



USAID FIRMS PROJECT

# Silos for Storage of Wheat

Pre-Feasibility Report

September; 2014

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## **DISCLAIMER**

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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 Resources
IDP	Internally Displaced Person
IT	Information Technology
IRR	Internal Rate of Return
KIBOR	Karachi Inter Bank Offer Rate
KPK	Khyber Pakhtunkhwa
NGO	Non-Governmental Organization
NPV	Net Present Value
PKR	Pakistani Rupee
ROI	Return on Investment
US	United States
USAID	United States Agency for International Development
USG	United States Government

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# 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.

The KPBOIT is considering development of wheat storage silos project in the province for bulk storage of grains in order to achieve various benefits like assured shelf life of grain for 2-3 years, easier grain management, lesser land requirement compared to traditional warehouses and no risk of pilferage. Steel silos are considered to be the best modern alternative storage technique suitable for KP conditions. The silo capacity of 50,000 MT has been considered. This facility would have 4 bins, each bin of capacity 12,500 MT.

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 project will be managed by the investors. The construction of project 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.

## **Results of financial pre-feasibility**

The results of this financial pre-feasibility indicate that development of a steel silos for storage of wheat with a capacity of 50,000 MT 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 21.74% and
- Project IRR of 19.13%

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 512 million, financed through 40% equity and 60% debt. Total equity contribution will be required at PKR 292 million.
- The cost of equity has been assumed at 15%, whereas, cost of debt is estimated at KIBOR + 3% (13.5% total).
- The project is expected to be constructed in a time period of one years.



# 1. Project Background and Rationale

## 1.1 Introduction

The most pertinent aspect, from an investor point of view is that, at present, long term storage capacity in the form of proper silos is virtually non-existent in the private sector. Considering the fact that the Government procures and stores grain as a policy, any investment in a silo project has an automatic and secure revenue stream in the form of rentals.

Godowns and warehouses do exist, but are not purpose built. They do not provide any significant protection against potential infestation. They cannot be made gas impermeable to facilitate fumigation. They do not have temperature or humidity control.

The need of the industry today is, concrete or metal silos, which can store up to 50,000 tons of grain and can effectively be fumigated and provide protection against insect infestation. The Silo project will also ensure bringing the grain storage industry in Pakistan in line with international best practices in multi-grain storage and handling. This will improve international donor support to our country in this industry and also encourage private sector investment in the agri-industry leading to improved operational efficiencies.

In order to enhance KP province's food security by increasing the long term multi-grain storage and management capacity of the province, The KPBOIT has conceived an idea to develop silo projects for wheat storage.

This study has been prepared to determine the financial feasibility of setting up and operating grain silo project.

## 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 the Sector**

Pakistan is primarily an agrarian economy with the agriculture sector contributing over 22% to the national GDP. Pakistan has two principal crops seasons, namely the kharif, the sowing season of which begins in April-June and harvested during October-December while rabi, begins in October-December and harvested in April-May. Besides this, KP's prime natural resources are arable land and water. About 58% of KP's total land area is under cultivation and is watered by multiple sources with 78% watering through canals.

Wheat is the main Pakistani dietary staple and the GOP considers it the key strategic commodity. 80 percent of farmers (45 percent of the total population) depend on it for their livelihood. As a result, it is the basis of the country's food security.

Considering the above, the GOP's agricultural policy is heavily centered on wheat through price support programs, storage strategies and export interventions. In 2013/14 wheat production is forecast at 24.0 million tons, up three percent from last year. The Government of Pakistan (GOP) raised the procurement price 14 percent for the current year's crop from Rs.1050 per 40 kg to Rs.1200 per 40 Kg. (source: PASSCO)

Grain storage in Pakistan is primarily in the public sector and is the responsibility of Pakistan Agricultural Storage and Services Corporation (PASSCO) as well as the four provincial food departments. PASSCO and the provincial departments are also responsible for regulation of agricultural commodity markets and for activities of provincial seed and fertilizer storage agencies.

Self-sufficiency in food grains requires adequate facilities for its storage. The existing storage facilities of the kind envisioned are insufficient for the large increase in production. Large-scale grain storage problem exist due either to traditional methods of seed storage or shortage of commercial grain storages and their management.

This, therefore, presents a highly lucrative opportunity for investing in the agribusiness value chain for 'best practice storage solutions" of agricultural produce where current post-harvest losses can be transformed into economic gain.

### **1.4 Godown Development/ Administration in KP**

Food Department, Government of KP is responsible for Godowns development and administration. Food Department is administrative department of Government of KP headed by Secretary Food whereas Food Directorate KP is an attached Department. The Department is

organized down at District Level. District Food Controller holds the charge of Field Office at District Level.

There are 17 godowns in various districts of the Province with a covered storage capacity of 368,300 tonnes. The NRC Azakhel is the biggest godowns with a capacity of 130,000 tonnes where reserve stocks are kept for supplies to deficit districts as and when required whereas Peshawar godowns having capacity of 50,500 tonnes cater for the requirements of Peshawar and Khyber Agency and D.I.Khan with a capacity of 57,500 tonnes caters for D.I.Khan, Tank and South Waziristan Agency. Other godowns cater for the needs of the concerned districts (source: PASSCO; Food Department GoKP).

No development schemes are presently under execution in the Food Department. Some of the godowns need significant repairs.

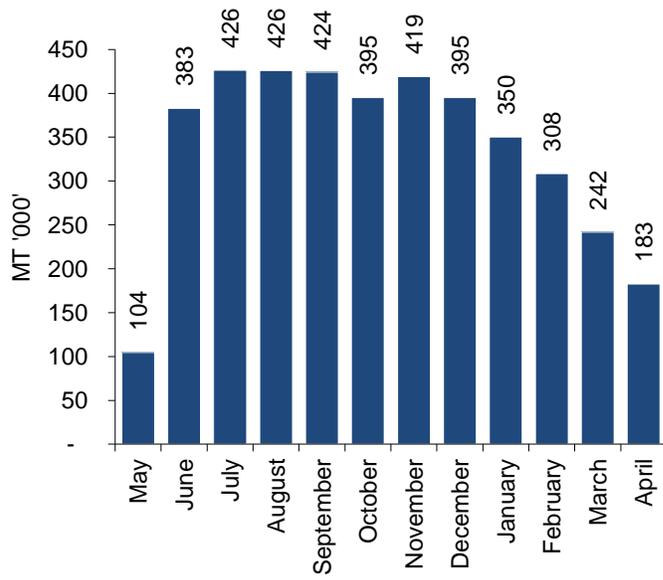
The GOP has launched a scheme under the ADB Agriculture Loan-II covering Agriculture and Food Sector. Schemes for strengthening storage capacity in the Province needs to be forwarded to MINFAL for concept clearance, which may be expedited. Structural study of the Food Department is also required for which a scheme can be sent to MINFAL for concept clearance under the said loan programme.

Most of the godowns in various cities are old buildings having now come in the centers of urban areas. Use of the facility as stores has now become underutilization of all assets and hence relocation of the stores at some of urban centers needs consideration.

**Table 1: Storage Capacity in KP**

	2012-13 (Tonnes)
<b>Khyber Pakhtunkhwa</b>	<b>368,300</b>
<b>District</b>	
Abbottabad	11,500
Bannu	8,600
Charsadda	3,500
Chitral	14,500
D.I.Khan	57,500
Dir Lower	9,600
Hangu	4,500
Haripur	7,500
Karak	3,000
Kohat	13,600
Lakki	1,000
Malakand	16,300
Mansehra	4,200
Mardan	21,500
Nowshera	130,400
Peshawar	50,500
Shangla	500
Swat	9,100
Tank	1,000

Source: Agriculture Statistics, Food Dept. KP



**Figure 1 Wheat stock positions in KP (2013)**

Source: Agriculture Statistics, Food Dept. KP

**Table 2 Wheat Production and Yields In KP**

	2012-13		
	Area	Production	Yield per Hectare
<b>KPK Province</b>	<b>636,309</b>	<b>1,149,873</b>	<b>1,807</b>
Abbottabad	14,472	22,901	1,582
Bannu	9,548	16,974	1,778
Battagram	7,477	14,493	1,938
Buner	47,872	74,975	1,566
Charsadda	29,643	74,814	2,524
Chitral	8,156	17,109	2,098
D.I.Khan	41,636	72,420	1,739
Dir Lower	26,750	49,802	1,862
Dir Upper	21,242	40,466	1,905
Hangu	12,004	17,450	1,454
Haripur	37,713	66,901	1,774
Karak	17,987	7,359	409
Kohat	29,355	49,904	1,700
Kohistan	1,392	2,607	1,873
Lakki	21,663	22,162	1,023
Malakand	26,697	32,473	1,216
Mansehra	37,763	88,991	2,357
Mardan	41,865	80,694	1,927
Nowshera	23,058	57,377	2,488
Peshawar	36,952	81,399	2,203
Shangla	24,373	36,324	1,490
Swabi	46,991	91,624	1,950
Swat	59,853	106,694	1,783
Tank	11,847	23,960	2,022

Source:- Agriculture Statistics, Food Dept. KP

Note: Area in Hectares, Production in Tonnes & Yield in KGs

## 1.5 Wheat Requirements in KP

KP has always been a wheat deficit province, the short fall is recouped through allocations made by the Ministry of Food, Agriculture and Livestock (MINFAL) from indigenous wheat or imports from abroad. Annual wheat requirement of the province is based on the population of

the NWFP (settled areas) plus population of FATA and Afghan Refugees living in the province at prescribed scale of 124kg per head per annum.

Food Department KP provides wheat of Flour Mills for consumption of general public on subsidized rates. KP Govt. Finance Department allocates budget for this purpose for each financial year.

The subsidy is worked out on the actual releases of wheat to settled areas as well as FATA. The subsidy is identified in consultation with Accountant General KP; KP Finance Department, MINFAL, PASCO or Punjab Food Department.

**Table 3: Wheat Requirements**

2012-13	Domestic Issue	Wheat Requirement	Wheat Production	Net Availability	Total Availability (Net avail+ Releases)	Difference (Deficit/ Access)
<b>Khyber Pakhtunkhwa</b>	<b>460.00</b>	<b>2,890.00</b>	<b>1,148.00</b>	<b>1,033.00</b>	<b>1,493.00</b>	<b>(1,857.00)</b>
Abbottabad	24.00	124.00	23.00	20.70	45.00	(103.00)
Bannu	17.00	110.00	17.00	15.30	32.00	(95.00)
Battagram	6.00	47.00	14.00	12.60	19.00	(35.00)
Buner	-	96.00	75.00	67.50	-	(28.00)
Charsadda	23.00	168.00	75.00	67.50	91.00	(101.00)
Chitral	12.00	50.00	17.00	15.30	27.00	(34.00)
D.I.Khan	65.00	148.00	72.00	64.80	130.00	(83.00)
Dir Lower	16.00	128.00	50.00	45.00	61.00	(83.00)
Dir Upper	11.00	93.00	40.00	36.00	47.00	(57.00)
Hangu	6.00	54.00	17.00	15.30	21.00	(39.00)
Haripur	23.00	103.00	67.00	60.30	83.00	(43.00)
Karak	8.00	75.00	7.00	6.30	14.00	(68.00)
Kohat	11.00	98.00	50.00	45.00	56.00	(53.00)
Kohistan	7.00	52.00	3.00	2.70	10.00	(49.00)
Lakki	10.00	84.00	22.00	19.80	30.00	(64.00)
Malakand	10.00	80.00	32.00	28.80	39.00	(51.00)
Mansehra	22.00	177.00	89.00	80.10	102.00	(97.00)
Mardan	59.00	245.00	81.00	72.90	132.00	(172.00)
Nowshera	27.00	144.00	57.00	51.30	78.00	(93.00)
Peshawar	55.00	367.00	81.00	72.90	128.00	(294.00)
Shangla	9.00	76.00	36.00	32.40	41.00	(43.00)
Swabi	-	171.00	92.00	82.80	-	(88.00)
Swat	38.00	222.00	107.00	96.30	134.00	(126.00)
Tank	1.00	41.00	24.00	21.60	23.00	(19.00)

Source:- Agriculture Statistics, Food Dept. KP

Note: Quantities in thousands on tonnes

## 1.6 Silos Project Overview

Silos are primarily the large tank type high vertical structures made of steel for storage of food grains in bulk form and in monitored atmosphere. Silo requires mechanized handling for loading and unloading of material. At port locations which are more prone to corrosion, concrete silos are constructed while for inland locations, steel silos are better as they are quite cost effective as compared to concrete silos.

In silos, there are many aspects of grain management, the management is mechanical rather than manual. In general, the grain may be kept safely in silos for a period of 2 to 3 years. Silo is basically a vertical storage option as compared to godowns which are horizontal type storages. Hence, silos save a lot of land compared to warehouses. For a 50,000 MT silo, 5 acres land is required. The construction of steel silos can be done within 10 months including the lead time of importing the steel structures. The erection time is about 2-3 months. Steel silos are quite easy to maintain.

## 1.7 Storage Process:

Grains could come in bulk or in bags. It would then be unloaded from the conveyance it is brought to the facility (and debagged if in bags at the debagging platform) and would be loaded into the unloading hoppers. Upon unloading, the wheat grain would be sampled through a pneumatic system linked to the laboratory. Upon sampling results, the temporary storage hopper would dispatch the grains into conveyor for pre-cleaning activities like removal of foreign particles and weighing.

Once in the storage bins, the grain will need to be regularly ventilated. The ventilation is subject to constant temperature controls through probes to maintain the grain quality all along the storage period.

To protect the grain from different contamination sources, the grain will be fumigated by spraying as it passes on the loading conveyors. During dispatch, the grain will be taken out of each bin by a chain conveyor located in the gallery under the bins. A bucket elevator would be connected to the chain conveyor to carry the grain to the bagging plant. The wastes accumulated during the process would be conveyed by a separate elevator to a waste bin to be discharged locally.

The bulk arrivals or bulk procurement facilities would be arranged at the silo site by Food Department, Government of KP. This would eliminate duplication of activities like Marking, Filling, Weighing, Bagging, and Loading & Unloading at Mandi or by the procurement societies.

The bulk arrivals can directly be moved for quality check, followed by cleaning (if the grain is found suitable) and then for preservation and storage. This option would help in optimizing the transportation cost between Mandi to storage point and also reduce hassles of manual handling at Mandi during peak procurement season.



## 2. Financial Pre-Feasibility

This section provides various assumptions considered for operational parameters, revenue stream, cost parameters and other financial assumptions considered for evaluation of the project. The financial analysis has been performed for 10 operating years, though the minimum useful life of a steel silo is generally 35 years.

### 2.1 Storage Capacity

Storage capacity considered for the proposed project is 50,000 MT (4 bins of 12,500 MT capacity each) and the feed rate to the Silo is assumed to be 60 Tonnes / Hour.

The proposed Silo storage facility is assumed to work for 360 days in a year

### 2.2 Revenue Assumptions

The sources of revenue for the proposed project are from handling and storage of wheat. Food grains handling involves loading, unloading, testing, weighing, bagging and debagging of food grains. On the other hand, storage charges are divided into two parts, fixed charge and variable charge.

For the project life, fixed charge shall be payable irrespective of the quantum of food grains actually handled while the variable charge shall be linked directly to the quantum of food grains handled.

Revenue assumptions as explained above are tabulated

**Table 4: Revenue Assumptions**

Revenue assumptions	
Receipt and Dispatch Charges	Reimbursement of actual cost
Storage Charges	
Variable Charge - PKR/ Ton	100
Fixed Charge - PKR/ Ton	2,000

### 2.3 Estimated Project Costs

The estimated cost of grain silo project is PKR 512 million, the breakup of the same has been tabulated below.

**Table 5: Project Capital Cost**

<b>Project Capital Cost (PKR)</b>	
Land 5 acres @ PKR 1.5 million per acre	7,500,000
Building and civil works	243,219,000
Plant and machinery	179,454,267
Electric, automation and other utilities	46,325,000
Genset and other accessories/ equipment	5,000,000
Furniture, fixtures, office equipment & MIS	5,000,000
Vehicles	4,000,000
Interest during construction	21,336,821
<b>Total Capital Cost</b>	<b>511,835,088</b>

To construct the silo facility, the estimated land requirement is 5 (five) acres (as per Industry norms).

**Table 6: Building and Civil Works**

<b>Building and civil works (PKR)</b>	
Silos Foundations Trenches & Elevators Pits	157,080,000
Bag Storage Godown with PEB structure	24,225,000
Utility & maintenance workshop PEB structure	8,075,000
Administrative Building	9,520,000
Security Rooms	2,125,000
Laboratory Rooms	2,125,000
Weighbridge RCC base RCC pit & RCC pedestals	969,000
Internal Roads	18,360,000
Parking area and intake pits	17,000,000
Boundary wall including gates, barbed wire etc	3,740,000
	<b>243,219,000</b>

**Table 7: Plant & Machinery**

<b>Plant and machinery (PKR)</b>	
Silo & Accessories	102,577,546
Aeration System	5,055,171
Centrifugal Fan	2,386,950
Roof Exhausters	1,858,649
WC Temperature Monitoring System	5,985,039
High/Low Level Switches	133,892
Silo Sweep Augers	2,805,437
Bucket Elevator E1 & Chain Conveyor	2,557,580
Bucket Elevator E2	3,010,112
Silo Loading Chain Conveyors	6,693,449
Return Chain Conveyors	5,044,140
Bucket Elevator E3 & Chain Conveyor	2,180,231
Bucket Elevator for Waste E4	1,002,864
Grain Cleaner CL1 Capacity - 150 TPH	4,391,675
Hopper Bottom Silo	760,165
Bagging System	3,806,509
Hopper Bottom - Dust Silo	974,911
Bucket Elevator Support Tower	4,798,886
Catwalks & Supports - Conveyors	3,125,625
Other accessories	1,467,239
Duties freight & comissioning	18,838,197
	179,454,267

Other than the primary plant & machinery, electrical, automation and utility equipment shall also be required to operate the Silo facilities. The details of the electrical, automation and other utility equipment are given as table below:

**Table 8: Utilities**

<b>Electric, automation and other utilities (PKR)</b>	
Fire Fighting Arrangements	6,800,000
Weighbridge	2,720,000
DG sets	6,800,000
Transformer	3,060,000
Electric Connection Cost	2,040,000
General panel for low tension	2,550,000
Reversing Switch	1,190,000
RFID Cost	10,200,000
Work Shop Equipment	2,040,000
Lab Equipments	2,040,000
Fumigation Spraying System	3,060,000
Raw Water and Borewell	1,190,000
Emergency Usage Vehicle	2,040,000
Water Tanks (General use)	595,000
	46,325,000

### 2.3.1 Power Cost

The power costs have been estimated with reference to the load requirement of 450 KW with levelized load factor of 21%. The base tariff has been assumed at PKR 20/ KWH.

### 2.3.2 Fumigation Cost

Fumigation is required twice in a year. For fumigation, about 27 grams of fumigation material is required which costs around PKR 0.66 per gram.

Cost of fumigation per MT is estimated to be PKR 18.

### 2.3.3 HR Cost

A total of 20 full employees are estimated to be required including four executives and 16 staff. The monthly average salary of executives is estimated at PKR 60,000 per month while for rest of staff an average of PKR 20,000 per month has been applied. The category wise estimated HR requirements are listed below:

- Business Head 1
- Management Executives 2
- Lab Technician 1
- Assistant Lab Technician 1
- Clerks 1
- Silo Operators – General 2
- Fumigation Expert 1
- Weighbridge Operators 2
- Electricians - 1
- Mechanical staff – 2

- Peons and Watch Guards 4
- Driver 1

### 2.3.4 Receipt and Dispatch Charges

Receipt and dispatch charges includes expenses estimated for sampling of wheat, laboratory testing, weighing, handling of wheat procured and bagging after evacuation. For receipt and dispatch charges a blended rate of PKR 5 per quintal has been applied. Receipt and dispatch charges have been assumed to be reimbursed at actual from the Food Department, KP province.

### 2.3.5 Repair and Maintenance Cost

During the initial few years of operations, since the assets are newly built up or installed, repairs and maintenance expenses would be lower. As the time passes and assets become older, expenses towards repairs and maintenance increase over period of time. However, a maintenance fund model has been assumed with costs at 2% of P & M cost.

### 2.3.6 Insurance Cost

Insurance costs have been estimated at 0.5% per annum of the total project costs.

## 2.4 Administrative Cost Assumption

The administrative costs, based on the standard industry practice, is assumed to be 1% of the total revenues of the respective year.

### 2.4.1 Financing Assumptions

It is considered that the capital investment required for development of the proposed project would be funded by a mix of equity and debt in the proportion of 40:60. Equity shall be put in by the developers while debt would be financed by the financial institutions.

The debt tenor has been assumed at 1+8 carrying interest at KIBOR plus 300 basis points.

### 2.4.2 Escalation Assumptions

The following escalation assumptions have been applied for the purposes of financial pre-feasibility study:

**Table 9: Escalation Assumptions**

Escalation assumptions	
Annual escalation in costs %	8%
Annual escalation in revenue %	8%
Annual escalation in insurance costs %	5%

### 2.4.3 Depreciation Assumptions

The following asset useful life assumptions have been applied for the purposes of financial pre-feasibility study:

**Table 10: Assets Useful Lives**

<b>Assets useful life (Years)</b>	
Building and civil works	30
Plant and machinery	30
Electric, automation and other utilities	30
Furniture, fixtures & office equipment	10
Vehicles	10

**2.4.4 Working Capital Assumptions**

The following working capital assumptions have been applied for the purposes of financial pre-feasibility study:

**Table 11: Working Capital Assumptions**

<b>Working capital assumptions</b>	
Stores and spares (as % of P & M costs)	5%
Trade debts (days)	30
Trade creditors (days)	30

**2.5 Capacity Utilization**

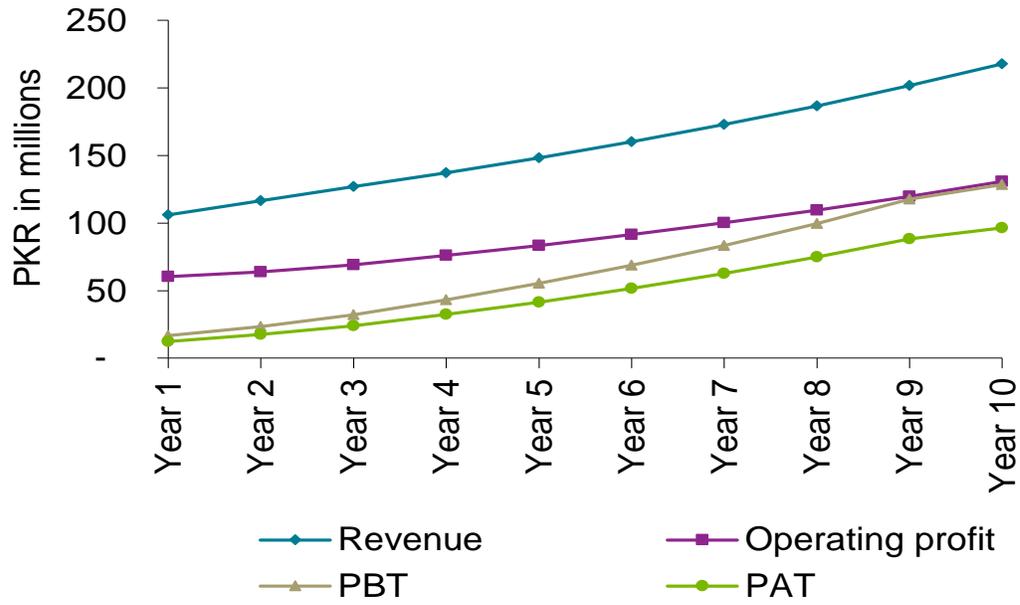
The first year capacity utilization has been assumed at 60% increasing to 80% during second year of operations and thereafter maintaining a 90% utilization factor.

**2.6 Indicative Project Returns**

The indicative project and equity return have been identified below. The NPV has been calculated with reference to a hurdle rate of 15%. As the project life is expected to be over 30 year, a terminal value has also been accounted for while applying a terminal growth of 2%.

<b>Project IRR</b>	<b>19.13%</b>
<b>Project NPV @15%</b>	<b>112,513,517</b>
<b>Equity IRR</b>	<b>21.74%</b>
<b>Equity NPV @15%</b>	<b>118,726,565</b>

### Project performance indicators





# 3. Appendices

## Appendix 1 - Indicative Financial Statements

	Amounts in PKR					
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Fixed Assets</b>	511,835,088	494,423,918	477,012,748	459,601,579	442,190,409	424,779,240
<b>Current Assets</b>						
Stores & spares	-	11,538,963	12,692,860	13,962,146	15,358,360	16,894,196
Trade debts	-	8,712,329	9,586,849	10,449,666	11,285,639	12,188,490
Cash & bank balances	15,000,000	6,773,958	14,348,338	24,970,804	39,952,224	59,345,229
	15,000,000	27,025,250	36,628,046	49,382,616	66,596,223	88,427,915
<b>Total Assets</b>	526,835,088	521,449,168	513,640,795	508,984,194	508,786,632	513,207,155
<b>Share Capital &amp; Reserves</b>						
Share capital	210,734,035	210,734,035	210,734,035	210,734,035	210,734,035	210,734,035
Retained earnings	-	12,467,001	30,002,373	54,065,871	86,412,111	127,878,244
	210,734,035	223,201,036	240,736,408	264,799,906	297,146,146	338,612,279
<b>Long term debt</b>	291,771,984	264,158,491	232,817,177	197,244,786	156,870,121	111,044,877
<b>Current liabilities</b>						
Creditors/ liabilities	-	2,320,481	2,900,771	3,345,945	3,613,620	3,902,710
Tax payable	-	4,155,667	5,845,124	8,021,166	10,782,080	13,822,044
Current portion - LT debt	24,329,068	27,613,493	31,341,314	35,572,392	40,374,664	45,825,244
	24,329,068	34,089,641	40,087,209	46,939,502	54,770,365	63,549,998
<b>Total equity &amp; liabilities</b>	526,835,088	521,449,168	513,640,795	508,984,194	508,786,632	513,207,155

	Amounts in PKR				
	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Fixed Assets</b>	407,368,070	389,956,900	372,545,731	355,134,561	337,723,392
<b>Current Assets</b>					
Stores & spares	18,583,616	20,441,977	22,486,175	24,734,793	27,208,272
Trade debts	13,163,569	14,216,655	15,353,987	16,582,306	17,908,891
Cash & bank balances	83,441,777	112,549,048	146,989,575	254,103,950	367,242,518
	115,188,962	147,207,680	184,829,737	295,421,049	412,359,681
<b>Total Assets</b>	<b>522,557,032</b>	<b>537,164,580</b>	<b>557,375,468</b>	<b>650,555,610</b>	<b>750,083,073</b>
<b>Share Capital &amp; Reserves</b>					
Share capital	210,734,035	210,734,035	210,734,035	210,734,035	210,734,035
Retained earnings	179,391,956	241,981,889	316,789,329	405,081,318	501,481,337
	390,125,991	452,715,924	527,523,364	615,815,354	712,215,372
<b>Long term debt</b>	59,033,225	-	-	-	-
<b>Current liabilities</b>					
Creditors/ liabilities	4,214,927	4,552,121	4,916,290	5,309,594	5,734,361
Tax payable	17,171,237	20,863,311	24,935,814	29,430,663	32,133,340
Current portion - LT debt	52,011,652	59,033,225	-	-	-
	73,397,816	84,448,657	29,852,104	34,740,257	37,867,701
<b>Total equity &amp; liabilities</b>	<b>522,557,032</b>	<b>537,164,580</b>	<b>557,375,468</b>	<b>650,555,610</b>	<b>750,083,073</b>

**Figure 2 Projected Balance Sheet**

Amounts in PKR

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Revenue</b>					
Receipt and Dispatch Charges	3,000,000	4,320,000	5,248,800	5,668,704	6,122,200
Variable Charge	3,000,000	4,320,000	5,248,800	5,668,704	6,122,200
Fixed Charge	100,000,000	108,000,000	116,640,000	125,971,200	136,048,896
	106,000,000	116,640,000	127,137,600	137,308,608	148,293,297
<b>Costs</b>					
Receipt and dispatch expenses	3,000,000	4,320,000	5,248,800	5,668,704	6,122,200
Fumigation cost	540,000	777,600	944,784	1,020,367	1,101,996
Power cost	9,797,760	14,108,774	17,142,161	18,513,534	19,994,616
Manager & supervisors - salary cost	2,880,000	3,110,400	3,359,232	3,627,971	3,918,208
Skilled Staff - salary cost	3,840,000	4,147,200	4,478,976	4,837,294	5,224,278
Other overheads	1,000,000	1,080,000	1,166,400	1,259,712	1,360,489
Repair & maintenance costs	4,615,585	4,984,832	5,383,619	5,814,308	6,279,453
Insurance costs	2,559,175	2,763,909	2,985,022	3,223,824	3,481,730
Depreciation	17,411,170	17,411,170	17,411,170	17,411,170	17,411,170
	45,643,690	52,703,886	58,120,163	61,376,883	64,894,140
Margin	60,356,310	63,936,114	69,017,437	75,931,725	83,399,157
<b>Other costs</b>					
Admin & general expenses	1,060,000	1,166,400	1,271,376	1,373,086	1,482,933
Financial costs	42,673,642	39,389,218	35,661,396	31,430,319	26,628,046
	43,733,642	40,555,618	36,932,772	32,803,405	28,110,979
Profit before tax	16,622,668	23,380,497	32,084,664	43,128,320	55,288,178
Tax	4,155,667	5,845,124	8,021,166	10,782,080	13,822,044
Profit after tax	12,467,001	17,535,372	24,063,498	32,346,240	41,466,133

**Figure 3 Projected Profit and Loss account**

	Amounts in PKR				
	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Revenue</b>					
Receipt and Dispatch Charges	6,611,976	7,140,934	7,712,209	8,329,186	8,995,521
Variable Charge	6,611,976	7,140,934	7,712,209	8,329,186	8,995,521
Fixed Charge	146,932,808	158,687,432	171,382,427	185,093,021	199,900,463
	160,156,760	172,969,301	186,806,845	201,751,393	217,891,504
<b>Costs</b>					
Receipt and dispatch expenses	6,611,976	7,140,934	7,712,209	8,329,186	8,995,521
-	1,190,156	1,285,368	1,388,198	1,499,253	1,619,194
-	21,594,186	23,321,721	25,187,458	27,202,455	29,378,651
Manager & supervisors - salary cost	4,231,665	4,570,198	4,935,814	5,330,679	5,757,133
Skilled Staff - salary cost	5,642,220	6,093,597	6,581,085	7,107,572	7,676,178
Other overheads	1,469,328	1,586,874	1,713,824	1,850,930	1,999,005
Repair & maintenance costs	6,781,809	7,324,354	7,910,302	8,543,126	9,226,576
Insurance costs	3,760,268	4,061,090	4,385,977	4,736,855	5,115,804
Depreciation	17,411,170	17,411,170	17,411,170	17,411,170	17,411,170
	68,692,778	72,795,306	77,226,037	82,011,227	87,179,231
Margin	91,463,983	100,173,995	109,580,808	119,740,166	130,712,273
<b>Other costs</b>					
Admin & general expenses	1,601,568	1,729,693	1,868,068	2,017,514	2,178,915
Financial costs	21,177,466	14,991,058	7,969,485	-	-
	22,779,034	16,720,751	9,837,554	2,017,514	2,178,915
Profit before tax	68,684,949	83,453,243	99,743,254	117,722,652	128,533,358
Tax	17,171,237	20,863,311	24,935,814	29,430,663	32,133,340
Profit after tax	51,513,712	62,589,933	74,807,441	88,291,989	96,400,019

**Figure 4 Projected profit and loss (year 6 to 10)**

## Appendix 2 - Cash Flow Statement

	Amounts in PKR					
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Profit before taxation</b>	-	16,622,668	23,380,497	32,084,664	43,128,320	55,288,178
<b>Adjustment of non-cash items</b>						
Depreciation	-	17,411,170	17,411,170	17,411,170	17,411,170	17,411,170
Financial charges	-	42,673,642	39,389,218	35,661,396	31,430,319	26,628,046
	-	76,707,479	80,180,884	85,157,230	91,969,809	99,327,393
<b>Working capital changes</b>						
current assets	-	(20,251,292)	(2,028,417)	(2,132,102)	(2,232,188)	(2,438,687)
current Liabilities	-	2,320,481	580,290	445,174	267,676	289,090
	-	(17,930,811)	(1,448,127)	(1,686,929)	(1,964,512)	(2,149,598)
	-	58,776,668	78,732,757	83,470,301	90,005,296	97,177,796
Taxes paid	-	-	(4,155,667)	(5,845,124)	(8,021,166)	(10,782,080)
Interest paid	(21,336,821)	(42,673,642)	(39,389,218)	(35,661,396)	(31,430,319)	(26,628,046)
Cash flow from Operations	(21,336,821)	16,103,026	35,187,872	41,963,781	50,553,811	59,767,670
Capital expenditure	(490,498,267)					
Equity	210,734,035					
Debt	316,101,053	(24,329,068)	(27,613,493)	(31,341,314)	(35,572,392)	(40,374,664)
Total cash generated	15,000,000	(8,226,042)	7,574,380	10,622,467	14,981,420	19,393,005
Opening cash	-	15,000,000	6,773,958	14,348,338	24,970,804	39,952,224
Closing cash	15,000,000	6,773,958	14,348,338	24,970,804	39,952,224	59,345,229

	Amounts in PKR				
	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Profit before taxation</b>	68,684,949	83,453,243	99,743,254	117,722,652	128,533,358
<b>Adjustment of non-cash items</b>					
Depreciation	17,411,170	17,411,170	17,411,170	17,411,170	17,411,170
Financial charges	21,177,466	14,991,058	7,969,485	-	-
	107,273,585	115,855,471	125,123,909	135,133,822	145,944,528
<b>Working capital changes</b>					
current assets	(2,664,499)	(2,911,447)	(3,181,530)	(3,476,936)	(3,800,064)
current Liabilities	312,217	337,194	364,170	393,303	424,767
	(2,352,282)	(2,574,253)	(2,817,360)	(3,083,633)	(3,375,296)
	104,921,303	113,281,218	122,306,549	132,050,189	142,569,231
Taxes paid	(13,822,044)	(17,171,237)	(20,863,311)	(24,935,814)	(29,430,663)
Interest paid	(21,177,466)	(14,991,058)	(7,969,485)	-	-
Cash flow from Operations	69,921,792	81,118,923	93,473,752	107,114,375	113,138,568
Capital expenditure					
Equity					
Debt	(45,825,244)	(52,011,652)	(59,033,225)	-	-
Total cash generated	24,096,548	29,107,271	34,440,527	107,114,375	113,138,568
Opening cash	59,345,229	83,441,777	112,549,048	146,989,575	254,103,950
Closing cash	83,441,777	112,549,048	146,989,575	254,103,950	367,242,518



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