

Pre-Feasibility Study

(Semi-Intensive Tilapia Aquaculture)



Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

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1. DISCLAIMER

This information memorandum is to introduce the subject matter and provide a general idea and information on the said matter. Although, the material included in this document is based on data/information gathered from various reliable sources; however, it is based upon certain assumptions which may differ from case to case. The information has been provided on as is where is basis without any warranties or assertions as to the correctness or soundness thereof. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA, its employees or agents do not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The contained information does not preclude any further professional advice. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information which is necessary for making an informed decision; including taking professional advice from a qualified consultant/technical expert before taking any decision to act upon the information.

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2. EXECUTIVE SUMMARY

Tilapia Aquaculture is proposed to be located at water sufficient areas with suitable land, water, and climatic conditions. These areas include, Awaran, Khuzdar, Lasbela, Sibbi (Baluchistan), Bannu, D.I. Khan, Kohat, Mardan, Nowshehra, Swabi (Khyber Pakhtunkhwa), Hyderabad, Faisalabad, Nawabshah, Sukkur, Shikarpur, Thatta, (Sindh), D.G. Khan, Gujranwala, Gujrat, Multan, Muzaffargarh, Okara, Sahiwal, Vehari (Punjab). Other areas qualifying on climatic and water conditions may equally be suitable for the purpose.

The proposed project will have the installed capacity of 26 Ton/ year whereas the operation will start with a capacity of 95% which 25 Tons/Year is reaching a maximum of 26 Tons in the third year.

The total Project Cost is **Rs. 2, 816,371** including the Capital Cost of **Rs. 2, 213,804** and the Working Capital of **Rs. 602,567**. Given the cost assumptions, Internal Rate of Return (IRR) and payback are **28%** and **4.03** years respectively, hence making the project viable.

The most critical consideration or factors for success of the project are:

- Right Decisions about Location and product selling time.
- Procurement of healthy, certified, mono-sex (Genetically treated) seed from reliable sources recommended by the Fisheries Development Board

3. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to facilitate potential investors in Tilapia Aquaculture by providing them with a general understanding of the business with the intention of supporting potential investors in crucial investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business set-up and it's successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form basis of any Investment Decision.

4. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs" , SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need based capacity building programs of different types in addition to business guidance through help desk services.

5. BRIEF DESCRIPTION OF PROJECT AND PRODUCT

The project is related to setting up Tilapia Aquaculture with following detail:

- **Technology:** This proposed farm will start with the semi intensive fish farming techniques, requiring water bore, and locally available equipment essential for inland fish farming. The option of Solar driven tube well and aerators (For intensive farming) may be considered by the entrepreneur as per his discretion, the cost of which varies with the choice about system's country of origin, area of coverage, and the water table.
- **Location:** The farm will be located at water sufficient areas with suitable land, water, and climatic conditions. These areas include, Awaran, Khuzdar, Lasbela, Sibbi (Baluchistan), Bannu, Charsada, D.I. Khan, Kohat, Mardan, Nowshehra, Swabi (Khyber Pakhtunkhwa), Hyderabad, Nawabshah, Sukkur, Shikarpur, Thatta, (Sind), D.G. Khan, Faisalabad, Gujranwala, Gujrat, Multan, Muzaffargarh, Okara, Sahiwal, Vehari (Punjab). Other areas qualifying on climatic and water conditions may equally be suitable for the purpose.
- **Product:** The farm will produce the Mono-sex GIFT Tilapia (Genetically Improved Farmed Tilapia), which is one of the Nile Tilapia's strains and successfully introduced in Pakistan. It is a hardy fish and the stocking density of this specie is several times higher than the conventional carps, that is, without aeration 6,000 of Tilapia can be stocked per acre as compared to the Conventional Carps having density of 600-1,200 per acre¹. It has the ability to gain the weight of 600-900 grams within 08 month. This project will produce an average weight of 800 grams per fish in 08 months. The optimum temperature for tilapia culture is reported to be 20- 30 C° or above. The ideal DO₂ level for tilapia culture is 4-5 mg/l. Free CO₂ is another factor that negatively affects feed intake and therefore fish growth. But, Nile tilapia can tolerate CO₂ concentration above 20 mg/l and is unlikely to have an adverse

¹ SMEDA's sector survey

effect on fish in intensive culture systems unless free CO₂ concentration reaches 100 mg/l.²

- **Target Market:** The nearest areas of farm's location, and the large stores like, Makro, Metro, and Hyper Star etc of the Karachi, Lahore, Rawalpindi/Islamabad, and Quetta.
- **Employment Generation:** The proposed project will initially provide direct employment to 02 persons. The indirect employment is at the time of fish harvest as per the wages against 40 Kg unit.
- **Profitability:** The Financial Analysis shows the farm will be profitable from the very first year of the operation.

5.1) Production Process Flow

The total production time will be 08 months with the following stages:

Procurement of Fingerlings

The project will procure Mono-sex GIFT Tilapia (Genetically Improved Farmed Tilapia), weighing fingerlings of 0.2 grams. This particular world famous specie has also been successfully introduced in Pakistan. This hardy fish has high stocking density and even without aeration 6,000- 7,000 of Tilapia can be stocked per acre as compared to the Conventional Carps having density of 600-1,200 per acre. Though the fingerlings can be imported but the local hatchery is now also available.

Nursery

Immediately after procurement, the fish will be stocked in the nursery pond. One acre pond of the farm will initially be used as a nursery pond and after the fingerlings gain weight of 50 grams, these will be shifted to grow out ponds and the nursery pond will then work as one of the grow out ponds.

This is the stage where the mortality is highest. In case of Tilapia, the best practices are even reported with a mortality of 11-16% but on average the total mortality is 20-25%. The major reasons for mortality are the stress due to transportation, and diseases. Apart from these, the mortality may also be due to the stocking density above the maximum level as per the type of the farm. 1% of the fish loss is also reported due to the fish predators.

² Suman B. Chakraborty, Sameer Banerjee (Effects of Stocking Density on Mono Sex Nile Tilapia Growth During Pond Culture in India)

Growing In Ponds or (Semi- Intensive Mono-culture Pond)

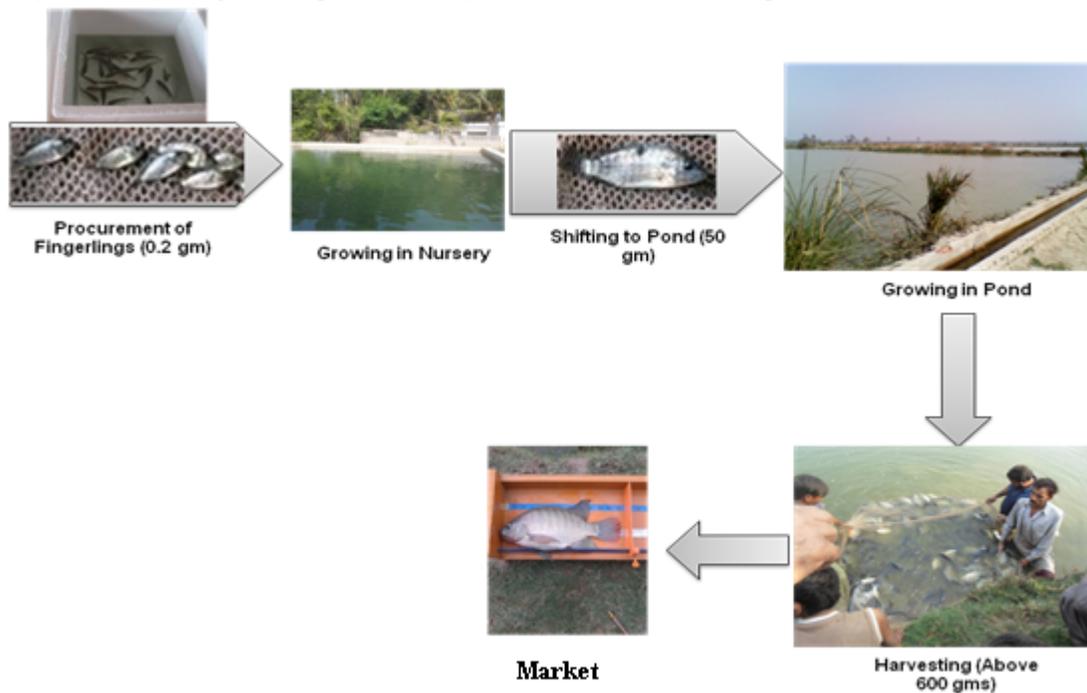
The fingerlings will be kept in the grow out ponds until they gain the weight above 600 grams. With the Soya based pallet feed, the average weight is 800 grams and in terms of total weight/bio mass of the fish sold will be 18 Tons in the first year.

Fish Harvesting

The fish will be harvested through nets on the basis of Rupees per 40 Kg given to the harvesting labour. The rate varies as per the region practices.

Fish Packing

The packing of the fish is conventionally done in the polypropylene bags but now the progressive farmers and traders are packing it in the polystyrene boxes for the improved quality during the transportation and handling.



5.2) Installed and Operational Capacities

The farm will have installed capacity of 26 Tons/Year with initial capacity utilization at 25Tons/Year reaching a maximum of 26 Tons in the second year.

6. CRITICAL FACTORS

The following factors should be considered thoroughly:

- Location must have suitable climate, soil, and sufficient water of the required quality and quantity.
- Right timing of finished product sales, i.e., either by the end of December or the start of January.
- Proper match of fingerlings' stocking density to feed.
- Pond development and maintenance to ensure efficient inflow, retention and drainage of water.
- Optimum protection against fish theft and fingerlings/fish escape.
- Growing the fry in nursery and then shifting it to main ponds
- Procurement of healthy, certified, mono-sex seed from reliable sources recommended by the Fisheries Development Board

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Majority of areas throughout Pakistan carry potential for Tilapia Aquaculture. These areas include, Awaran, Khuzdar, Lasbela, Sibbi (Baluchistan), Bannu, Charsada, D.I. Khan, Karak, Kohat, Mardan, Nowshehra, Swabi (Khyber Pakhtunkhwa), Hyderabad, Nawabshah, Sukkur, Shikarpur, Thatta, (Sind), D.G. Khan, Faisalabad, Gujranwala, Gujrat, Multan, Muzaffargarh, Okara, Sahiwal, Vehari (Punjab), and other areas having suitable climate, soil, and water conditions. The Fisheries Development Board should be contacted before the commencement of the project, so that to have a very clear understanding of the geographical and technical aspects.

8. POTENTIAL TARGET CUSTOMER/MARKETS

The product can be sold throughout the country, especially within the areas having taste for fresh water fish. These include the Non coastal areas of Balochistan, interior Sind, Punjab, and KP. The market of Punjab is well established for Tilapia (Gujranwala and Rawalpindi offering higher prices). The large stores of major cities like, Hyper Star, Makro, and Metro etc. can be the big customers provided their quantity and quality requirements are satisfied.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the Tilapia Aquaculture. Various cost and revenue related assumptions along with results of the analysis are outlined in this section.

9.1) Project Economics

All the figures in this financial model have been calculated for installed capacity of 30 Tons/Year with initial capacity utilization at 24Tons/Year reaching a maximum of 27Tons in the second year.

The following table shows internal rates of return and payback period.

Table 1 - Project Economics

Description	Details
Internal Rate of Return (IRR)	28%
Payback Period	4.03 Years
Net Present Value (NPV)	Rs. 1,464,372

9.2) Project Financing

Following table provides details of the equity required and variables related to bank loan;

Table 2 - Project Financing

Description	Details
Total Equity (50%)	1,408,186
Bank Loan (50%)	1,408,186

9.3) Project Cost

Following requirements have been identified for operations of the proposed business.

Table 3: Project Cost

Description	Amount Rs.
Capital Cost	
Infrastructure Development	1,330,846
Machinery and Equipment	693,500
Furniture and Fixtures	44,000
Office Equipment	1,500
Pre-operating Cost	143,958
Total Capital Cost	2,213,804
Working Capital	
Raw Material Inventory	352,207
Upfront Land Lease Rental	149,875
Cash	100,486
Total Working Capital	602,567
Total Project Cost	2,816,371

9.4) Space Requirement

This proposed project will be established on 5 Acres of land acquired on lease of 5 years. The ponds would be developed on 4.5 acres and rest would be utilized for management building, store etc.

Table 4: Space Requirement

Space Requirement (in ft.)	Rs/Unit	Units	Amount (Rs.)
Management Building (Sq. Ft)	1,500	400	600,000
Store for Raw Material (Sq. Ft)	350	200	70,000
Grow out Pond (Acre)	100,188	4.5	450,846
Grounds (Sq. Ft)	10	21,000	210,000
Total			1,330,846

The decision about the opportunity cost of land is at the discretion of the owner of the project and the prevailing rates of land varying from area to area. However for the financial model the land lease cost is assumed to be **Rs. 30,000/acre**.

9.5) Machinery and Equipment

Following table provides list of machinery and equipment. Costs may vary from area to area and underground water table.

Table 5: List of Machinery and Equipment

Description	Units	Cost Rs/unit	Total Rs.
Water Bore (4" Outlet with Initial Water Table 150, and submersible of 20 hp)	01	693,500	693,500
Total Cost			693,500

9.6) Furniture and Fixtures

Table 6: List of Machinery and Equipment

Description	Units	Cost Rs/unit	Total Rs.
Furniture	1	25,000	25,000
Fans	2	3,500	7,000
Electric Wiring and Lighting	200	60	12,000
Total			44,000

9.7) Furniture and Fixtures

Such type of project only requires a cell phone for communication. An ordinary set of **Rs. 1,500/** will be purchased.

9.8) Human Resource Requirement

Table 8: Payroll For Financial Analysis (Human Resource Requirements)

Description	No.	Monthly Salary/ Person (Rs.)	Months (No.)	First Year Salaries (Rs)
Farm Manager/ CEO	01	30,000	12	360,000
Watchman/Labor for Feeding	01	15,000	12	180,000
Total Cost				540,000

9.9) Utilities and Other Costs (Raw Material and Other Expenses)

It should be maintained that the mortality 25% is observed during nursery stage, so the quantity of feed is assumed on the same basis. Following table shows raw material requirement.

Table 6: Cost of Material

Description	Unit	Rate (Rs./ Unit)	Qty	Rs./Cycle
Fingerlings	Number	09	27,788	250,088
Feed	Kg	70	20,126	1,408,826
Fertilizer	Lump Sum	2,000	4.5	4,500
Total Cost				1,663,414

The electricity charges are based on the assumption of operating tube well with the water table beginning at 150 ft. in case of the areas with the lowest water tables; this cost may be as low as Rs. 135,000 per year.

Table 7: Miscellaneous

Description	Rs./Production Cycle
Direct Electricity for Water	334,970
Cost of Fish Harvest	65,317
Machinery Maintenance	36,000
Electricity (Admin)	24,000
Travelling Expenses	36,000
Communication Expenses	6,000
Cost of Draining Water	30,000
Total Cost	532,287

9.10) Revenue Generation

The selling price depends upon the season, size of the product, and quantity sold. It may range between Rs. 150/kg to Rs. 320/ kg. Keeping in view the size and better quality of the fish due to efficient farm management and transportation of product in insulated boxes, the average price for the project will be Rs. 210/Kg. The Ton to Kg conversion is based upon the 1: 907.19, which means 18.38 Tons fish sold for the first year at Rs. 190,509 per Ton. With a total mortality of 6 Tons for the first year the revenues are as under:

Table 8: Revenue Generation

Product	Unit	Sales Price (Rs./Unit)	First Year Production	First Year Sales Revenue (Rs)
Tilapia Fish (Average Weight Per Fish 800 gm)	Ton	190,509	18.38	3,501,225
Total Revenue				3,501,225

10. CONTACTS

A great deal of information for this prefeasibility has been obtained through a visit to the Ayfa Fish Farm, and a working by Mr. Nabeel Chaudhry, FDB, and Mr. AbidRafique.

Fisheries Development Board (FDB)

Business: The FDB's efforts for successful introduction of Tilapia in Pakistan are worth to be mentioned. The organization has sufficient expertise and the committed team to cater to enquiries regarding Tilapia on Farm establishment, Fingerlings/Fry Procurement, Feed, and Farm Management.

Contact Person: Mr. Faisal Iftikhar/Mr. Junaid Watoo

Contact Detail: Plot #12, Orchard Scheme, Murree Road Islamabad, Phone: +92 51 923 0348-9 Fax: +92 51 8365937

M/s. Abid Rafique and Co.

Business: Aquaculture Fingerlings and Equipment Suppliers, Consultancy

Contact Person: Mr. Abid Hussain

Contact Detail: +923005260128

www.abidrafique.com

M/s. Ayefa Protein Farms (Pvt) Ltd.

Business: Tilapia Farm.

Contact Person: Mr. Nabeel Chaudhry

Contact Detail: 42 Westwood Colony, ThokarNiazBaig, Lahore.

Cell No: +9249-400 1072

M/s. Tawakkal Tilpia Hatcheries

Muzaffargarh, Punjab

Email: tawakkalfishhatchery@yahoo.com

0345-8407083

11. USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.khyberpakhtunkhwa.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Government of Azad Jamu Kashmir	www.ajk.gov.pk
Security Commission of Pakistan (SECP)	www.secp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
State Bank of Pakistan (SBP)	www.sbp.org.pk
Fisheries Development Board	Phone: +92 51 923 0348-9 Fax: +92 51 8365937
NARC	www.parc.gov.pk

12. ANNEXURES

12.1) Income Statement

Rs. in actuals

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	3,501,225	3,932,429	4,414,860	4,905,401	5,395,941	5,935,535	6,529,088	7,181,997	7,900,197	8,690,216
Cost of goods sold	2,281,074	2,548,667	2,883,270	3,155,272	3,470,172	3,864,815	4,197,394	4,616,304	5,141,332	5,583,728
Gross Profit	1,220,151	1,383,761	1,531,590	1,750,129	1,925,769	2,070,719	2,331,694	2,565,693	2,758,864	3,106,488
<i>General administration & selling expenses</i>										
Administration expense	360,000	395,050	433,513	475,720	522,037	572,863	628,638	689,843	757,007	830,710
Rental expense	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875
Utilities expense	24,000	26,400	29,040	31,944	35,138	38,652	42,517	46,769	51,446	56,591
Travelling & Comm. expense (phone, fax, etc.)	42,000	46,200	50,820	55,902	61,492	67,641	74,406	81,846	90,031	99,034
Office vehicles running expense	-	-	-	-	-	-	-	-	-	-
Office expenses (stationary, etc.)	-	-	-	-	-	-	-	-	-	-
Promotional expense	-	-	-	-	-	-	-	-	-	-
Insurance expense	-	-	-	-	-	-	-	-	-	-
Professional fees (legal, audit, etc.)	-	-	-	-	-	-	-	-	-	-
Depreciation expense	140,442	140,442	140,442	140,442	140,442	140,442	140,442	140,442	140,442	140,442
Amortization expense	28,792	28,792	28,792	28,792	28,792	-	-	-	-	-
Property tax expense	-	-	-	-	-	-	-	-	-	-
Miscellaneous expense	-	-	-	-	-	-	-	-	-	-
Subtotal	745,109	786,759	832,482	882,675	937,776	969,474	1,035,878	1,108,776	1,188,801	1,276,652
Operating Income	475,043	597,002	699,109	867,453	987,993	1,101,245	1,295,816	1,456,917	1,570,063	1,829,836
Other income	-	-	-	-	-	-	-	-	-	-
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	475,043	597,002	699,109	867,453	987,993	1,101,245	1,295,816	1,456,917	1,570,063	1,829,836
Interest expense	162,169	132,557	123,478	113,147	101,389	88,009	72,781	55,452	35,731	13,287
Earnings Before Tax	312,874	464,445	575,630	754,306	886,603	1,013,236	1,223,034	1,401,465	1,534,332	1,816,548
Tax	-	4,511	14,563	32,646	52,490	71,485	102,955	129,720	151,366	207,809
NET PROFIT/(LOSS) AFTER TAX	312,874	459,934	561,067	721,661	834,113	941,751	1,120,079	1,271,745	1,382,966	1,608,739

12.2) Balance Sheet

Rs. in actuals

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	100,486	140,582	601,744	1,137,780	1,805,567	2,545,085	3,315,021	4,205,651	5,179,305	6,182,370	9,957,692
Accounts receivable	-	-	-	-	-	-	-	-	-	-	-
Finished goods inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment spare part inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	352,207	435,142	537,378	656,795	794,722	961,614	1,163,553	1,407,899	1,703,558	2,061,305	-
Pre-paid annual land lease	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	-	-	-	-	-	-	-	-	-	-	-
Total Current Assets	602,567	725,599	1,288,997	1,944,450	2,750,164	3,656,574	4,628,449	5,763,425	7,032,738	8,393,550	9,957,692
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	1,330,846	1,264,304	1,197,761	1,131,219	1,064,677	998,135	931,592	865,050	798,508	731,965	665,423
Machinery & equipment	693,500	624,150	554,800	485,450	416,100	346,750	277,400	208,050	138,700	69,350	-
Furniture & fixtures	44,000	39,600	35,200	30,800	26,400	22,000	17,600	13,200	8,800	4,400	-
Office vehicles	-	-	-	-	-	-	-	-	-	-	-
Office equipment	1,500	1,350	1,200	1,050	900	750	600	450	300	150	-
Total Fixed Assets	2,069,846	1,929,404	1,788,961	1,648,519	1,508,077	1,367,635	1,227,192	1,086,750	946,308	805,865	665,423
<i>Intangible assets</i>											
Pre-operation costs	143,958	115,166	86,375	57,583	28,792	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	143,958	115,166	86,375	57,583	28,792	-	-	-	-	-	-
TOTAL ASSETS	2,816,371	2,770,169	3,164,333	3,650,552	4,287,033	5,024,208	5,855,641	6,850,175	7,979,046	9,199,415	10,623,115
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	-	-	-	-	-	-	-	-	-	-
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-										
<i>Other liabilities</i>											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	-	-	-	-	-	-	-	-	-	-
Long term debt	1,408,186	1,049,109	983,339	908,491	823,311	726,374	616,056	490,510	347,636	185,040	-
Total Long Term Liabilities	1,408,186	1,049,109	983,339	908,491	823,311	726,374	616,056	490,510	347,636	185,040	-
<i>Shareholders' equity</i>											
Paid-up capital	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186	1,408,186
Retained earnings	-	312,874	772,808	1,333,875	2,055,536	2,889,649	3,831,400	4,951,479	6,223,224	7,606,190	9,214,929
Total Equity	1,408,186	1,721,060	2,180,994	2,742,061	3,463,722	4,297,835	5,239,585	6,359,665	7,631,410	9,014,376	10,623,115
TOTAL CAPITAL AND LIABILITH	2,816,371	2,770,169	3,164,333	3,650,552	4,287,033	5,024,208	5,855,641	6,850,175	7,979,046	9,199,415	10,623,115

12.3) Cash Flow Statement

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	Rs. in actuals										
<i>Operating activities</i>											
Net profit	-	312,874	459,934	561,067	721,661	834,113	941,751	1,120,079	1,271,745	1,382,966	1,608,739
Add: depreciation expense	-	140,442	140,442	140,442	140,442	140,442	140,442	140,442	140,442	140,442	140,442
amortization expense	-	28,792	28,792	28,792	28,792	28,792	-	-	-	-	-
Deferred income tax	-	-	-	-	-	-	-	-	-	-	-
Accounts receivable	-	-	-	-	-	-	-	-	-	-	-
Finished good inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	(352,207)	(82,935)	(102,236)	(119,417)	(137,927)	(166,892)	(201,939)	(244,346)	(295,659)	(357,747)	2,061,305
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	-	-	-	-	-	-	-	-	-	-	-
Accounts payable	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(352,207)	399,173	526,932	610,884	752,968	836,455	880,254	1,016,175	1,116,529	1,165,661	3,810,486
<i>Financing activities</i>											
Change in long term debt	1,408,186	(359,076)	(65,770)	(74,848)	(85,180)	(96,937)	(110,318)	(125,545)	(142,875)	(162,596)	(185,040)
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875	149,875
Land lease payment	(149,875)	(149,875)	(149,875)	(149,875)	(149,875)	(149,875)	(149,875)	(149,875)	(149,875)	(149,875)	-
Change in lease financing	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	1,408,186	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing	2,666,496	(359,076)	(65,770)	(74,848)	(85,180)	(96,937)	(110,318)	(125,545)	(142,875)	(162,596)	(35,165)
<i>Investing activities</i>											
Capital expenditure	(2,213,804)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing	(2,213,804)	-	-	-	-	-	-	-	-	-	-
NET CASH	100,486	40,096	461,162	536,035	667,788	739,518	769,936	890,630	973,654	1,003,065	3,775,321

13. KEY ASSUMPTIONS

13.1) Operating Cost Assumptions

Description	Details
Hours Operational Per Day	8
Days Operational Per Month	30
Days Operational Per Year	244
Operating Cost Growth Rate (per annum)	10%

13.2) Production Cost Assumptions

Description	Details
COGS Annual Growth Rate	10%

13.3) Revenue Assumptions

Description	Details
Sales Price Growth Rate	10%
Maximum Capacity Utilization	100%
Initial Capacity Utilization	95%

13.4) Economy Related Assumptions

Description	Details
Inflation Rate	10%
Electricity Price Growth Rate	10%
Wage Growth Rate	10%