

7. Cost Analysis

7.1. Manpower

Table 2: Manpower

Manpower	Quantity	Wages/month	Total cost per annum (in Rs.)
Skilled	10	10,791	12,94,920
Semi-skilled	12	9,634	13,87,296
Unskilled	21	8,758	22,07,016
Total	43	4,07,436	48,89,232.00

7.2. Raw Materials

Table 3: Raw Materials

Items	Quantity	Rate	Total cost per annum (in Rs.)
Jaggery	750kg	30/kg	22,500
Yeast	1000kg	30/100g	3,00,000
Bottle	15000	2.5	37,500
Total			3,60,000.00

7.3. Contingent Expenses

Table 4: Contingent Expenses

Items	Total cost per annum (in Rs.)
Stationery	10,000
Telephone Expenses	12,000
Floor Cleaners, Disinfectants, etc.	6,000
Repair & Maintenance	12,000
Transportation & Cartage expenses	24,000
Advertisement, Publicity & Travelling & Sales expenses	12,000
Insurance	6,000
Miscellaneous	24,000
Total	Rs.1,06,000.00

7.4. Water Supply

Table 5: Water Supply

Purpose	Quantity	Rate	Total cost per annum (in Rs.)
Bio-Enzyme	36	280	10,080
Sanitary Purpose	320	280	89,600
Drinking Purpose	100	280	28,000
Total			Rs.1,27,680.00

7.5. Electricity Cost

Energy Charges: Rs. 8 per unit

Units Consumed: 8000kWh per month.

Total Electricity Cost: $[8000 \times 8] \times 12 = \text{Rs.} 7,68,000$ per annum.

7.6. Machines

Table 6: Machines

Cost of Water Supply and machinery Items	Unit cost (in Rs.)	No. of units	Total Cost (in Rs.)
Enzyme Fermenter Machine	7.5L	1	750000
Vibro Sifter	88500	1	88500
Stainless, mild steel twin shaft disperser/mixer	3.7 L	1	370000
Generator	85000	1	85000
Ceiling Fans	2000	15	30000
Coolers	15000	3	45000
Air-conditioners	45000	5	225000
Washroom essentials	500	130	65000
Office Desktop PCs	30000	5	150000
LED-Tube lights	108	25	2700
Switches	100	60	6000
Almirahs	8500	8	68000

Total Cost of Machinery: Rs. 18,85,200

8. Site Selection

Table 7: Site Selection

Factors affected	Site location			
	Sikandra Site	Foundry Nagar	Belanganj	UPSIDC Industrial Area
Cost of Land	3	4	3	5
Availability of Manpower	3	4	4	4
Availability of raw materials	2	4	5	4
Ease of transportation	5	5	3	5
Availability of nearby markets	2	3	4	3
Availability of Power supply	5	5	4	5
Ease of industrial norms (env. norms, licensing)	2	5	4	5
Sustainability of industry	4	4	4	4
Total Points	26	34	31	35

After this survey location of the Site selected: **UPSIDC Industrial Area**

Total land area needed = (100×170) sq. ft = **17,000 sq. ft.**

Rate per sq. meter = **Rs. 2750.**

Thus, the total estimated cost for 17,000 sq. feet (or 1579.352 sq. meters)

= Rs. (1579.352×2750) = Rs. 43,43,218 (approx. **Rs. 43.43 lakhs**)

9. Plant Layout

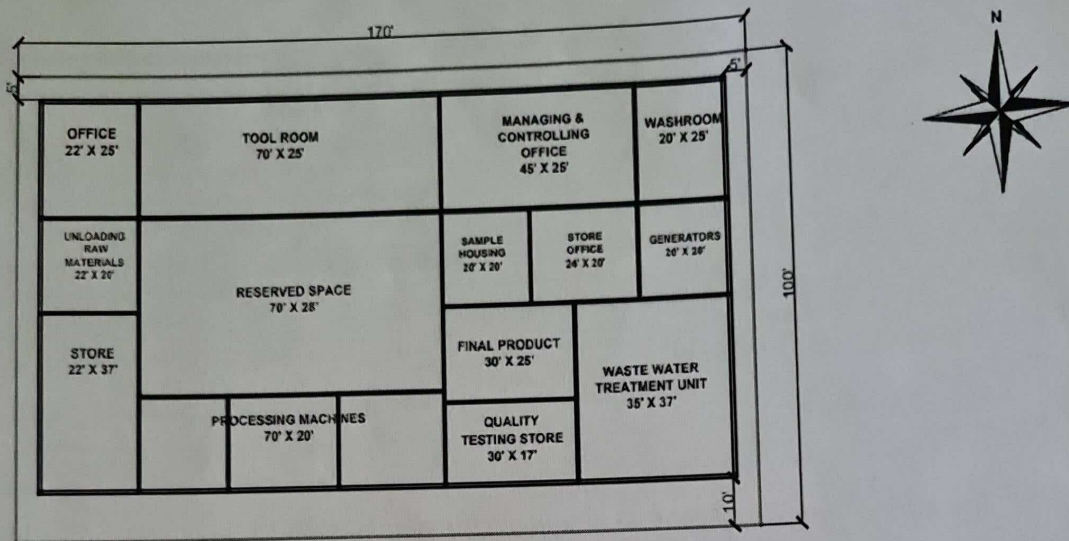


Figure 5: Plant Layout

Raw Material: A raw material, also known as a feedstock, unprocessed material, or primary commodity, is an essential material used to produce goods, finished products, energy, or intermediate materials, which are feedstock for future finished products.

Store: Non-transitory, semi-permanent, or long-term containment, holding, leaving, or placement of goods or materials, usually to retrieve them later. It does not include the interim accumulation of a limited amount during processing, maintenance, or repair.

Processing: Perform a series of mechanical or chemical operations on (something) to change or preserve it.

Tool Room: A toolroom is a room where tools are stored or, in a factory, made and repaired for use throughout the rest of the factory. In engineering and manufacturing, toolroom activity is everything related to tool-and-die facilities compared to production line activity.

Managing And Controlling: Control, or controlling, is one of the managerial functions like planning, organizing, staffing, and directing. It is an essential function because it helps to check the errors and take corrective action to minimize deviations from standards. The stated goals of the organization are achieved in the desired manner.

Sample Housing: Take a sample or samples of locks for analysis. Alternatively, a representative part or a single item from a larger whole or group, especially when presented for inspection or shown as evidence of quality.

Final Product: In production, a final product is a product that is ready for sale without

significant further processing.

Quality Testing: Quality assurance prevents mistakes and defects in manufactured products and avoids problems when delivering products or services to customers; ISO 9000 defines it as part of quality management focused on providing confidence that quality requirements will be fulfilled.

Store Office: Office supplies are consumables and equipment used in offices by businesses and other organizations, by individuals engaged in written communications, recordkeeping or bookkeeping, janitorial and cleaning, and storing supplies or data.

Shipping: The process of transporting an item, usually through the mail. Shipping is a fundamental, standard way of getting an item from one place or person to another.

Washroom: A toilet complex must be needed in every factory shed. The number of toilet units depends upon the size of the factory staff.

Generators: Electric generators are backup power sources that convert fuel supply-gasoline, diesel, propane, or natural gas — into electrical energy. They are the primary sources of electrical supply during power outages.

Wastewater Treatment Unit: Sewage treatment aims to remove contaminants from sewage to produce an effluent suitable for discharge to the surrounding environment or an intended reuse application, thereby preventing water pollution from raw sewage discharge.

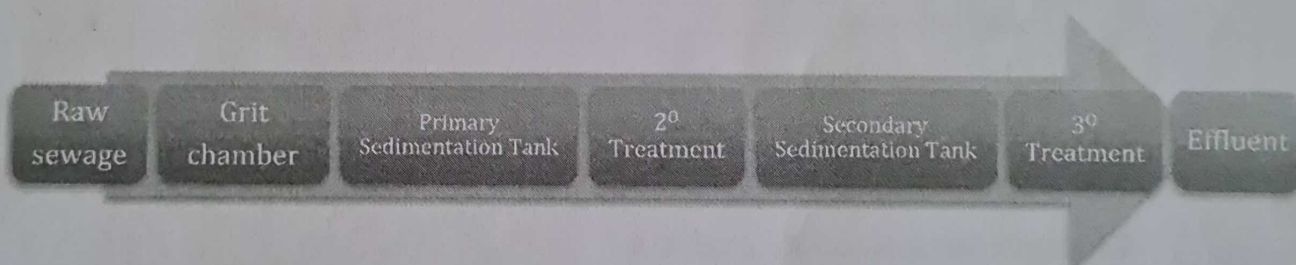


Figure 6: Waste Water Treatment Unit

10. Cost Estimation

Table 8: Cost Estimation

Item	Annual Cost (Rs.)
Manpower	48,89,232
Land	43,43,218
Machinery	18,85,200
Raw Materials	3,60,000
Contingent Expense	1,06,000
Electricity Supply	7,68,000
Water Supply	1,27,680
Total	1,26,35,150

11. Manufacturing Cost

11.1. Estimated Fixed Cost

Table 9: Estimated Fixed Cost

Item	Annual cost (Rs.)
Land	43,43,218
Machinery	18,85,200
Total	62,28,418

11.2. Estimated Variable Cost

Table 10: Estimated Variable Cost

Item	Annual cost (Rs.)
Manpower	48,89,232
Raw materials	3,60,000
Contingent	1,06,000
Electricity supply	7,68,000
Water supply	1,27,680
Total	62,50,912

11.3. Overall Cost Analysis

Table 11: Overall Cost Analysis

The total fixed cost incurred	Rs. 62,50,912
Each workshop production per day	50 items
3 workshops production per day	150 items
Overall production of a month	$(150 \times 25) = 3750$ items
Annual production	$(3750 \times 12) = 45000$ items
Variable cost per unit	$(62,50,912 / 45,000) = \text{Rs. } 138.9$ (Approx. Rs.140)

12. Profitability

Total fixed cost incurred = Rs. 62,28,418

Investment Price per unit = Rs. 138.9 (Approx. Rs.140)

Selling Price Per Unit = Rs. 200

Profit Analysis (Over three years)

Table 12: Profitability

Production Time (in years)	Yield	Cost Price (Rs.)	Selling Price (Rs.)
1	45000	1,25,28,418	90,00,000
2	90000	1,88,28,418	1,80,00,000
3	135000	2,51,28,418	2,70,00,000

Total CP for initial 3 years = Rs. 2,51,28,418

Total SP for initial 3 years = Rs. 2,70,00,000

Profit: Rs. 18,71,582

Profit: 6.93%

13. Break-Even Analysis

Total fixed cost incurred=Rs. 62,28,418

Variable cost per unit=Rs. 140

Average Selling Price Per Unit=Rs. 200

Table 13: Break-Even Analysis

Units	Fixed cost	Variable cost	Total cost price	Sales price
0	6228418	0	6228418	0
22500	6228418	3150000	9378418	4500000
45000	6228418	6300000	12528418	9000000
67500	6228418	9450000	15678418	13500000
90000	6228418	12600000	18828418	18000000
112500	6228418	15750000	21978418	22500000
135000	6228418	18900000	25128418	27000000
157500	6228418	22050000	28278418	31500000

Units Increment (for X-Axis display)	6 months
Break-Even (units)	103800
Break-Even (time)	2.81 years
Break-Even (Rs.)	2,07,60,000

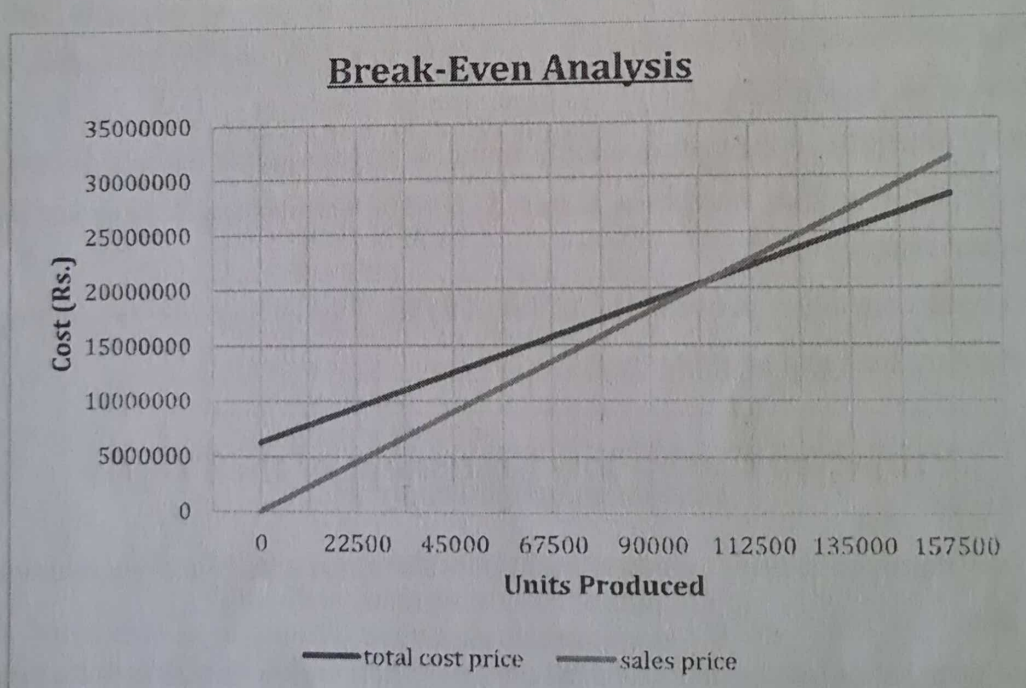
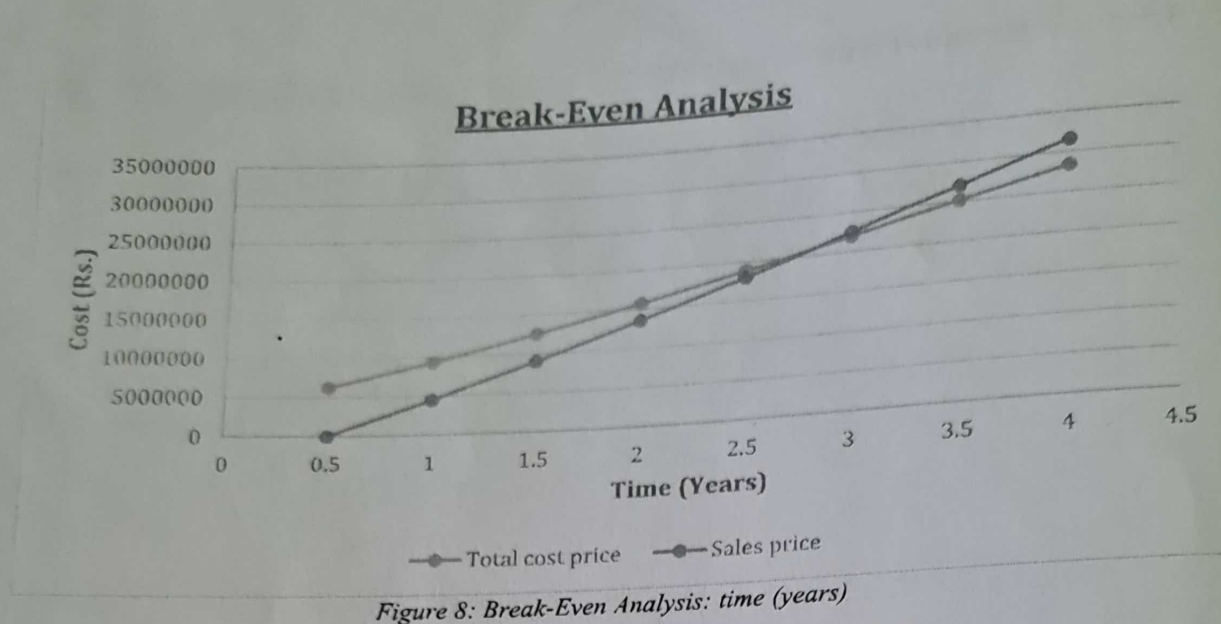


Figure 7: Break-Even Analysis: Units produced



14. Capital Requirements

Stand-Up India: Governed by the Small Industries Development Bank of India (SIDBI), Stand Up India was initiated to fund people under SC/ST category and women entrepreneurs. This scheme provides bank loans between Rs. 10 lakhs and Rs. 1 crore to at least one SC/ST borrower and one-woman borrower per bank branch. [22]

Eligibility: Enterprises in the trading, manufacturing, or services sectors are considered eligible for this scheme. In non-individual enterprises, at least 51% of the shareholding stake should be with an SC/ST or woman entrepreneur.

It offers composite loans between **Rs. 10 lakhs to Rs. 1 crore** to cover 75% of the project, including the term loan and working capital.

15. Projected Cash Flow Statement of the Project

A cash flow statement contains information about the cash flows in and out of the company and the uses for the cash.

There are three subdivisions under which all concerned cash inflow and outflow are classified in the standard cash flow statement format – operations, investing, and financing.

Preparation of cash flow statements: A cash flow statement can be prepared by following either of the two below-mentioned methods.[23]

Direct Method: Under this approach of preparing a cash flow statement, all cash-related transactions within an accounting period are added and deducted accordingly to calculate the net cash flows. These transactions, in turn, are derived from the opening and closing balances of relevant accounts.

Indirect Method: The net cash flow is derived from the net income shown in an organization's

Income Statement in the indirect method. All cash and non-cash transactions are added and deducted to derive the net cash flow.

Table 14: Cash Flow Statement

Items	Amount (Rs.)
Cash Flow from Investing Activities	43,43,218
Raw Materials	3,60,000
Miscellaneous Items	7,20,000
Electricity Supply	7,68,000
Water Supply	1,27,680
Salary and wages	48,89,232
Purchase of machinery	18,85,200
Decrease in accounts receivable	6,00,000
The net change in cash and cash equivalents	1,36,93,330

Projected cash flow statement for three years = $3 \times 13693330 = \text{Rs. } 4,10,79,990$ (approx.)

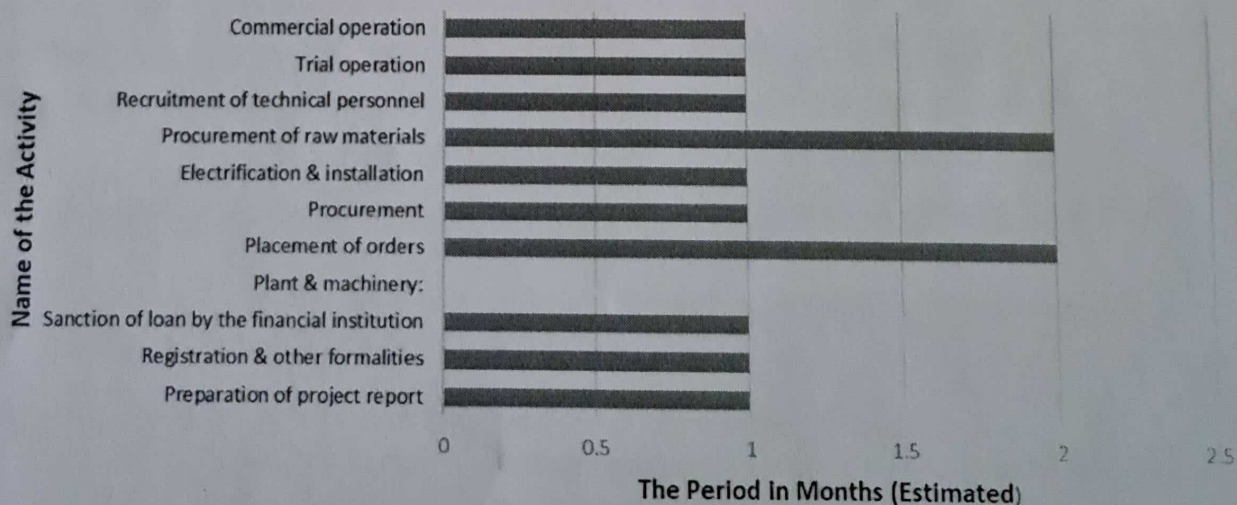
16. Project Implementation

The primary activities in the implementation of the project have been listed, and the average time for implementation of the project is estimated at 12 months:

Table 15: Project Implementation

S.No.	Name of the activity	The period in months (estimated)
1.	Preparation of project report	1
2.	Registration & other formalities	1
3.	Sanction of loan by the financial institution	1
4.	Plant & machinery:	
4(a).	Placement of orders	2
4(b).	Procurement	1
4(c).	Electrification & installation	1
5.	Procurement of raw materials	2
6.	Recruitment of technical personnel	1
7.	Trial operation	1
8.	Commercial operation	1

Project Implementation



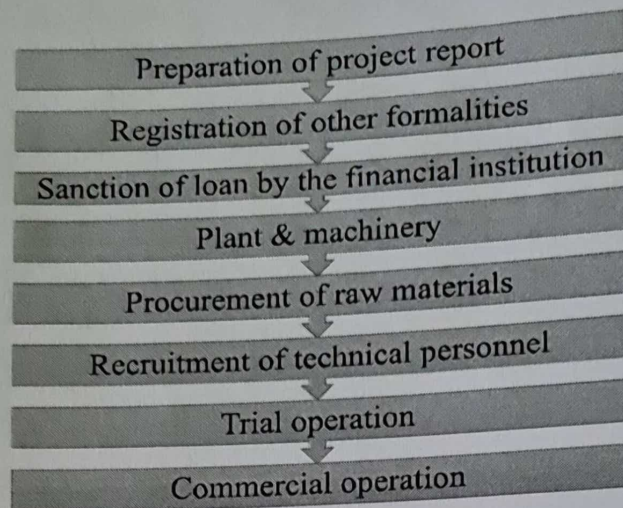


Figure 9: Project Implementation

17. Conclusion

Bio-Enzyme is helpful to us in many ways. Some of the reasons to set up the Bio-Enzyme industry are:

1. Rare: Industries making artificial cleaners harm humans and the environment. Due to very rare industries of Bio-Enzyme in India, there is a high chance of sales of Bio-Enzyme in the local market.
2. Affordable: The materials and preparation of Bio-Enzyme are low. Therefore, the cost of the product being less than artificial cleaners encourages all classes of society to purchase this product.
3. Best Out of Waste: Fruits are consumed reasonably, as only the inner part is consumed. The peel is a waste that is thrown away. In Bio-enzyme, the outer covering of fruits, i.e., peels, is the main ingredient to prepare it. In this way, the waste can be turned into valuable products.
4. Employment Opportunities: Bio-enzyme does not require a highly skilled workforce. This is a simple and easy-to-make product industry. Therefore, the local rural area women can easily get employed, which can be a good source of income for them. In this way, this industry can employ the rural area people and help them in their living.

Bio-Enzyme Industry, an innovative SSI, can be an excellent industry in India's rural areas.