

# Pre-Feasibility Study

## Mineral Water Bottling Plant (100,000 GPD)



*Turn Potential into Profit*

Small & Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

[www.smeda.org.pk](http://www.smeda.org.pk)

## **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.

For more information on services offered by SMEDA, please contact our website:

[www.smeda.org.pk](http://www.smeda.org.pk)

## Table of Contents

<b>1 DISCLAIMER .....</b>	<b>5</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>6</b>
<b>INTRODUCTION TO SMEDA.....</b>	<b>7</b>
<b>PURPOSE OF THE DOCUMENT.....</b>	<b>8</b>
<b>CRUCIAL FACTORS .....</b>	<b>8</b>
PROJECT TIME LINES.....	9
<b>PROJECT PROFILE.....</b>	<b>9</b>
PURIFICATION OF WATER.....	9
OPPORTUNITY RATIONALE.....	10
PROJECT BRIEF.....	10
PROJECT INVESTMENT.....	10
PROCESS.....	10
PLANT CAPACITY .....	11
FINANCIAL SUMMARY.....	11
THE PROCESS FLOW .....	11
PROPOSED LOCATION.....	13
<b>STRATEGIC RECOMMENDATIONS.....</b>	<b>13</b>
MARKET ENTRY TIMING .....	13
<b>KEY SUCCESS FACTORS .....</b>	<b>13</b>
MARKETING .....	13
PRICING.....	14
PRODUCT PACKAGING.....	14
<b>SECTOR &amp; INDUSTRY ANALYSIS .....</b>	<b>15</b>
<b>BRANDS AVAILABLE IN THE MARKET .....</b>	<b>15</b>
LEGAL REQUIREMENTS .....	17
<b>MACHINERY &amp; EQUIPMENT REQUIREMENTS.....</b>	<b>21</b>
<b>SUPPLIER DETAILS.....</b>	<b>21</b>
<b>FINANCIAL ANALYSIS .....</b>	<b>22</b>
PROJECT COSTS.....	22
LAND: .....	22
BUILDING/INFRASTRUCTURE.....	23

MACHINERY & EQUIPMENT REQUIREMENT ..... 23  
FURNITURE & FIXTURES REQUIREMENT ..... 24  
OFFICE EQUIPMENT REQUIREMENT..... 24  
VEHICLES REQUIREMENT ..... 24  
HUMAN RESOURCE REQUIREMENT ..... 25  
UTILITIES AND OTHER COSTS..... 25  
CAPITAL STRUCTURE ..... 25  
PROJECT RETURNS ..... 26  
**FINANCIAL ASSUMPTIONS..... 26**  
    REVENUE ASSUMPTIONS ..... 26  
        *Selling Price of Bottle* ..... 26  
        *Starting Capacity of Plant* ..... 26  
        *No. of Bottles*..... 26  
**FINANCIAL STATEMENT ..... 27**



## 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.

For more information on services offered by SMEDA, please contact our website: [www.smeda.org.pk](http://www.smeda.org.pk)

### *Document Control*

Document No.	PREF-NO: 142
Revision	No. 01
Prepared by	SMEDA-Sindh
Revision Date	June, 2017
For information	Provincial Chief (Sindh) mkumar@smeda.org.pk

## EXECUTIVE SUMMARY

The demand for mineral water is constantly rising and there are a number of local manufacturers producing good quality mineral water bottles. The consumers are becoming increasingly quality conscious and seek products offering value for money. This trend has led to strong growth in mineral water bottling plant all across Pakistan. The focus of the business would be to provide clean, hygienic and drinkable water.

This proposed pre-feasibility study presents an investment opportunity for establishing a Mineral Water Processing Plant with a capacity of **100,000 gallons per day**. The proposed product line will consist of **19 liters bottles**. Total utilized production capacity of purified bottled water is **875,368** bottles per year, where initial capacity utilization will be **40%**.

The total project cost for setting up a Mineral Water Processing Unit is estimated at **Rs. 106.41 million** out of which **Rs. 100.48 million** is capital cost and **Rs. 5.92 million** is working capital. The project is proposed to be financed through **100%** equity. The NPV is projected around **Rs. 89.96 million**, with an IRR of **41%** and a Payback Period of **3.29 years**.

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

- Most significant consideration
  - Location with respect to source of water.
  - Compliance with standards & obtaining license from (PSQCA) Pakistan Standards & Quality Control Authority.
  - Maintenance of quality and hygiene standards.
  - Efficient promotion of product through various TTL marketing activities.
  
- Equally important factors
  - Experienced & Strong Distributor.
  - Reasonable & competitive prices with respect to brand positioning.

## **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.

## **PURPOSE OF THE DOCUMENT**

The objective of this Pre-feasibility study is primarily to facilitate the investor in identification of project viability. This may form the basis of an important investment decision and in order to serve this objective; the document/study covers various aspects related to concept development, start-up, production, marketing & finance and business management. The document also provides sectoral information, brief on Government policies and international scenario, which have some bearing on the project itself.

This particular study is regarding production of purified drinking water on commercial basis. Before studying the whole document one must consider following critical aspects, which forms the basis of any investment decision.

## **CRUCIAL FACTORS**

It is advisable to evaluate the associated risk factors by taking into consideration of certain key elements. For establishing water purification plant critical factors that should be considered before launching are described below:

- The market for purified bottled / mineral water is a growing market, but offers tough competition.
- Perception / positioning of the new brand. Usually the top target markets for bottled mineral water follows the perception. If the perception is positive, the results will be higher sales. The positive perception for distributors and final customers may result from direct consumer experience, awareness, direct promotional activities, print media and cable advertisement.
- Distribution is very important for the success of new brand. The stronger the distribution the more successful will be the new brand. The distribution strategy should be designed after a careful study of the market for going for regional distribution or for nationwide distribution.
- Pre-launch advertising is vital for positive perception of the product, which will result in higher product acceptance.
- Compliance of the water quality standards of (PSQCA) Pakistan Standards & Quality Control Authority and license from the authority.
- Availability of product at A class, B class or C class shops should be decided before launching the product and availability should be persistent.



## Project Time Lines

S. No	Activity	Time (months)
1	Civil Works	06
2	Plant order and lay out	03
3	Pre-opening operations	03

The construction / renovation of civil works are estimated to be completed in six months whereas the plant lay out and machinery order and installation is also estimated to be completed in three months. The time required for pre-operations is three months. The project time line may extend and cut back depending upon the start of activities on parallel basis or one after another.

## PROJECT PROFILE

### Purification of Water

The process of purified bottled water manufacturing consist of collecting water from a suitable source, filtration, demineralization, blending with salts, aeration, testing for standards conformation, bottling and then packaging.

Before 2010 much of the mineral water was being imported. But today the demand is being met by local producers / suppliers. According to PSQCA, there are 111<sup>1</sup> registered / licensed brands available in the market thus showing a substantial growth by the industry. Other than registered brands it is estimated that there are hundreds of unregistered brands being supplied in the market.

**Table: Mineral Water Imports in Pakistan**

Year	Quantity/Liters	Value (Rs.)
2009-10	1,957,685	37,859,400
2010-11	561,033	11,593,800
2011-12	802,278	15,800,400
2012-13	590,286	10,670,400
2013-14	17,814	2,312,794
2014-15	14,754	1,100,490
2015-16	6,407	2,515,211

Source: COMTRADE.UN.ORG

<sup>1</sup> <http://www.psqca.com.pk/valid/drinking.htm>

## Opportunity Rationale

The market for mineral water has been showing a mushroom growth trend over the last few years due to the increasing population in a country, less availability of clean drinking water in majority of areas and awareness of hygiene with respect to drinking water. The demand of clean-fresh water is increasing year after year. Keeping this situation in mind many individuals and companies have set up mineral water processing plants in order to supply clean drinking water.

Pakistan has an estimated population of more than 189 million, due to this increase in population, demand of pure drinking water has increased. Most of our population is facing the problem of drinking water shortage. This further integrates the demand for pure drinking water. This business can be set-up in any major city with significant population such as Karachi, Hyderabad, Lahore, Rawalpindi, Islamabad, Multan, Peshawar and Quetta.

The potential markets for bottled / mineral water consist of Households, Hotel Industry, Hospitals, Offices, Homes, Educational Institutions, Commercial Markets and Hygiene conscious people. Moreover the bottled / mineral water has been emerging as a daily preference of Upper, Middle & Lower Middle Class due to unavailability of clean/pure drinking water.

## Project Brief

This proposed Pre-feasibility study presents an investment opportunity for establishing a bottled water plant for providing pure drinking water. The proposed product line will consist of bottles of 19 liters.

## Project Investment

The total cost of the project has been worked out to be Rs. 106,411,600 This includes a fixed cost of Rs. 100,484,300 and a working capital requirement of Rs. 5,927,300

## Process

Three sources of water can be used for purification purposes on commercial basis.

- Ground/Boring Water
- Water Supply from KWSB (in Karachi)
- Through Hydrants/Tankers

The ground water available in Karachi at different areas has different chemical composition and treatment would vary depending upon the chemical composition

from area to area. The water supply from Ground Water is more feasible as compared to the water supply from KWSB. Water can also be purchased from KWSB on commercial basis. This feasibility focuses on Ground/Boring Water as source of water. Initially, we recommend Resistivity or Geological survey at particular plant location, which consists of four tests and will cost Rs. 70,000. This Resistivity survey report will identify the TDS (Total Dissolved Solids), time period for the availability of boring water at particular depth and feasibility of chemical and microbiological composition of ground/boring water which will be more helpful for this project.

### Plant Capacity

This study has been designed for a water purification plant with a capacity of 100,000 gallons per day. The product consists of 19 liters bottles only.

**Table: Recommended project Parameters**

Installed Capacity	Human Resource	Technology/Machinery	Location
100,000 Gallons per day	62	Imported	Karachi

### Financial Summary

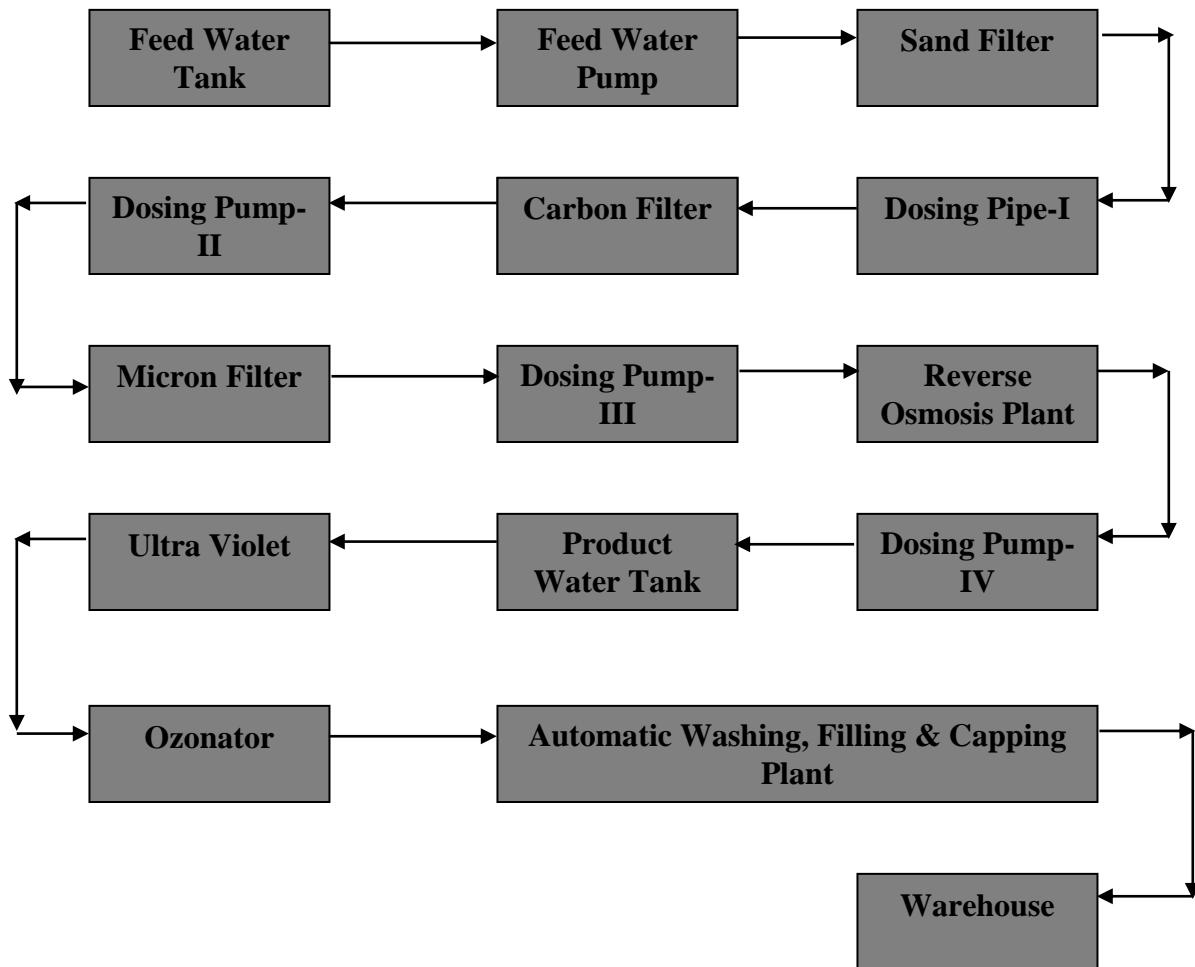
The financial cost of the project can be summarized as under:

Project Cost	IRR	MIRR	Payback Period (years)	NPV
Rs. 106,411,600	41%	23%	3.29	89,966,110

### The process flow

The first step for setting up a water purification plant is the analysis of source of water. After the chemical analysis, the specifications of the purification plant are set. In the purification plant, source water is stored into the feed water tank, passes through the sand filter for preliminary water filtration. Water then passes through the dosing pump-I where chlorine is added to kill the germs in the water. After the chlorination process, water passes through carbon filter. It helps in the maintenance of proper odour and taste of the water. It also removes chlorine from water. Water then passes through dosing pump-II, where Sodium Meta Bisulphate is added. It helps in dechlorination of water. Water is filtered next, it passes through dosing

pump-III, where anti scallant is added. It prevents scaling of membrane from calcium, magnesium and biological growth. Water then passes through reverse osmosis module. This stage of the process makes water clear from all the contaminations and minute particles. Water then passes through dosing pump-IV, where minerals are added for taste development. After this stage, water undergoes Ultra Violet treatment to avoid any contamination from bacteria and other micro-organisms. Water then passes through automatic washing, filling and capping plant. Here water is filled into bottles. After filling, bottles are taken into the warehouse or shipped to the retailers. The complete process flow diagram is as under.



### **Proposed Location**

Mineral Water processing plant can be set-up in any major city with significant population such as Karachi, Hyderabad, Lahore, Rawalpindi, Islamabad, Multan, Peshawar and Quetta.

## **STRATEGIC RECOMMENDATIONS**

### **Market Entry Timing**

The weather is the main dynamic that may bring changes in the market size of the purified drinking water as the daily water requirement increases in summer. When launching a new brand of purified water for bulk market, weather is the main dynamic and should be given proper consideration. The demand pattern for retail market of purified bottled water is not affected by the weather. However, it is suggested that the new brand of purified bottled water is launched in the start of summer season. The Investor have to match the brand launching time with the advertisement and weather that would drive the demand of bottled water and willingness of consumers to switch towards new brand.

## **KEY SUCCESS FACTORS**

### **Marketing**

The traditional marketing tools include site advertisement, print media advertising and brochures. This study allocates 20% of the revenue for advertising and promotional purposes.

Apart from the traditional marketing tools, this study suggests to focus more on other marketing magnets that include interactive marketing. Interactive marketing may include educating the general public about the importance of water and its daily consumption requirements for human body through the participation in seminars and in general public gatherings (e.g. College and University gatherings).

One of the marketing options is to sponsor public events like cricket matches or hospital campaigns, distributing free brochures about water and its daily consumption. The interactive marketing may be designed through seminars and workshops about the daily human consumption requirements and diseases originating from the lack of pure water. Overall marketing strategy may change with the change of target market. A market research study is recommended to design the different dynamics of marketing before launching the new brand.

Marketing expense has been included at the rate of 20% of Total Revenue. The investor may decide to increase or decrease the amount of marketing expense depending upon the choice of promotional activities and type of media used. Following table gives the breakup of tentative marketing expense.

Table: In % age if the marketing expense

Bill Boards / Float Operations	20%
Newspapers	25%
Magazines	15%
Point of Sales Marketing	40%

### Pricing

The pricing strategy should be in line with the going rate market prices of the different local brands. Since a new brand has to face a lot of competition from the market, it is suggested that the price strategy should be according to the market competition. Suggested price is Rs.110 for 19 Gallon Bottle however different brands are available at Rs. 50 to 250 with respect to their brand positioning and consumers perception.

### Product Packaging

Product packaging and presentation is one of the main dynamics, which control the flow of target customers towards the product. Packaging should be in line with the industrial norms. Packaging may also vary with the understanding of the target market. It is suggested that the bottles of 19 liters capacity should be used. Bottles should be clear. The bottle should give a reflection of light sky blue color, which is considered a natural symbol of the water. This color also adds a tinge of purity. The water should give a shiny and a glossy reflection. The bottles should be placed in special racks and stand meant for bottled water at retail outlets, which will be having a unique color and a unique design. The color and the design will create a positive perception for the new brand. The lamination on the bottle is suggested to be on four-color printing and should have the following information in addition to the logo of the company.

- Water Specification
- Certificate mark of the Pakistan Standards & Quality Control Authority
- Expiry Date (Best Before Date)
- A brief intro of the company with the address
- Website address of the company
- Brand Name / Trade Name
- Net volume in System International / Metric system
- Batch number or code number

## SECTOR & INDUSTRY ANALYSIS

According to PSQCA website, there are around 284 registered players in the bottled water sector. According to the industry sources, the numbers of bottlers are well above 300 due to increasing demand for drinking water. However, the much publicized laboratory report published by the Pakistan Council of Research on Water Resources (PCRWR) after conducting a survey of 111<sup>2</sup> registered brands in the Pakistan declaring that, 89 brands available in the market are safe while 22 out of them are unsafe for drinking. Pakistan Standards & Quality Control Authority (PSQCA) has made it obligatory for the companies to obtain license from the authority before commencing operations.

Pakistan's bottled water market comprises of two main segments i.e. retail market and bulk market. The retail market consists of 0.5 liter, 1.5 liters, 3.1 liters 5.0 liters, 6.0 liters, 16 liters and 19 liters capacity PET bottles, whereas the bulk market consists of home and office delivering in 2, 3, 5 and 19 gallon cans.

## BRANDS AVAILABLE IN THE MARKET

**Table: Some popular Brands available in the market**

Abc-Hayat	Lucent
Springley	Fission
Aqua Bara Safe	Balance
Aqua Flex	Aqua Plus
Nestle Pure Life	Exact
Atlantis	Pureza
Sparkletts	XT
Aafi	Aqua Nation
Classic	Aala Pure Drop
AB-E-Tasneem	Oasiss
Tws	Horizon
Nayab	Maya
Aspen Aqua	Nino
Pineo	Prime Pani
Kinley	Pure N Fine
Kinley	Ok Lasani
Great	Aqua Clear
ISIS	Aab-e-Anoud
Aab-E-Wah	Life Water
Salsabeel Water	Habib

<sup>2</sup> PCRWR Report Jan-Mar 2016

Piyaas Plus	Fast Water
Aqualine Premium	Quality
Aqua 7	Revielle
Akson Pure Water	Water One
Deja Blue	Blue Ever Pure
Crystal White	Hydropsy
Pure Light	Aabshaar
Uni Pak Healthy Life	Date Vally
Snow Mountian	Mountain Fresh
Gourmet	Stream
Tahoor	Valvic
Nestle Pure Life	Life Line
Minhal	Best Water
Culligan	Defence
Glow	Iqra Finu
Safa	Aqua Link
Miracle	Montana
Everest	Lariab
Zindagi	Alish
AquaAroma	Pak Abshaar
Cascade	Nesma
Nature	Crest
Bhambhor	Eden
Avion	De Aar
Volvia	Value
AL-Atash	Aab-e-Hunain
Xtreme	Aab-e-Shifa
Buxton	Dam
24 Karat	Bay
Okay	Agua Gud
Calyx	Meme
Wania	Al-Maa
Glacier	Ashley Water
Aqua Fina	Euphoria
Viva	Future Plus
Ocean	Aqua Life
Ramna Premium	Keeper
Hydro Clear	Neelam Plus



Silver Sip	Blue Lagoon
Siz	Oxygen
Finest	Mummum
Vey	Dew Drop
Al-Habib	Aqua Best
Sprinkle	H2O4U
Origin	Eye Line
Aqua Blue	Saqi
Al-Hayat	Combi Plus
Orish	Oslo
Salwa	Coral
Sohat	Top Mountain
Bee Harry's	Glorious Plus
Aqua Aro	Momsa
Volga	Pride Plus
Winsip	NAFENA
Energy	Rejoice

Source: <http://www.psqca.com.pk/valid-license.htm>

The price range for 19 liter category is from Rs.50 to Rs.250 in the market depending upon the positioning and quality of the brand.

### Legal Requirements

The Pakistan Quality Standards defines bottled drinking water as, ***“Bottled drinking waters are waters other than natural mineral waters which are filled into hermetically sealed containers of various compositions forms and capacities that are safe and suitable for direct consumption bottled drinking water is considered food.”***

The Pakistan Standard Quality Control Authority (PSQCA) was established under section 3 of the Act-1996. The establishment of any mineral water plant in Pakistan is required to get a license from the Pakistan Standards Quality Control Authority, which will cost Rs. 19,000. An application form, which can be obtained for only from the office of the Pakistan Standard Quality Control Authority and it is to be submitted to the Pakistan Standard Quality Control Authority. The manufacturer is required to have a laboratory and a technical person, who will be checking the samples for consistent quality. The team from the Pakistan Standard Quality Control Authority then visits the plant and collects samples. After the conformity of the samples to the standards the Pakistan Standard Quality Control Authority issues a license.

The Pakistan Standard Quality Control Authority has developed standards for bottled and mineral water. All the water plants being established in the country are required to follow these standards. These standards are available for Rs. 1,700. A manufacturer cannot market bottled / mineral water without obtaining a license from the Pakistan Standard Quality Control Authority. The authority examines the availability of proper facilities including standardized laboratory and purification-processing plant for ensuring the quality of purified drinking water with a team of experts. Manufacturing, Stocking and sale of bottled drinking water and bottled mineral water without certification marks license is prohibited under the Pakistan Standard Quality Control Authority Act. Violation of the Pakistan Standard Quality Control Authority Standards can lead to punitive action as per law.

The general requirements for establishing a bottled / mineral water plant as developed by Pakistan Standard Quality Control Authority are as following:

### ***Suitability***

The assessment of the suitability of water for human consumption shall be based on consideration of its physical, chemical and microbiological requirements and limits for toxic substances. The water should be free from all chemical and bacteriological contaminations which are hazardous to health.

**Table: Chemical and Microbiological Requirements of Bottled/Mineral Water**

<b>Requirements</b>	<b>Units</b>
pH Range	6.5-8.5
Total Dissolved Solids (TDS) Max	500 mg/L
Total Hardness as CaCO <sub>3</sub> Max	250 mg/L
<b>Chemical Requirements</b>	
Nitrite (NO <sub>2</sub> )	10 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Sodium	50 mg/L
Potassium	10 mg/L
Magnesium	50 mg/L
Calcium	100 mg/L
<b>Microbiological Requirements</b>	
Escherichia Coli	0/250 ml
Total Califon	0/250 ml
Entercooci (Streptococci)	0/250 ml
Sporulated SRA	0/100 ml
Pseudomonas Aeruginosa	0/250 ml
Parasites and pathogenic micro organisms	Shall be free

**Source:** PCRWR Quarterly Report-Bottled Water Quality

### ***Hygiene***

Drinking water for the purpose of bottling shall be prepared in accordance with PS:4639-2004 for the code of practice-General principal of food Hygiene and in accordance with the PS:4718-2001 for code of practice for the collecting, processing and marketing of natural mineral waters.

### ***Packaging***

The containers shall be hygienic suitable completely clean and shall not cause any undesirable changes in the tastes, odour or color or quality of the water. It can be inspected at random, just prior to being filled and sealed. It should be packed in hermetically sealed containers of Food Grade material to prevent contamination of bottled water. Filling and sealing operations of containers shall be done in an aseptic atmosphere so as to prevent any contamination.

### ***Transportation***

Bottled water shall be transported by any suitable means of transport to protect it from contamination.

### ***Marking***

Compliance with PS: 1485-1994 is required for labeling of Pre-Packaged Foods, the following provisions shall apply.

- a) Name of the product for example bottled drinking water
- b) Brand name or trade name
- c) Net volumes in System International / Metric System
- d) Name and address of the manufacturer
- e) Batch number or Code number
- f) Date of Expiry
- g) Chemical composition e.g. Sulfate, Magnesium, Potassium etc.
- h) Pakistan Standard number, PS mark and license number
- i) Date of bottling
- j) Location and name of the source.

### ***Sampling***

- In any consignment all the bottles of the same size and belonging to one batch of the manufacturer or supply shall constitute a **LOT**
- Each bottle of the sample shall be marked with necessary details of sampling and the bottles for bacteriological testing shall be marked separately

- The bottles of the sample shall be stored in such a manner that there shall be no deterioration of quality of water
- The bottles for bacteriological testing shall be brought to the testing laboratory within one hour, of sampling. If this is not possible the bottles shall be stored at 10 °C or below and transported to the testing laboratory within 24 hours. In case of small units, the original packing shall be treated as sample.

### *Scale of Sample*

Sample shall be tested from each lot for ascertaining its conformity to the requirements of this specification. The number of bottles to be selected from a lot shall be in accordance with the following table.

**Table: R-1**

<b>Number of Bottles in the Lot</b>	<b>Number of bottles to be selected</b>
Up to 1000	15
1001 to 3000	17
3001 to 10,000	18
10,001 and above	24

**R-2:** If bottles are packed in cases, 10 percent of the cases subject to minimum of five cases shall be selected from the lot and as far as possible an equal number of bottles shall be selected from each case so selected to form a sample of sizes given in the table **R-1**.

### *Number of Test*

- Each bottle selected as in R-1 and R-2 shall be inspected for packaging and marking requirements
- The bottle shall be selected from the bottles, selected as in R-1 and R-2 and tested individually for bacteriological limits
- A sufficiently quantity of water shall be drawn from each of the remaining bottles and mixed to form a composite sample thus obtained shall be tested for the requirements for its suitability and chemical composition.

### *Criteria for Conformity*

A **LOT** shall be declared as conforming to the requirements of this specification, if the following conditions are satisfied.

- Each bottle inspected as “**A**” satisfies the relevant requirements
- Each bottle when tested as in “**B**” satisfies the relevant information

- Composite sample when tested as in “C” satisfies the relevant requirements

Government of Pakistan has initiated steps to launch programs against substandard bottled water. The Pakistan Council of Research on Water Resources (PCRWR) has launched a campaign against substandard and unlicensed brands of mineral water being sold in the market. The PCRWR has conducted a series of tests of 65 registered brands of mineral water last month and 8 were found unsafe and some of them substandard. It is recommended to fulfill all the requirements of the Pakistan Quality Control Authority for getting a license for the production and marketing of bottled / mineral water in Pakistan

## MACHINERY & EQUIPMENT REQUIREMENTS

Most of the water purification plants being installed in the country are Reverse Osmosis based. Government also recommends RO based technology. This study is based on Reverse Osmosis technology. Most of the machinery is imported from China, Taiwan, Italy and Germany along with some local components. Cost of the machinery is as following.

**Table: Machinery Cost**

Machinery Name	Cost
R.O Plant Unit (Imported with duty and taxes)	Rs. 25,000,000

## SUPPLIER DETAILS

In order to facilitate potential investors, contact details of private sector service providers relevant to propose project is given:

Name of Supplier	Address	Cell	E-mail	Website
Mr. Ayaz Attari	Plot # 4/33 Sector-21, Korangi Industrial Area, Karachi-74900	0300-2457198	rotackwater@gmail.com	www.rotackwater.com
Mr. Fahad	Shop No.8 Opp. Akbar Sanitary Jam Sadiq Road Gizri, Karachi	0322-2682235	socleanwatercare@gmail.com	www.thewaterfiltershop.com.pk

## FINANCIAL ANALYSIS

### Project Costs

Total project cost for the RO Mineral Water Plant is estimated to be around Rs. 106,411,600. This includes costs of capital expenditure as well as working capital required for the project in the initial year.

Table Project Cost Details

Description	Amount in Rs.
Land	10,018,800
Building/Infrastructure	32,355,500
Machinery, Equipment & Laboratory	29,200,000
Bottles	2,200,000
Furniture & fixtures	1,490,000
Office vehicles	19,050,000
Office equipment	1,100,000
Pre-operating costs (Connections charges, Surveys & Accruals)	4,070,000
Legal, Licensing & Promotional Expense	1,000,000
<b>Total Capital Cost</b>	<b>100,484,300</b>
Working Capital Requirement	5,927,300
<b>Total Project Cost</b>	<b>106,411,600</b>

### Land:

The space requirement for the proposed Mineral water processing plant for 100,000 GPD is approx. 01 acre and estimated by 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:

**Building/Infrastructure**

Description	Estimated Area (Sq. ft.)	Unit Cost (Rs.)	Total Cost (Rs.)
Management building	1,500	1,400	2,100,000
Factory	5,000	1,400	7,000,000
Store	8,000	1,400	11,200,000
Cafeteria	500	1,400	700,000
Pavement/driveway	2,000	500	1,000,000
Boring (Running Ft.)	500	3,500	1,750,000
Rest Room for Management	1,000	3,000	3,000,000
Rest Room for Labors	23,560	50	1,178,000
Open Space	835	3,500	2,922,500
Boundary Wall (Running Ft.)	700	2,150	1,505,000
<b>Total</b>	<b>42,060</b>		<b>32,355,500</b>

**Machinery & Equipment Requirement**

Description	Total Cost (Rs.)
Complete RO Plant	27,200,000
Full Automatic RO Plant	
Mineral Water Filling Machine	
Brush bottle & Cap remover	
Steam type shrink machine with steam generator	
Lamp check	
Conveyor	
Conveyor driven motor	
Cap Sterilizer	
Barcoding Machine	
<b>Total Machinery Cost</b>	<b>27,200,000</b>
Laboratory Equipment	2,000,000
<b>Total</b>	<b>29,200,000</b>

Description	Quantity	Unit Cost	Total (Rs.)
Bottle (Empty)	4,000	550	2,200,000
<b>Total</b>			<b>2,200,000</b>

**Furniture & Fixtures Requirement**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Table & Chairs	20	30,000	600,000
Chairs & Stools	20	10,000	200,000
File Cabinets	10	15,000	150,000
Shelves	10	15,000	150,000
Air Conditioners 1.5 Ton	06	65,000	390,000
<b>Total</b>			<b>1,490,000</b>

**Office Equipment Requirement**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Computer server	01	150,000	150,000
Computers/Laptops	08	70,000	560,000
Computer printer	02	25,000	50,000
Telephone exchange	01	40,000	40,000
Telephones	20	2,500	50,000
Fax machines	01	25,000	25,000
Copier	01	225,000	225,000
<b>Total</b>			<b>1,100,000</b>

**Vehicles Requirement**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Truck (Mazda or Equivalent) <sup>3</sup>	10	1,800,000	18,000,000
Motor Bike	15	70,000	1,050,000
<b>Total</b>			<b>19,050,000</b>

<sup>3</sup> 2800 cc vehicle with 3.0 Tons capacity can load 250 bottles maximum in three layers. For 2600 bottles/day 05 trucks can also be used on shift basis while trucks can be increased with respect to sales volume. It should also be noted that as per industry practice storage points / godowns at various locations of city are used for efficient distribution, however at initial stage godowns can be avoided and maximum load can be uplifted from the plant for delivery.



### Human Resource Requirement

Description <sup>4</sup>	No. of Employees	Monthly Salary per person (Rs.)	Monthly Salary (Rs.)
CEO / Owner	01	250,000	400,000
Admin & Accounts Manager	01	75,000	100,000
Assistant Admin & Accounts Manager	02	30,000	60,000
QC Officer / Production Officer	01	30,000	30,000
Production Officer / Plant Operator	02	30,000	60,000
Marketing Manager	01	150,000	150,000
Marketing & Sales Officer	12	35,000	420,000
Customer Service Officer	02	20,000	40,000
Plant Helper	02	18,000	36,000
Filler	02	18,000	36,000
Washer	02	18,000	36,000
Loader	20	18,000	360,000
Driver	10	18,000	180,000
Peon	02	18,000	36,000
Watchman	02	18,000	36,000
<b>Total</b>	<b>62</b>		<b>1,980,000</b>

### Utilities and other costs

An essential cost to be borne by the project is the cost of electricity. The direct electricity expenses are estimated to be around Rs. 213,006 per month. Furthermore, promotional expense being essential for marketing of Mineral water bottling plant is estimated as 20% of Revenue.

### Capital Structure

The proposed project is based on 100% equity.

Table: Capital Structure Details

Description	Debt/Equity Ratio	Amount in Rs.
Debt	0%	-
Equity	100%	147,134,153

<sup>4</sup> Salaries as suggested by the client.

## Project Returns

The details of project returns are as following:

Table: Returns

IRR	41%
PAYBACK (Yr.)	3.29

## FINANCIAL ASSUMPTIONS

The financial projections are based on the following assumptions:

### Revenue Assumptions

#### Selling Price of Bottle

The proposed market price for selling 1 bottle of 19 liter is Rs. 110.

Table: Annual Growth Rates Assumed

Price Growth Rate	10%
Annual Increase in Capacity Utilization	5%

#### Starting Capacity of Plant

Starting annual capacity of the plant is 40% on the basis of single shift operation of 08 hours/ day.

#### No. of Bottles

The starting no. of bottles (utilized capacity) per year is assumed to be 875,368

## **FINANCIAL STATEMENT**

Calculations										
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	96,290,526	119,159,526	145,639,421	176,223,699	211,468,439	251,999,890	298,522,947	351,830,616	412,814,589	482,477,051
<i>Cost of sales</i>										
Cost of goods sold 1	6,375,600	7,674,629	9,124,281	10,739,278	12,535,667	14,530,927	16,744,099	19,195,913	21,908,936	24,907,721
Operation costs 1 (direct labor)	8,856,000	9,718,233	10,664,414	11,702,716	12,842,109	14,092,435	30,928,988	33,940,278	37,244,752	40,870,953
Operating costs 3 (direct electricity)	2,556,076	2,811,683	3,092,852	3,402,137	3,742,351	4,116,586	4,528,244	4,981,069	5,479,175	6,027,093
<b>Total cost of sales</b>	<b>17,787,676</b>	<b>20,204,545</b>	<b>22,881,546</b>	<b>25,844,131</b>	<b>29,120,126</b>	<b>32,739,947</b>	<b>52,201,331</b>	<b>58,117,260</b>	<b>64,632,863</b>	<b>71,805,768</b>
<b>Gross Profit</b>	<b>78,502,851</b>	<b>98,954,982</b>	<b>122,757,875</b>	<b>150,379,568</b>	<b>182,348,313</b>	<b>219,259,943</b>	<b>246,321,616</b>	<b>293,713,356</b>	<b>348,181,727</b>	<b>410,671,284</b>
	82%	83%	84%	85%	86%	87%	83%	83%	84%	85%
<i>General administration &amp; selling expenses</i>										
Administration expense	12,804,000	14,050,616	15,418,603	16,919,780	18,567,114	20,374,835	44,717,114	49,070,836	53,848,442	59,091,202
Administration benefits expense	896,280	983,543	1,079,302	1,184,385	1,299,698	1,426,238	3,130,198	3,434,959	3,769,391	4,136,384
Electricity expense	1,208,675	1,329,542	1,462,496	1,608,746	1,769,620	1,946,582	2,141,241	2,355,365	2,590,901	2,849,991
Maintainance expense	1,460,000	1,562,200	1,671,554	1,788,563	1,913,762	2,047,726	2,191,066	2,344,441	2,508,552	2,684,150
Fuel for Vehicles	2,722,500	3,062,813	3,403,125	3,743,438	4,083,750	4,424,063	4,764,375	5,104,688	5,445,000	5,785,313
Communications expense (phone, fax, mail, internet, etc.)	1,280,400	1,405,062	1,541,860	1,691,978	1,856,711	2,037,483	4,471,711	4,907,084	5,384,844	5,909,120
Office vehicles running expense	2,857,500	3,143,250	3,457,575	3,803,333	4,183,666	4,602,032	5,062,236	5,568,459	6,125,305	6,737,836
Office expenses (stationary, entertainment, janitorial services, etc.)	1,152,360	1,264,555	1,387,674	1,522,780	1,671,040	1,833,735	4,024,540	4,416,375	4,846,360	5,318,208
Promotional expense	19,258,105	23,831,905	29,127,884	35,244,740	42,293,688	50,399,978	59,704,589	70,366,123	82,562,918	96,495,410
Insurance expense	1,739,500	1,565,550	1,391,600	1,217,650	1,043,700	869,750	695,800	521,850	347,900	173,950
Professional fees (legal, audit, consultants, etc.)	1,925,811	2,383,191	2,912,788	3,524,474	4,229,369	5,039,998	5,970,459	7,036,612	8,256,292	9,649,541
Depreciation expense	6,921,775	6,954,775	6,992,725	7,036,368	7,086,556	7,367,338	7,409,456	7,457,890	7,513,591	7,577,646
Amortization of pre-operating costs	814,000	814,000	814,000	814,000	814,000	-	-	-	-	-
Amortization of legal, licensing, and training costs	200,000	200,000	200,000	200,000	200,000	-	-	-	-	-
Bad debt expense	2,888,716	3,574,786	4,369,183	5,286,711	6,344,053	7,559,997	8,955,688	10,554,918	12,384,438	14,474,312
Miscellaneous expense 1	2,500,000	2,625,000	2,756,250	2,894,063	3,038,766	3,190,704	3,350,239	3,517,751	3,693,639	3,878,321
<b>Subtotal</b>	<b>60,629,621</b>	<b>68,750,787</b>	<b>77,986,621</b>	<b>88,481,007</b>	<b>100,395,494</b>	<b>113,120,459</b>	<b>156,588,713</b>	<b>176,657,351</b>	<b>199,277,571</b>	<b>224,761,384</b>
<b>Operating Income</b>	<b>17,873,229</b>	<b>30,204,195</b>	<b>44,771,255</b>	<b>61,898,562</b>	<b>81,952,819</b>	<b>106,139,484</b>	<b>89,732,903</b>	<b>117,056,005</b>	<b>148,904,155</b>	<b>185,909,900</b>
<b>Earnings Before Interest &amp; Taxes</b>	<b>17,873,229</b>	<b>30,204,195</b>	<b>44,771,255</b>	<b>61,898,562</b>	<b>81,952,819</b>	<b>106,139,484</b>	<b>89,732,903</b>	<b>117,056,005</b>	<b>148,904,155</b>	<b>185,909,900</b>
Subtotal	-	-	-	-	-	-	-	-	-	-
<b>Earnings Before Tax</b>	<b>17,873,229</b>	<b>30,204,195</b>	<b>44,771,255</b>	<b>61,898,562</b>	<b>81,952,819</b>	<b>106,139,484</b>	<b>89,732,903</b>	<b>117,056,005</b>	<b>148,904,155</b>	<b>185,909,900</b>
Tax	3,574,646	6,040,839	8,954,251	12,379,712	16,390,564	21,227,897	17,946,581	23,411,201	29,780,831	37,181,980
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>14,298,584</b>	<b>24,163,356</b>	<b>35,817,004</b>	<b>49,518,849</b>	<b>65,562,256</b>	<b>84,911,587</b>	<b>71,786,322</b>	<b>93,644,804</b>	<b>119,123,324</b>	<b>148,727,920</b>



Calculations											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
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	1,000,000	10,312,208	23,197,551	36,367,975	50,465,651	63,451,326	79,676,795	83,308,984	95,638,495	112,604,551	134,163,645
Accounts receivable		3,957,145	4,427,056	5,441,074	6,613,626	7,966,277	9,523,322	11,312,113	13,363,429	15,711,888	18,396,404
Raw material inventory	3,187,800	3,837,314	4,562,140	5,369,639	6,267,833	7,265,463	8,372,049	9,597,957	10,954,468	12,453,861	12,453,861
Pre-paid insurance	1,739,500	1,565,550	1,391,600	1,217,650	1,043,700	869,750	695,800	521,850	347,900	173,950	173,950
<b>Total Current Assets</b>	<b>5,927,300</b>	<b>19,672,217</b>	<b>33,578,347</b>	<b>48,396,338</b>	<b>64,390,810</b>	<b>79,552,817</b>	<b>98,267,966</b>	<b>104,740,904</b>	<b>120,304,292</b>	<b>140,944,249</b>	<b>165,187,859</b>
<i>Fixed assets</i>											
Land	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800	10,018,800
Building/Infrastructure	32,355,500	30,737,725	29,119,950	27,502,175	25,884,400	24,266,625	22,648,850	21,031,075	19,413,300	17,795,525	16,177,750
Machinery & equipment	29,200,000	26,280,000	23,360,000	20,440,000	17,520,000	14,600,000	11,680,000	8,760,000	5,840,000	2,920,000	-
Bottles	2,200,000	2,310,000	2,436,500	2,581,975	2,749,271	5,172,309	4,927,919	4,704,587	4,505,473	4,334,209	4,194,972
Furniture & fixtures	1,490,000	1,341,000	1,192,000	1,043,000	894,000	745,000	596,000	447,000	298,000	149,000	-
Office vehicles	19,050,000	17,145,000	15,240,000	13,335,000	11,430,000	9,525,000	7,620,000	5,715,000	3,810,000	1,905,000	-
Office equipment	1,100,000	990,000	880,000	770,000	660,000	550,000	440,000	330,000	220,000	110,000	-
<b>Total Fixed Assets</b>	<b>95,414,300</b>	<b>88,822,525</b>	<b>82,247,250</b>	<b>75,690,950</b>	<b>69,156,471</b>	<b>64,877,734</b>	<b>57,931,569</b>	<b>51,006,462</b>	<b>44,105,573</b>	<b>37,232,534</b>	<b>30,391,522</b>
<i>Intangible assets</i>											
Pre-operation costs	4,070,000	3,256,000	2,442,000	1,628,000	814,000	-	-	-	-	-	-
Legal, licensing, & training costs	1,000,000	800,000	600,000	400,000	200,000	-	-	-	-	-	-
<b>Total Intangible Assets</b>	<b>5,070,000</b>	<b>4,056,000</b>	<b>3,042,000</b>	<b>2,028,000</b>	<b>1,014,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>106,411,600</b>	<b>112,550,742</b>	<b>118,867,597</b>	<b>126,115,288</b>	<b>134,561,281</b>	<b>144,430,551</b>	<b>156,199,535</b>	<b>155,747,366</b>	<b>164,409,865</b>	<b>178,176,783</b>	<b>195,579,381</b>
<b>Liabilities &amp; Shareholders' Equity</b>											
<i>Current liabilities</i>											
Accounts payable		419,709	502,881	595,641	698,922	813,745	941,218	1,082,550	1,239,057	1,412,170	1,535,407
<b>Total Current Liabilities</b>	<b>-</b>	<b>419,709</b>	<b>502,881</b>	<b>595,641</b>	<b>698,922</b>	<b>813,745</b>	<b>941,218</b>	<b>1,082,550</b>	<b>1,239,057</b>	<b>1,412,170</b>	<b>1,535,407</b>
<i>Shareholders' equity</i>											
Paid-up capital	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600	106,411,600
Retained earnings		5,719,433	11,953,116	19,108,048	27,450,759	37,205,206	48,846,717	48,253,216	56,759,208	70,353,013	87,632,373
<b>Total Equity</b>	<b>106,411,600</b>	<b>112,131,033</b>	<b>118,364,716</b>	<b>125,519,648</b>	<b>133,862,359</b>	<b>143,616,806</b>	<b>155,258,317</b>	<b>154,664,816</b>	<b>163,170,808</b>	<b>176,764,613</b>	<b>194,043,973</b>
<b>TOTAL CAPITAL AND LIABILITIES</b>	<b>106,411,600</b>	<b>112,550,742</b>	<b>118,867,597</b>	<b>126,115,288</b>	<b>134,561,281</b>	<b>144,430,551</b>	<b>156,199,535</b>	<b>155,747,366</b>	<b>164,409,865</b>	<b>178,176,783</b>	<b>195,579,381</b>

Calculations											SMEDA
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
<i>Operating activities</i>											
Net profit		14,298,584	24,163,356	35,817,004	49,518,849	65,562,256	84,911,587	71,786,322	93,644,804	119,123,324	148,727,920
Add: depreciation expense		6,921,775	6,954,775	6,992,725	7,036,368	7,086,556	7,367,338	7,409,456	7,457,890	7,513,591	7,577,646
amortization of pre-operating costs		814,000	814,000	814,000	814,000	814,000	-	-	-	-	-
amortization of training costs		200,000	200,000	200,000	200,000	200,000	-	-	-	-	-
Accounts receivable		(3,957,145)	(469,911)	(1,014,018)	(1,172,552)	(1,352,651)	(1,557,045)	(1,788,791)	(2,051,316)	(2,348,458)	(2,684,516)
Raw material inventory	(3,187,800)	(649,514)	(724,826)	(807,499)	(898,194)	(997,630)	(1,106,586)	(1,225,907)	(1,356,511)	(1,499,393)	-
Advance insurance premium	(1,739,500)	173,950	173,950	173,950	173,950	173,950	173,950	173,950	173,950	173,950	-
Accounts payable		419,709	83,172	92,760	103,282	114,823	127,473	141,332	156,507	173,113	123,238
Cash provided by operations	(4,927,300)	18,221,358	31,194,516	42,268,921	55,775,703	71,601,303	89,916,718	76,496,361	98,025,323	123,136,127	153,744,288
<i>Financing activities</i>											
Issuance of shares	106,411,600	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	106,411,600	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(100,484,300)	(330,000)	(379,500)	(436,425)	(501,889)	(2,807,819)	(421,173)	(484,349)	(557,001)	(640,551)	(736,634)
Acquisitions											
Cash (used for) / provided by investing activities	(100,484,300)	(330,000)	(379,500)	(436,425)	(501,889)	(2,807,819)	(421,173)	(484,349)	(557,001)	(640,551)	(736,634)
NET CASH	1,000,000	17,891,358	30,815,016	41,832,496	55,273,814	68,793,484	89,495,545	76,012,012	97,468,322	122,495,575	153,007,654
Cash balance brought forward		1,000,000	10,312,208	23,197,551	36,367,975	50,465,651	63,451,326	79,676,795	83,308,984	95,638,495	112,604,551
Cash available for appropriation	1,000,000	18,891,358	41,127,224	65,030,047	91,641,789	119,259,135	152,946,871	155,688,808	180,777,306	218,134,070	265,612,204
Dividend		8,579,150	17,929,674	28,662,072	41,176,138	55,807,809	73,270,076	72,379,824	85,138,812	105,529,519	131,448,560
Cash balance	1,000,000	10,312,208	23,197,551	36,367,975	50,465,651	63,451,326	79,676,795	83,308,984	95,638,495	112,604,551	134,163,645
Cash carried forward	1,000,000	10,312,208	23,197,551	36,367,975	50,465,651	63,451,326	79,676,795	83,308,984	95,638,495	112,604,551	134,163,645

Calculations										
Revenue Generation										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Production capacity (units)	2,188,421	2,188,421	2,188,421	2,188,421	2,188,421	2,188,421	2,188,421	2,188,421	2,188,421	2,188,421
Starting capacity utilization	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Capacity utilization growth rate		5%	5%	5%	5%	5%	5%	5%	5%	5%
Capacity utilization for the year	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%
Production per year	875,368	984,789	1,094,211	1,203,632	1,313,053	1,422,474	1,531,895	1,641,316	1,750,737	1,860,158
Production quantity sold	875,368	984,789	1,094,211	1,203,632	1,313,053	1,422,474	1,531,895	1,641,316	1,750,737	1,860,158
Sale price per unit	110	121	133	146	161	177	195	214	236	259
Revenue	96,290,526	119,159,526	145,639,421	176,223,699	211,468,439	251,999,890	298,522,947	351,830,616	412,814,589	482,477,051