
Pre-Feasibility Study

INLAND FISH FARMING



Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

www.smeda.org.pk

HEAD OFFICE

4th Floor, Building No. 3,
Aiwan-e-Iqbal Complex, Egerton Road Lahore,
Tel: (042) 111-111-456
Fax: (042) 36304926-7

helpdesk.punjab@smeda.org.pk

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
4 th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 helpdesk.punjab@smeda.org.pk	5 th Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 helpdesk-qta@smeda.org.pk

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1 DISCLAIMER

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Document Control

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2 EXECUTIVE SUMMARY

The venture is tied in with laying out an Inland Fish Farm in the possible areas of Pakistan which provide appropriate climate and environment. The project would serve as to use the ordinary resources as feed for inland fish ranch that typically winds up as social waste. On the other hand it would create work for the neighborhood occupants and more over would conceivably cause cash inflow too for the investor. As of now the project is being proposed for the high temperature regions/urban areas like Sibi and Jacobabad, but the equivalent can be proposed for the regions which can satisfy input and calculated necessities of the undertaking.

The proposed project is principally centered around the nearby clients and public business sectors due to the winning popularity and taste inclinations. The fundamental element of the venture would incorporate naturally developed fisheries in clean climate keeping in view the quality principles and standards. This prefeasibility study investigates the viability of setting up inland fish farm in light of economic and innovation patterns and accessible nearby strengths, weaknesses, opportunities and threats.

The finished product would be fish of different kinds likewise Tilapia, Moraka and Rohu. Production capacity would be around 20000 units per year based on information gathered.

The project is set to operate at 85% capacity utilization initially and gradually grow by 5% on yearly basis.

Total cost estimated is **Rs. 17,831,967** with fixed investment **Rs. 17,119,750** and working capital **Rs. 712,217**.

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

- The product should be produced in accordance with International standards and quality
- Location of the farm would play vital role in this projects success.
- Marketing through proper channels could attract more customers moreover awareness about the product should be taken into consideration while marketing the product.
- Procurement of raw material from trusted suppliers and below market rates.
- Forward integration may be practiced e.g. developing shops in the market.
- Human resource would play vital role in manufacturing therefore well trained staff will be required to run the project successfully.

3 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.

4 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 **INLAND FISH FARMING** 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.

5 BRIEF DESCRIPTION OF PROJECT & PRODUCT

Following key parameters must be addressed as per pre-feasibility study under preparation

- **Technology:** The proposed farm is likely to be equipped with modern water pumps/air pumps, filters for filtering waste from ponds including nets for careful catch. However constant efforts may be done for up gradation of the machinery.
- **Location:** The farm is proposed to be located in Sibi and Jacobabad considering climatic conditions needed for survival of the fish. However the equivalent can be proposed for the regions which can satisfy input and calculated necessities of the undertaking.
- **Product:** the finished product would be fish of different kinds likewise Tilapia, Moraka and Rohu.
- **Target Market:** The target clients for fish are households, lodgings, eateries and pharmaceutical companies. Initially the undertaking will focus on nearby market, contingent on its effective activity it would be marketed in other customer groups of the country at national level.
- **Employment Generation:** The proposed project will provide employment opportunity to 6 people. Financial analysis shows the unit would be profitable from the very first year of operation.

5.1 Production Process Flow

Globally three methods are rehearsed for inland fish cultivating.

1. Extensive Fish Farming
2. Intensive Fish Farming
3. Semi intensive Fish Farming

1. Extensive Fish Farming

Extensive fish farming is a self-supporting regular creation framework where the fishes are thoroughly feed on naturally developed plants and species inside the water. Extensive system utilizes low loading densities (e.g., 5,000-10,000 hatchlings/ha/crop) and no supplementary feeding, despite the fact that preparation might be done to animate the development and creation of natural food in the water. Water changes are done on regular premise to keep up with the oxygen level and give new water to fishes for better development. The ponds utilized for extensive culture are normally huge (more than two Hectare) might be shallow and not completely gotten free from tree stumps. Creation is for the most part not exactly 1 ton/ha/year.

2. Intensive fish farming

Intensive fish farming is a procedure wherein the fish are supported in artificial culture for example outside food supply, artificial air circulation and water filtration. Intensive fish farming utilizes extremely high densities of culture life organisms (for example 200,000-300,000 hatchlings/ha/crop) and is absolutely dependent on artificially formulated feeds. Monetary returns are in this manner substantially more appealing than those from extensive culture. Production is obviously a lot higher (for example 10 tons/ha/crop).

3. Semi intensive fish farming

Semi Intensive farms harvested in ponds and supply with artificial feeds alongside normal Feed. This method is fundamentally a combination of both Extensive and Intensive fish cultivating. This strategy is generally rehearsed in small ponds for example around 1 acre of land each in size for simplicity of the board. Semi intensive ponds framework utilizes densities higher than extensive frameworks (e.g., 50,000-100,000 hatchlings/ha/harvest) and utilize supplementary feeding. Semi intensive culture framework is overseen by the utilization of information sources (basically feeds, fertilizers) and the control of the climate fundamentally via waters the executives using pumps. Taking care of the stock is done at standard stretches during the day. In Semi intensive culture production is a lot higher then extensive technique (for example 1.5 tons /ha/crop).

The management of each expressed inland fish cultivating procedure/framework is totally unique with implication on capital and operational expense, prerequisite of technical expertise and economies of cultivating. Nonetheless, keeping in view the social, practical and ecological and environmental aspects of Pakistan market, semi-intensive fish farming is proposed for the said project.

5.2 FARM MANAGEMENT

a) DESCRIPTION OF FISH FARMING TECHNIQUE

In Semi intensive fish farming feeding is carried out at least once per day and fertilizing once per week. In addition natural sources of feeding are used simultaneously with artificial feed sources for maximizing output. Feeding and fertilizing were chosen as indicators of the intensity level as these parameters are more operational than others. Semi intensive fish farming uses higher densities (e.g., 50,000-100,000 larvae/ha/crop) and use supplementary feeding. Semi intensive culture system is managed by the application of inputs (mainly feeds and fertilizers) and the manipulation of the environment primarily by way of water and fresh air management through the use of pumps. Feeding of the stock is done at regular intervals during the day.

b) SITE SELECTION

Special consideration should be given to the location of proposed facility. It should be located in an area that is neither subject to flooding nor near to rivers. The selected location should have enough elevation so that it can easily be dried in off season. In addition many other factors must be considered while selecting site. These factors may include availability of china clay in soil, round the year adequate water supply, road access even during the rainy season and location away from agricultural activities to avoid pesticides application and noise pollution.

c) Structural Design of the Land

The site for proposed fish farm will require proper surveying to determine the slope , bed of pond should be kept slight in slope to take advantage by allowing the water to flow as much as possible by gravity. This slope will provide water to move easily hence increase the natural oxygenation process and reduce the soil excavation due to water strike which ultimately results in the lowering of operational costs. Water distribution channels should be placed on top of the pond dikes and the drainage channels from the ponds should be kept at the lowest point of the land. Effort should be made to utilize the natural attributes of the land to minimize capital costs and to facilitate the operational efficiency.

d) Soil sampling

Soil samples should be taken in account of the proposed site for analysis. These samples should be collected from the surface, middle and depth. The required lab tests are pH, soil composition (the ratio of sand to silt to clay), total dissolved salts, calcium and magnesium etc. Clay is most desirable for water retention in the fish ponds. If the soil is sandy at the surface but contains sufficient clay at an accessible depth, the sandy soil should be excavated completely, and the clay will be used for the final layers of the pond bottom and pond banks to minimize water losses.

e) Electricity Fixtures

Fish farms must be furnished with proper electricity facilitation for daily routine operations and particularly for the management of water and air. In addition, for quality inland farming machinery like filter, water pumps and blower must be installed.

f) Pond

The most appropriate pond type is the combination of both excavated/elevated ponds. If the soil has sufficient clay content, the dikes can be built form the soil that is removed during

pond excavation, thus excavation costs are minimized. Elevated ponds are recommended appropriate for natural oxygenation and could be partially drained by gravity. The proposed project will be established on 9 acres of land, consisting of 8 ponds with an area of 1 acre per pond. Appropriate walkways must be designed between ponds for ease of management. Preferably a rectangular shaped pond is desirable. It should be constructed by excavation 2 to 3 feet soil and elevating for 4 to 5 feet from ground level. The crest of the embankment should be 4 to 5 feet and depth should not be more than 8 to 10 feet, having a minimum slope of 1 to 2 feet.

g) Fertilizers

Nitrogen and Phosphorus are the primary Nutrients required to stimulate productivity of the pond. In Pakistan, there are two sources of organic fertilizers, Chicken manure and Cow dung. The recommended inorganic fertilizers are Urea, Di ammonium Phosphate, Single Super Phosphate, Ammonium Sulphate and Nitrogen. Different fertilizers require different application procedures, The inorganic fertilizers urea and others except DAP dissolves quite rapidly, and can be placed directly into the pond water, Di ammonium phosphate, however, requires extra effort to dissolve and should be mixed with water in a bucket or basin and dissolved as much as possible prior to distribution in the pond. Fertilizers should be added on regular basis throughout the summer to sustain the productivity.

h) Water Requirement

Water is the most essential component of inland fish farming. Normally two sources of water are preferred i.e. tube well and Irrigation canal water. Irrigation water comes from the entire catchments area of the drainage, thus it carries high loads of silt, and is subject to change in environmental conditions and water quality (temperature changes, rainfall silt loadings, alkali salt runoff, etc.) it may also carry a large number of trash/ carnivorous fish. In case of selecting irrigation water, proper filtration method must be used for obtaining the desire quality. The water quality of the tube well should be analyzed, oxygenation is main problem with the tube well water, and arrangement must be made for oxygenation of water that can be accomplished by installing air blowers. Thus temperature and dissolved oxygen should be tested at the site. A sample should be taken in one liter bottle capable of being sealed and transported immediately to a lab for further examination analysis, tests of the total alkalinity, pH, nitrogen, salinity, and total dissolved solids are required. Water color is a good indicator of its quality. A good robust green color is most desirable, maintainable by the addition of feed (Cow dung) when the green starts to fade to a light brown. Selection of the water source i.e. Tube well or Irrigation is totally dependent on the choice of entrepreneur however keeping in view the economical factor, irrigation water is proposed.

i) Species Selection

The proposed fish's species for the said project are Thaila, Moraka and Rohu. These species provide an ideal environment for farm management and as per their feeding pattern. Rohu feeds near the water surface, Thaila in the middle and Moraka takes feeds from the bottom. This pattern will provide an efficient utilization of feeds and prevent feed losses. It is the choice of entrepreneur; however it is recommended that these species may be used in ratio of Rohu (40%), Thaila (30%) and Moraka (30%) respectively.

j) Fish Growth

Growth is defined as weight gain during a specific period of time. Fish are cold blooded animals, and as such, their metabolic rate is governed directly by the ambient water temperature. Each fish has an optimum temperature for growth, a temperature at which all of its physiological functions are optimized, including growth rate and resistance to disease. Although the optimum temperature for growth has not been precisely determined, the available empirical growth data suggests that their optimum growth occurs at approximately temperature between 25 to 30 degree centigrade. At higher temperature than this, a thermal stress occurs, resulting in an excessive metabolic rate, reduced growth, increased oxygen consumption, and greater susceptibility to diseases. If temperature is significantly high than 30 degree centigrade then recommended management strategy should be add fresh water to the pond to reduce water temperature. Growth monitoring of all species are required at intervals of thirty days before final harvest. The desired final product for all species is a minimum of 1.5 kg at harvest.

k) Supplementary Feeding

In a well-managed pond enough food will be produced to permit the moraka, rohu and thaila to attain marketable size in a prescribed growth period. All species including the specialist plankton feeders will accept supplementary feeds and additional weight gain may be realized, but the bottom and water column feeding species (Rohu and Moraka) may receive the most benefits, especially if the amount of organic material in the pond is limited. Four rules should be followed when feeding fish.

A regular feeding schedule must be followed, because infrequent feeding will have little measurable effect on growth. The fish should be fed on daily basis during the warm months. The quantity of feed given must be calculated by the farmer based on the actual sample weight data collected at the end of each month.

The fish must be fed at the same time each day, and at the same place in the pond. The fish will quickly become accustomed to being fed, and will often move to the feeding area as soon as the farmer appears at the edge of the pond, This practice would avoid feed waste.

The farmer must carefully observe feeding behavior and determine the extent to which the fish are consuming the feed given.

Supplementary feeds and feed mixtures must be fresh, since the materials quickly disperse and become unavailable to the fish. Instead, the feed should be mixed with enough water to form a sticky ball. Balls of feed measuring 2-4 inches in diameter may be carefully placed in the pond at the designated feeding areas, where they will be readily located and consumed by the fish. The fish should be fed slowly, and the farmer must stop feeding when there is no feeding activity especially in cloudy/ rainy days.

1) Production Cycling

The overall production cycle for the inland fish farming comprises of 8-9 months which is mainly subjected to the life/age of the seed (specie). If fresh seed is used (with an age of less than 20 days) the production cycle will take 9 months for the production of desire output. It varies respectively with the selection of fish (seed) age. Keeping in view the economical prospective, it is suggested that fish with different age may be used for different ponds.

5.3 Installed and Operational Capacities

The proposed farm is set to operate at 85% at capacity utilization initially and shall increase its production by 5% yearly.

The proposed farm has the ability to produce 20000 units on yearly basis.

6 CRITICAL FACTORS

- Trained and specialized human resource should be hired which would play vital role in project's success.
- Continuous efforts should be made to upgrade technology.
- Price may be adjusted in accordance to the segment targeted moreover price would play vital role in success of the project.
- Purchase of raw material from trusted suppliers and below market prices would play a vital role in projects success and may provide competitive advantage over competitors
- Location of the unit would play a vital role in projects success and farm should be located in an area that is not subject to flooding and must not be located adjacent to river belt.
- Farm must have sufficient height so it can without much of a stretch be parched during the slow time of year.
- Each farm should be prepared with proper soil i.e. China Clay to avoid water seep.
- Availability of fresh water supply throughout the year.
- Farm should be positioned away from agricultural activities to avoid spray application of pesticides.
- Fingerling/seed must be purchased from certified dealers for the assurance of desire fish species.
- Efficient delivery will provide a competitive edge in capturing market.

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Farm should be set up adjacent to big cities with growing middle income group such as Karachi, Islamabad, Quetta, Lahore, Sukkur and Hyderabad are some of the prospective cities for setting up this business. Cities like Lahore and Karachi with high population density and having more consumption needs are more favorable for this project.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

In Pakistan main fish or fish products are used commonly and is considered as health diet. Especially in winters consumption of fish increases. The marketing of Fish follows the traditional channels of distribution. Generally fish are distributed in the market through middlemen and wholesalers. The role of middlemen and wholesalers is to identify buyers and negotiate the price. Fish are transported to the urban market and are sold to retailers. The time spent in transporting fish from the farm to the retail shop varies from area to area. Although collection and handling of fish has improved with the use of loader vehicles, but it is an established fact that greater the distance between the farm and consumer, more complicated will be marketing system including their collection, handling and transportation to the middlemen or consumer as per perishable nature of the product. The trick in marketing is availability of current market information of fish supply and demand, which will determine the selling price.

The target customers for fish are households, hotels, restaurants and pharmaceutical companies. Initially the project will focus on local market, depending upon its successful operation it would be marketed in other customer groups of the country at national level.

9 PROJECT COST SUMMARY

9.1 Project Economics

All the figures in this financial model have been calculated for estimated sales of Rs. 9.01 million in the year one. The capacity utilization during year one is worked out at 85% with 5% increase in subsequent years up to the maximum capacity utilization of 95%.

The following table shows internal rate of return, payback period and net present value of the proposed venture.

Table 1: Project Economics

Description	Details
Internal Rate of Return (IRR)	24%

Payback Period (yrs.)	4.72
Net Present Value (Rs.)	4,593,309

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 (70%)	Rs.12,482,377
Bank Loan (30%)	Rs.5,349,590
Markup to the Borrower (%age / annum)	14%
Tenure of the Loan (Years)	10

9.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business.

Table 3: Project Cost

Description	Amount Rs.
Capital Cost	
Land	7,499,000
Building/Infrastructure	6,097,500
Plant and Machinery	3,315,000
Furniture & Fixture	188,250
Office Equipment	20,000
Total Capital Cost	17,119,750
Working Capital	
Raw Material Inventory	145,917
Upfront insurance payment	66,300

Cash	500,000
Total Working Capital	712,217
Total Project Cost	17,831,967

9.4 Space Requirement

The space requirement for the proposed **In-Land Fish Farming** is estimated considering various facilities including management office, production hall, storage, open space, etc. Details of space requirement and cost related to land & building is given below;

Table 4: Space Requirement

Description	Estimated Area (Sq.ft)	Unit Cost (Rs.)	Total Cost (Rs.)
Management Office	250	1500	375,000
Pond Area	320,000	15	4,800,000
Pavement/driveway	4000	50	200,000
labor rooms	300	1000	300,000
bathrooms/washrooms	200	1100	220,000
guard room	200	1000	200,000
Total	374,950		6,097,500

9.5 Machinery & Equipment Requirement

Plant, machinery and equipment for the proposed project are stated below.

Table 5: Machinery & Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Tube well	1	18,00,000	18,00,000
Transformer	1	800,000	800,000
Air pump/ Water Pump	1	85,000	340,000
Nets	1	35,000	35,000

Filters	4	85,000	340,000
Total			3,315,000

9.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for the project are given below;

Table 6: Furniture & Fixture

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Furniture(lump sum)	1	1	80,000
Carpeting	250	33	8,250
Electric wiring & lighting(lump sum)	1	1	100,000
Total			188,250

9.7 Office Equipment Requirement

Following office equipment will be required for **Inland Fish farm**;

Table 7: Office Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Telephone set	2	10,000	20,000
Total			20,000

9.8 Human Resource Requirement

In order to run operations of **Inland Fish Farm** smoothly, details of human resources required along with number of employees and monthly salary are recommended as under;

Table 8: Human Resource Requirement

Description	No. of Employees	Monthly Salary per person (Rs.)
Farm Manager	1	25,000
Helpers	3	22,000

Guards	2	20,000
Total	06	

9.9 other costs

The promotional expense being essential for marketing of Inland Fish Farm is estimated as 1% of revenue expenses which is estimated to be Rs. 90,100 in first year of operations.

9.10 Revenue Generation

Based on the capacity utilization of 85%, respectively, sales revenue during the first year of operations is estimated as under;

Table 9: Revenue Generation – Year 1

Description	No. of Units Produced (No.)	Finished Goods Inventory (No.)	Units available for Sale (No.)	Sale Price / unit (Rs.)	Sales Revenue (Rs.)
Fish	17,000	-	17,000	530	9,010,000
Total					9,010,000

10 CONTACT DETAILS

In order to facilitate potential investors, contact details of private sector Service Providers relevant to the proposed project be given.

10.1 Machinery Suppliers

Name of Supplier	Address	Phone	E-mail	Website
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Guangzhou Zhonghang Environmental Technology Co., Ltd	No.10 Jinshanhu Street, Zhonger Village, Zhongcun Street, Guangzhou, Guangdong, China	+86 02082249699	djxmachine@163.com	http://www.zhwte.com
Shenzhen Ozonegreen plant Technology Co., Ltd.	No. 5, Caihui Street, Huangpu Development Area, Guanzhou, Guangdong, China	+86-020-29806906	manager@ozonegreenplant.com	https://www.ozonegreenplant.com
Feili pumps.co.,Ltd.	E12 Distric, Jiaozhou steel Market, Qingdao,Shandong Province, China	+86177577927 36	kay@zjfeilicom	Feili pumps.co., Ltd.

10.2 Raw Material Suppliers

Name of Supplier	Address	Phone	Fax	Website
M. Iqbal Ansari	Buffer Zone 1, Karachi	+92-3002218520	-	-

11 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries & Production	www.moip.gov.pk

Ministry of Education, Training & Standards in Higher Education	http://moptt.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
Trade Development Authority of Pakistan (TDAP)	www.tdap.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
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Pakistan Horticulture Development and Export Company (PHDEC)	www.phdec.org.pk
Punjab Vocational Training Council (PVTC)	www.pvtc.gop.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Pakistan Readymade Garment Technical Training Institute	www.prgmea.org/prgtti/
Livestock & Dairy Development Department, Government of Punjab.	www.livestockpunjab.gov.pk
Punjab Industrial Estates (PIE)	www.pie.com.pk
Faisalabad Industrial Estate Development and Management Company (FIEDMC)	www.fiedmc.com.pk

12 ANNEXURES

12.1 Income Statement

Statement Summaries										SMEDA
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	Rs. in actuals									
Revenue	9,010,000	10,494,000	12,184,700	13,403,170	14,743,487	16,217,836	17,839,619	19,623,581	21,585,939	23,744,533
Cost of goods sold	4,294,000	4,762,510	5,268,913	5,577,529	5,905,973	6,255,665	6,628,138	7,025,046	7,448,176	7,899,462
Gross Profit	4,716,000	5,731,490	6,915,787	7,825,641	8,837,514	9,962,171	11,211,481	12,598,535	14,137,763	15,845,072
<i>General administration & selling expenses</i>										
Administration expense	787,800	864,501	948,670	1,041,034	1,142,391	1,253,616	1,375,669	1,509,607	1,656,584	1,817,871
Rental expense	-	-	-	-	-	-	-	-	-	-
Utilities expense	-	-	-	-	-	-	-	-	-	-
Travelling & Comm. expense (phone, fax, etc.)	15,600	17,119	18,786	20,615	22,622	24,824	27,241	29,893	32,804	35,997
Office vehicles running expense	-	-	-	-	-	-	-	-	-	-
Office expenses (stationary, etc.)	7,800	8,559	9,393	10,307	11,311	12,412	13,620	14,947	16,402	17,999
Promotional expense	90,100	104,940	121,847	134,032	147,435	162,178	178,396	196,236	215,859	237,445
Insurance expense	66,300	59,670	53,040	46,410	39,780	33,150	26,520	19,890	13,260	6,630
Professional fees (legal, audit, etc.)	45,050	52,470	60,924	67,016	73,717	81,089	89,198	98,118	107,930	118,723
Depreciation expense	657,200	657,200	657,200	657,200	657,200	657,200	657,200	657,200	657,200	657,200
Amortization expense	-	-	-	-	-	-	-	-	-	-
Property tax expense	-	-	-	-	-	-	-	-	-	-
Miscellaneous expense	90,100	104,940	121,847	134,032	147,435	162,178	178,396	196,236	215,859	237,445
Subtotal	1,759,950	1,869,400	1,991,706	2,110,645	2,241,890	2,386,648	2,546,241	2,722,126	2,915,898	3,129,311
Operating Income	2,956,050	3,862,090	4,924,081	5,714,996	6,595,624	7,575,523	8,665,240	9,876,410	11,221,865	12,715,761
Other income	140,236	281,417	381,659	473,657	556,089	626,612	686,601	743,684	798,168	865,022
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	3,096,286	4,143,508	5,305,740	6,188,653	7,151,713	8,202,135	9,351,841	10,620,094	12,020,033	13,580,783
Interest expense	750,939	713,755	671,366	623,042	567,953	505,151	433,558	351,941	258,898	152,828
Earnings Before Tax	2,345,347	3,429,753	4,634,374	5,565,611	6,583,760	7,696,983	8,918,283	10,268,153	11,761,136	13,427,955
Tax	961,592	1,406,199	1,900,093	2,281,901	2,699,341	3,155,763	3,656,496	4,209,943	4,822,066	5,505,462
NET PROFIT/(LOSS) AFTER TAX	1,383,755	2,023,554	2,734,281	3,283,710	3,884,418	4,541,220	5,261,787	6,058,210	6,939,070	7,922,494
Balance brought forward		691,877	1,357,716	2,045,998	2,664,854	3,274,636	3,907,928	4,584,858	5,321,534	6,130,302
Total profit available for appropriation	1,383,755	2,715,431	4,091,997	5,329,709	6,549,273	7,815,856	9,169,715	10,643,068	12,260,604	14,052,796
Dividend	691,877	1,357,716	2,045,998	2,664,854	3,274,636	3,907,928	4,584,858	5,321,534	6,130,302	7,026,398
Balance carried forward	691,877	1,357,716	2,045,998	2,664,854	3,274,636	3,907,928	4,584,858	5,321,534	6,130,302	7,026,398

12.2 Balance Sheet

Statement Summaries											SMEDA
Balance Sheet											
	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										
Assets											
<i>Current assets</i>											
Cash & Bank	500,000	2,304,719	3,323,629	4,309,561	5,163,580	5,958,195	6,574,037	7,157,982	7,715,703	8,247,665	9,052,784
Accounts receivable	-	246,849	267,178	310,667	350,519	385,571	424,128	466,540	513,195	564,514	620,965
Finished goods inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment spare part inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	145,917	165,470	187,063	200,345	214,569	229,804	246,120	263,594	282,309	302,353	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	66,300	59,670	53,040	46,410	39,780	33,150	26,520	19,890	13,260	6,630	-
Total Current Assets	712,217	2,776,708	3,830,911	4,866,982	5,768,448	6,606,720	7,270,805	7,908,007	8,524,467	9,121,162	9,673,750
<i>Fixed assets</i>											
Land	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000	7,499,000
Building/Infrastructure	6,097,500	5,792,625	5,487,750	5,182,875	4,878,000	4,573,125	4,268,250	3,963,375	3,658,500	3,353,625	3,048,750
Machinery & equipment	3,315,000	2,983,500	2,652,000	2,320,500	1,989,000	1,657,500	1,326,000	994,500	663,000	331,500	-
Furniture & fixtures	188,250	169,425	150,600	131,775	112,950	94,125	75,300	56,475	37,650	18,825	-
Office vehicles	-	-	-	-	-	-	-	-	-	-	-
Office equipment	20,000	18,000	16,000	14,000	12,000	10,000	8,000	6,000	4,000	2,000	-
Total Fixed Assets	17,119,750	16,462,550	15,805,350	15,148,150	14,490,950	13,833,750	13,176,550	12,519,350	11,862,150	11,204,950	10,547,750
<i>Intangible assets</i>											
Pre-operation costs	-	-	-	-	-	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	-										
TOTAL ASSETS	17,831,967	19,239,258	19,636,261	20,015,132	20,259,398	20,440,470	20,447,355	20,427,357	20,386,617	20,326,112	20,221,500
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	301,436	335,381	371,139	390,042	409,915	430,807	452,772	475,866	500,146	499,060
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	301,436	335,381	371,139	390,042	409,915	430,807	452,772	475,866	500,146	499,060
<i>Other liabilities</i>											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	679,575	679,575	679,575	679,575	679,575	543,660	407,745	271,830	135,915	-
Long term debt	5,349,590	5,083,993	4,781,213	4,436,043	4,042,550	3,593,967	3,082,583	2,499,605	1,835,010	1,077,372	213,665
Total Long Term Liabilities	5,349,590	5,763,568	5,460,788	5,115,618	4,722,125	4,273,542	3,626,243	2,907,350	2,106,840	1,213,287	213,665
<i>Shareholders' equity</i>											
Paid-up capital	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377	12,482,377
Retained earnings	-	691,877	1,357,716	2,045,998	2,664,854	3,274,636	3,907,928	4,584,858	5,321,534	6,130,302	7,026,398
Total Equity	12,482,377	13,174,254	13,840,092	14,528,375	15,147,231	15,757,013	16,390,305	17,067,234	17,803,911	18,612,679	19,508,774
TOTAL CAPITAL AND LIABILITY	17,831,967	19,239,258	19,636,261	20,015,132	20,259,398	20,440,470	20,447,355	20,427,357	20,386,617	20,326,112	20,221,500

12.3 Cash Flow Statement

Statement Summaries											SMEDA
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Rs. in actuals Year 10
<i>Operating activities</i>											
Net profit	-	1,383,755	2,023,554	2,734,281	3,283,710	3,884,418	4,541,220	5,261,787	6,058,210	6,939,070	7,922,494
Add: depreciation expense	-	657,200	657,200	657,200	657,200	657,200	657,200	657,200	657,200	657,200	657,200
amortization expense	-	-	-	-	-	-	-	-	-	-	-
Deferred income tax	-	679,575	-	-	-	-	(135,915)	(135,915)	(135,915)	(135,915)	(135,915)
Accounts receivable	-	(246,849)	(20,329)	(43,489)	(39,852)	(35,052)	(38,557)	(42,413)	(46,654)	(51,319)	(56,451)
Finished good inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	(145,917)	(19,553)	(21,594)	(13,281)	(14,224)	(15,234)	(16,316)	(17,474)	(18,715)	(20,044)	302,353
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	(66,300)	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630	6,630
Accounts payable	-	301,436	33,945	35,759	18,903	19,872	20,892	21,965	23,094	24,281	(1,086)
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(212,217)	2,762,194	2,679,406	3,377,099	3,912,367	4,517,834	5,035,154	5,751,780	6,543,850	7,419,902	8,695,224
<i>Financing activities</i>											
Change in long term debt	5,349,590	(265,597)	(302,780)	(345,170)	(393,493)	(448,583)	(511,384)	(582,978)	(664,595)	(757,638)	(863,707)
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	-	-	-	-	-	-	-	-	-	-
Land lease payment	-	-	-	-	-	-	-	-	-	-	-
Change in lease financing	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	12,482,377	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financ	17,831,967	(265,597)	(302,780)	(345,170)	(393,493)	(448,583)	(511,384)	(582,978)	(664,595)	(757,638)	(863,707)
<i>Investing activities</i>											
Capital expenditure	(17,119,750)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by invest	(17,119,750)	-	-	-	-	-	-	-	-	-	-
NET CASH	500,000	2,496,597	2,376,626	3,031,930	3,518,874	4,069,252	4,523,770	5,168,802	5,879,255	6,662,264	7,831,517
Cash balance brought forward		500,000	2,304,719	3,323,629	4,309,561	5,163,580	5,958,195	6,574,037	7,157,982	7,715,703	8,247,665
Cash available for appropriation	500,000	2,996,597	4,681,345	6,355,559	7,828,434	9,232,832	10,481,966	11,742,840	13,037,237	14,377,967	16,079,182
Dividend	-	691,877	1,357,716	2,045,998	2,664,854	3,274,636	3,907,928	4,584,858	5,321,534	6,130,302	7,026,398
Cash carried forward	500,000	2,304,719	3,323,629	4,309,561	5,163,580	5,958,195	6,574,037	7,157,982	7,715,703	8,247,665	9,052,784

13 KEY ASSUMPTIONS

13.1 Operating Cost Assumptions

Description	Details
Operational days per year	270
Operational hours per day	8
Shifts per day	1

13.2 Production Cost Assumptions

Description	Details
Production capacity utilization in year 1	85%
Production capacity growth rate	5%
Maximum capacity utilization	95%

13.3 Revenue Assumptions

Description	Details
Production Units	20,000
Sale price per unit	530
COGs	206

13.4 Financial Assumptions

Description	Details
Interest rate	14%
Debt : Equity Ratio	30:70
Project Life (Years)	10