USAID FIRMS PROJECT

Pre-Feasibility Study Report

Float Glass Manufacturing Facility

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Data Page

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Abstract:

The USAID Pakistan Firms project aims to assist the Khyber Pakhtunkhwa Board of Investment and Trade (KPBOIT) in promoting investment and trade in the province. In an effort to achieve this aim preliminary feasibility studies have been conducted in order to highlight the investment opportunities available for international and domestic investors. The focus of these preliminary feasibility studies has been kept on the high economic growth sectors in KPK.

This report is a part of series of pre-feasibility studies conducted for identified projects. The information used for the preparation of this report has been gathered from various reliable sources including economic and statistical surveys carried out by the government of Pakistan. Competitor's data and industry averages have been used as a basis for the preparation of preliminary financial projections.

This report provides a financial and economic analysis of the opportunities available in the sector and identifies the potential technical strengths and constraints that may be encountered by the investor(s) in undertaking the identified project. It aims to help the reader develop an understanding of the operational aspects of the sector and its growth potential in the country particularly in the Khyber Pakhtunkhwa province. An outline for a business plan has been prepared for the identified project which identifies the operational requirements (equipment, human resource, infrastructure etc.). The analysis is supported by preliminary financial projections for the first ten years of the business.

Acronyms

GDP	Gross Domestic Product
HR	Human Resource
IT	Information Technology
IRR	Internal Rate of return
KIBOR	Karachi Inter Bank Offer Rate
KPK	Khyber PakhtunKhwa
KPBOIT	Khyber Pakhtunkhwa Board of Investment and Trade
NGO	Non-Governmental Organization
NPV	Net present Value
PKR	Pakistani Rupee
ROI	Return on Investment
US or USA	United States of America
USAID	United States Agency for International Development
USD	United States Dollar

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Disclaimer
The financial projections used in this study should be viewed as approximations and the provincial government of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Board of Investment and Trade (BOIT) and/or their consultants will have no liability, whatsoever, in relation to financial projections included in this study. These projections assume that the project will be professionally marketed, managed and maintained under international standards. The investors may undertake their own study prior to making investment decision.

Executive summary

Chemonics International is implementing the USAID Pakistan Firms Project that works to develop a dynamic internationally competitive business sector to accelerate sales, increase exports, investment, job growth and produce higher value added products and services. Within the business enabling component, the project has initiated an assistance program for the Khyber Pakhtunkhwa Board of Investment and Trade (KPBOIT) to help it meet its mandate promoting investment and trade in the province. The KPBOIT was created with a mandate to advocate specific investment friendly reforms and advise the KP government regarding the provision of adequate infrastructure facilities for making the KP Province business environment more conducive to international investment.

KPBOIT has envisioned a float glass manufacturing project which can be established in Masehra, Karak or D.I.Khan based on the Silica sand deposits in these areas.

The project will be offered to the investor(s) selected through competitive bidding process. Identification of land and obtaining requisite approvals from the provincial government for construction of the proposed facility in the proposed areas will be the responsibility of the investor with facilitation from KPBOIT. Depending on the approvals from provincial government, the investors can be provided land on lease basis, whereas, construction and operations of the Plant will be managed by the investors. The construction of Plant would be subject to pre-conditions with respect to design approval, minimum standards to be followed etc. which will be detailed in the project RFPs to be launched at a later stage. However, this pre-feasibility is based on the assumption that the investor will arrange land for the project on its own.

This pre-feasibility has been based on a series of assumptions with respect to design, size, costs, revenues, returns etc.. However, these are indicative only and the investors might require to carry out their own feasibility studies.

Results of financial pre-feasibility

The results of this financial pre-feasibility indicate that development of the float glass manufacturing facility, with installed capacity of 550 tons per day, will be a profitable financial investment.

The results of this financial pre-feasibility indicate that the project is capable of generating following results:

- **Equity IRR of 19.74% and**

- **Project IRR of 19.31%**

Following are the key assumptions/considerations for the investors which were used in this pre-feasibility and which form basis of projected returns from the project:

- **Total project outlay is estimated at PKR 3.69 billion**, financed through 40% equity and 60% debt. **Total equity contribution will be required at PKR 1.59 billion.**
- The cost of equity has been assumed at 15%, whereas, cost of debt is estimated at 10.5%with a spread of 2.5%.
- The project is expected to be constructed in a time period of two years.
- Cost estimates are based on cost structures in comparable facilities in the country.

1 Project Background and Rationale

1.1 Introduction

Pakistan is one of the major exporters of Float glass, bottles, drinking glasses and glassware used in kitchens and table wares to the world. Top three export destinations are Afghanistan, Bangladesh and Tanzania. Pakistan also exports glassware products to the United Arab Emirates, Iran, South Africa, Philippines, Oman, Bangladesh, Belgium and other countries. Pakistan exported glass products of worth US $ 15 million in 2010 to the world (source: trade map).

The Khyber Pakhtunkhwa Board of Investment and Trade (KPBOIT) has conceived the idea to develop a float glass manufacturing unit in the Khyber Pakhtunkhwa province. The project can be set up in the Mansehra, Karak or D.I.Khan areas based on silica sand deposits, the key raw material for float glass production, in these areas,

This study has been prepared to determine the financial feasibility of building and operating a float glass manufacturing plant with installed capacity of 550 tons per day.

1.2 Introduction to KPBOIT

Khyber Pakhtunkhwa Board of Investment and Trade (KPBOIT) is established for the promotion of trade and investment activities in Khyber Pakhtunkhwa (KPK). Government of Khyber Pakhtunkhwa is committed to bring economic prosperity in the Province through industrial and trade development and delegated this role to KP-BOIT. KP-BOIT has accepted this challenging task towards achievement of its mission under the leadership of a dynamic Board Members comprising of eminent people of public and private sectors.

High motivation and commitment is there to achieve the vision to flourish the investment and trade in Khyber Pakhtunkhwa making it most favorite investment destination for investors.

Our land is blessed with abundance of natural resources of Oil & Gas, Hydel Power Generation, Tourist Destinations, Mines and Minerals along with Agriculture. The Province is located at an outstanding geographical location.

KPBOIT is striving for exploiting the tremendous potential of the Province into reality and is focused on meeting its important objective of facilitating local and foreign investors desirous of benefiting from this huge potential of the KPK. Our aim is creating an attractive business environment through proactive policy advocacy both at the Provincial and Federal level. Another important role of awareness among investors is to the tremendous opportunities available for investment in KPK and therefore facilitating them for undertaking such investment as a joint venture partners.

We also act as a focal point of contact for both foreign and domestic investors providing information and assistance in coordination with other Government Departments and Agencies.

KPBOIT's objectives are:

- To flourish and revive the investment climate of Khyber Pakhtunkhwa and to make it a lucrative investment friendly destination.
- To provide one window operation facility to investors by proactively engaging with all stakeholders to ensure successful investments.
- To act as a bridge between investors and all related government and semi Government Departments/Organizations.
- Advise the Provincial Government to create environment for investment through advocacy of specific investment friendly and comprehensive Public Private Partnership policies.

1.3 Overview of Glass Industry in Pakistan

Float glass is a flat and crystal clear glass without any bubbles, layers and distortions of an ordinary glass, resultantly float glass is extensively used by architects, interior decorators and construction companies in the form of window panes, glass doors etc.. Float glass is manufactured via the Pilkington process (named after Sir Alastair Pilkington who invented the process). Although the manufacturing process for flat and float glass is not much different but the former is a bit different from float glass in the context that it is a broader term which comprises of numerous types of glass.

Glass manufacturing are well known energy intensive industries comprising of manufacturers in the organized sub-segment, producing 90% of indigenous production. Demand for glassware has shown a rising trend due to the increase in population and income levels. Pakistan exported glass products worth Rs.60 million to Rs 120 million per annum during 2005-2010, according to Pakistan Glass Manufacturer Association (PAGMA). Pakistan also imports glass products which are used in high quality table wares for exort and during the past five years, imports of various glass products increased from Rs 975 million to Rs 1,782 million, showing an increase of 83% (Source: PAGMA).

During 2009-10, the sub-segment produced glass products worth USD 134.50 MN and production of all types of glass containers has grown at an average annual rate of 5% during

the past five years. In the year 2010-11, glass industry has undertaken production worth USD 81 MN, contributing 1.9 percent to the total manufacturing sectors value. There are more than 35 glassworks in Pakistan producing sheet glass, glass containers, electric glass tubes and bulbs, neutral glass tubing and glassware. The production capacity ranges between 15 tons and 250 tons per day. Most of the units are located near the sources of raw materials. Gas is the primary fuel used in production of glass; over 80% of manufacturers rely on natural gas. The industry suffers from decreased production in winters on the back of fuel shortages of natural gas and electricity. More than 50% of glass industry has suspended its activities while the remaining units are on the verge of closure due to gas and power load shedding (data source: State Bank of Pakistan report 2011).
Glass industry is dominated by Ghani Glass and Tariq Glass Industries, due to higher production capacity and well-developed distribution network as compared to other small and medium units.

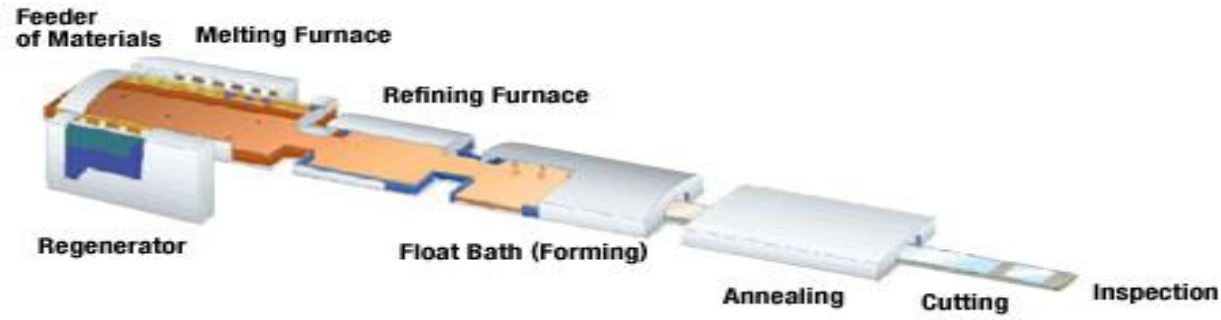
Pakistan Glass Manufactures Association (PAGMA) looks after the affairs of the glass industry.

This sub-segment experiences business cycles due to fluctuation of power and gas shortages which increases manifolds during winters. The prices of raw materials are relatively low and seldom fluctuate and generally the availability of multiple suppliers results in their limited leverage over the glass manufacturers.

1.4 Process

Introduction
Float glass is a sheet of glass made by floating molten glass on a bed of molten metal, typically tin, although lead and various low melting point alloys were used in the past. This method gives the sheet uniform thickness and very flat surfaces. Modern windows are made from float glass. Most float glass is soda-lime glass, but relatively minor quantities of specialty borosilicate and flat panel display glass are also produced using the float glass process. The float glass process is also known as the Pilkington process, named after the British glass manufacturer Pilkington, which pioneered the technique (invented by Sir Alastair Pilkington) in the 1950s.

The following diagram illustrates the process for float glass production.



Raw Materials

Float glass uses common glass-making raw materials, typically consisting of sand, soda ash (sodium carbonate), dolomite, limestone, and salt cake (sodium sulfate) etc. Other materials may be used such as colorants, refining agents or to adjust the physical and chemical properties of the glass.

Table 1: Raw Materials

Material	Composition (%)	Benefits
Sand	72.6	-
Soda Ash	13.0	**Easier melting**
Limestone	8.4	**Durability**
Dolomite	4.0	**Working & weathering properties**
Alumina	1.0	-
Others	**1.0**	-

Batching of Raw materials

The raw materials are weighed and mixed into batches cullet in the batch plant to which recycled glass (cullet) is added. The use of 'cullet' reduces the consumption of natural gas. The materials are tested and stored for later mixing under computerized control.

Melting and refining

The raw materials are then charged into a large furnace to be melted at 1500°C to 1600°C. Common flat glass furnaces are 9 m wide, 45 m long, and contain more than 1200 tons of glass.

Several processes – melting, refining, homogenizing – take place simultaneously in the furnace. They occur in separate zones in a complex glass flow driven by high temperatures. It adds up to a continuous melting process, lasting as long as 50 hours, that delivers glass at approximately 1100°C to 1200°C, free from inclusions and bubbles, smoothly and continuously to the float bath. The melting process is key to glass quality; and compositions can be modified to change the properties of the finished product.

Float Bath

The molten glass is fed into a "tin bath", a bath of molten tin (about 3–4 m wide, 50 m long, 6 cm deep), from a delivery canal and is poured into the tin bath by a ceramic lip known as the spout lip. The amount of glass allowed to pour onto the molten tin is controlled by a gate called a tweel.

Tin is suitable for the float glass process because it has a high specific gravity, is cohesive, and is immiscible with molten glass. Tin, however, oxidizes in a natural atmosphere to form tin dioxide (SnO_2). Known in the production process as dross, the tin dioxide adheres to the glass. To prevent oxidation, the tin bath is provided with a positive pressure protective atmosphere of nitrogen and hydrogen.

A continuous ribbon of molten glass is fed out of the melting furnace over a refractory spout on to the mirror-like surface of molten tin, starting at 1100 °C and leaving the float bath as a solid ribbon at 600 °C.

The molten glass literally floats on top of the tin, and as it flows along the surface of the tin bath away from the delivery canal it forms a ribbon of uniform thickness. Thickness is controlled by the speed at which solidifying glass ribbon is drawn off from the bath. The glass which is highly viscous and the tin which is very fluid do not mix and the contact surface between these two materials is perfectly flat.

Annealing

Despite the tranquility with which float glass is formed, considerable stresses are developed in the ribbon as it cools. Too much stress and the glass will break beneath the cutter. To relieve

these stresses, the ribbon undergoes heat-treatment in a long furnace known as a lehr. Temperatures are closely controlled both along and across the ribbon.

The glass ribbon is pulled off the bath by rollers at a controlled speed. Variation in the flow speed and roller speed enables glass sheets of varying thickness to be formed. Top rollers positioned above the molten tin may be used to control both the thickness and the width of the glass ribbon.

The glass is now hard enough to pass over rollers and is annealed, which modifies the internal stresses enabling it to be cut and worked in a predictable way and ensuring flatness of the glass. As both surfaces are fire finished, they need no grinding or polishing.

Inspection

The float process is renowned for making perfectly flat, flaw-free glass. But to ensure the highest quality, inspection takes place at every stage.

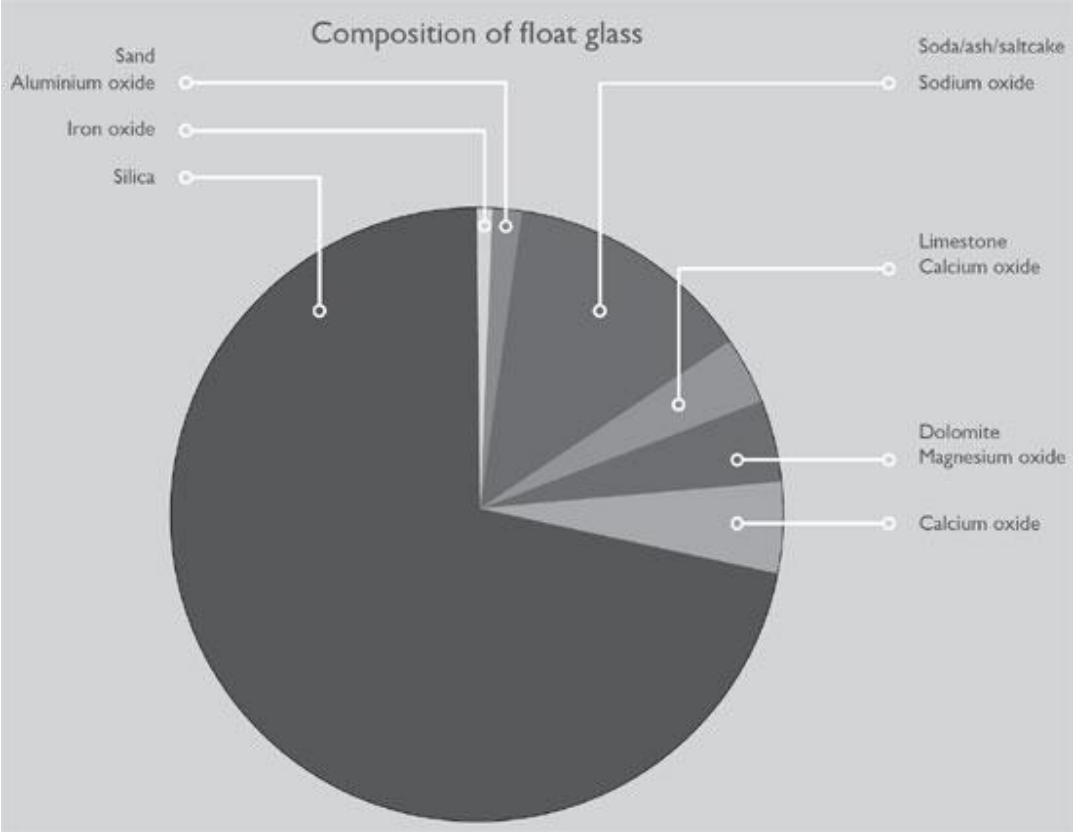
Occasionally a bubble is not removed during refining, a sand grain refuses to melt, a tremor in the tin puts ripples into the glass ribbon. Automated on-line inspection does two things. It reveals process faults upstream that can be corrected. And it enables computers downstream to steer cutters round flaws.

Cutting to order

Once cooled down and solidified the glass goes to the cutting area where it is cut in to a large sheet of 'jumbo size' (6×3.21 meters) or 'cut-sizewhich are specific to customer orders, before being stacked for transportation.

Diamond wheels trim off selvedge - stressed edges - and cut the ribbon to size dictated by computer.

Float glass is sold by the square meter. Computers translate customers' requirements into patterns of cuts designed to minimize wastage. Increasingly, electronic systems integrate the operation of manufacturing plants with the order book.



Products of Float Glass Manufacturing

Building industry

Float glass is used for smaller windows in domestic housing. Larger windows are made from toughened glasses. Glass is used for windows for aesthetic and functional reasons, allowing the occupants to see out and at the same time allowing light in.

Commercial glazing

Float glass is becoming more and more popular in commercial applications as it allows structures to be constructed that give the impression of being outside with the benefits of being inside protected from the elements (with the exception of the sun). Glass is also playing an increasing role in buildings where it provides an attractive and easy to maintain exterior surface. It should be noted that most glass used for this application is subject to a post heat treatment toughening process before use.

In this application several design factors are involved apart from aesthetics. Factors such as light and heat transmittance can play a big role in glass selection as they will influence the amount of heating and cooling that will be required inside a building according to the differences in seasons and climates.

Displays

Based on its transparency, hardness and ease of cleaning, glass is often used for display cases in retail outlets and countertops.

2 Financial Pre-feasibility

2.1 Project design assumptions

The project aims at the establishment of a Float Glass Manufacturing Facility in KPK. The facility will be constructed over a land area of 30 acres valued at PKR 45 million. 0.5 million sq. ft. of this area will be allocated for the buildings. The plant will have a capacity of 550 TPD and will be operational for 300 days a year.

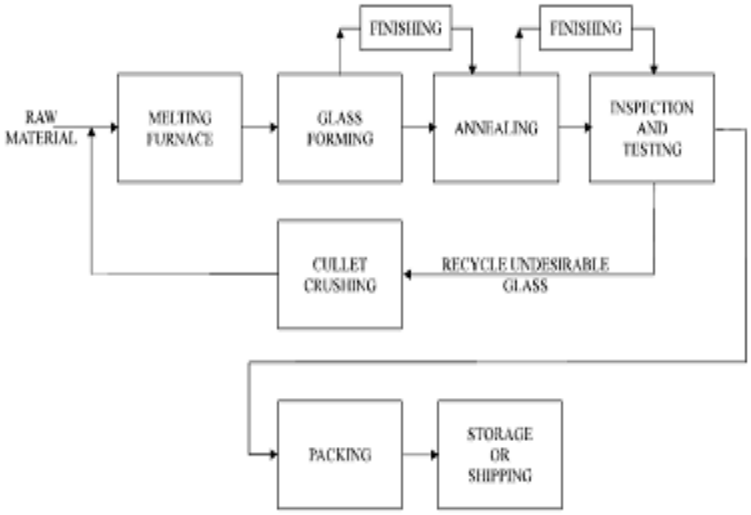
Equipment
The facility will be equipped with the latest equipment in order to enable it to operate efficiently and economically and to reduce environmental pollution on a continuous basis to meet the applicable environmental regulations.

The following items of equipment will be used in the float glass manufacturing process:

- Automatic Ribbon Cutting Line
- Cryogenic Nitrogen Plant
- Hydrogen Plant
- Gas Electric Generators
- Standby (Diesel) Generators
- Glass Leveler & Batch Feeder
- Air Compressor Plant
- Water Supply Station
- Float Furnace/Tin Bath
- Cooling Towers
- Cullet return and crushing
- Batch Plant
- Gas and oil filling system
- Annealing Lehr
- Weight Bridge
- Moulds

Following Office equipment will be required to support the manufacturing process:

- Telephone with connection
- Fax machine
- Computers
- Printers
- Furniture and Fixtures
- DCS System
- Computerized Networking System



Human Resource:

Proper training will be provided to workers who are to operate the facility to help them carry out the processes reduce raw material losses, and thereby increase profitability.

Human resource required for administration and marketing purpose are as follows:

- General manager
- Accountant
- Drivers
- Personal & Admin. Officer
- Peon
- Gardener
- Security Guards

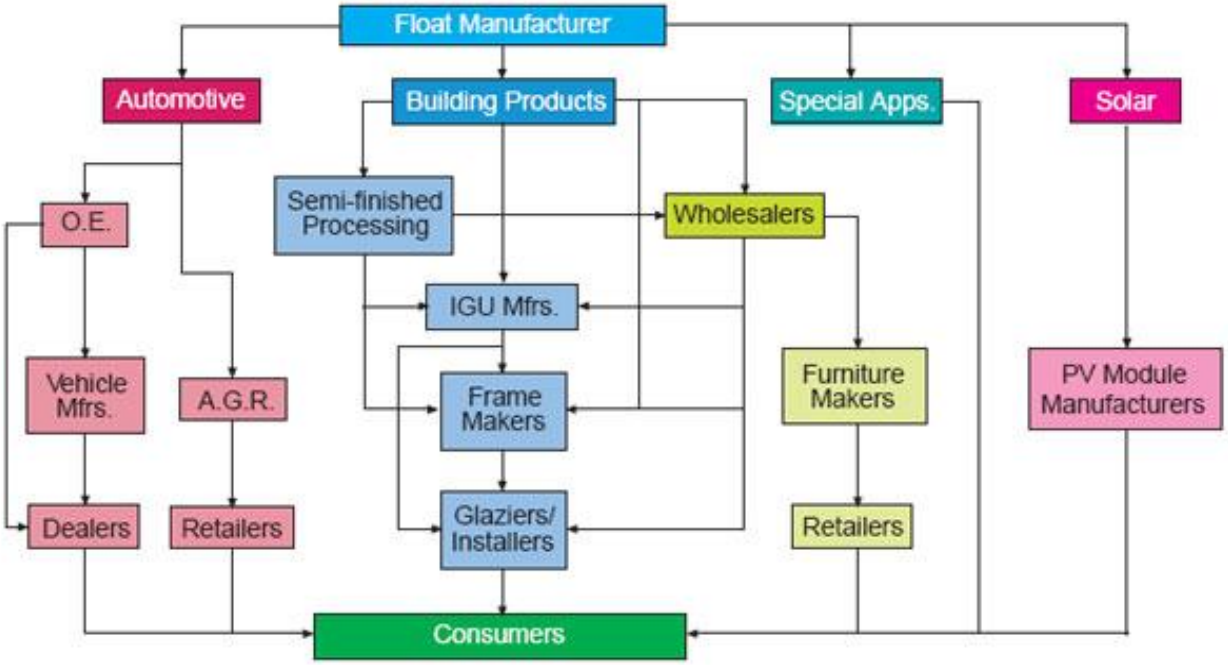
Steps will be taken to promote safety and health at work and strive to avoid all types of labor which, by its nature or the condition under which it is carried out, might compromise safety and health.

Final Products:

The final products will be various types of sheet glass which will be used for

- Glazing wherever full transparency is required in buildings.
- As a base material for safety glass, reflective glass and self-cleaning glass, among others.
- In precision mechanics, especially where extreme surface flatness is required. E.g., for visual displays windows.

The products will be sold locally as well as exported.



2.2 Project set up costs

The plant will be built over an area of 30 acres and will require an estimated total project outlay of PKR 3.694 billion. The project cost includes a working capital injection of PKR 275 million. The plant will be constructed over a period of 2 years and operations will start in the 3rd year. Please refer table below for detailed breakdown of project set up costs.

Table 2: Project Cost

Project Cost	
Land (30 Acres)	45,000,000
Buildings (500,000 SFT)	900,000,000
Plant & machinery	
Sand Benefication Plant	28,750,000
Melting Furnace	933,750,000
Automatic Ribbon Cutting Line	213,750,000
Cryogenic Nitrogen Plant	112,500,000
Hydrogen Plant	98,750,000
Gas Electric Generators	97,500,000
Standby (Diesel) Generators	15,000,000
DCS System	13,750,000
Glass Leveler & Batch Feeder	58,750,000
Tin	28,750,000
Air Compressor Plant	6,250,000
Water Supply Station	16,250,000
Float Furnace/Tin Bath	392,500,000
Cooling Towers	36,250,000
Cullet return and crushing	22,500,000
Batch Plant	140,000,000
Gas and oil filling system	2,500,000
Annealing Lehr	140,000,000
Computerized Networking System	37,500,000
Weight Bridge	33,750,000
Moulds	15,000,000
Furniture, Fixture and Equipment	6,500,000
Vehicles	6,000,000
IDC	292,825,960
	3,694,075,960

The project will be funded through both equity and debt in a 40% to 60% ratio. The debt will be repaid over a course of 8 years with a grace period of 2 years.

2.3 Operating revenues

The float glass manufacturing facility will have a capacity of 550 tons per day. It will generate revenue from 3 sources:

- Local Sales
- Export Sales

- Value added products

The following table outlines the sales composition for the glass manufacturing facility:

Table 3: Revenue Assumptions

Revenue assumptions	
Local sales	70%
Exports	20%
Value added products	10%

A capacity utilization rate of 60% has been assumed for the first year of operation keeping in view the duration of establishment of the plant. This rate is expected to increase to 80% in Year 2. A 90% utilization rate is predicted for the continuing years.

Revenues have been estimated on the basis of capacity utilization rates, selling prices, and inflation rates. Selling price estimates have been made with regard to the prevailing market prices for the product.

Table 4: Selling Price

Average selling price PKR/Ton	
Local sales	20,000
Exports	18,000
Value added products	24,000

Selling prices of all products are expected to escalate by 8% per year. Total revenue of PKR 1.98 billion is estimated for the first year of operation. This figure is expected to rise to PKR 5.49 billion by Year 10.

2.4 Operating costs

Variable Costs

The cost estimates have been based on current market prices and competitor analysis. Costs have been calculated on a per ton basis and extrapolated for the year.

Table 5: Variable Costs

Variable costs PKR/ Ton	
Raw Material	6,942
Packing Material	1,521
Salaries	1,273
Fuel	3,783
Electricity	831
Oil and Lubricants	183
Other Consumables	190
R&M	114
Value Addition	903
Other Expenses	152

Costs are expected to rise per year at the rates illustrated in the following table:

Table 6: Cost Escalation Assumptions

Cost escalation assumptions	
Raw material	5%
Packing material	8%
Salaries & wages	10%
Fuel	10%
Electricity	10%
R & M	8%
Other costs	8%

Total variable costs of PKR 1.67 billion are estimated for the first year of operation. This figure is expected to rise to PKR 4.199 billion by Year 10.

Administrative Costs

Administrative costs have been estimated on a per year basis and are also expected to rise from PKR 200 million in year 1 to PKR 370.1 million in Year 10 at a rate of 8% per year.

Fixed Assets

Assets are expected to be in use for the following number of years after which they will have to be replaced.

Table 7: Assets Useful Life

Assets useful life (Years)	
Building	20
Plant and machinery	20
Moulds	10
Furniture, Fixture and Equipn	10
Vehicles	10

2.5 Project returns

Based on cash flow projections prepared after taking into consideration project set up costs and operating results, the project is expected to generate IRR of 19.74% for the equity investor. Please refer charts below for profitability analysis.

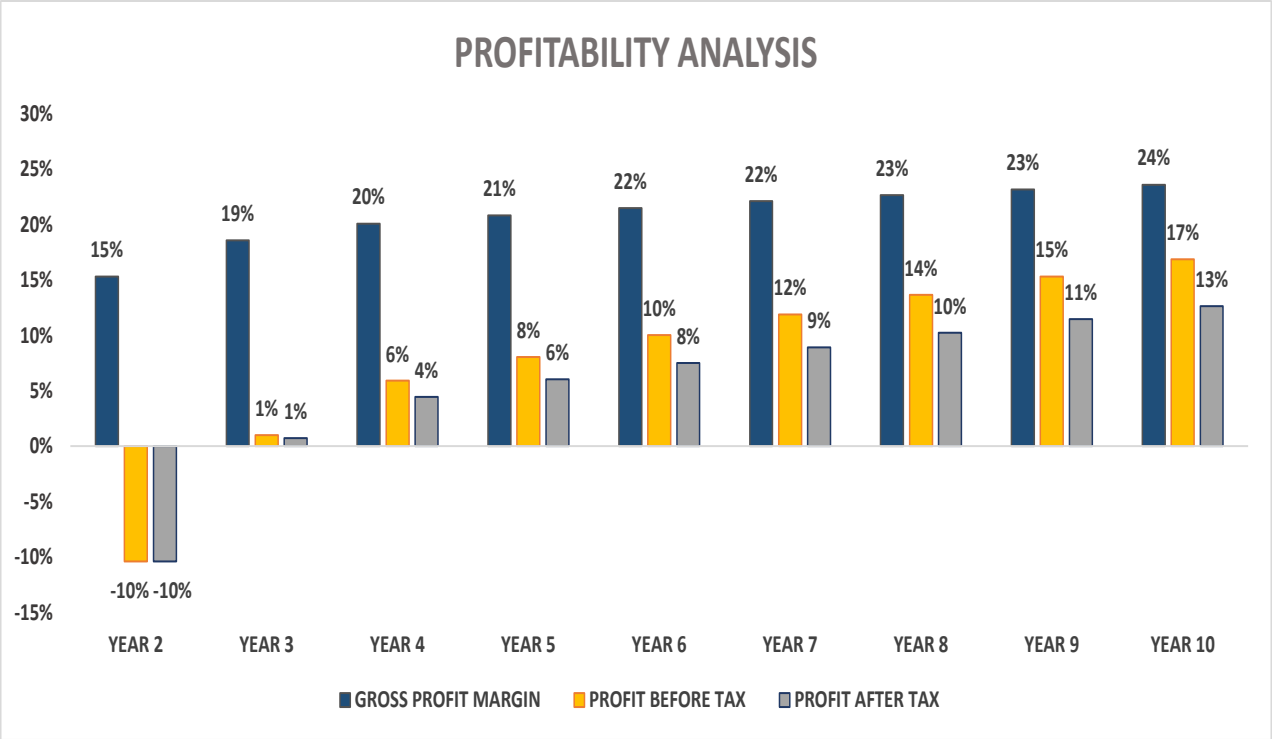
Table 8: Project/Equity Returns

Project Returns	
Project IRR	19.31%
Project NPV	808,641,858

Equity Returns	
Equity IRR	19.74%
Equity NPV	608,754,835

Assumptions

For calculation of IRR and net present value of the project cost of equity has been assumed at 15%. Whereas, cost of debt is assumed at 10.5% with a spread of 2.5%.


PROFITABILITY ANALYSIS
30%
25%
20%
15%
10%
5%
0%
-5%
-10%
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15%
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19%
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24%
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YEAR 2
YEAR 3
YEAR 4
YEAR 5
YEAR 6
YEAR 7
YEAR 8
YEAR 9
YEAR 10
GROSS PROFIT MARGIN
PROFIT BEFORE TAX
PROFIT AFTER TAX

Appendices

Appendix I: Indicative financial statements

Projected balance sheet (First six years)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Fixed Assets	1,769,640,999	3,694,075,960	3,510,247,162	3,326,418,364	3,142,589,566	2,958,760,768
Current Assets						
Stocks in trade	-	-	127,126,033	176,902,686	210,032,348	222,841,745
Trade debts	-	-	162,739,726	234,345,205	284,729,425	307,507,779
Cash & bank balances	-	275,000,000	21,530,145	398,047	89,688,486	226,166,088
	-	275,000,000	311,395,904	411,645,938	584,450,258	756,515,612
Total Assets	1,769,640,999	3,969,075,960	3,821,643,067	3,738,064,303	3,727,039,824	3,715,276,380
Share Capital & Reserves						
Share capital	707,856,400	1,587,630,384	1,587,630,384	1,587,630,384	1,587,630,384	1,587,630,384
Retained earnings	-	-	(206,138,032)	(184,778,213)	(30,809,819)	194,924,464
	707,856,400	1,587,630,384	1,381,492,352	1,402,852,171	1,556,820,565	1,782,554,848
Long term debt	1,061,784,599	2,194,771,869	1,983,830,581	1,745,466,925	1,476,115,993	1,171,749,441
Current liabilities						
Creditors/ liabilities	-	-	245,378,845	351,381,551	424,752,334	456,605,539
Current portion - long term debt	-	186,673,707	210,941,289	238,363,656	269,350,931	304,366,553
	-	186,673,707	456,320,134	589,745,207	694,103,266	760,972,092
Total equity & liabilities	1,769,640,999	3,969,075,960	3,821,643,067	3,738,064,303	3,727,039,824	3,715,276,380

Projected balance sheet (Year 7 to 10)

	Year 6	Year 7	Year 8	Year 9	Year 10
Fixed Assets	2,774,931,970	2,591,103,172	2,407,274,374	2,223,445,576	2,039,616,778
Current Assets					
Stocks in trade	236,550,949	251,230,104	266,955,315	283,809,186	301,881,409
Trade debts	332,108,401	358,677,073	387,371,239	418,360,938	451,829,813
Cash & bank balances	405,882,826	631,479,847	905,647,706	1,231,109,070	2,106,859,165
	974,542,176	1,241,387,024	1,559,974,260	1,933,279,194	2,860,570,387
Total Assets	3,749,474,146	3,832,490,196	3,967,248,634	4,156,724,771	4,900,187,165
Share Capital & Reserves					
Share capital	1,587,630,384	1,587,630,384	1,587,630,384	1,587,630,384	1,587,630,384
Retained earnings	499,019,781	888,655,210	1,371,647,439	1,956,509,871	2,652,517,763
	2,086,650,165	2,476,285,594	2,959,277,823	3,544,140,255	4,240,148,147
Long term debt	827,815,236	439,169,586	0	0	-
Current liabilities					
Creditors/ liabilities	491,074,540	528,389,366	568,801,226	612,584,516	660,039,018
Current portion - long term debt	343,934,204	388,645,651	439,169,586	-	-
	835,008,744	917,035,017	1,007,970,811	612,584,516	660,039,018
Total equity & liabilities	3,749,474,146	3,832,490,196	3,967,248,634	4,156,724,771	4,900,187,165

Projected profit and loss (Year 1 to 6)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue						
Local sales	-	-	1,386,000,000	1,995,840,000	2,424,945,600	2,618,941,248
Exports	-	-	356,400,000	513,216,000	623,557,440	673,442,035
Value add products	-	-	237,600,000	342,144,000	415,704,960	448,961,357
	-	-	1,980,000,000	2,851,200,000	3,464,208,000	3,741,344,640
Costs						
Raw Material	-	-	687,237,342	962,132,279	1,136,518,755	1,193,344,693
Packing Material	-	-	150,580,491	216,835,907	263,455,628	284,532,078
Salaries	-	-	126,068,349	184,900,245	228,814,053	251,695,459
Fuel	-	-	374,512,771	549,285,398	679,740,680	747,714,748
Electricity	-	-	82,240,458	120,619,339	149,266,432	164,193,075
Oil and Lubricants	-	-	18,089,248	26,048,518	31,648,949	34,180,865
Other Consumables	-	-	18,772,279	27,032,081	32,843,979	35,471,497
R&M	-	-	11,263,367	16,219,249	19,706,387	21,282,898
Value Addition	-	-	8,939,180	12,872,420	15,639,990	16,891,189
Other Expenses	-	-	15,017,823	21,625,665	26,275,183	28,377,197
Depreciation	-	-	183,828,798	183,828,798	183,828,798	183,828,798
	-	-	1,676,550,107	2,321,399,898	2,767,738,833	2,961,512,496
Margin	-	-	303,449,893	529,800,102	696,469,167	779,832,144
Other costs						
Admin costs	-	-	150,000,000	162,000,000	174,960,000	188,956,800
Selling costs	-	-	50,000,000	54,000,000	58,320,000	62,985,600
Financial costs	-	-	309,587,925	285,320,343	257,897,976	226,910,700
	-	-	509,587,925	501,320,343	491,177,976	478,853,100
Profit before tax	-	-	(206,138,032)	28,479,759	205,291,192	300,979,044
Tax	-	-	-	7,119,940	51,322,798	75,244,761
Profit after tax	-	-	(206,138,032)	21,359,819	153,968,394	225,734,283

Projected profit and loss (Year 7 to 12)

	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue					
Local sales	2,828,456,548	3,054,733,072	3,299,111,717	3,563,040,655	3,848,083,907
Exports	727,317,398	785,502,790	848,343,013	916,210,454	989,507,290
Value add products	484,878,265	523,668,527	565,562,009	610,806,969	659,671,527
	4,040,652,211	4,363,904,388	4,713,016,739	5,090,058,078	5,497,262,725
Costs					
Raw Material	1,253,011,927	1,315,662,524	1,381,445,650	1,450,517,932	1,523,043,829
Packing Material	307,294,644	331,878,216	358,428,473	387,102,751	418,070,971
Salaries	276,865,005	304,551,505	335,006,656	368,507,321	405,358,053
Fuel	822,486,222	904,734,845	995,208,329	1,094,729,162	1,204,202,078
Electricity	180,612,382	198,673,621	218,540,983	240,395,081	264,434,589
Oil and Lubricants	36,915,334	39,868,561	43,058,046	46,502,689	50,222,904
Other Consumables	38,309,217	41,373,954	44,683,870	48,258,580	52,119,266
R&M	22,985,530	24,824,372	26,810,322	28,955,148	31,271,560
Value Addition	18,242,484	19,701,883	21,278,033	22,980,276	24,818,698
Other Expenses	30,647,373	33,099,163	35,747,096	38,606,864	41,695,413
Depreciation	183,828,798	183,828,798	183,828,798	183,828,798	183,828,798
	3,171,198,917	3,398,197,441	3,644,036,256	3,910,384,602	4,199,066,160
Margin	869,453,295	965,706,948	1,068,980,484	1,179,673,476	1,298,196,565
Other costs					
Admin costs	204,073,344	220,399,212	238,031,148	257,073,640	277,639,532
Selling costs	68,024,448	73,466,404	79,343,716	85,691,213	92,546,511
Financial costs	191,895,079	152,327,427	107,615,981	57,092,046	-
	463,992,871	446,193,043	424,990,845	399,856,900	370,186,042
Profit before tax	405,460,423	519,513,905	643,989,638	779,816,576	928,010,523
Tax	101,365,106	129,878,476	160,997,410	194,954,144	232,002,631
Profit after tax	304,095,318	389,635,429	482,992,229	584,862,432	696,007,892

Projected cash flows (Year 1 to 6)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Profit before taxation	-	-	(206,138,032)	28,479,759	205,291,192	300,979,044
Adjustment of non-cash items						
Depreciation	-	-	183,828,798	183,828,798	183,828,798	183,828,798
Financial charges	-	-	309,587,925	285,320,343	257,897,976	226,910,700
	-	-	287,278,691	497,628,900	647,017,965	711,718,542
Working capital changes						
current assets	-	-	(289,865,759)	(121,382,132)	(83,513,881)	(35,587,751)
current Liabilities	-	-	245,378,845	106,002,705	73,370,784	31,853,205
	-	-	(44,486,914)	(15,379,427)	(10,143,097)	(3,734,546)
	-	-	242,791,777	482,249,473	636,874,868	707,983,996
Taxes paid	-	-	-	(7,119,940)	(51,322,798)	(75,244,761)
Interest paid	(69,015,999)	(223,809,961)	(309,587,925)	(285,320,343)	(257,897,976)	(226,910,700)
Cash flow from Operations	(69,015,999)	(223,809,961)	(66,796,148)	189,809,190	327,654,095	405,828,534
Capital expenditure	(1,700,625,000)	(1,700,625,000)				
Equity	707,856,400	879,773,985	-	-	-	-
Debt	1,061,784,599	1,319,660,977	(186,673,707)	(210,941,289)	(238,363,656)	(269,350,931)
Total cash generated	-	275,000,000	(253,469,855)	(21,132,098)	89,290,438	136,477,603
Opening cash	-	-	275,000,000	21,530,145	398,047	89,688,486
Closing cash	-	275,000,000	21,530,145	398,047	89,688,486	226,166,088

Projected cash flows (Year 7 to 12)

	Year 6	Year 7	Year 8	Year 9	Year 10
Profit before taxation	405,460,423	519,513,905	643,989,638	779,816,576	928,010,523
Adjustment of non-cash items					
Depreciation	183,828,798	183,828,798	183,828,798	183,828,798	183,828,798
Financial charges	191,895,079	152,327,427	107,615,981	57,092,046	-
	781,184,301	855,670,130	935,434,417	1,020,737,420	1,111,839,321
Working capital changes					
current assets	(38,309,826)	(41,247,827)	(44,419,377)	(47,843,570)	(51,541,098)
current Liabilities	34,469,001	37,314,826	40,411,860	43,783,290	47,454,503
	(3,840,825)	(3,933,001)	(4,007,517)	(4,060,281)	(4,086,595)
	777,343,475	851,737,129	931,426,900	1,016,677,140	1,107,752,725
Taxes paid	(101,365,106)	(129,878,476)	(160,997,410)	(194,954,144)	(232,002,631)
Interest paid	(191,895,079)	(152,327,427)	(107,615,981)	(57,092,046)	-
Cash flow from Operations	484,083,290	569,531,226	662,813,510	764,630,950	875,750,095
Capital expenditure					
Equity	-	-	-	-	-
Debt	(304,366,553)	(343,934,204)	(388,645,651)	(439,169,586)	-
Total cash generated	179,716,738	225,597,021	274,167,859	325,461,364	875,750,095
Opening cash	226,166,088	405,882,826	631,479,847	905,647,706	1,231,109,070
Closing cash	405,882,826	631,479,847	905,647,706	1,231,109,070	2,106,859,165

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