Pre-Feasibility Study to Establish a Copper Bars, Rods and Profiles Plant

February 2019

Pre-Feasibility Study to Establish a Copper Bars, Rods and Profiles Plant

Market, Technical and Financial Analysis

Study Report

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إخلاء المسؤولية

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Executive Summary

The potential for Copper Bars, Rods and Profitless is high given the competition does not exist in Oman, this coupled with the availability of local raw material to include copper au.

The manpower is estimated to be in the region of 60 employees, this is estimated based on industry norms of this type of copper Bars Rods & Profiles manufacturing companies. The cost of investment for plant and machinery amounts in the region of 2.1 million RO and the proposed capacity is estimated at 13,500 tons per year as installed capacity. In year 1 the capacity is 40% utilization, 50% utilization in year 2 and gradually increasing y-o-y by 10% reaching a maximum utilization of 90% in year 6.

In terms of profitability the net profit amounts to 2.72% in year 1, 7.73% year 2, 9.28% year 3, 5.29% year 4, 6.11% year 5, 9.25% year 6, 5.73% in year 7 and 7.32% in year 8, year 9 net profit 8.90% & year 10 net profit amounts to 10.47%.

PROJECT HIGHLIGHTS

Name of Project: Copper Bars, Rods and Profiles Plant.

Total Investment Cost: **3.2 million OMR**

Equipment's &Vehicles: 361,000OMR

Building Cost: 722,000 OMR

Plant Capacity: The proposed Plant will have an installed capacity of 13,500 tons. In 1st year operation the production output amount to 5,400 tons.

Local Market Demand: The total estimated demand is in excess of 60 Million RO per year in Oman.

Source of finance: 60% Debt & 40% equity.

Total Investment	Production capacity	Revenue
•3,299,670 OMR •Source of Finance: banking at 60% Equitr 40%	•Year 1 = 40% •Year 2 = 50% •Year 3 = 60% •Year 4 = 70% •Year 5 = 80% •Year 6 = 90% •Year 7 = 90% •Year 8 = 90% Year 9 = 90% Year 10 = 90%	•Yr 1= 8.3 million OMR •Yr 2= 10.4 million OMR •Yr 3= 12.5 Million OMR •Yr 4= 14.6 Million OMR •Yr 5= 16.7 Million OMR •Yr 6= 18.8 Million OMR Yr 7= 18.8 Million OMR Yr 8=18.8 Million OMR Yr 9=18.8 Million OMR Yr 10=18.8 Million OMR

Broad Scope of Study & Methodology

This pre-feasibility study covers three main areas to include market & market research, evaluation of the technical aspects and the financial analysis to determine the feasibility of the project.

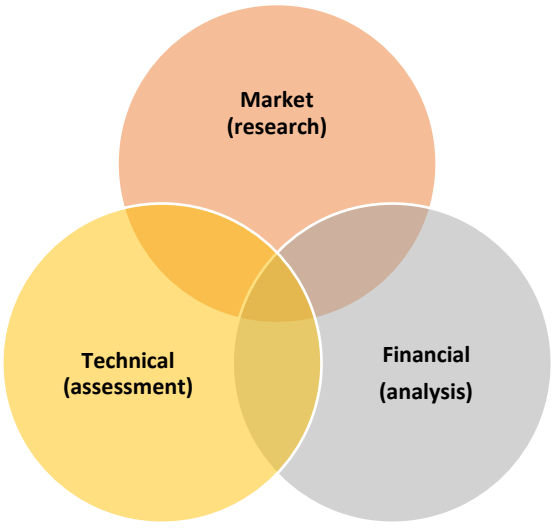
The Market Assessment consists of:

- Market size of Copper Bars, Rods and Profiles in Oman.
- Market survey of the Copper Bars, Rods and Profiles prices for the various Copper Bars, Rods and Profiles products.
- Overview of the local competitors in Oman & GCC region.
- Supply & Demand: estimate the supply & demand of Copper Bars, Rods and Profiles products to include import, export & review of competition in the GCC region.
- Market share of the proposed new plant.

The Technical Part of the Study comprises all technical requirements needed to render the Copper Bars, Rods and Profiles plant operational to include capacity utilization, raw material, staff requirements & process flow.

The Financial Analysis for the project covers the following:

- Cost of the project (total investment)
- Source of Finance (equity & debt)
- Financial assumptions
- Financial schedules comprising:
  - Projected Income Statement
  - Projected Balance Sheet
  - Projected Cash Flow Statement
  - Projected Revenue Stream
  - Depreciation Schedule
  - Salaries (Number of required employees & the expected Salaries)
  - Loan repayment Schedule
  - Finance Cost
  - Financial Ratios
  - Internal Rate of Return & Payback period.



Chapter 1

Introduction

COPPER PIPES & FITTINGS

Copper is a long lasting, corrosion resistant, lightweight and strong material that involves minimal maintenance. When in contact with oxygen, copper forms a protective (patina) coating that renders it resistant to corrosion. Copper is the leading choice for plumbing, heating, cooling and other mechanical systems. Residential, commercial, and industrial buildings all utilize copper as a construction material for water and air conveying systems.[1]

Modern technology, recognizing that no material is superior to copper for conveying water, has reconfirmed it as the prime material for such purposes. Years of trouble-free service in installations here and abroad have built a new reputation for copper piping in its modern form—light, strong, corrosion resistant tube. It serves all kinds of buildings: single family homes, high-rise apartments and industrial, commercial and office buildings.

Among applications, the construction segment holds a major share of the global copper market and the trend is likely to continue throughout the forecast period with other electrical sectors to include electrical stations and conductors systems Copper can withstand extreme weather conditions and can bear high compressive loads. Major government, commercial, and residential buildings use copper for their HVAC and gas piping systems

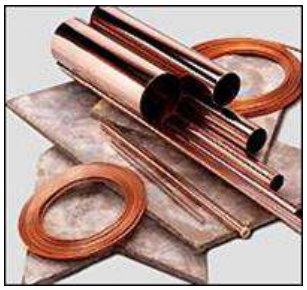


Table in page.21 identifies the sectors whereby the use of copper material in construction industry is estimated at 25% with the majority of the usage being in the electrical appliances sector at 65%.

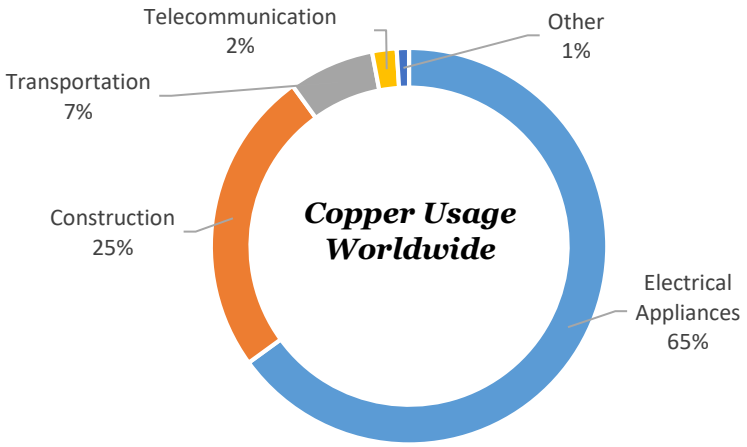


Figure 1-1: Copper Usage Worldwide

[1] *Source: http://www.opuspiping.org/material.aspx?id=-5429027728257375268*

Copper is a crucial component of electricity infrastructure across the world; all rely on copper wires due to high electric and thermal conductivity.

Copper is used also in wind energy and solar power industries as well as energy-efficient buildings, as it has higher strength-to-weight ratio compared to steel. Copper is also employed in medical applications and drinking water infrastructure, as it has antimicrobial properties.

1.1. Project Overview

In terms of revenue, the global copper market is anticipated to expand at a CAGR of 4.6% from 2018 to 2026 and reach value of US$ 222.1 Bn by 2026. The global copper market has been segmented based on type, form, and application. Based on type, the market has been segregated into primary copper and secondary copper. The secondary copper segment is expected to witness significant growth during the forecast period. Based on form, the global copper market has been segmented into wire rods, plates, sheets & strips, tubes, bars & sections, and others. Based on application, the global copper market has been classified into construction, transportation, appliances & electronics, power generation, distribution and transmission, and others. The construction segment accounted for a leading share of the global copper market in 2017. It is likely to remain a dominant segment throughout the forecast period. The power generation, distribution and transmission segment is anticipated to expand at a rapid pace between 2018 and 2026, followed by the construction segment, in terms of both value and volume.

This project entails the set-up of a new Copper Tube Plant. The production output of the new proposed plants will focus on mainly the import substitution of Oman market.

Target Market	
Oman 80%	Export 20%

Assumptions

- Target Market Local import substitution at 80% Exports at 20%.
- The production cost is based on industry standards of pipe manufacture 70% raw material, 6% labour, 6% utilities, 5%
- General Admin and Other Expenses at 5%
- The plant will employee in the region of 80 Plus workforce of both production and admins staff.
- Welfare estimated at 15% cover for Ticket, Holidays & Other employee expenses.
- 2 shift system (8 hours per shift)
- Working Capital for Raw material and Salaries is for 3 months

Production Capacity

PRODUCTION CAPACITY		
Total Installed Capacity	13,500	Tons Per Year
Utilisation Year 1	5,400	Tons
Working Day Per Year	300	days

The proposed Copper products consist mainly of 3 types as follows:

Si.	Size Diameter	Percentage Distribution
Product A	Bars	33%
Product B	Rods	33%
Product C	Profiles	33%

Market Analysis

Chapter 2

Market Analysis

2.1. Market Overview

Regional - Market for Copper Pipes, Bars, Rods and Profiles in Saudi Arabia, UAE, Kuwait and Qatar.

The market for Copper Pipes, Bars, Rods and Profiles in Saudi Arabia, UAE, Kuwait and Qatar is forecast to grow at a CAGR of over 8% through 2021, especially due to rising demand for new infrastructure and building construction in these countries.

Rising infrastructure developments in Saudi Arabia, UAE, Kuwait and Qatar are anticipated to boost demand for HVAC and plumbing systems, and thereby, drive the market in these countries through to at least 2021.

Copper pipes are widely applied in air conditioning and refrigeration systems, due to their high resilience to changes in temperatures and longevity. Saudi Arabia, UAE, Kuwait and Qatar witness hot climatic conditions, which results in high usage of air conditioning and refrigeration systems, Oman is a major importer of copper bars, rods and profiles.

Product: 740710 Bars, rods and profiles, of refined copper, n.e.s.

Table 2-1: Oman Copper Bars, Rods And Profiles Exports During the Period (2013-2017)

	2013	2014	2015	2016	2017	AGV
Value USD (000)	893	722	10	593	94	462.4
Weight in Ton	203	124	25	113	14	95.8

Source: Trademap.com 740710 HS Code

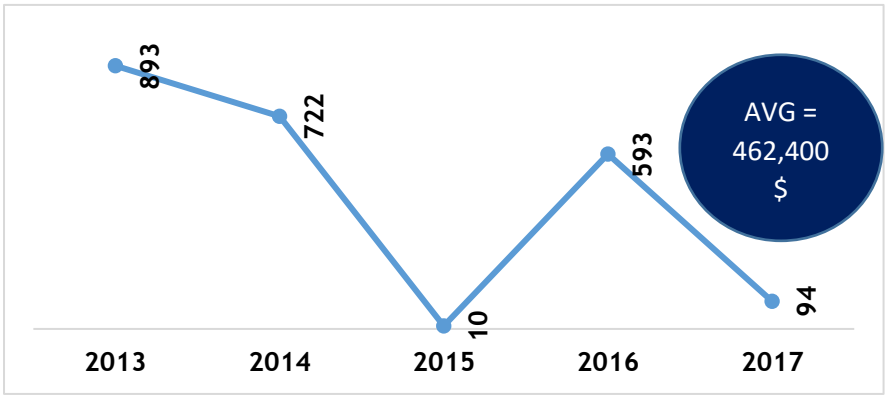


Figure 2-1: - HS Code 740710 Exporting Value USD (000)

The export for HS Code 740710 amount to 893,000 USD in 2013. In the following year 2014 the total export decreased to a total of 722,000 USD. In 2015 the export decreased significantly to 10,000 USD, in 2016 the total export increased significantly to a total of 593,000 USD. In 2017 the total export of HS Code 740710 reduced significantly to a total of 94,000 USD.

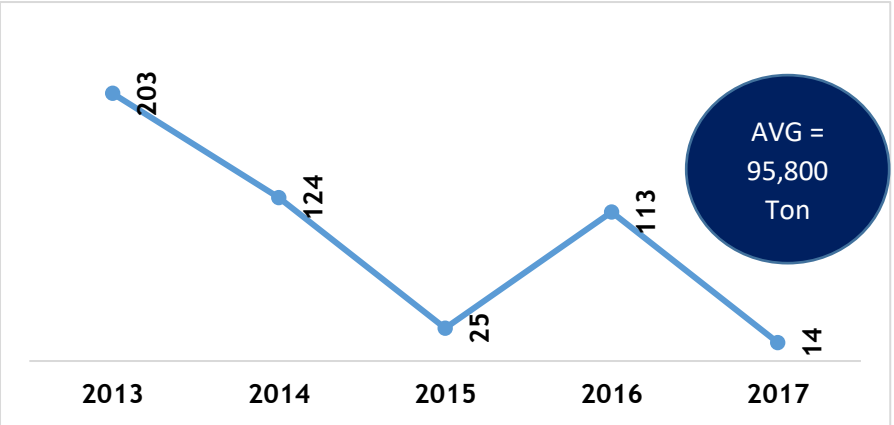


Figure 2-2: HS Code 740710 Exporting Weight Ton (000)

The export for HS Code 740710 amount to 203 tons in 2013. In the following year 2014 the total export decreased to a total of 124 tons. In 2015 the export decreased significantly to 25,000 tons, in 2016 the total export increased to a total of 113 tons. In 2017 the total export of HS Code 740710 reduced significantly to a total of 14 tons.

Product: 740710 Bars, rods and profiles, of refined copper, n.e.s.

Table 2-2: Oman Copper Bars, Rods and Profiles Import During the Period (2013-2017)

	2013	2014	2015	2016	2017	AGV
Value USD (000)	404,542	307,915	203,282	193,719	153,391	253,315
Weight in Ton	51,264	51,004	38,150	101,016	20,110	52,461

Source: Trademap.com 740710 HS Code

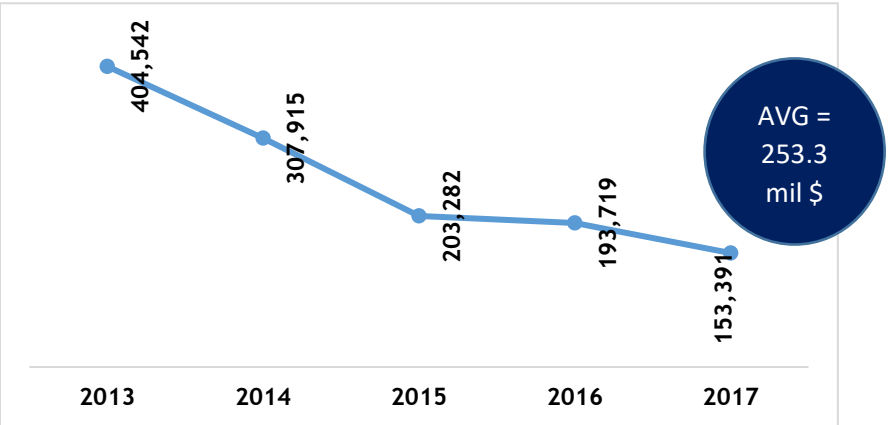


Figure 2-3: HS Code 740710 Importing Value USD (000))

The HS Code 740710 Tubes amount to 404.5 Million USD in 2013. In the following year 2014 the total import decreased to a total of 307.9 Million USD. In 2015 the import deceased significantly to 203.2 Million USD, in 2016 the total import decreased to a total of 193.7 Million USD. In 2017 the total import of HS Code 740710 amount reduced to a total of 153.3 Million USD.

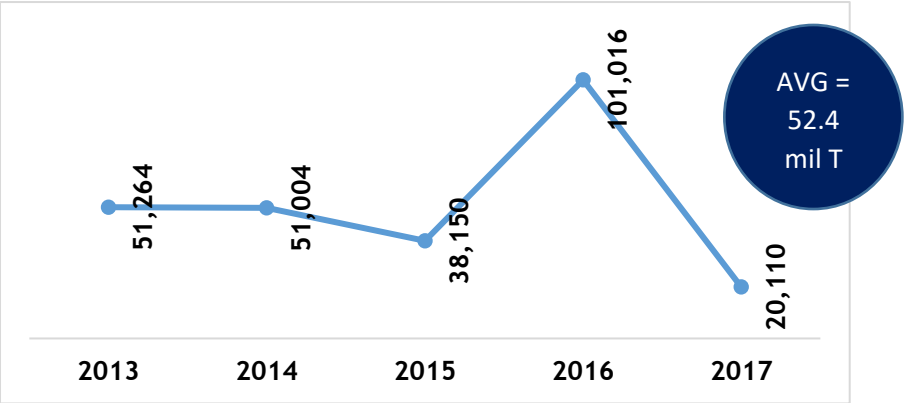


Figure 2-4: HS Code 740710 Importing Weight Ton (000)

The imports for HS Code 740710 amount to 51 thousand tons in 2013. In the following year 2014 the total import decreased to a total of 51 thousand tons. In 2015 the import decreased to 38.1 thousand tons, in 2016 the total import increased to a total of 101 thousand tons. In 2017 the total import of HS Code 740710 amount reduced significantly to a total of 20 thousand tons.

Product: 740710 Bars, rods and profiles, of refined copper, n.e.s.

Table 2-3: GCC Copper Bars, Rods And Profiles Imports During the Period (2013-2017)

	2013		2014		2015		2016		2017	
V USD	V (000)	Q (Ton)	V (000)	Q (Ton)	V (000)	Q (Ton)	V (000)	Q (Ton)	V (000)	Q (Ton)
United Arab Emirates	231,282	30,188	418,831	50,749	259,714	42,492	168,291	33,018	53,142	8,469
Saudi Arabia	301,761	38,326	60,164	8,780	57,815	9,062	34,956	6,728	21,541	4,164
Qatar	3,306	377	3,716	464	9,017	1,080	6,456	773	20,363	3,181
Kuwait	190,775	24,580	122,219	16,528	15,184	2,092	11,908	1,958	8,596	1,246
Bahrain	1,161	123	1,008	132	966	132	1,228	191	1,172	147
Total	728,285	93,594	605,938	76,653	342,696	54,858	222,839	42,668	104,814	17,207

Source: Trademap.com 740710 HS Code

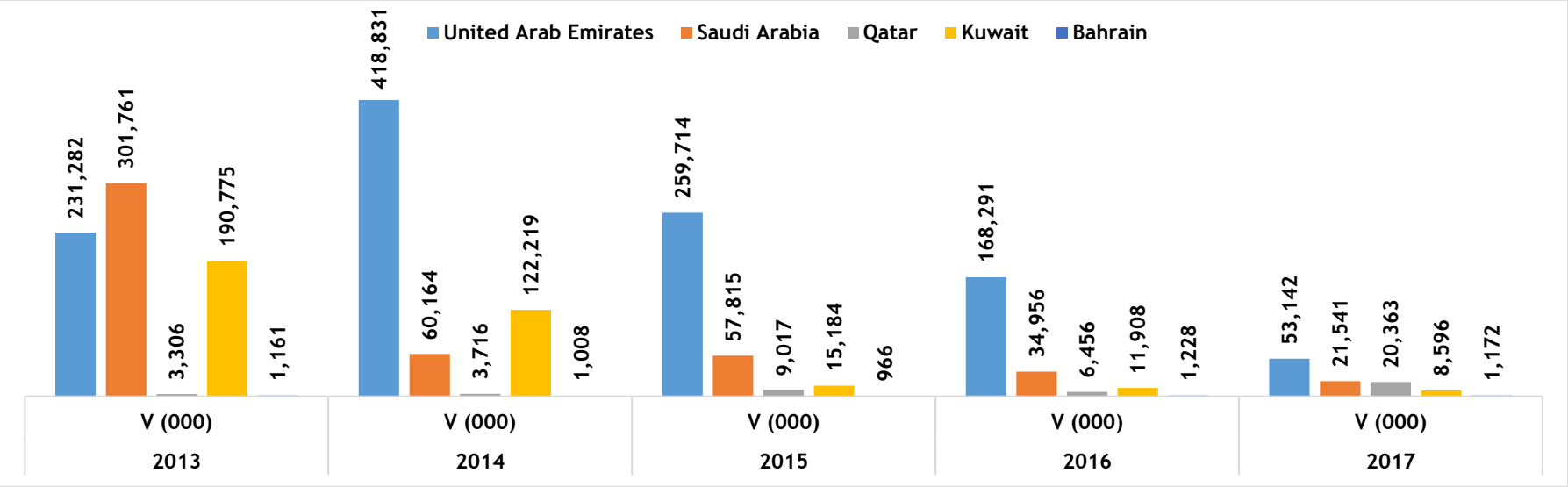
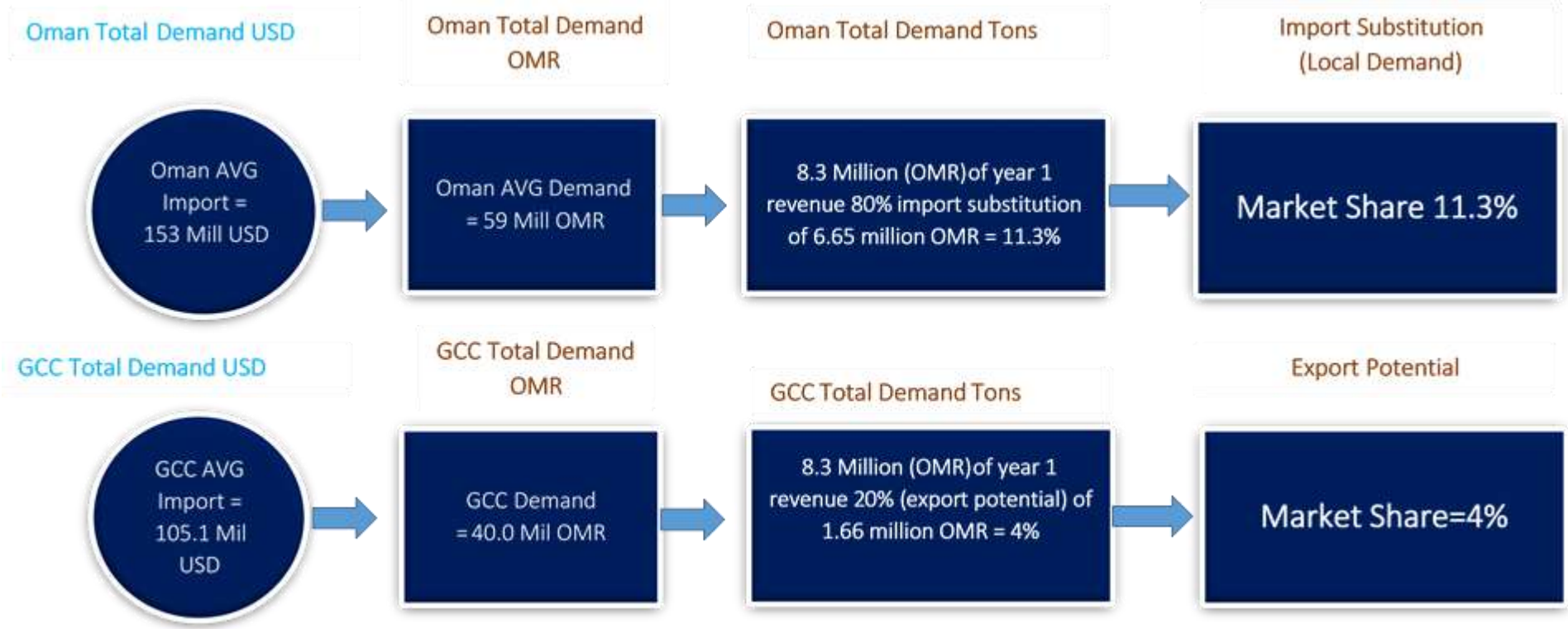


Figure 2-5: HS Code 740710 – GCC Importing Imports During the Period (2013-2017) - Value

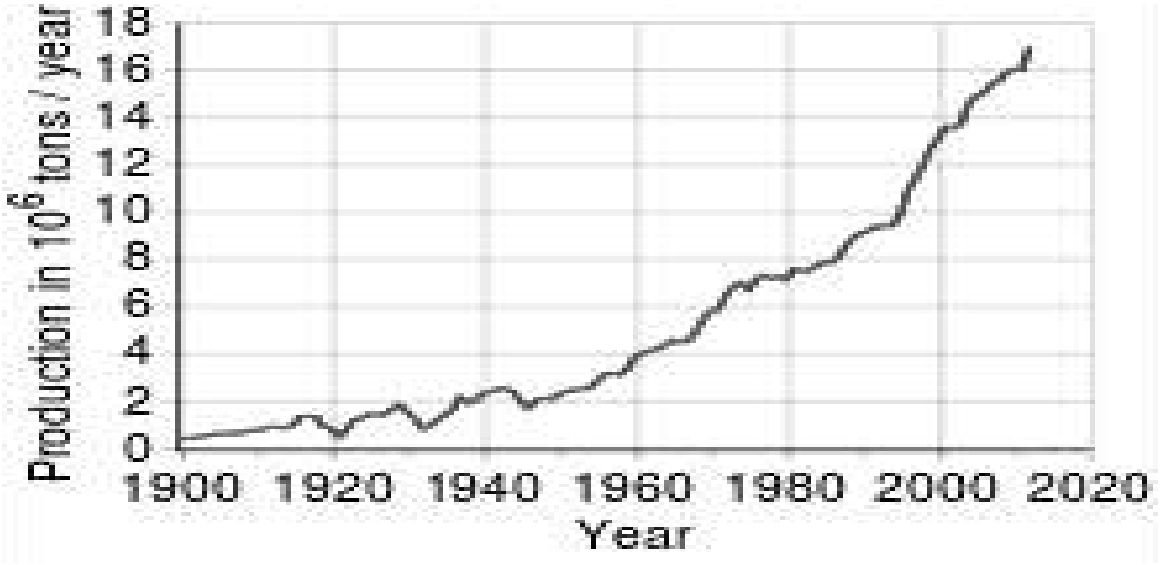
Supply & Demand



The total market size for GCC countries is estimated at 255 million USD (100 million OMR) includes Oman.

2.2. Raw Material – Global Copper Production

Global copper mine production is expected to rise 3.7 percent per year to 22.6 million metric tons in 2019. Copper and copper products are widely used in fields of electric power, electronic, energy and petro chemistry, machinery and metallurgy, transportation, light industry and emerging industry. It ranks the second in China's non-ferrous metal consumption only second to aluminum.



Global demand for copper metal (produced from refined copper and recycled scrap) is projected to advance 4.2 percent per year through 2019 to 36.0 million metric tons, valued at $261 billion. Robust gains in building construction expenditures are expected to boost the use of copper wire, tube, and other mill products in applications such as building wire and plumbing. Increased infrastructure investment, particularly in developing countries, will further benefit copper suppliers.

Table 2-4: Copper Official prices, US$ per ton

Contract	Bid (US$ / Ton)	Offer (US$ / Ton)*
Cash	6015	6018
3-months	6024.5	6025.5
19-Dec	6025	6035
20-Dec	6020	6030
21-Dec	6005	6015

AVERAGE LME RATE FOR COPPER = 6,015 USD PER TON

Source: www.lme.com

Chapter 3

Technical Evaluation

3.1. Raw Material Composition

Copper ore becomes high grade copper concentrate after dressing; through smelting, copper concentrate becomes refined copper and copper products. Copper applied in industries can be mainly classified into electrolytic copper (copper content: 99.9%~99.95%) and refined copper (copper content: 99.0%~99.7%).

AVIALABILITY

HALF HARD RANGE BS EN 1057-R250

Size OD x Wall	Standard Available Lengths*			Nominal Bars, Rods and Profiles Weight	Maximum Working Pressure up to 65°C	Bore Capacity	Bars, Rods and Profiles per inner bundle	Bars, Rods and Profiles per master bundle
(mm)	3m	5.8m	6m	(Kg/m)	(bar) #	(l/m)		
15 x 0.7	●	●	●	0.28	58	0.145	10	300
22 x 0.9	●	●	●	0.531	51	0.321	10	150
28 x 0.9	●	●	●	0.682	40	0.539	10	100
35 x 1.2	●		●	1.134	42	0.835	5	50
42 x 1.2	●		●	1.369	35	1.232	5	50
54 x 1.2	●		●	1.772	27	2.091	3	30

COPPER BARS, RODS AND PROFILES TO BS EN 1057 – R250/R290

Seamless Copper Bars, Rods and Profiles meeting the specification requirements of ASTM B68, ASTM B280 and JIS H3300 for ACR applications and the British standard COPPER BARS, RODS AND PROFILES TO BS EN 1057 – R250/R290

SCOPE IN THE USAGE OF COPPER BARS, RODS AND PROFILES IN OMAN

USES AND APPLICATIONS

Strong and Durable

- Copper systems are so reliable, Pipes are largely maintenance free and do not require replacement
- Copper maintains its physical and mechanical properties at extreme temperatures ranging from -200 to +205˚C
- It is also naturally inert and remains totally unaffected when exposed to long periods of direct sunlight
- Copper has excellent corrosion resistance to most waters and gases
- Copper systems are durable and can withstand high working pressures

Modern and Versatile

- Copper tubes and fittings are suitable for water and gas services
- They can be used in most parts of a plumbing or heating system

- Copper systems are interchangeable; you can use pipes and fittings from different manufacturers
- Specially cleaned copper tube and fittings are available for medical gas, oxygen and vacuum lines
- Modern press and push fit systems meet the growing requirement for flame-free installation

Fire Resistant and Safe

- Copper has very high fire resistance
- Pipes and fittings will not lose physical and mechanical properties in fire situations
- Copper does not generate toxic fumes during a fire
- Copper is approved for use in sprinkler systems in domestic and industrial buildings
- Copper systems keep the water safe
- As a bactericide, copper can consistently suppress bacterial growth

Ecological and Non-Permeable

- Copper has excellent ecological credentials
- 90 per cent of copper and brass scrap is recycled
- At the end of a building's life, all copper can be reclaimed
- Copper is non-porous and contaminants cannot penetrate it
- Using copper can prevent corrosion in boilers and radiators
- Copper is not susceptible to rodent attack.

3.2. Production Process

Raw Materials The production of copper tube begins with raw material: copper, which in this case may be either copper scrap, newly refined copper (called cathode copper, or simply cathode) or copper ingots. The choice of raw material depends on economic factors such as cost and availability, and the technical capabilities of the plant's melting furnaces

Melting The charge of raw materials is melted in a furnace which, in a large tube mill, may hold up to 20 tons of metal. The furnace's primary function is to melt the copper charge, and if the raw materials are only in the form of cathode, refined ingot or home scrap, a simple shaft furnace suffices.

Casting in most mills, molten metal is transferred from the melting/refining furnace into a holding furnace or into a tundish, either of which acts as a reservoir for the casting process thereby allowing the melting/refining furnace to begin processing the next charge. The holding furnace/tundish is heated just enough to maintain the molten metal at a constant temperature. To protect the copper from oxidation, the liquid metal surface may be covered with a blanket of graphite powder.

Piercing The next step is to reheat the billets to approximately 1535°F (835°C) to make the copper pliable. A pointed rod called a piercing mandrel is then driven lengthwise through the center of the billets to create what will eventually become the inside wall of the plumbing tube. Obviously, this step is not needed if the billets are cast as tube rounds. Piercing can take place either immediately before, or concurrent with extrusion.

Extrusion. Extrusion is often quite accurately compared with squeezing toothpaste from a tube. During extrusion, the billet, heated to the proper hot-working temperature, is placed in the chamber of an extrusion press. The horizontally mounted chamber contains a die at one end and a hydraulically driven ram at the other.

Drawing. Drawing simply involves pulling the hollow tube through a series of hardened steel dies to reduce its diameter. Before each step of the drawing process, the tube is pointed at one end to fit through the next die, whereupon it is gripped by automatic jaws attached to a rotating, 7-ft-diameter drawing machine called a bull block.

Annealing Tube that is to be sold in the soft condition, generally as coils, is next passed through a continuous annealing furnace operating at 1300°F (704°C). The furnace is essentially a long heated box filled with a protective atmosphere to prevent the copper from oxidizing. In plants that are not equipped with continuous annealing furnaces, annealing is done in batches in what are aptly called bell furnaces

Final steps. The tube is now almost ready for shipping. It may be cleaned to remove any traces of drawing lubricants or other contaminants. This is particularly important for special-use products; such as tube that is intended to carry medical gases and refrigerants for cooling applications. In all cases, however, samples of the finished tube are taken at regular intervals to ensure that it meets all requirements of size, wall thickness and quality as required under ASTM B88 and other applicable standards.

Source: https://www.copper.org/publications/newsletters/innovations/1998/09/howdo_tube.htm

Production Process Layout

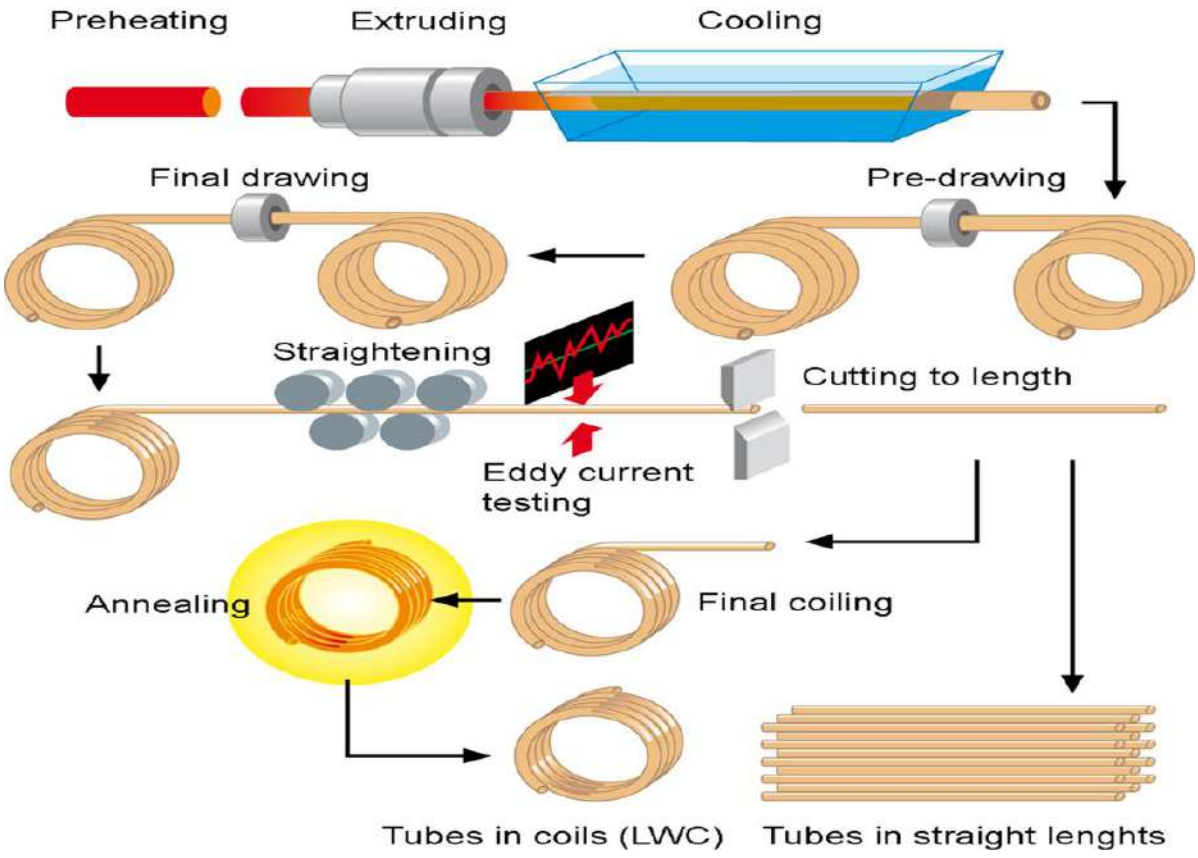


Figure 3-1: Production Process Layout

Copper Upstream & Downstream (Applications)

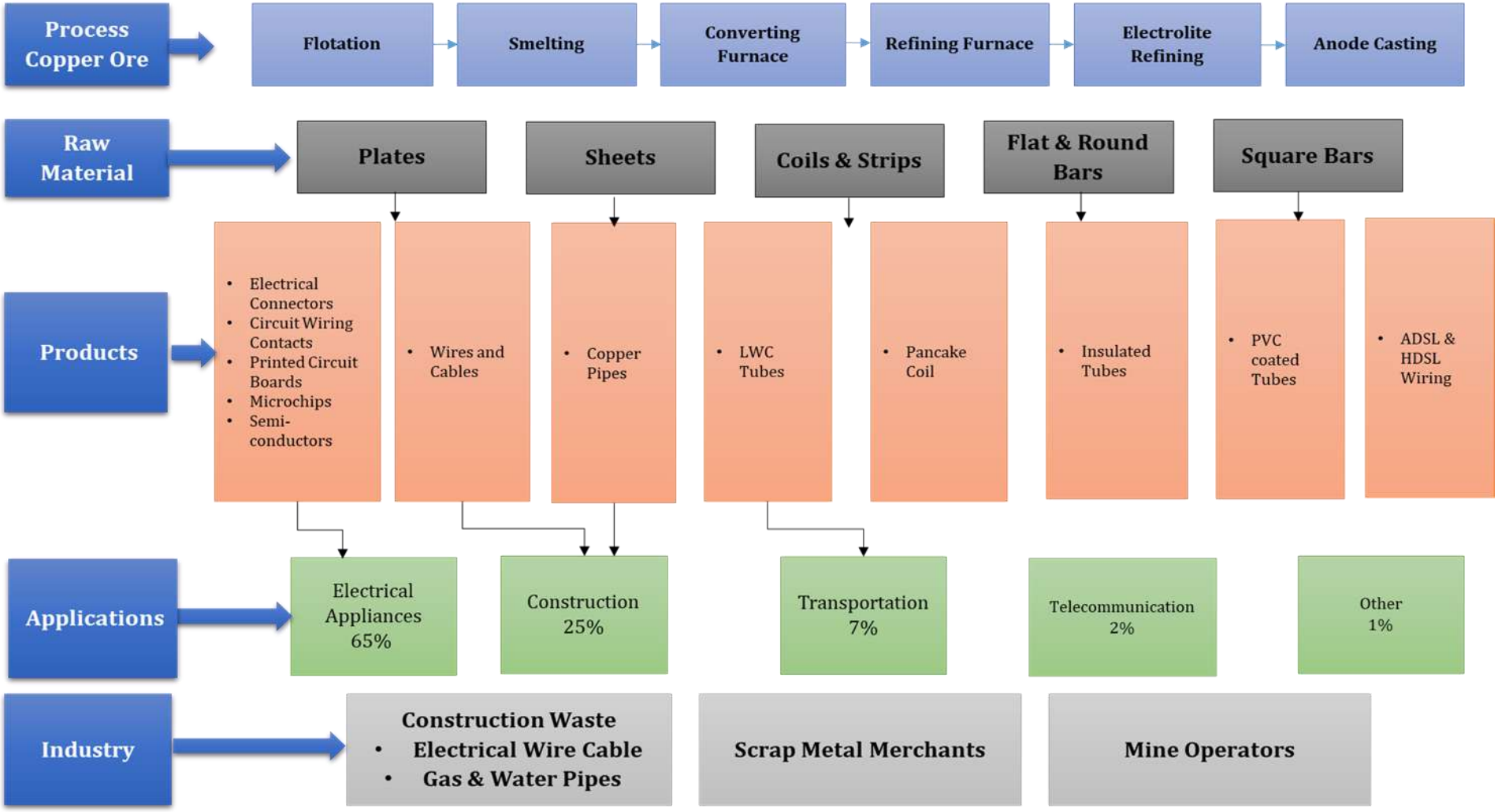


Figure 3-2: Copper Upstream & Downstream (Applications)

3.3. Manpower

The manpower requirements are based on company industry experts experience to deem the plant operational.

The Omanization percentage will be a minimum of 60% given the unskilled workers account for 20 employees of the total 58 workforce.

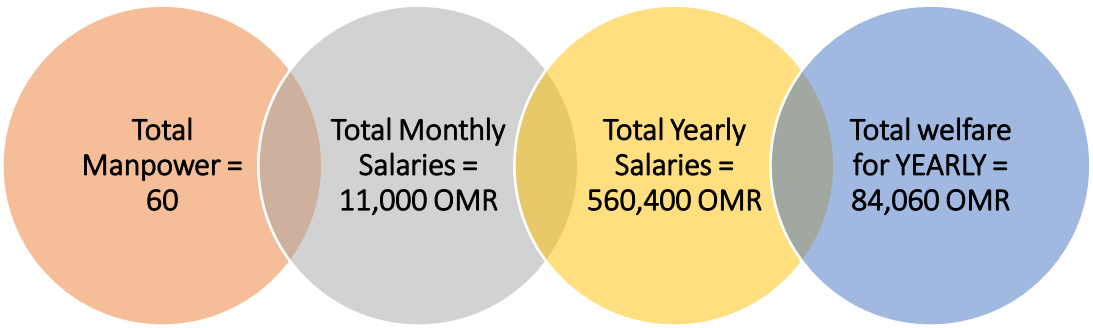
Direct staff include employees responsible for the operational and production of the Bitumen product and indirect staff include office staff.

Table 3-1: Direct Cost Manpower Requirements

DIRECT COST MANPOWER REQUIREMENTS						
Si.No	Position	Numbers	Salary Per Month	Salary Per Year	Welfare Expenses @15%	Grand Total
1	GM	1	3,000	36,000	5,400	41,400
2	Operations Manager	3	2,500	90,000	13,500	103,500
5	Supervisor	6	1,200	86,400	12,960	99,360
6	Electrician	10	700	84,000	12,600	96,600
7	Skilled Workers	15	600	108,000	16,200	124,200
8	Semi-Skilled Workers	5	450	27,000	4,050	31,050
Total		40	8,450	431,400	64,710	496,110

Table 3-2: Indirect Cost Manpower Requirements

INDIRECT COST MANPOWER REQUIREMENTS						
Si.No	Position	Numbers	Salary Per Month	Salary Per Year	Welfare Expenses @15%	Grand Total
1	Accounts & Admin Supervisor	5	600	36,000	5,400	41,400
2	Accounts Purchaser	3	450	16,200	2,430	18,630
3	Salesman	6	600	43,200	6,480	49,680
4	Security	4	500	24,000	3,600	27,600
5	PRO	2	400	9,600	1,440	11,040
Total		20	2,550	129,000	19,350	148,350



3.4. Organization Chart

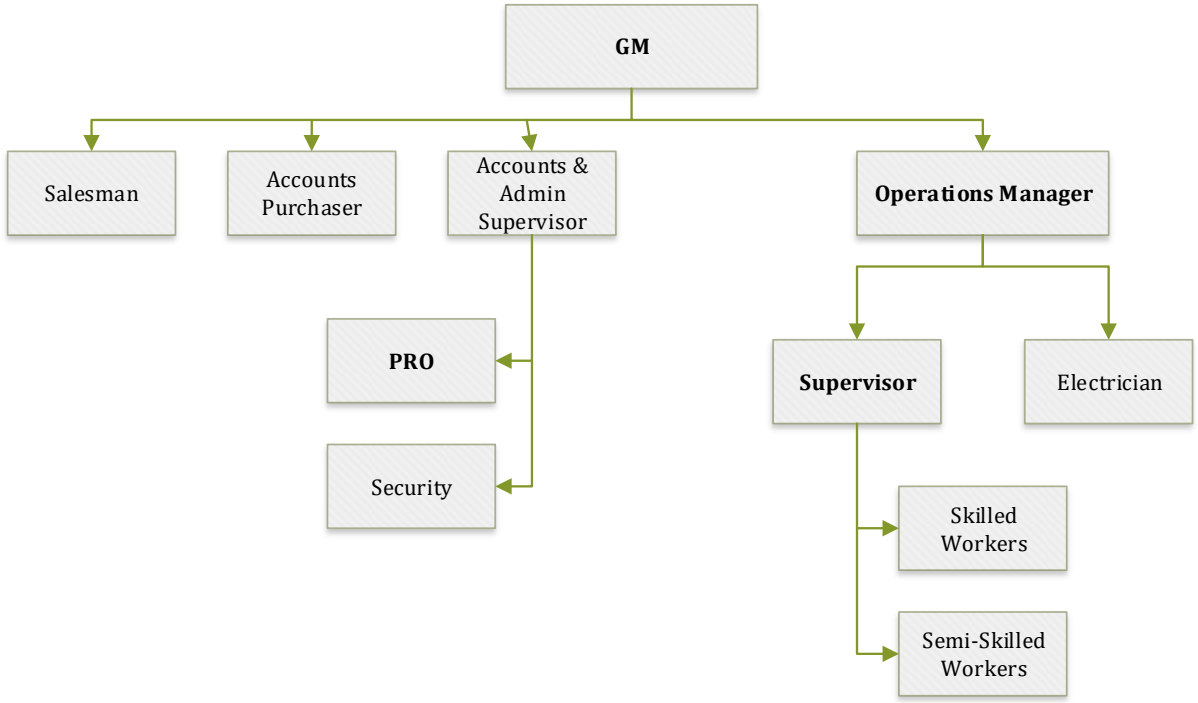


Figure 3-3: Organization Chart

3.5. Project Time Frame

Table 3-3: Project time frame

ACTIVITIES	TIME IN MONTHS								
PLANT	2	4	6	8	10	12	14	16	18
• Design									
• Manufacture									
• Purchase									
• Shipment									
• Installation									
• Commissioning									
• Civil work									

The implementation of the project starts initially with the drawing of overall plant layout followed by civil works, procurement, delivery and installation. This requires a time frame of 18 months.

Chapter 4

Financial Analysis

4.1. Cost of Investment Capex

The total cost of Main machinery amounts to 2.1 Million /RO sourced from an international machinery supplier.

Building cost is costed at minimum RO of 721,000 RO with a contingency of 3% for reasons of price fluctuation in construction material cost.

Table 4-1: Investment Capex

Si. No.	Description	Quantity	Cost Per Unit OMR	Total Cost OMR
	Main Plant & Machinery			
A1	3 x Automatic hole punch machines with 6 and 9 tool carousels	3	30,000.00	90,000
A2	1 x EHRT bending machine	1	120,000.00	120,000
A3	2 x Euromac 500 Digibend	2	250,000.00	500,000
A4	1 x PEM Insert machine	1	87,000.00	87,000
A5	1 x Electric Oven for sleeving / Insulation requirements	1	210,000.00	210,000
A7	3 x Drilling Station	3	55,000.00	165,000
A8	2 x CNC Bandsaws	2	220,000.00	440,000
A9	1 x CNC Circular saw	1	120,000.00	120,000
A10	1 x CNC Vertical Milling Centre	1	200,000.00	200,000
A11	3 x Finishing stations	3	75,000.00	225,000
			Sub Total	**2,157,000**
	GRAND TOTAL			**2,157,000.00**
	Equipment Cost			
	Packing ,Forwarding ,Insurance, Freight			50,000
	Erection and Installation			65,000
	Cost of Transformer			15,000
	Misc Equip			30,000
	Total			**160,000**
	Building			
B1	Land@ Biza 0.250 /M2 + 10% registration expenses	5000	0.25	1,250
B2	Hanger sq/ft.	3000	120	360,000
B3	Boundary wall	1000	50	50,000
B4	Office @ Ro 6/800 sq.	1000	150	150,000
B5	Security office and Gate			20,000
B6	Staff room and Toilet			45,000
B7	Laboratory Room	800	5.5	4,400
B8	Land development			20,000
B12	Generator Room			50,000
	Sub Total			**700,650**
			Contingency @ 3%	21,020
	Total Cost			**721,670**
	Vehicles			
1c	Car Pick Up	2	8000	16,000

1b	Trailers	3	50000	150,000
1c	Company Vehicle	5	7000	35,000
Total Transportation Vehicle Cost				**201,000**
	Office Furniture & Equipment			
1a	Computer ,Printer ,UPS ,Fax,			20,000.00
			Total	**20,000.00**
1b	Furniture Desk & Chairs			10,000.00
1c	Electrification & Air Conditioning			20,000.00
1e	Misc			10,000.00
Total				**40,000.00**
Grand Total				**3,139,669.50**

4.2. Investment Cost

Table 4-2: Investment Cost

Si.No.	Investment Cost	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
1a	Plant	2,157,000										
	Equipment	160,000										
1a	Building	721,670										
1a	Vehicles	201,000						201,000				
1a	Computers	20,000				20,000						
1a	Office Furniture & Equipment	40,000							40,000			
Total Investment Cost (Fixed Assets)		**2,641,545**	**3,299,670**	**-**	**-**	**-**	**20,000**	**-**	**201,000**	**40,000**	**-**	**-**
	Acc. Cost	3,299,670	3,299,670	3,299,670	3,299,670	3,319,670	3,319,670	3,520,670	3,560,670	3,560,670	3,560,670	3,560,670

Manpower

The manpower requirements are based on company industry experts experience to deem the plant operational.

The Omanization percentage will be a minimum of 80% given the total 60 employee workforce most of which can be filled by nationals.

Direct staff include employees responsible for the operational and production of the copper rods, bars and profiles and the indirect staff of 20 employees to include office staff.

DIRECT COST MANPOWER REQUIREMENTS						
Si.No	Position	Numbers	Salary Per Month	Salary Per Year	Welfare Expenses @15%	Grand Total
1	GM	1	3,000	36,000	5,400	41,400
2	Operations Manager	3	2,500	90,000	13,500	103,500
5	Supervisor	6	1,200	86,400	12,960	99,360
6	Electrician	10	700	84,000	12,600	96,600
7	Skilled Workers	15	600	108,000	16,200	124,200
8	Semi-Skilled Workers	5	450	27,000	4,050	31,050
Total		40	8,450	431,400	64,710	496,110

INDIRECT COST MANPOWER REQUIREMENTS						
Si.No	Position	Numbers	Salary Per Month	Salary Per Year	Welfare Expenses @15%	Grand Total
1	Accounts & Admin Supervisor	5	600	36,000	5,400	41,400
2	Accounts Purchaser	3	450	16,200	2,430	18,630
3	Salesman	6	600	43,200	6,480	49,680
4	Security	4	500	24,000	3,600	27,600
5	PRO	2	400	9,600	1,440	11,040
Total		20	2,550	129,000	19,350	148,350

4.3. Profit & Loss

Particulars	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Filling Capacity	40%	50%	60%	70%	80%	90%	90%	90%	90%	90%
Grand Total Revenue OMR	**8,375,400**	**10,469,250**	**12,563,100**	**14,656,950**	**16,750,800**	**18,844,650**	**18,844,650**	**18,844,650**	**18,844,650**	**18,844,650**
Cost of Revenue (Direct Cost)										
Raw Material	4,116,420	5,145,525	6,174,630	7,203,735	8,232,840	9,261,945	9,261,945	9,261,945	9,261,945	9,261,945
Manpower	496,110	510,993	526,323	542,113	558,376	575,127	592,381	610,153	628,457	647,311
Utilities	216,000	270,000	324,000	378,000	432,000	486,000	486,000	486,000	486,000	486,000
Maintenance	502,524	628,155	753,786	1,758,834	2,010,096	2,261,358	3,392,037	3,392,037	3,392,037	3,392,037
Total Direct Cost	**5,331,054**	**6,554,673**	**7,778,739**	**9,882,682**	**11,233,312**	**12,584,430**	**13,732,363**	**13,750,135**	**13,768,439**	**13,787,293**
Gross Profit	**3,044,346**	**3,914,577**	**4,784,361**	**4,774,268**	**5,517,488**	**6,260,220**	**5,112,287**	**5,094,515**	**5,076,211**	**5,057,357**
Indirect Expenses										
Depreciation	(304,643)	(304,643)	(304,643)	(304,643)	(304,643)	(304,643)	(304,643)	(304,643)	(304,643)	(304,643)
Manpower Indirect	(148,350)	(152,801)	(157,385)	(162,106)	(166,969)	(171,978)	(177,138)	(182,452)	(187,925)	(193,563)
Fright Charges and custom	(418,770)	(523,463)	(628,155)	(732,848)	(837,540)	(942,233)	(942,233)	(942,233)	(942,233)	(942,233)
Warranty Exp.	(83,754)	(104,693)	(125,631)	(146,570)	(167,508)	(188,447)	(188,447)	(188,447)	(188,447)	(188,447)
Marketing, Advertising & Promotion	(1,256,310)	(1,570,388)	(1,884,465)	(2,198,543)	(2,512,620)	(2,261,358)	(1,884,465)	(1,507,572)	(1,130,679)	(753,786)
Lease Office and Stores	(6,000)	(6,000)	(6,000)	(6,000)	(6,000)	(18,000)	(18,000)	(18,000)	(18,000)	(18,000)
Telephone Internet & Fax	(1,500)	(2,000)	(2,500)	(3,000)	(3,500)	(4,000)	(4,500)	(5,000)	(5,500)	(6,000)
Audit Charges	(1,500)	(2,000)	(2,500)	(3,000)	(3,500)	(4,000)	(4,500)	(5,000)	(5,500)	(6,000)

Particulars	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Waste Disposal	(205,821)	(154,366)	(185,239)	(216,112)	(246,985)	(277,858)	(277,858)	(277,858)	(277,858)	(277,858)
Misc Exp	(25,000)	(26,500)	(28,000)	(29,500)	(31,000)	(32,500)	(34,000)	(35,500)	(37,000)	(38,500)
Insurance	(4,000)	(4,200)	(4,410)	(4,631)	(4,862)	(5,105)	(5,360)	(5,628)	(5,910)	(6,205)
Pre-Operating Expenses	(127,500)									
Total Expenses	**(2,583,148)**	**(2,851,052)**	**(3,328,928)**	**(3,806,952)**	**(4,285,128)**	**(4,210,122)**	**(3,841,144)**	**(3,472,333)**	**(3,103,695)**	**(2,735,235)**
PBIT/PBT										
PBIT	461,198	1,063,524	1,455,433	967,317	1,232,360	2,050,097	1,271,143	1,622,182	1,972,516	2,322,122
Finance Interest Main Loan	(138,586)	(110,869)	(83,152)	(55,434)	(27,717)	-	-	-	-	-
Finance Interest O/Draft W. Capital	(54,492)	(43,593)	(32,695)	(21,797)	(10,898)	-	-	-	-	-
PBT	268,120	952,656	1,372,281	911,882	1,204,643	2,050,097	1,271,143	1,622,182	1,972,516	2,322,122
Income Tax @ 15%	(40,218)	(142,898)	(205,842)	(136,782)	(180,696)	(307,515)	(190,671)	(243,327)	(295,877)	(348,318)
PAT	**227,902**	**809,757**	**1,166,439**	**775,100**	**1,023,946**	**1,742,583**	**1,080,471**	**1,378,855**	**1,676,638**	**1,973,803**

The profit after tax in 1st year of operation amounts to 227,902RO and increase significantly to an amount of 809,757 RO in the 2nd year of operation. In the 3rd year of operation the profit after tax amounts to 1.1 million RO and the 4th year decreases to 775,100 RO mainly due to the increase in maintenance charge from then PAT increase to and in excess of 1.0 million RO and year 6 reaches 1.7 million RO reaching almost 2.0 million RO in year 10.

4.4. Capacity Utilization

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Capacity Level %	40%	50%	60%	70%	80%	90%	90%	90%	90%	90%
Product piece	5,400.00	6,750.00	8,100.00	9,450.00	10,800.00	12,150.00	12,150.00	12,150.00	12,150.00	12,150.00
Bars and Rods (flat , Round)	50% of Production Capacity									
Production Output	1,782	2,228	2,673	3,119	3,564	4,010	4,010	4,010	4,010	4,010
Revenue OMR	4,187,700	5,234,625	6,281,550	7,328,475	8,375,400	9,422,325	9,422,325	9,422,325	9,422,325	9,422,325
Profiles (Any Shape)	50% of Production Capacity									
Production Output	1,782	2,228	2,673	3,119	3,564	4,010	4,010	4,010	4,010	4,010
Revenue OMR	4,187,700	5,234,625	6,281,550	7,328,475	8,375,400	9,422,325	9,422,325	9,422,325	9,422,325	9,422,325
Grand Total Revenue OMR	8,375,400	10,469,250	12,563,100	14,656,950	16,750,800	18,844,650	18,844,650	18,844,650	18,844,650	18,844,650

The capacity utilization start with 40% in year of operation and is forecasted to increase gradually y-o-y, reaching a capacity of 90% in the 6th year of operation.

4.5. Cash Flow

Particulars	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Operating Activity											
Profit Before Tax PBT		268,120	952,656	1,372,281	911,882	1,204,643	2,050,097	1,271,143	1,622,182	1,972,516	2,322,122
Depreciation		304,643	304,643	304,643	304,643	304,643	304,643	304,643	304,643	304,643	304,643
Interest on Loan ODB		138,586	110,869	83,152	55,434	27,717	-	-	-	-	-
W. Capital Interest O/draft		54,492	43,593	32,695	21,797	10,898	-	-	-	-	-
Cash Flow Operating Activity	-	765,841	1,411,761	1,792,771	1,293,757	1,547,902	2,354,741	1,575,786	1,926,826	2,277,159	2,626,765
Investing Activity											
Purchasing of Fixed Assets	(3,299,670)	-	-	-	(20,000)	-	(201,000)	(40,000)	-	-	-
Working Capital & Pre-op	(1,217,330)										
Finance Activity											
Owners Contribution	1,319,868										
Pre-Op Owner Contribution	127,500										
Debt Loan	1,979,802										
Working Capital Overdraft	1,089,830										
ODB Loan Payment											
Loan Payment		(395,960)	(395,960)	(395,960)	(395,960)	(395,960)	-	-	-	-	-

Particulars	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Interest		(138,586)	(110,869)	(83,152)	(55,434)	(27,717)	-	-	-	-	-
Commercial Loan WC											
Loan Payment		(217,966)	(217,966)	(217,966)	(217,966)	(217,966)	-	-	-	-	-
Interest		(54,492)	(43,593)	(32,695)	(21,797)	(10,898)	-	-	-	-	-
Tax paid		-	(40,218)	(142,898)	(205,842)	(136,782)	(180,696)	(307,515)	(190,671)	(243,327)	(295,877)
Sub Total	**4,517,000**	**(807,004)**	**(808,606)**	**(872,671)**	**(897,000)**	**(789,324)**	**(180,696)**	**(307,515)**	**(190,671)**	**(243,327)**	**(295,877)**
Net Cash Flow	1,217,330	(41,163)	603,155	920,100	376,757	758,577	1,973,044	1,228,272	1,736,154	2,033,832	2,330,888
Open Cash equivalents	-	1,217,330	1,176,167	1,779,322	2,699,422	3,076,179	3,834,757	5,807,801	7,036,073	8,772,227	10,806,059
Closing Cash Equivalents	**1,217,330**	**1,176,167**	**1,779,322**	**2,699,422**	**3,076,179**	**3,834,757**	**5,807,801**	**7,036,073**	**8,772,227**	**10,806,059**	**13,136,947**

The cash flow is showing a positive 1,217,330 /RO in year 1 due to working capital and cash flow increases and is relatively consistent and continues to be positive as profit is increasing reaching 13.13 million RO in year 10.

4.6. Balance Sheet

Particulars	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Current Assets											
Cash & Cash Equivalents	1,217,330	1,176,167	1,779,322	2,699,422	3,076,179	3,834,757	5,807,801	7,036,073	8,772,227	10,806,059	13,136,947
Working capital		-	-	-	-	-	-	-	-	-	-
Sub Total	**1,217,330**	**1,176,167**	**1,779,322**	**2,699,422**	**3,076,179**	**3,834,757**	**5,807,801**	**7,036,073**	**8,772,227**	**10,806,059**	**13,136,947**
Non-Current Assets											
Fixed Assets	3,299,670	2,995,026	2,690,383	2,385,739	2,101,096	1,796,452	1,692,809	1,428,165	1,123,522	818,878	514,235
Sub Total	**3,299,670**	**2,995,026**	**2,690,383**	**2,385,739**	**2,101,096**	**1,796,452**	**1,692,809**	**1,428,165**	**1,123,522**	**818,878**	**514,235**
Total Assets	**4,517,000**	**4,171,193**	**4,469,704**	**5,085,161**	**5,177,275**	**5,631,209**	**7,500,610**	**8,464,238**	**9,895,749**	**11,624,937**	**13,651,181**
Liabilities											
Current liabilities											
Loan (Short Term) ODB	1,979,802	395,960	395,960	395,960	395,960				-	-	-
Loan Short Term WC ODB	1,089,830	217,966	217,966	217,966	217,966			-	-	-	-
Provision for taxation		40,218	142,898	205,842	136,782	180,696	307,515	190,671	243,327	295,877	348,318
Total current liabilities	3,069,632	654,144	756,825	819,769	750,709	180,696	307,515	190,671	243,327	295,877	348,318
Loan Long Term ODB		1,187,881	791,921	395,960	-	-	-	-	-	-	-
Long term ODB w.c.loan		653,898	435,932	217,966	-	-	-	-	-	-	-
Total current liabilities	-	1,841,779	1,227,853	613,926	-	-	-	-	-	-	-
Shareholders											
Shareholders Capital	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368	1,447,368
Legal Reserve											
Profit & Loss Account		227,902	1,037,659	2,204,098	2,979,198	4,003,144	5,745,727	6,826,199	8,205,053	9,881,692	11,855,495
Total equity	1,447,368	1,675,270	2,485,027	3,651,466	4,426,566	5,450,512	7,193,095	8,273,566	9,652,421	11,329,060	13,302,863
Total Liabilities	4,517,000	4,171,193	4,469,704	5,085,161	5,177,275	5,631,209	7,500,610	8,464,238	9,895,749	11,624,937	13,651,181

The initial 0 years' current ratio is adverse due to short term loan and the 1st year onwards it recovers and becomes positive.

4.7. Payback Period

Appraisal on Equity Investment											
Particulars	Investment	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10

Yearly Cash flow (OMR '000)	(1,319,868)	(41,163)	603,155	920,100	376,757	758,577	1,973,044	1,228,272	1,736,154	2,033,832	2,330,888
IRR	44.20%										
NPV @ WACC	4,802,474										
Pay Back period	4	Years	-9	Months							
Appraisal on Total Investment											
Particulars	Investment	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Yearly Cash flow (OMR '000)	(4,517,000)	493,384	1,109,984	1,399,212	828,152	1,182,255	1,973,044	1,228,272	1,736,154	2,033,832	2,330,888
IRR	22.72%										
NPV @ WACC	3,432,536										
Pay Back period	4	Years	7	Months							

Cost		
Owners' Equity	15.00%	40.00
Finance	7.00%	60.00
Total		100.00
Weighted Average Cost	10.20%	

The IRR on total investment is resulting in **22.72%,**

NPV results in 3.4 million /RO & payback period is 4 years and 7 months.

4.8. Depreciation

Si.No	Particulars	Amount	Years	Percentage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1a	Plant	2,157,000	10.00	10%	215,700	215,700	215,700	215,700	215,700	215,700	215,700	215,700	215,700	215,700
1b	Building	721,670	20.00	5%	36,083	36,083	36,083	36,083	36,083	36,083	36,083	36,083	36,083	36,083
1c	Vehicles	201,000	5	20%	40,200	40,200	40,200	40,200	40,200	40,200	40,200	40,200	40,200	40,200

1d	Computers	20,000	3.00	33%	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660
1e	Office Furniture & Equipment	40,000	6.67	15%	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Total		**3,139,670**	**Total Depreciation**		**304,643**	**304,643**	**304,643**	**304,643**	**304,643**	**304,643**	**304,643**	**304,643**	**304,643**	**304,643**
	Accumulated depreciation				304,643	609,287	913,930	1,218,574	1,523,217	1,827,861	2,132,504	2,437,148	2,741,791	3,046,435
	Net book value				2,995,026	2,690,383	2,385,739	2,101,096	1,796,452	1,692,809	1,428,165	1,123,522	818,878	514,235

4.9. Raw Material Cost

Cost Per Unit OMR											
Si. No	**Description**	**Cost for 1 Ton**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
1a	COPPER Cathode	2310	2310	2310.0	2310.0	2310.0	2310.0	2310.0	2310.0	2310.0	2310.0	2310.0
		2,310	4,116,420	5,145,525	6,174,630	7,203,735	8,232,840	9,261,945	9,261,945	9,261,945	9,261,945	9,261,945
Total cost per Year			**4,116,420**	**5,145,525**	**6,174,630**	**7,203,735**	**8,232,840**	**9,261,945**	**9,261,945**	**9,261,945**	**9,261,945**	**9,261,945**

4.10. Pre-Operating Expenses

Si.No	Particulars	Amount
1a	Company formation and legal expenses	75,000.00
1b	Project Report ,Technical assistance ,Civil Plan & Estimates	10,000.00

1c	Travelling expenses	7,500.00
1d	Misc Exp.	35,000.00
Total		127,500.00

4.11. Working Capital

The working capital for the initial start of the project is mainly for the raw material for a period of 3 months amounting to 1.0 million RO and salaries at 2 months amounting to 24,725 RO

Working capital is obtained as an overdraft facility from the banks at the interest rate of 5% over a period of 5 years.

Si.No	Particulars	Months	Amount
1a	Raw Material	3	1,029,105.00
1b	Employees	2	24,725.00
1d	Utilities	2	36,000.00
Total			1,089,830.00

Working Capital Loan

Sl.No	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1a	Loan Opening Balance	1,089,830	871,864	653,898	435,932	217,966
1b	Interest @ 5%	54,492	43,593	32,695	21,797	10,898
1c	Installments	217,966	217,966	217,966	217,966	217,966
1d	Closing Balance	871,864	653,898	435,932	217,966	-

4.12. Source of Finance

Sl.No.	Particular	Percentage	Amount
1a	Owner Contribution	40%	1,319,868

1b	Loan	60%	1,979,802
Total		100%	3,299,670

4.13. Loan Schedule

Si.No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1a	loan Opening Balance	1,979,802	1,583,841	1,187,881	791,921	395,960
1b	Interest @ 7%	138,586	110,869	83,152	55,434	27,717
1c	Installments	395,960	395,960	395,960	395,960	395,960
1d	Closing Balance	1,583,841	1,187,881	791,921	395,960	-

4.14. Utility Costs

Description	Cost Per unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Electricity Per Kw	40.000	216,000	270,000	324,000	378,000	432,000	486,000	486,000	486,000	486,000	486,000
Total Utility Cost		216,000	270,000	324,000	378,000	432,000	486,000	486,000	486,000	486,000	486,000

4.15. Rental Lease

Si. No	Description Lease/Rental Premises	Size sq./m	Cost per Month	Cost per Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1a	Land	2000	0.25	6,000	6,000	6,000	6,000	6,000	6,000	18,000	18,000	18,000	18,000	18,000
2b	land rent after 5 years	2000	0.75	18,000										

Capacity & Selling Price

Installed Capacity Per Day	No of Hrs./Per Shift	No of Shifts Per Day	Working Day's Per Month	Working Months Per Year	Total Production Per Year Tons	Total Production Per Year tons

5	9	1	25	12	13,500	13,500

Products	Product Name	Unit	Quality	Percentage Distribution	Selling Price OMR
1	Bar	ton	high	33%	2350.000
2	Profiles	ton	high	33%	2350.000
3	Rods	ton	Standard	33%	2350.000
Total Percentage Distribution				99%	

4.16. Conclusion

- The production capacity in the 1st year is 40% and increases to a capacity of 50% in the 2nd year, thereafter the capacity utilization increases y-o-y to reach 90% capacity utilization in the 6th year; these capacity utilizations results in the following revenues:
- 1st year revenue amounts to **8.3 million OMR**
- 2st year revenue amounts to **10.4 million OMR**
- 3rd year revenue amounts to a total of **12.5 Million OMR**
  Reaching **18.8 Million OMR** in the 10th year.

  The above revenue stream reveals the following net profit results:

- The 1st year net profit amounts to **227,902 OMR.**
- 2nd year net-profit amounts to **809,757 million OMR.**
- 3rd year net-profit amounts to **1.1 million OMR.**
- 4th year net-profit amounts to **775,100 OMR.**
- 5th year net profit will be in region of **1.0 million OMR.**
- 10th year net profit will be in region of **1.9 million OMR**

Internal Rate of Return (IRR) =**22.72 %.**

NPV = **3,432,536 OMR.**

Pay Back Period = **4 years 7 month.**

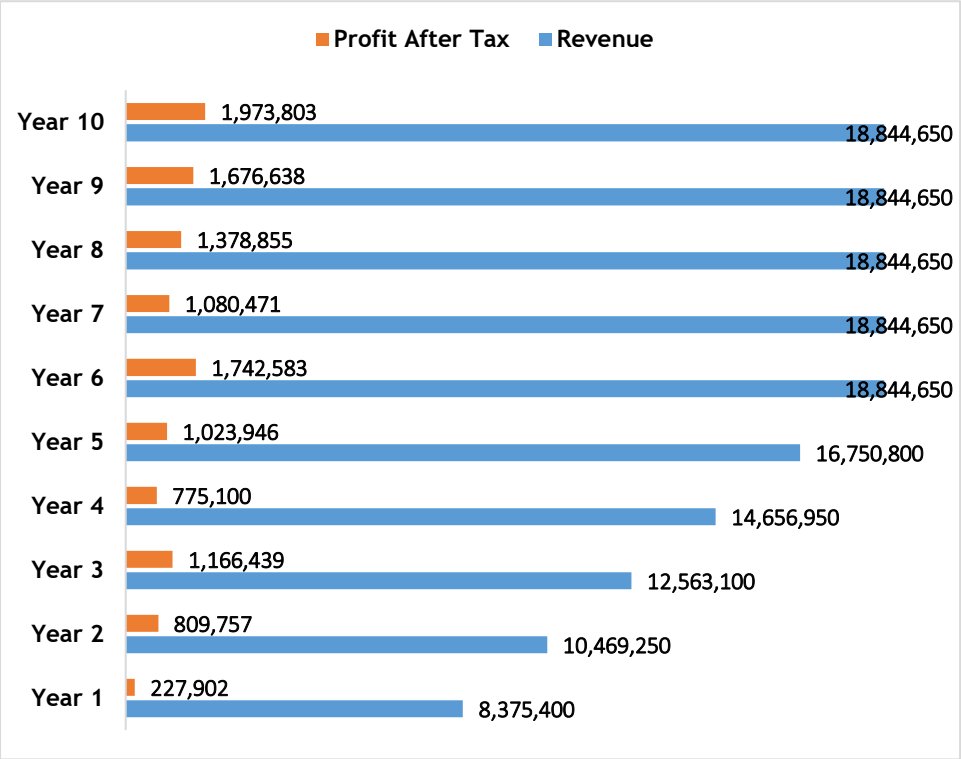


Figure 4-1: Projections Main Scenario - Revenue & Profit After Tax

Financial Analysis Summary											IRR	NPV	Payback Period
Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	22.72%	3,432,536	4 Years & 7 Month
Capacity	40%	50%	60%	70%	80%	90%	90%	90%	90%	90%			
Revenue	8,375,400	10,469,250	12,563,100	14,656,950	16,750,800	18,844,650	18,844,650	18,844,650	18,844,650	18,844,650			
Profit After Tax	227,902	809,757	1,166,439	775,100	1,023,946	1,742,583	1,080,471	1,378,855	1,676,638	1,973,803			

- The project has a medium to high viability due to mainly the raw material availability
- Copper Bars, Rods and Profiles has a good product range and is a necessity in terms demand quantity for Electrical Substation, HVAC, Switchgear, trunking Systems & Conductor systems locally and regionally
- The local competition is none existent in Oman thus provides an opportunity for this new entrant to be established themselves.
- The net profit is in year1 amounts to 227,902 RO & year 2 increases significantly to 809,757 RO, year 3 increases significantly to 1.1 million RO and further increase y-o-y reaching 1.9 million RO in year 10 of operations.
- IRR is attractive @ **22.72%** and payback is acceptable within 4 year & 7 months.