# *Detailed Project Report*

## *On*

## *Bio-Floc Fish Farming (10 Tanks)*

**Under MKUY**

**Name of the Entrepreneur/Entity:**

**Address:**

## Contents

## 1. Project Summary

| | | |
|---|---|---|
| 1 | Name of the Enterprise<br>(as per the Illustrative List of Enterprises) | Bio-Floc Fish Farming |
| 2 | Sector (as per the Illustrative List of Enterprises) | Fishery |
| 3 | Project Capacity[1] | 10 Tanks |
| 4 | Key components of the project | Production of Fish |
| 5 | Project Address<br>(Village/Ward, Gram Panchayat/Municipality, Block, District) | |
| 6 | Products/Output from the project | Fish |
| 7 | Total Project Cost | Rs. 22,08,000 |
| 8 | Fixed Capital Cost | Rs. 21,57,000 |
| 9 | Working/Recurring capital (for one month) | Rs. 51,000 |
| 10 | Bank Finance/ Self Finance | Bank Finance |
| 11 | Bank Loan Amount | Rs. 15,35,400 |
| 12 | Promoter Contribution | Rs. 6,72,600 |
| 13 | Assumed Rate of Interest | 11% |
| 14 | Subsidy Eligibility (40%, 50%) | |
| 15 | Repayment Terms<br>(Tenure, Moratorium, Frequency, Mode of Repayment: equal principal/equal instalment) | Equal Monthly Instalment |
| 16 | Key Financial Indicators:<br>1. Average Annual Net Profit<br>2. Debt Service Coverage Ratio (DSCR)<br>3. Internal Rate of Return<br>4. Break Even Year | <br>Rs. 7,13,819<br>2.59<br>27.86%<br>3 Year 5 Month |
| 17 | Estimated employment to be generated (nos.) | 2 |

**Note:**

1. Customized DPR is to be prepared as per the information given by the beneficiary.
2. The CIS will be calculated as per the cost norm of MKUY guideline.
3. All the prices quoted here are indicative in nature.
4. The particulars under each component of the Capital Investment may be changed as per the requirement of the project.

[1] Capacity can be in terms of area or quantity

# 2. Project Profile

## 2.1 Entrepreneur/Entity Profile

| | | |
|---|---|---|
| 1 | Name of the Entrepreneur/Entity | |
| 2 | Legal status<br>(Individual/ Group/ FPO/ FPC/ Proprietorship/ Partnership firm/ Company/ Cooperative/ Federation/ Society/ Trust) | |
| 3 | Name of Representative[2] in Ease of entity | |
| 4 | Gender (Male/ Female/ Third Gender/ Not Applicable) | |
| 5 | Date of Birth of Individual/Representative of Entity | |
| 6 | Date of Incorporation/Registration of Entity | |
| 7 | Category opted for<br>(Women/ ST/ SC/ Differently Abled/ Third gender/ Agri & Allied Graduate) | |
| 8 | Educational Qualification of Individual/Representative of Entity | |
| 9 | Passport size photograph of the Individual/ Representative of entity | |
| 10 | Local Address for Correspondence of the Individual/ Representative of entity | |
| 11 | Registered Address of Entity | |
| 12 | Main Office/Branch Address of Entity | |
| 13 | Phone no. of Individual/Representative of Entity | |
| 14 | Email Id of Individual/Representative of Entity | |
| 15 | AADHAR No. of Individual/Representative | |
| 16 | PAN of Individual/Representative of Entity, if available | |
| 17 | Farmer Id of Individual, if available | |
| 18 | Details of other Partner/Director/ President/Secretary | |
| 19 | Registration No./ CIN of the Entity[3] | |
| 20 | PAN/TAN of Entity | |
| 21 | GSTIN of Entity, if available | |
| 22 | Details of experience and exposure relevant to the proposed enterprise/project<br>(family business, work experience, e-learning/certificate courses, trainings undertaken etc.) | |

[2] Representative should be authorized by the board/governing body of the entity.

[3] Registration document:
Groups (SHG/PG/: FPO: Proprietorship firm: Registration Certificate under Shops & Establishment Act, Partnership firm: Registration Certificate from IGR of state, Company (Pvt. Ltd., Public Ltd., LLP, OPC, FPC): Certification of Incorporation, Cooperative/ Federation: Certificate of Registration from Registrar of Cooperative Societies, Society/Trust: Darpan Unique Id

## 2.2. Project Consultant Details

DPR prepared by: APICOL, Baramunda, Bhubaneswar

## 2.3. Concept and Scope of the Project

"Bioflocs" are a consortium of particulate matter formed predominantly by a biota of aerobic and heterotrophic bacteria, protozoa, microalgae (diatoms), metazoans, detritus, faeces, remnants of feed and remains of dead organisms

**Principle on which Bio-floc works**

Bio-floc system is a wastewater treatment, which has gained vital importance as an approach in aquaculture.

- It combines the removal of nitrogenous metabolites from the water by addition of carbon source externally for the production of microbial biomass under strong aeration, which then can be used by the cultured fish species as an additional food source.
- The principle of the technique is to maintain the higher C-N ratio by adding carbohydrate source and the water quality is improved through the production of high-quality single cell microbial protein.
- In such condition, heterotrophic microbial growth occurs which assimilates the nitrogenous waste that can be exploited by the cultured species as a feed and also works as bioreactor controlling of water quality.
- Immobilization of toxic nitrogen species occurs more rapidly in biofloc because of the growth rate and microbial production per unit substrate of heterotrophs are ten-times greater than that of the autotrophic nitrifying bacteria.
- This technology is based on the principle of flocculation within the system.

**Major requirements of BFT**

- High stocking density
- High aeration (To keep DO level >6ppm)
- Sludge/waste disposal system
- Poly-lined ponds /poly-tarpaulin or cemented tanks
- Indoor/Outdoor
- Suitable candidate species (Fin/Shellfish & FW/BW/MW)
- Zero water exchange
- Zero tolerance to antibiotics

**Basic Requisites for BFT**

- Biofloc tank installation
- Air pump and supply
- Feed, probiotics, molasses & chemicals
- Water quality test kit & equipment

**Nutritional value of Bio-floc**

- Dry weight protein ranges from 25–50%
- Fat ranges from 0.5–15%
- Good source of vitamins and minerals, particularly phosphorous

- It has an effect similar to gut probiotics
- The dried bio-floc meal is proposed as an ingredient to replace the fishmeal or soybean meal in the feed.

**Advantage of Bio-floc technology**

- It is an eco-friendly fish farming system and it reduces environmental impact.
- Judicial use of land and water
- Limited or zero water exchange system thus reducing the pollution
- Higher productivity (it enhances survival rate, growth performance and feed
- conversion in the culture systems of fish).
- It provides higher bio-security thus minimizing the risk of disease
- outbreaks.
- It reduces utilization of protein rich feed and cost of standard feed.
- It reduces the pressure on capture fisheries i.e., use of cheaper food fish and
- trash fish for fish feed formulation.

**Fish Species Suitable for Bio-floc Technology**

Bio-floc system works best with species that are able to derive some nutritional benefits from the direct consumption of floc. Bio-floc system is most suitable for species that can tolerate high solids concentration in water and are generally tolerant of poor water quality. Some of the species that are suitable for bio-floc technology are:

- Air breathing fish like Singhi (Heteropneustes fossilis), Magur (Clarias batrachus), Pabda (Ompok pabda), Anabas/Koi (Anabas testudineus), Pangasius (Pangasianodan hypophthalmus).
- Non-air-breathing fishes like Common Carp (Cyprinus carpio), Rohu (Labeo rohita), Tilapia (Oreochromis niloticus), Milkfish (Chanos chanos).
- Shellfishes like Vannamei (Litopenaeus vannamei) and Tiger Shrimp
- (Penaeus monodon) - in brackish water systems.

**Bio-floc Fish Farm Infrastructure**

Under the scheme promoted by the Department, the technical standards of circular tanks constructed from cement concrete or PVC/HDPE polyliners with metallic/PVC frames is a minimum of 4-meter diameter, 1.3-meter depth and with central drain. The tanks should be housed in a shed constructed from shade net. Good sunlight is essential for bio-floc 04 Bio-floc Technology in Fish Farming culture. Transparent polyliners can also be used by replacing shade nets to increase the sunlight and to protect the tanks from rainwater. Freshwater can be sourced from borewell or municipal tap water line. In case of municipal tap water, care should be taken to remove all the chlorine content from source water. Each tank should be provided with ample aeration line with air blower. Air blowers should have to power backup from inverter with battery or mini genset for continuous aeration.

**Example of GIFT farming in Bio-floc system: Seed stocking density, feed management and water quality management**

| S. No. | Component | Details |
|---|---|---|
| 1 | Bio-floc Tank size (1.20 m water depth) | 4 metre diameter and 1.5-meter height |
| 2 | Water holding capacity ofeach tank | 15,000 Litres capacity |
| 3 | Water quality parameters | Dissolved Oxygen - 5mg/L; Temperature-26-34°C, pH-7.5 to 8, TDS-600ppm, Floc density-25-40mg/l, Ammonia-0.5 ppm, Nitrite-0.3 ppm, Nitrate-150 ppm, Alkalinity-120-280 ppm |
| 4 | Stocking density depending on species) | 100 nos/m3(1000 nos. of fingerlings per tank) |
| 5 | Common Species cultured | GIFT Tilapia *(Oreochromis niloticus)* - mono-sex fingerlings bought from licensed hatcheries should be stocked for fast and uniform growth |
| 6 | Survival (%) | 80 |
| 7 | Type of feed to be used Fat 3%) | Floating pellet feed (Crude Protein 22-24%; |
| 8 | % of feed per day | 2-3% of Average Body weight per day |
| 9 | Feeding frequency | 4 times early stage, later 2 times per day |
| 10 | FCR | 1:1.25 |
| 11 | Duration of culture | 4 months |
| 12 | Size/ weight of the fish atharvest (gram) | 500 g average weight |
| 13 | No. of crops per year | 3 |

**How to Prepare the Inoculum:**

**METHOD I:**

For 15000 Litres of fresh water 150 Litres of inoculum is required for the floc development

**Step 1**

Take clean tub/can with 150 Litres of water and continue vigorous aeration

**Step 2**

Add 3 Kg of pond soil

+

1.5 gm of Ammonium sulphate /Urea

+

30 gm of carbon source (Jagerry /Wheat flour /Tapioca flour)

**Step 3**

Mix it well with water in tub and provide adequate aeration

**Step 4**

The inoculum will be ready after 24-48 hrs and it can be transferred to main tank

- Daily addition of carbon source is required for the development of floc. For every 1 kg of feed given (with 25 % of crude protein), 600 gm of carbon source is to be added to the system to maintain C: N of 10:1.
- Once the floc volume reaches 15-20ml further addition of carbon source is not required

**METHOD II:**

**Step 1**

Take clean tub/can with 130 Litres of water and continue vigorous aeration

**Step 2**

Add 20 Litres of pond water/RAS water (before filtration)

+

30 gm of carbon source (Jagerry /Wheat flour /Tapioca flour)

+

10 gm of probiotic (with Bacilus Sp., Aspergilus Sp. etc with a total concentration of 10x109 CFU/gm)

Follow the remaining steps as mentioned in **method 1**

***NB: Well developed inoculum will be turbid with foam on the water surface (Ideal Volume of Floc in Imhoff cone for shrimp is 10-15 ml/L**

## Techno-commercial Assumptions

| Sl. No. | Parameter | Value | Unit |
|---|---|---|---|
| 1 | Increase in Rate of Product | 5 | % |
| 2 | Increase in Electricity consumption | 3 | % |
| 3 | Collection from Debtors (First Year) | 15 | Days |
| 4 | Collection from Debtors | 15 | Days |
| 5 | Payable to Creditors | 20 | Days |
| 6 | Drawing by Promoter | 20 | % |
| 7 | Increase in Staff Salary | 5 | % |
| 8 | Rate of Interest on TL | 11 | % |
| 9 | Rate of Interest on WC | 9 | % |
| 10 | Loan Repayment (in year) | 7 | Days |
| 11 | Raw Material in Stock (on sales) | 7 | Days |
| 12 | Finished Goods in stock (on sales) | 10 | Days |
| 13 | Promoter's Contribution (Term Loan) | 30 | % |
| 14 | Promoter's Contribution (Working Capital) | 50 | % |
| 15 | Working Capital Requirement | 1 | Months |
| 16 | Working Capital Utilisation | 100 | % |
| 17 | No. of Working days | 360 | Days |
| 18 | No. of Tanks | 10 | Nos. |
| 19 | No. of fingerlings per tank (Stocking) | 1200 | Nos. |
| 20 | Production per tank per crop of Tilapia/ Pangasius/ Catfish/ Amur carp/ Scampi/ shrimp/ barb etc. | 600 | kg |
| 21 | No. of crop per year | 3 | Nos. |
| 22 | Feed per Tank per Year | 400 | Kg |
| 23 | Cost of Feed per kg | 36 | Rs |
| 24 | Cost of one Fingerling | 4 | Rs |
| 25 | Cost of probiotic per tank per annum | 1600 | Rs |
| 26 | Office Space | 50 | Sq. ft |
| 27 | Store Space | 50 | Sq. ft |
| 28 | Cost of Office construction per sq. ft | 850 | Rs |
| 29 | Cost of Store construction per sq. ft | 400 | Rs |
| 30 | Space required for one Tank | 345 | Sq. ft |
| 31 | Cost of construction of one Tank | 45000 | Rs |
| 32 | Cost of construction of shed with flooring per sq. ft. | 320 | Rs |
| 33 | Survival Rate | 80 | % |

## 3. Financial Details

### 4.1. Project Fixed Capital

| Details of Fixed Assets | | | | | |
|---|---|---|---|---|---|
| **Sl. No.** | **Particulars** | **Unit** | **Qty.** | **Cost per unit (Rs)** | **Total (Rs)** |
| **A** | **Land** | | | | |
| 1 | Land Development | Sq. ft | 5000 | 0.70 | 3,500 |
| 2 | Fencing (Barbed wire) | ft | 200 | 60.00 | 12,000 |
| | **Sub Total** | | | | **15,500** |
| **B** | **Civil Construction** | | | | |
| 1 | Construction of Shed with installation charges including flooring | sq. ft | 3450 | 320.00 | 1,104,000 |
| 2 | Setup of Bio-Floc Tanks: Brick Masonary with frames, solid base, drain pipe fish net covering (4m dia x 1.5 m depth tank with 1.2 m water depth =15,000 lts Capacity each Tank) with 150 cum capacity | Nos. | 10 | 45,000.00 | 450,000 |
| 3 | Store | sq. ft | 50 | 400 | 20,000 |
| 4 | Office | sq. ft | 50 | 850.00 | 42,500 |
| | **Sub Total** | | | | **1,616,500** |
| **C** | **Water Supply** | | | | |
| 1 | Water Supply with borewell, pump (3 HP) and PVC pipe fittings for air and water flow | Nos | 1 | LS | **200,000** |
| **D** | **Electrification** | | | | |
| 1 | Electrical Installation & DG Set/ Power Generator/ Any other back up system | | | | **100,000** |
| **E** | **Plant & Machinery (all the machinery items to be specified)** | | | | |
| **Sl. No.** | **Particulars** | **Specification** | **Qty** | **Unit Price (Rs)** | **Total (Rs)** |
| 1 | Ring Blower (2 nos of 3 HP)/ High pressure air pump and other accessories | | | | 100,000 |
| 2 | Nets & Accessories (Air Oxi tube/ Air Oxi Spider etc.) | | | | 75,000 |
| 3 | Electronic weighing balance | | | | 1,000 |
| 4 | Other accessories | | | | 24,000 |
| | **Total Machinery Cost** | | | | **200,000** |
| | | | | | |
| **G** | **Miscellaneous Expenditure** | | | | |
| 1 | Insurance premium of assets | | | | 15,000 |
| 2 | Cost of DPR Preparation | | | | 5,211 |
| 3 | Other miscellaneous exp. | | | | 4,789 |
| | **Total Miscellaneous Expenditure** | | | | **25,000** |

## 4.2. Project Variable Expenses

| Details of Recurring Expenditure | | | | | | |
|---|---|---|---|---|---|---|
| **A** | **Details of raw material (per annum @ 100%)** | | | | | |
| **Sl. No.** | **Items** | **Unit** | **Rate/Unit (in Rs)** | **Qty/day** | **Qty/annum(kg)** | **Total (Rs)** |
| 1 | Fish Fingerlings Tilapia/ Pangasius/ Catfish/ Amur carp/ Scampi/ shrimp/ barb etc. | Nos | 4 | | 36,000 | 144,000 |
| 2 | Formulated Feed (24-30% crude protein & 3% fat) | Kg | 36 | | 4,000 | 144,000 |
| 3 | Probiotics, Carbon source test kits | Rs | | | | 16,000 |
| | **Total** | | | | **40,000** | **304,000** |

| Details of salary and other benefits | | | | |
|---|---|---|---|---|
| **Sl. No.** | **Type of Workers** | **No. of Worker** | **Salary Per Month/head (Rs)** | **Total Salary per Annum (Rs)** |
| 1 | Unskilled | 1 | 10,000 | 120,000 |
| 2 | Skilled | 1 | 12,000 | 144,000 |
| | **Grand Total** | 2 | | **264,000** |

## 4.3. Details of Sales

| Details of sales | | | | | | |
|---|---|---|---|---|---|---|
| **Sl. No.** | **Type of products** | **Unit** | **Rate/Unit (Rs)** | **Quantity/day** | **Quantity/annum** | **Total (Rs)** |
| 1 | Tilapia/ Pangasius/ Catfish/ Amur carp/ Scampi/ shrimp/ barb etc. production | Rs | 130 | | 14,400 | 1,872,000 |
| | **Total** | | | | **14,400** | **1,872,000** |

## 4.4. Project Balance Sheet

| Liabilities | I | II | III | IV | V | VI | VII |
|---|---|---|---|---|---|---|---|
| **Opening Capital** | **-** | **673,139** | **891,367** | **1,173,655** | **1,569,544** | **2,000,935** | **2,403,835** |
| Add: Introduced | 672,600 | | | | | | |
| Add: Profit | 169,539 | 442,228 | 576,288 | 788,889 | 932,392 | 1,004,900 | 1,082,501 |
| Less: Drawing | 169,000 | 224,000 | 294,000 | 393,000 | 501,000 | 602,000 | 698,000 |
| **Closing Capital** | **673,139** | **891,367** | **1,173,655** | **1,569,544** | **2,000,935** | **2,403,835** | **2,788,336** |
| Term Loan from Bank | 1,358,257 | 1,189,066 | 1,000,296 | 789,682 | 554,696 | 292,517 | - |
| **Current Liabilities** | | | | | | | |
| Cash Credit from Bank | 25,500 | 25,500 | 25,500 | 25,500 | 25,500 | 25,500 | 25,500 |
| Sundry Creditors | 12,160 | 16,000 | 17,933 | 21,200 | 23,533 | 24,733 | 26,000 |
| Expenses Payable | 34,900 | 37,400 | 39,600 | 42,100 | 44,500 | 46,700 | 49,100 |
| Current Provisions | - | 10,117 | 34,697 | 87,847 | 131,739 | 162,814 | 196,072 |
| **Total Current Liabilities** | **72,560** | **89,017** | **117,730** | **176,647** | **225,273** | **259,747** | **296,672** |
| **Total Liabilities** | **2,103,956** | **2,169,450** | **2,291,681** | **2,535,873** | **2,780,904** | **2,956,100** | **3,085,008** |
| **Assets** | | | | | | | |
| Fixed Assets | 2,132,000 | 2,132,000 | 2,132,000 | 2,132,000 | 2,132,000 | 2,132,000 | 2,132,000 |
| *Less* Depreciation | 226,650 | 403,470 | 583,119 | 743,177 | 885,848 | 1,013,078 | 1,126,586 |
| **Net Fixed Assets** | **1,905,350** | **1,728,530** | **1,548,881** | **1,388,823** | **1,246,152** | **1,118,922** | **1,005,414** |
| **Current Assets** | | | | | | | |
| Sundry Debtors | 56,200 | 73,800 | 82,600 | 97,600 | 108,200 | 113,700 | 119,400 |
| Inventories | 34,800 | 35,900 | 46,272 | 52,089 | 61,122 | 67,411 | 70,739 |
| Cash and Bank Balance | 11,300 | 14,800 | 16,600 | 19,600 | 21,700 | 22,800 | 23,900 |
| Other Current Assets | 96,306 | 316,420 | 597,328 | 977,761 | 1,343,730 | 1,633,266 | 1,865,555 |
| **Total Current Assets** | **198,606** | **440,920** | **742,800** | **1,147,050** | **1,534,752** | **1,837,178** | **2,079,594** |
| **Total Assets** | **2,103,956** | **2,169,450** | **2,291,681** | **2,535,873** | **2,780,904** | **2,956,100** | **3,085,008** |

## 4.5. Calculation of Depreciation

| Rates of Depreciation | | 10% | 15% | Total depreciation for the year (Rs) |
|---|---|---|---|---|
| Year | 1 | 181,650.00 | 45,000 | 226,650 |
| | 2 | 163,485.00 | 38,250 | 201,735 |
| | 3 | 147,136.50 | 32,513 | 179,649 |
| | 4 | 132,422.85 | 27,636 | 160,058 |
| | 5 | 119,180.57 | 23,490 | 142,671 |
| | 6 | 107,262.51 | 19,967 | 127,229 |
| | 7 | 96,536.26 | 16,972 | 113,508 |

## 4.6. Projected P&L

| Description | Year ending March 31st | | | | | | |
|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII |
| Capacity Utilisation | **60** | **75** | **80** | **90** | **95** | **95** | **95** |
| **Revenue** | | | | | | | |
| Sales | 1,123,200 | 1,475,000 | 1,652,000 | 1,952,000 | 2,164,000 | 2,273,000 | 2,387,000 |
| Opening Stock of Finished Goods | - | (31,200) | (40,972) | (45,889) | (54,222) | (60,111) | (63,139) |
| Closing Stock of Finished Goods | 31,200 | 40,972 | 45,889 | 54,222 | 60,111 | 63,139 | 66,306 |
| **Total Income (A)** | **1,154,400** | **1,484,772** | **1,656,917** | **1,960,333** | **2,169,889** | **2,276,028** | **2,390,167** |
| **Expenditure** | | | | | | | |
| Opening stock of Raw Material | **-** | **3,600** | **4,700** | **5,300** | **6,200** | **6,900** | **7,300** |
| Purchase (Net) of Material | 182,400 | 240,000 | 269,000 | 318,000 | 353,000 | 371,000 | 390,000 |
| Closing Stock of Raw material | **3,600** | **4,700** | **5,300** | **6,200** | **6,900** | **7,300** | **7,600** |
| **Raw Material Consumption** | **178,800** | **238,900** | **268,400** | **317,100** | **352,300** | **370,600** | **389,700** |
| Repair & Maintenance- Machinery (@5% of Cost) | 105,825 | 111,200 | 116,800 | 122,700 | 128,900 | 135,400 | 142,200 |
| Utility expense | 22,464 | 29,500 | 33,100 | 39,100 | 43,300 | 45,500 | 47,900 |
| Insurance cost | 15,000 | 15,800 | 16,600 | 17,500 | 18,400 | 19,400 | 20,400 |
| Administrative salaries and wages | 264,000 | 277,200 | 291,100 | 305,700 | 321,000 | 337,100 | 354,000 |
| Other Misc Expenses [@1% of sales] | 11,232 | 14,750 | 16,520 | 19,520 | 21,640 | 22,730 | 23,870 |
| **Total Cost** | **597,321** | **687,350** | **742,520** | **821,620** | **885,540** | **930,730** | **978,070** |
| **Profit Before Depreciation, Interest and Tax** | **557,079** | **797,422** | **914,397** | **1,138,713** | **1,284,349** | **1,345,298** | **1,412,097** |

| Description | Year ending March 31st | | | | | | |
|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII |
| Depreciation | 226,650 | 201,735 | 179,649 | 160,058 | 142,671 | 127,229 | 113,508 |
| **Profit Before Interest and Tax** | **330,429** | **595,687** | **734,748** | **978,655** | **1,141,678** | **1,218,069** | **1,298,589** |
| Interest on Term Loan | 158,595 | 141,047 | 121,468 | 99,624 | 75,252 | 48,060 | 17,721 |
| Interest on Working Capital Loan | 2,295 | 2,295 | 2,295 | 2,295 | 2,295 | 2,295 | 2,295 |
| **Total Interest Paid** | **160,890** | **143,342** | **123,763** | **101,919** | **77,547** | **50,355** | **20,016** |
| **Profit Before Tax** | **169,539** | **452,345** | **610,984** | **876,736** | **1,064,131** | **1,167,714** | **1,278,573** |
| Income Tax | - | 10,117 | 34,697 | 87,847 | 131,739 | 162,814 | 196,072 |
| **Profit after Tax** | **169,539** | **442,228** | **576,288** | **788,889** | **932,392** | **1,004,900** | **1,082,501** |

## 4.7. Projected Cash Flow

| Period Ending: | I | II | III | IV | V | VI | VII |
|---|---|---|---|---|---|---|---|
| Cash & Bank Balance at Beginning | - | 11,300 | 39,715 | 41,515 | 44,515 | 46,615 | 47,715 |
| **Cash Inflow during the Period** | 2,330,606 | 660,420 | 784,650 | 1,007,864 | 1,123,688 | 1,166,604 | 1,232,933 |
| **Cash Outflow during the Period** | 2,319,306 | 632,005 | 782,850 | 1,004,864 | 1,121,588 | 1,165,504 | 1,231,833 |
| **Closing Cash & Bank Balance** | **11,300** | **39,715** | **41,515** | **44,515** | **46,615** | **47,715** | **48,815** |

## 4.8. Projected Loan Repayment

| Year | Interest | EMI | Principal |
|---|---|---|---|
| 1 | 158,594.78 | 310,238.00 | 151,643.22 |
| 2 | 141,046.80 | 310,238.00 | 169,191.20 |
| 3 | 121,468.19 | 310,238.00 | 188,769.81 |
| 4 | 99,623.97 | 310,238.00 | 210,614.03 |
| 5 | 75,251.96 | 310,238.00 | 234,986.04 |
| 6 | 48,059.65 | 310,238.00 | 262,178.36 |
| 7 | 17,720.67 | 310,238.00 | 292,517.33 |
| **Total** | **661,766.01** | **2,171,666.01** | **1,509,900.00** |

## 4.9. Calculation of DSCR, IRR and BEP

| Calculation of DSCR | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** |
| Net Sales | 1,123,200 | 1,475,000 | 1,652,000 | 1,952,000 | 2,164,000 | 2,273,000 | 2,387,000 |
| Net Profit | 169,539 | 442,228 | 576,288 | 788,889 | 932,392 | 1,004,900 | 1,082,501 |
| Interest Paid | 160,890 | 143,342 | 123,763 | 101,919 | 77,547 | 50,355 | 20,016 |
| **Cash Accruals (a)** | **330,429** | **585,570** | **700,051** | **890,808** | **1,009,939** | **1,055,254** | **1,102,517** |
| Interest Paid | 878,044 | 783,879 | 677,772 | 558,208 | 423,480 | 271,665 | 100,597 |
| Principal | 151,643 | 169,191 | 188,770 | 210,614 | 234,986 | 262,178 | 292,517 |
| Interest | 160,890 | 143,342 | 123,763 | 101,919 | 77,547 | 50,355 | 20,016 |
| **Total (b)** | **312,533** | **312,533** | **312,533** | **312,533** | **312,533** | **312,533** | **312,533** |
| DSCR | 1.06 | 1.87 | 2.24 | 2.85 | 3.23 | 3.38 | 3.53 |
| **Average DSCR** | | | | **2.59** | | | |

| Calculation of Break-Even Point (BEP) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sales | **1,154,400** | **1,484,772** | **1,656,917** | **1,960,333** | **2,169,889** | **2,276,028** | **2,390,167** |
| Variable Cost | 190,032 | 253,650 | 284,920 | 336,620 | 373,940 | 393,330 | 413,570 |
| **Contribution** | **964,368** | **1,231,122** | **1,371,997** | **1,623,713** | **1,795,949** | **1,882,698** | **1,976,597** |
| Fixed Cost | 794,829 | 778,777 | 761,012 | 746,977 | 731,818 | 714,984 | 698,024 |
| **BEP Sales** | **951,452** | **939,229** | **919,050** | **901,837** | **884,192** | **864,357** | **844,074** |
| **Average BEP sales** | | | | | | | **900,599** |

| Calculation of Internal Rate of Return (IRR) | | | | |
|---|---|---|---|---|
| **Sl. No.** | **Year** | **PAT** | **Depreciation** | **Cash Accrual** |
| | Cash outflow at beginning | | | -2,165,000 |
| 1 | 31/03/2023 | 169,539 | 226,650 | 396,189 |
| 2 | 31/03/2024 | 442,228 | 201,735 | 643,963 |
| 3 | 31/03/2025 | 576,288 | 179,649 | 755,937 |
| 4 | 31/03/2026 | 788,889 | 160,058 | 948,947 |
| 5 | 31/03/2027 | 932,392 | 142,671 | 1,075,063 |
| 6 | 31/03/2028 | 1,004,900 | 127,229 | 1,132,129 |
| 7 | 31/03/2029 | 1,082,501 | 113,508 | 1,196,009 |

| | | | | |
|---|---|---|---|---|
| **IRR** | | **27.86%** | | |
| **Payback Period** | | **3 Years 5 Months** | | |

## 4.10. Summary of Project Cost

| Sl No | Name of Assets | Amount |
|---|---|---|
| 1 | Land Development | 15,500 |
| 2 | Civil Construction | 1,616,500 |
| 3 | Irrigation/Water Supply | 200,000 |
| 4 | Electrification | 100,000 |
| 5 | Plant & Machinery | 200,000 |
| 6 | Livestock | - |
| 7 | Insurance | 15,000 |
| 8 | DPR Cost | 5,211 |
| 9 | Other Miscellaneous Exp. | 4,789 |
| | **Total Fixed Cost** | **2,157,000** |
| | **Recurring** | **51,000** |
| | **Cost of Project** | **2,208,000** |

## 2 Working Capital Requirement

| | Heads of Expenses | Amount/year |
|---|---|---|
| A | Raw Material | 3,04,000 |
| B | Salary | 2,64,000 |
| C | Utilities | 22,464 |
| D | Other Expenses | 11,232 |
| | **Sub total per year** | **6,01,696** |

**Working capital requirement (for one month)** **51,000**