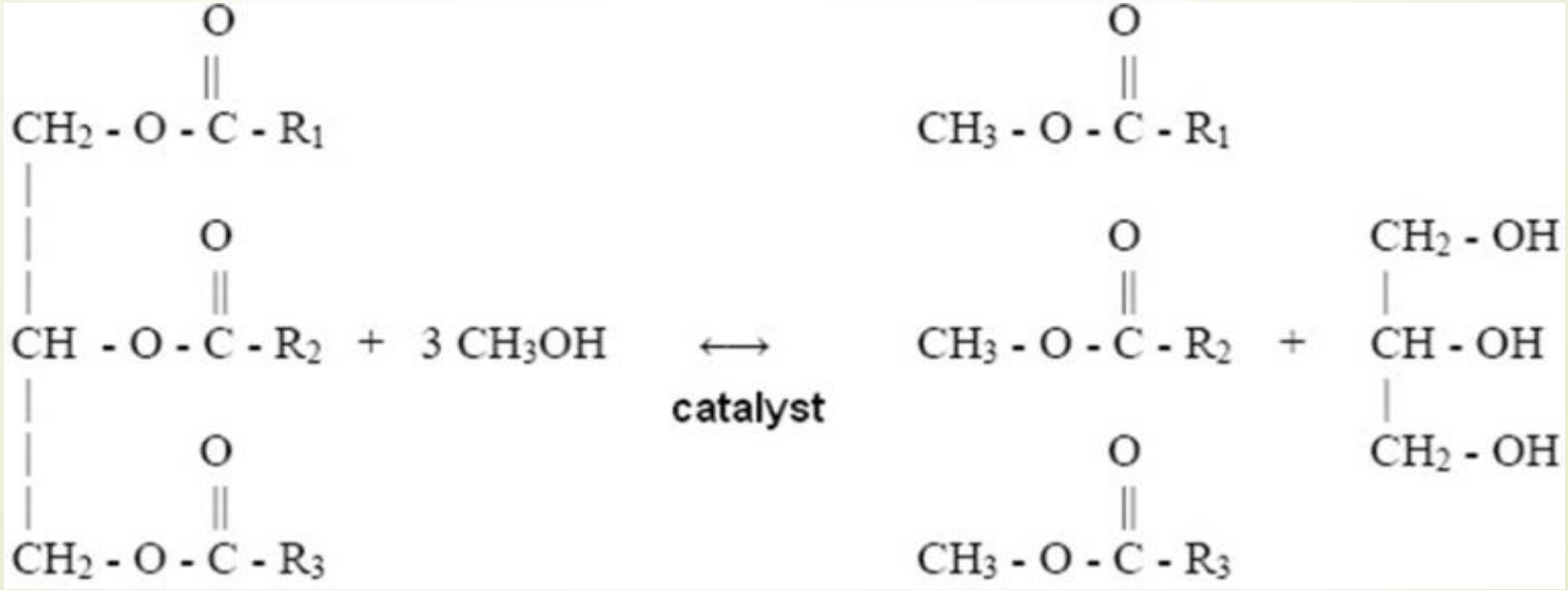
- Bio Bharath is a Private Limited company with three share holders.

- Principals:
  1. Ashrith Arun
  2. Chandrakanth Kosuru
  3.Meenakshi Gondyala

- The shares are divided equally over the principals.

Technical Background

- Biodiesel is made through a chemical process called transesterification whereby the glycerine is separated from the fat or vegetable oil. The process leaves behind two products -- methyl esters (the chemical name for biodiesel) and glycerine (a valuable by-product usually sold to be used in soaps and other products).



Government Initiatives

- Biodiesel production from non-edible oilseeds on waste, degraded and marginal lands to be encouraged. A Minimum Support Price (MSP) to be announced for farmers producing non-edible oil seeds used to produce biodiesel.
- Financial incentives for new and second generation biofuels, including a National Biofuel Fund.
- Biodiesel and bioethanol are likely to be brought under the ambit of “declared goods” by the Government to ensure the unrestricted movement of biofuels within and outside the states.
- Setting up a National Biofuel Coordination Committee under the Prime Minister for a broader policy perspective.

Implementation Plan

1. Production Planning

- The facility is capable of producing 100 tons of Biofuel per day

Production Capacity per day	100 Tonnes
Working Days Per Year	320 Days
Production Capacity per Year	32000 Tonnes

- We plan to adopt a labor intensive operation of 24 hours a day with 3 shifts of 8 working hours each.

2. Land Acquisition

- For the production facility we have estimated a land requirement of 14,500Sq Meters.

Land(Sq. Meters)	Cost Per Sq. Meter	Total land Cost
14500	250 €	**3,625,000 €**

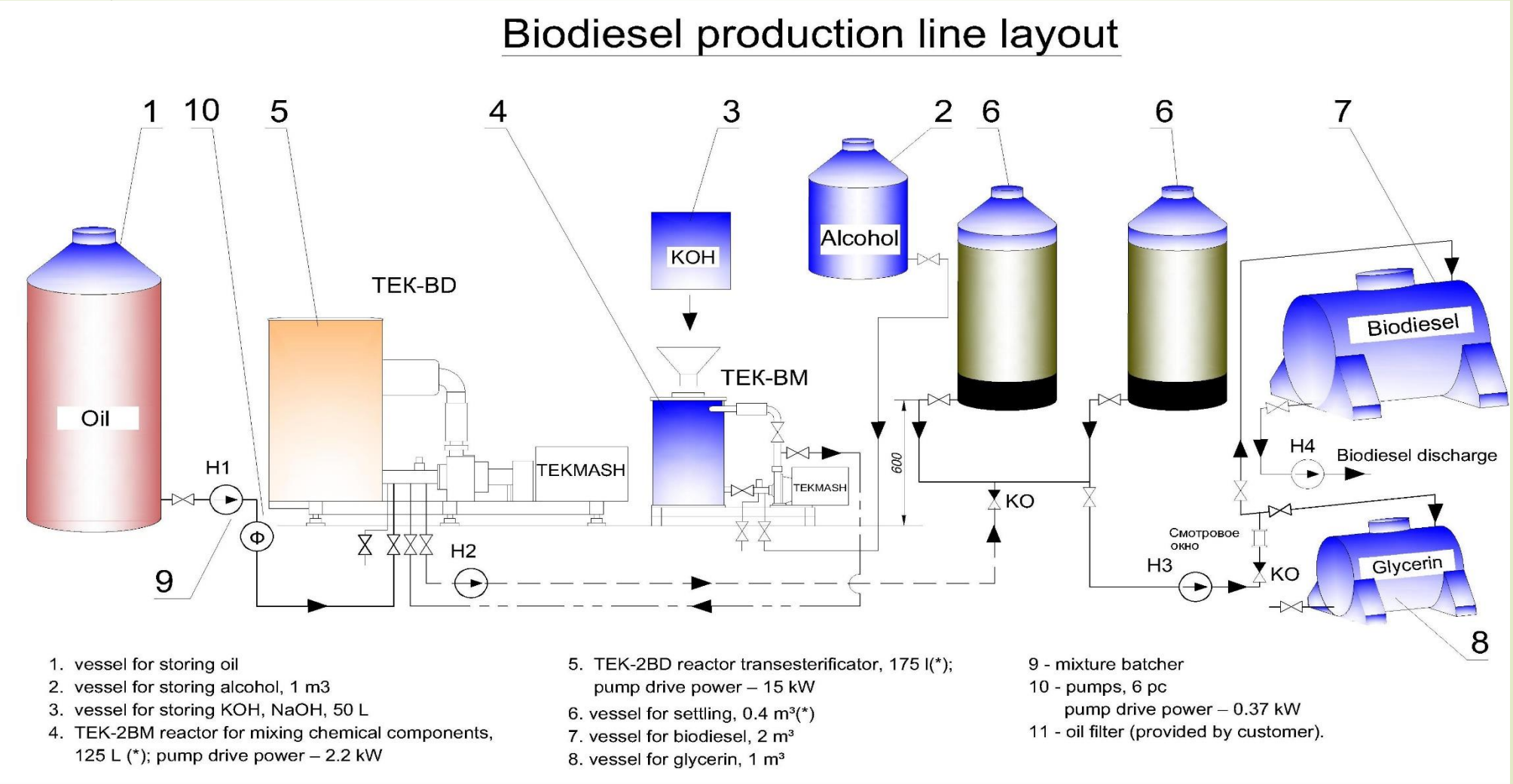
- The location of the facility is chosen considering the factors of transportation of fuel and raw material availability

3. Raw Material Requirement

- For Transesterification process, along with the oil produced from Jatropha seeds we need Methanol and a catalyst(Potassium Hydroxide) as raw materials.
- The quantity of raw material required and the respective prices are as below

Raw Material	Unit Price(Euro per Unit)	Units	Quantity	Total Price(Euro)
Jatropha Seeds	75 €	Tons	4.5	338 €
Methanol	3 €	Liters	140	420 €
Catalyst-KOH	2 €	kgs	15	37 €
	Total Raw Material Cost Per Ton of Fuel			**794 €**
	Total Raw Material Price for 1 Years			**25,410,000 €**

4. Plant Layout



1. vessel for storing oil
2. vessel for storing alcohol, 1 m3
3. vessel for storing KOH, NaOH, 50 L
4. TEK-2BM reactor for mixing chemical components, 125 L (*); pump drive power – 2.2 kW
5. TEK-2BD reactor transesterificator, 175 l(*); pump drive power – 15 kW
6. vessel for settling, 0.4 m³(*)
7. vessel for biodiesel, 2 m³
8. vessel for glycerin, 1 m³

9 - mixture batcher
10 - pumps, 6 pc
pump drive power – 0.37 kW
11 - oil filter (provided by customer).

5. Estimation of plant Inputs

- The Data related to inputs is generated based on the plant capacity and the estimated data of inputs respectively.

Specification	Unit	Estimation based on
Equipment cost		Design and supplier quotations
Power	HP	Power rating of equipments
Water	Litre	Estimated as per process requirements
Total factory area	Squre metre	Layout of plant
Oil seeds	Tons	Capacity of Bio diesel plant
Methanol	Litres	Capacity of Bio diesel plant
Catalyst (KOH)	Kgs	Capacity of Bio diesel plant
Labor	Hours	Human resource requirement for operation based on output

6. Machinery Investment

- To Achieve a production of 100 Tons per day, two setups of capacity 50Tons have been employed.

Equipment	Cost Of Machine 1	Cost of machine 2	
Crushers	31,250 €	31,250 €	
Material Handling Equipment	12,500 €	12,500 €	
Refining	25,000 €	25,000 €	
Oil Handling Column	53,750 €	53,750 €	
Vessel for storing Alcohol	53,750 €	53,750 €	
Vessel storing KOH	16,250 €	16,250 €	
Reactor for Mixing	150,000 €	150,000 €	
Reactor for Transesterification	225,000 €	225,000 €	
Vessel for settling	16,250 €	16,250 €	
Vessel for Biodiesel	53,750 €	53,750 €	
Glycerin	6,250 €	6,250 €	
Mixture Batcher	2,750 €	2,750 €	
Pumps	1,250 €	1,250 €	
Oil Filter	5,625 €	5,625 €	**Total Equipment Cost**
Total	653,375 €	653,375 €	**1,306,750 €**

7. Total Plant Investment

Plant Setup Costs	Price in Euro
Grading Work	1,875,000 €
Equipment Installation	625,000 €
Electrical works	500,000 €
Piping Works	625,000 €
Automation	375,000 €
Insulation	250,000 €
Total cost	**4,250,000 €**

Inventory Costs	Price in Euro
Rawmaterial Handling	1,000,000 €
Finished Products Handling	625,000 €
Total cost	**1,625,000 €**

Erection Labour Cost	Price in Euro
Construction and Assembly	250,000 €
Commisioning	75,000 €
Total cost	**325,000 €**

Auxiliary Costs	Price in Euro
WareHouse	62,500 €
Utility Costs	125,000 €
Office Buildings	25,000 €
Furniture	12,500 €
Total cost	**225,000 €**

Miscelleneous Expences	Price in Euro
Tool Kits	12,500 €
Spare Parts	62,500 €
Equipment Plant	31,250 €
Vehicle and Transportation Costs	62,500 €
Waste water handling	125,000 €
Total cost	**293,750 €**

8. Total Investment and Depreciation Costs

Investment Costs	Amount	Depreciation	Depreciation Costs
Total land Costs	36,25,000 €	0%	- €
Total Equipment Cost	13,06,750 €	10%	1,30,675 €
Plant Setup Costs	42,50,000 €	10%	4,25,000 €
Inventory Costs	16,25,000 €	10%	1,62,500 €
Erection Labour Cost	3,25,000 €	0%	- €
Miscelleneous Expences	2,93,750 €	10%	29,375 €
Auxiliary Costs	2,25,000 €	20%	45,000 €
Unexpected Costs	1,25,000 €	0%	- €
Circulating Capital	62,500 €	0%	- €
Total Cost	**1,18,38,000 €**	**Total Depreciation**	**7,92,550 €**

9. Financing Costs

Investment Planning And Financing

Total Investment	**1,18,38,000 €**
Bank Loan(60 Percent)	71,02,800 €
Share Holders(40 Percent)	47,35,200 €

Interst Paid on Debt

Year	balance of Debt	Intrest Rate	Intrest Cost	Repayment
1	71,02,800 €	5%	3,55,140 €	7,10,280 €
2	63,92,520 €	5%	3,19,626 €	7,10,280 €
3	56,82,240 €	5%	2,84,112 €	7,10,280 €
4	49,71,960 €	5%	2,48,598 €	7,10,280 €
5	42,61,680 €	5%	2,13,084 €	7,10,280 €
6	35,51,400 €	5%	1,77,570 €	7,10,280 €
7	28,41,120 €	5%	1,42,056 €	7,10,280 €
8	21,30,840 €	5%	1,06,542 €	7,10,280 €
9	14,20,560 €	5%	71,028 €	7,10,280 €
10	7,10,280 €	5%	35,514 €	7,10,280 €
		Intrest For 10Years	**19,53,270 €**	

10. Labor Costs

Administrative Staff	No.	basic Pay	Gross pay	Income Tax	Professional Tax	Health Insurance	Provident Fund	NetPay
Manager	1	312.50 €	2,500.00 €	46.88 €	3.13 €	31.25 €	31.25 €	2,387.50 €
Assistant Manager	2	250.00 €	1,250.00 €	37.50 €	2.50 €	25.00 €	25.00 €	1,160.00 €
Human Resource Manager	1	187.50 €	937.50 €	28.13 €	1.88 €	18.75 €	18.75 €	870.00 €
Sales Manager	1	187.50 €	937.50 €	28.13 €	1.88 €	18.75 €	18.75 €	870.00 €
Finance Manager	1	150.00 €	750.00 €	22.50 €	1.50 €	15.00 €	15.00 €	696.00 €
		Total	**6,375.00 €**					

Operative Staff	No. Per Shift	basic Pay	Gross pay	Income Tax	Professional Tax	Health Insurance	Provident Fund	NetPay
Security Chief	1	187.50 €	937.50 €	28.13 €	1.88 €	18.75 €	18.75 €	870.00 €
Inventory Manager	2	187.50 €	937.50 €	28.13 €	1.88 €	18.75 €	18.75 €	870.00 €
Chief Technician	2	225.00 €	1,062.50 €	33.75 €	2.25 €	22.50 €	22.50 €	981.50 €
Shift Chief	2	162.50 €	812.50 €	24.38 €	1.63 €	16.25 €	16.25 €	754.00 €
Machine Operators	8	125.00 €	437.50 €	18.75 €	1.25 €	12.50 €	12.50 €	392.50 €
		Total	**4,187.50 €**					

Total Labour Costs Per Month	**18,937.50 €**
Total Labour Costs Per Year	**227,250.00 €**

11. Self Cost

Self Cost										
Year	1	2	3	4	5	6	7	8	9	10
Utilisation Capacity	70%	90%	100%	100%	100%	100%	100%	100%	100%	100%
Quantity Produced(Tons)	22400	28800	32000	32000	32000	32000	32000	32000	32000	32000
Depreciation Cost(€)	792,550 €	792,550 €	792,550 €	792,550 €	792,550 €	792,550 €	792,550 €	792,550 €	792,550 €	792,550 €
Finance Cost(€)	355,140 €	319,626 €	284,112 €	248,598 €	213,084 €	177,570 €	142,056 €	106,542 €	71,028 €	35,514 €
Labour Costs(€)	227,250 €	227,250 €	227,250 €	227,250 €	227,250 €	227,250 €	227,250 €	227,250 €	227,250 €	227,250 €
Consumption Costs(€)	17,787,000 €	22,869,000 €	25,410,000 €	25,410,000 €	25,410,000 €	25,410,000 €	25,410,000 €	25,410,000 €	25,410,000 €	25,410,000 €
Total Cost(€)	19,161,940 €	24,208,426 €	26,713,912 €	26,678,398 €	26,642,884 €	26,607,370 €	26,571,856 €	26,536,342 €	26,500,828 €	26,465,314 €
Cost Per Ton(€)	**855 €**	**841 €**	**835 €**	**834 €**	**833 €**	**831 €**	**830 €**	**829 €**	**828 €**	**827 €**

12. Cash Flow

Year	1	2	3	4	5	6	7	8	9	10
Production	22400	28800	32000	32000	32000	32000	32000	32000	32000	32000
Price of Bio diesel(per ton)	855 €	855 €	855 €	855 €	855 €	855 €	855 €	855 €	855 €	855 €
Production Of Glycerine(tons)	2240	2880	3200	3200	3200	3200	3200	3200	3200	3200
Price of Glycerine(per ton)	40 €	40 €	40 €	40 €	40 €	40 €	40 €	40 €	40 €	40 €
Turnover	1,92,51,540 €	2,47,51,980 €	2,75,02,200 €	2,75,02,200 €	2,75,02,200 €	2,75,02,200 €	2,75,02,200 €	2,75,02,200 €	2,75,02,200 €	2,75,02,200 €
Depriciation Cost	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €	7,92,550 €
Labour	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €	2,27,250 €
Consumption Cost	1,77,87,000 €	2,28,69,000 €	2,54,10,000 €	2,54,10,000 €	2,54,10,000 €	2,54,10,000 €	2,54,10,000 €	2,54,10,000 €	2,54,10,000 €	2,54,10,000 €
Finance Cost	3,55,140 €	3,19,626 €	2,84,112 €	2,48,598 €	2,13,084 €	1,77,570 €	1,42,056 €	1,06,542 €	71,028 €	35,514 €
Loss Carry Forward	-	-	-	-	-	-	-	-	-	-
Profit Before Tax	89,600 €	5,43,554 €	7,88,288 €	8,23,802 €	8,59,316 €	8,94,830 €	9,30,344 €	9,65,858 €	10,01,372 €	10,36,886 €
Excise Duty	22,400 €	1,19,582 €	1,73,423 €	1,81,236 €	1,89,050 €	1,96,863 €	2,04,676 €	2,12,489 €	2,20,302 €	2,28,115 €
CST Tax	1,792 €	10,871 €	15,766 €	16,476 €	17,186 €	17,897 €	18,607 €	19,317 €	20,027 €	20,738 €
Profit After Tax	65,408 €	4,13,101 €	5,99,099 €	6,26,090 €	6,53,080 €	6,80,071 €	7,07,061 €	7,34,052 €	7,61,043 €	7,88,033 €
Cash Flow	8,57,958 €	12,05,651 €	13,91,649 €	14,18,640 €	14,45,630 €	14,72,621 €	14,99,611 €	15,26,602 €	15,53,593 €	15,80,583 €
Repayment Credit	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €	7,10,280 €
Dividend	**1,47,678 €**	**4,95,371 €**	**6,81,369 €**	**7,08,360 €**	**7,35,350 €**	**7,62,341 €**	**7,89,331 €**	**8,16,322 €**	**8,43,313 €**	**8,70,303 €**

Total Dividend	68,49,738 €

Conclusions

- By the end of 10 Years we have a total dividend of 6804008€. So, we can expect the return of investment tentatively during the 11th year of operation.
- Energy sustainability and energy security being the prime focus of the Indian government, we certainly expect favorable conditions for production and sales of our product in the years to follow. So, we anticipate an earlier return of investment.
- With an ever increasing consciousness among people about the harmful effects of fossil based fuels, we expect an increasing demand for our product. Therefore depending on the situation, we could have a possibility of a re investment to increase the plant capacity to match the market demand.
- Bio fuel is renewable, non toxic, free from sulfur and lead, and surely the future of transportation in developing nations. Invest in us for a better future.

The senseless battle of “Market versus the Environment”

Must become a battle of

“Market for the Environment”

The Markets for the future are Green.

Thank You☺