

General Department of Economic and Financial Affairs of Khuzestan

Preparation and Compilation of Investment Opportunities in The Province

Investment opportunity studies report

«Composite silver Production Plan»

(Attachment Number 1)

V-2

Date: 2023/07/06

In the name of God

Table of content

(Attachment Number 1)	1
1)Location of the project	4
1-1-Province	4
1-2- County	4
2) Project Status	5
2-1-ACCESS TO INFRASTRUCTURES	5
3)Technical specifications of the project	6
3-1-Product	6
3-2-Project Requirement	6
3-2-1-Land And Required Infrastructure	6
3-2-2-Plant Machinery and Equipment	6
3-2-3-Raw Materials and Intermediate Parts	7
3-2-4-Management and human resource	7
4)Ownership and legal permissions.....	7
4-1-land ownership	7
4-2-Intellectual Property and Concessions	7
4-3-Legal permissions	7
5)market research and competition	8
5-1-Target market introduction	8
(6)Physical progress of the project.....	9
7)Operational plan and implementation scheduling.....	9
8)Financial Plan	10
8-1-Cost Estimation	10
8-2-Sales Revenue	11
8-3-Length of Production Phase	11
8-4-Break-Even Analysis	12
8-5-Cost-Benefit Analysis	13
8-6-Sensitive Analysis	13
8-7-Conclusion	15
8-8-Estimation of currency rate fluctuation during the project implementation	15
9)Investment Required, method of fundraising and guarantees.....	16
9-1-Foreign Currency Required	16
9-2-Model Of Partnership and Fundraising	16
9-3-Payback Period	16
10)Incentives, features and benefits of the plan.....	17
(Attachment Number 2)	18

Tables and Figures

Table (1): access to infrastructures	5
Table (2): Amount of investment in land, landscaping and building	6
Table (3): Plant Machinery and Equipment.....	6
Table (4): Auxiliary and service plant Equipment	7
Table (5): Costs of Raw Material for Production.....	7
Table (6): Management and Human Resource	7
Table (7): Project Scheduling	9
Table (8): Cost Estimations.....	10
Table (9): Fixed Capital Estimations (Capital Costs).....	10
Table (10): Total Net Working Capital Requirements (Production Costs).....	11
Table (11): Pre-Production Expenditure.....	11
Table (12): Project Revenue in the First 5 Years of Production Phase (Billion Rials)	11
Table (13): Planning Horizon	11
Table (14): Project break-even point estimation.....	12
Table (15): Project Return Index.....	13
Table (15): Sensitivity Analysis (Percentage of IRR changes caused by sales revenue, fixed assets and operating costs alteration)	13
Table (16): Summary of Economic Features	15
Table (18): Currencies exchange Rate	15
Table (19): Foreign (Fixed) Currency Required	16
Figure (1): The Province Location in Iran.....	4
Figure (2): AHVAZ Location in Khuzestan Province.....	4
Figure (3): Political Divisions of Khuzestan Province	4
Figure (4): Project location map	5
Figure (5): Access routes to the project	5
Figure (6): Percentage changes in IRR caused by the sales revenue, fixed assets and operating costs alteration.....	14

1) Location of the project

1-1- Province

KHUZESTAN province is located in the southwest of Iran (in 47° 42' to 50° 39' east of the Greenwich meridian and 29° 58' to 32° 58' north of the equator). The area of Khuzestan province is 63,238 square kilometers. With a population of 4,994 thousand people in 1400SH, it is the fifth most populous province in Iran (after TEHRAN, KHORASAN RAZAVI, ISFAHAN and FARS provinces). **Ahvaz** is the capital of Khuzestan province and is located in the 880km of Tehran. This province is bordered by ILAM province from the northwest, Lorestan province from the north, CHAHARMAHAL and BAKHTIARI, KOHGILOUYEH and BOYER-AHMAHAD provinces from the northeast and east, the Persian Gulf (330km long) from the south and Iraq (330km long) from the west. The location of Khuzestan is in the west of Zagros mountains. Due to the vastness of its plains, the border with Iraq and the Persian Gulf, and the distance from other provincial centers have placed this province in a strategic position.

1-2- County

According to the latest national divisions of 1401 of the Ministry of Interior, this province has 29 counties, 70 districts, 145 villages, 90 cities and 3 special governorates. The latest political divisions of the province are described in Figure (3).

Ahvaz is one of the cities of Khuzestan province, centered in Ahvaz city. Ahvaz has a population of 1,420 thousand people, 28% of the population of the province. This city has a common border with SHUSHTAR, BAVI and RAMSHIR cities from the east, HAMIDIEH and HOIZEH cities from the west, KARKHE city from the north and KHORRAMSHAHR, KARUN and MAHSHAHR port cities from the south. After passing through DEZFUL, it enters Ahvaz and connects to KARUN River at BANDGHIR, which after the confluence of two DEZ rivers, KARUN forms the great KARUN River, and after passing AHVAZ, it enters ABADAN and KHORRAMSHAHR. A total of 185 km from the KARUN River, 61 km from the KARKHEH River and 5 km from the DEZ River are located in AHVAZ .

From the industrial point of view, AHVAZ is considered the vital artery of KHUZESTAN province where large factories of food, mineral, metal, and chemical industries have been established there. In the industry sector, there are five industrial towns (Ahvaz 1 to 5) .

Critical industrial centers including National Iran Drilling Company, Steel Complex, National Steel Industrial Group, Pipeline Company, Oil and Gas Companies, Northeast Agriculture and Industries, DEHKHODA and sugarcane ancillary industries are located in Ahvaz. In addition, sandstone and wind (industrial) mines and rich oil and gas resources are being exploited in the area of Ahvaz and many utilization units and management facilities in the southern oil-bearing areas, including exploration, drilling and oil and gas production facilities are settled in AHVAZ. The prosperity of agriculture and industries in the region has led to the prosperity of commerce and all kinds of industrial products such as steel, iron sheets, pipes, profiles, industrial parts, artificial leather, pressure vessels and heat exchangers, all kinds of iron, oil and all kinds of petroleum products, sanitary products and detergents, food, agricultural products such as wheat, barley, tares, dates and fishery products are among the most important products exported from this region locally and internationally.



Figure (1): The Province Location in Iran

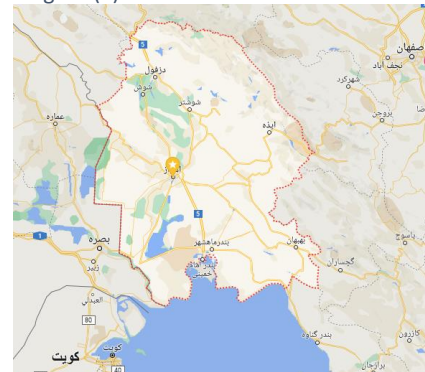


Figure (2): AHVAZ Location in Khuzestan Province

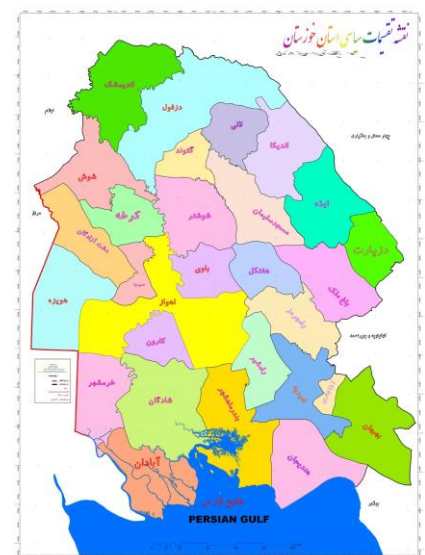


Figure (3): Political Divisions of Khuzestan Province

2) Project Status

The location of the land in Ahvaz Industrial Town 5 with the following specifications and an area of about 2500 square meters is suggested. The acquisition of industrial land in this place requires industry, mining and trade permits and the approval of the Industrial Towns Company and the approval of the city's environment. One of the reasons for choosing this place is its proximity to the center of the province and consumer industries.

2-1- Access to infrastructures

Currently, there are water, electricity and gas infrastructures in this industrial town. In terms of access to transportation, this town is in a good position. The distance of the chosen place to the Ahvaz-Imam Khomeini Port freeway is 1.2 km and its distance to Imam Khomeini Port is 107 km. Ahvaz airport is also located 15.7 km away from the place. Based on this, raw materials will be supplied from Imam Khomeini port.



Figure (4): Project location map

Table (1): access to infrastructures

No.	Required Infrastructure	Distance From Project Status	Location Of Infrastructure Provision
1	Water	0.8	Ahvaz industrial Estate no 5
2	Electricity	0.8	Ahvaz industrial Estate no 5
3	Gas	0.8	Ahvaz industrial Estate no 5
4	Telecommunication	0.8	Ahvaz industrial Estate no 5
5	Main road	1.2	Ahvaz – Imam Khomeini port highway
6	Side road	0	Industrial Estate transportation
7	Airport	15.7	Ahvaz airport
8	Port	107	Imam Khomeini Port
9	Railway Station	18.7	Ahvaz Railway

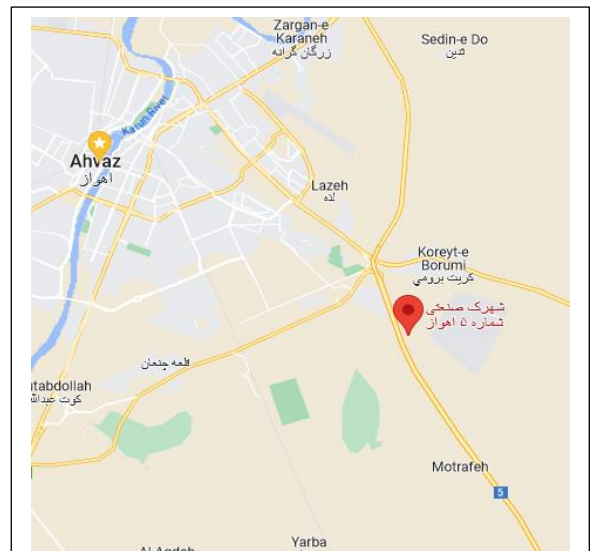


Figure (5): Access routes to the project

3) Technical specifications of the project

3-1- Product

Depending on the application, composite silver is obtained by combining silver nanoparticles or silver powder with other materials. Silver nanoparticles, as one of the most important materials with antimicrobial properties, are among the nanoparticles whose preparation and application have been investigated in various fields. Silver metal nanoparticles are one of the most well-known nanoparticles that have antimicrobial properties, and their antimicrobial activity may occur through mechanisms such as the destruction of the cell membrane structure and the release of ions from the surface of the nanoparticles and the death of bacteria due to sticking to the cell membrane. But due to the high costs of preparing and synthesizing these nanoparticles, their scope of application is limited. The use of composite silver in food packaging has a high disinfection capability and increases the shelf life of food by two to three times. Composite silver is also used in medicine and dentistry. Composite silver is also used in the production of storage containers, the inner body of the refrigerator, and food packaging containers.

3-2- Project Requirement

3-2-1- Land and Required Infrastructure

For the land composite silver with an area of 2,000 thousand square meters and the construction infrastructure (Sole and other buildings), the production of 860 meters is needed. The specifications of the land, main buildings and other required side buildings and investment in them are as described in the table below.

Table (2): Amount of investment in land, landscaping and building

No.	Requirements	Description	Investment Required		Total Cost (Million Rials)
			Required Area m²	Unit Price (Rial)	
1	Land purchase 40 m * 50 m	2000 square meters in Ahvaz industrial town 5	2,000	6,700,000	13,400
2	Site preparation and development	According to relative calculations	1,140	9,298,246	10,600
3	Civil works, structures and buildings	Production building (21*30)	504	150,000,000	75,600
		Office and management building	144	120,000,000	17,280
		Other buildings (warehouse, etc.)	212	120,000,000	25,440
Total			-	-	142,320

3-2-2- Plant Machinery and Equipment

Table (3): Plant Machinery and Equipment

No.	Equipment/Machinery	Required investment			Total cost (Million Rials)
		Amount	Unit Price	Currency	
1	Silver powder reactor	1	450,000	Euro	203,189
2	Composite firing system (furnace)	1	80,000	Euro	36,122
3	Other internal equipment	1	45,000	Million Rials	45,000
Total		-	-	-	284,311

Table (4): Auxiliary and service plant Equipment

No.	Equipment/Machinery	Unit of measurement	Type of equipment	Required investment		Total cost (Million Rials)
				Amount	Unit Price (Million Rials)	
1	Distribution Of Electricity / Demand Price	Kw	Facility	80	6	480
2	Several Electrical Cables	M	Facility	400	4.0	1,600
3	Electrical Equipment of The Greenhouse Lighting System	Amount	Facility	42	40	1,680
4	The Cost of Panel Boards and Related Electrical Equipment	Amount	Facility	6	320	1,920
5	Water Branch	-	Facility	1	3,000	3,000
6	Other Water Conveyance Equipment	Amount	Facility	1	2,000	2,000
7	Firefighting, Safety and Health Equipment, etc.	M	Facility	300	8	2,400
8	Other plumbing (electricity, etc.)	M	Facility	100	3	300
9	Firefighting, safety and health equipment and...	Capsule	Facility	10	30	300
10	Gas Piping	M	Facility	400	5	2,000
11	Gas Branching	-	Facility	1	20,000	20,000
12	Water Heater and Heater	Machine	Facility	3	350	1,050
13	Air Conditioner	fan	Facility	6	36	216
14	Gas Cooler	Set	Facility	5	1,000	5,000
15	Gas Heater	Ton	Facility	3	150	450
16	Workshop and laboratory tools	Machine	Workshop and laboratory tools	1	6,000	6,000
17	Other safety equipment and CCTV System	Set	Facility	1	1,000	1,000
18	Office Stuff	Set	Office Equipment	2	700	1,400
19	Restaurant Equipment	Set	Office Equipment	9	30	270
20	Other Facilities	-	Facility	1	2,414	2,414
Total				-	-	53,480

3-2-3- Raw Materials and Intermediate Parts

Table (5): Costs of Raw Material for Production

No.	Title	Production quantity at maximum capacity	Average price (Rials)	The cost at the maximum nominal capacity (Million Rials)
1	Formulation base materials (silver/nano silver powder, composite materials, ceramic materials, nano clay, polyethylene, resin, etc.)	1,500	124,861,200	187,292

3-2-4- Management and human resource

For the production of composite silver, a total of 10 different process units will require 10 human resources as described in Table (6).

Table (6): Management and Human Resource

No	Level of skill	Number of staff	Average basic salary
1	Senior	6	240,000,000
2	Mid-level	2	150,000,000
3	Junior	2	85,000,000

Number Of Direct Mid-Level Staff Required	2	Person
Number Of Direct Junior Staff Required	2	Person
Number Of Direct Senior Staff Required	6	Person
Total	10	person

4) Ownership and legal permissions

4-1- land ownership

The right place to implement the project is in one of Ahvaz's industrial estates (preferably Ahvaz 5 industrial town). The right to use the land in the mentioned industrial town is 6,700,000 rials. This town is subject to the rules and regulations of developed industrial towns. In order to obtain industrial land in this town, it is necessary for investors to obtain the legal permits listed in paragraph 3-4.

4-2- Intellectual Property and Concessions

In order to produce composite silver, high technical knowledge is needed. Currently, there is technical knowledge of composite silver production in the country.

4-3- Legal permissions

In order to produce this product, we need legal permits such as (visiting permit and exploitation permit) from Khuzestan Province Industry and Mining Organization, and environmental permit.

5) market research and competition

5-1- Target market introduction

Silver with the symbol Ag number 47 of the periodic table is the strongest electrical and thermal conductor among the elements and is harder than gold, but malleable and malleable. The antibacterial properties of silver metal have long been used to disinfect wounds caused by war or silver food containers to kill bacteria, etc., with the advent of antibiotics, the use of these metals has decreased day by day.

But with the advent of nano science, this metal was able to regain its importance. By turning silver into silver nanoparticles, which significantly increased the antibacterial property of this material by 99%, silver could return to the main consumption cycle and be used in various industries and applications as a composite or individually. So that it accounts for 56% of the production of nano materials.

As it is said, silver nanomaterials have high antibacterial properties, and for this reason, these materials are used in applications such as health and medical equipment, in plastic and household containers, the packaging industry, or surfaces that are constantly in contact with it. And also, various other things that we will discuss further.

One of the most important properties of silver nanomaterials is its dual toxicity. This means that it is lethal to viruses and bacteria, but perfectly compatible with human and animal bodies.

In addition to antibacterial properties, silver nanoparticles have features such as antifungal and anti-inflammatory effects, compatibility with the environment, non-stimulating and non-allergenic, lack of resistance to microorganisms, heat resistance, and long-term stability and durability of antibacterial properties. Due to these properties, it is used in various industries, some of which we will discuss below.

Medicine: Human and animal pathogens and the resistance of bacteria to antibiotics have required an increase in the consumption and the strongest of antibiotics to destroy bacteria. The same thing makes the production and consumption of antibiotics dangerous and unprofitable day by day.

Due to their functional mechanism, silver nanoparticles prevent the production of pathogens and the renewal of bacteria. These materials, which have high stability and longevity, can destroy 650 types of viruses, including AIDS.

Among the other medical applications of these materials are their use in dressings and ointments and the healing process of wounds and the coating of vascular prostheses and intravenous catheters with silver nanoparticles, and in the manufacture of medical equipment that requires antibacterial materials, as well as in the manufacture of biosensors for diagnosis. Diseases such as cancer and plasmonic properties of silver nanoparticles to be used in medical imaging and plasmonic sensors.

Textiles: Fabrics are among the things we use in clothes, pillows and sheets, towels, sheets and many other things that are used in places like homes, hospitals and hotels.

For this reason, in addition to the possibility of transferring bacteria and diseases caused by these devices, the bad smell and the creation of stains and dirt due to the accumulation of fungi can be annoying.

These days, with the help of silver nanoparticles, we are witnessing the production of antibacterial fabrics, which prevent the bad smell caused by body sweating and the transfer and spread of bacteria through fabrics.

Packaging industry: Another area where silver nanomaterials are used is in the packaging industry. Packaging and covering are done in cases that require protection from impact or bacteria and dirt from the desired material.

There are foods, pharmaceutical coatings, medical equipment, surfaces that we are constantly in public contact with, and many other things that need to be overcome due to their association with bacteria.

But food is the broadest area that needs to be antibacterial. Silver nanoparticles that have the ability to composite and combine with polymers are a very suitable option for such uses.

This type of packaging preserves the freshness and health of food and vegetables up to four times more than normal. During the tests conducted in the first 24 hours, it prevents the growth of 98% of bacteria and fungi, which are the factors that cause their multiple use in polymer films, pharmaceutical and food packaging, and various other cases.

6) Physical progress of the project

■ No □ Yes

This is a creative plan and it is defined in order to cover the needs of the country. There has been no progress in the implementation of this project so far.

7) Operational plan and implementation scheduling

The implementation of the project stages until its operation is planned for 30 months and the operation of the project is expected from the beginning of 1405. The schedule of the project is presented in Table (7).

Table (7): Project Scheduling

year	1402				1403				1404				1405			
Operations/Season	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Pre investment studies	■															
Fundraising and starting	■	■														
Obtain legal permissions			■													
Providing engineering services				■												
Land purchase and preparation				■												
Selecting contractor				■												
Equipping site					■											
Construction and landscaping					■	■	■	■	■							
Order, purchase and transportation of machinery					■	■	■	■	■							
Machinery installation									■	■						
Facilities							■	■	■	■						
Hiring employees											■					
Unexpected delays												■				
Trial production												■				
production phase													■	■	■	■

8) Financial Plan

8-1- Cost Estimation

In general, the investment of the project according to the stages of implementation and operation in two forms: fixed investment and initial working capital and necessary capital in the pre-operation period and creating the project through fixed capital and necessary capital in the operation period through Working capital is provided. The fixed investment of the project includes investment costs in land, landscaping and building, machinery and equipment, facilities, office equipment and pre-production costs. These types of costs are done at the beginning of the project and before operation and are depreciated during the life of the project according to their useful life. Working capital includes the capital needed during the operation of the project. The working capital of a production unit is the set of facilities, inventories and work in progress, as well as the liquidity required for the use and exploitation of fixed investment in order to maintain, continue and continue operations. Determining the basis of the number of inventories, work in progress and claims depends on the conditions of the supply, production and sales processes and the business environment. In this section, the evaluation and estimation of the investment required to complete the project (based on the price of the base year (1402) has been estimated and calculated.

Table (8): Cost Estimations

No.	Subject	Amount (Million Rials)
1	Total Fixed Investment Costs	518,830
2	Total Net Working Capital Requirements	13,043
3	Total Production Costs (Annual)	289,526
4	Depreciation	46,842
5	Total Investment	531,873
6	Unit Cost (By Product Type)	-
7	Composite silver (riyal/kilogram)	193,017,667

Table (9): Fixed Capital Estimations (Capital Costs)

No.	Subject	Cost (Million Rials)	
1	Purchasing land	13,400	
2	Landscaping and land improvement	10,600	
3	Civil operations and construction of buildings	118,320	
4	Production machinery and equipment	284,311	
5	Service equipment	53,480	
6	Protection and environmental equipment	0	
7	Overhead costs	0	
8	Pre-Production Expenditure (As described in Table (11))	Pre-investment studies	910
		Project management and organization	12,661
		Technology education	1,059
9	Unexpected costs	24,089	
Total		518,830	

The primary items included in working capital are:

- Raw materials (local and foreign): To prevent any interruptions in production process, production capacity, source and method of supplying materials, length of time during ordering and receiving materials, time of delivery and transportation, the amount of required raw materials, auxiliary materials and packaging are determined as one of the working capital items for one period. In this project, the material inventory coverage period is equal to 10.
- Final product and work in progress: according to the stages and methods of production, the time required for production and storage is determined and the related costs are considered as working capital. In this plan, the coverage period of the final product and work in progress is zero.
- Claims of expected funds from sold products that are collected in a short period of time. The duration for expected funds must be determined. According to the economic condition of Iran, cash is preferred.
- Revolving fund to finance the company's current expenses is considered as cash balance or revolving fund for a period of time in working capital based on production costs (without considering the cost of raw material production and depreciation). 60 days is considered in this plan.

Table (10): Total Net Working Capital Requirements (Production Costs)

No.	Subject	Amount (Million Rials)
1	Raw Materials Inventory	5,203
2	Work In Progress	0
3	Finished Product	0
4	Accounts Receivable	0
5	Cash-In-Hand	7,840
6	(Commercial Accounts Payable)	0
Total Net Working Capital Requirements		13,043

Table (11): Pre-Production Expenditure

No.	Subject	Description	Required cost (million Rials)	Total (million Rials)
1	Incorporation	-	150	150
2	Obtaining Licenses / Production License	-	550	550
3	Studying, Consulting, Research and Development, Traveling, Visiting and Participating in Local Exhibitions, etc.	1.5 thousandth of the investment costs of the project	910	910
4	Property Insurance	2 thousandth of depreciable fixed assets	1,010	1,010
5	Survey Fee, Financing, Contract and So On	Survey fee 0.5 thousandth, other 2.5 thousandth	0	0
6	Cartography, Supervising	2 thousandth of contract expenses	830	830
7	Other's	Staff Training	Equivalent to 3 days of Staff salary	229
		Wages And Salaries During the Construction	Equivalent to the salary of 19 personnel in 30 months	10,656
		Other Expenses	72.10	295
Total			14,630	14,630

8-2- Sales Revenue

Composite silver is a valuable and rare product, which has a high price due to its wide range of production and applications. The maximum nominal production capacity of the plan is equal to 1500 kilos per year and its selling price in the country is considered to be around 1017 dollars per kilogram. Considering the price of silver equivalent to 650 dollars/kg, this price is a good price for a composite product, depending on the application, a certain percentage of it is made of silver. According to the mentioned price, the total sales amount of the project in 1405 at the fixed prices of 1402 is estimated to be equal to 493 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 617 billion Rials.

Table (12): Project Revenue in the First 5 Years of Production Phase (Billion Rials)

No.	Subject	Q ₁	Q ₂	Q ₃	Q ₄	Total 1 st Year	Total 2 nd Year	Total 3 rd Year	Total 4 th Year	Total 5 th Year
1	composite silver	123	123	123	123	493	555	617	617	617

8-3- Length of Production Phase

The construction period of the project is 30 months and it is considered to start from the middle of 1402. The duration of the project is considered to be 7 years.

Table (13): Planning Horizon

Title	Month	-	year
Project identification	1	/	1402
Beginning of construction phase	7	/	1402
Beginning of production phase	1	/	1405
End of production phase	12	/	1411

Length of construction phase (months)	Start of phase (months)	Length of production phase (years)
30	12	7

8-4- Break-Even Analysis

From an economic point of view, break-even point analysis is an important technique that is used to study the relationship between costs, income and profit. The break-even point is the point at which total cost and total revenue are equal. In other words, it is used to analyze the effect of product volume change on the profit. The break-even point is calculated for 100% of practical capacity (year 1407 SH onwards) below.

$$\text{Break-even sales value (Rials)} = \frac{\text{Total Fixed Costs}}{1 - \frac{\text{Total Variable Costs}}{\text{Sales Value}}}$$

$$\text{The number of sales at the break-even point} = \frac{F_c}{S - V_c}$$

FC = Total Costs VC= Average Variable Costs Q = Quantity of Sales S = Unit Price

$$\text{Break-even sales value} = \frac{68,501}{1 - \frac{221,025}{616,500}} = 106,786 \text{ (Million Rials)}$$

$$\text{The number of sales at the break-even point} = \frac{68,501,319,990}{456,666,667 - 163,722,356} \approx \text{kilo 234}$$

$$\text{Break-even ratio (\%)} = \frac{106,786}{616,500} = 17.3\%$$

Table (14): Project break-even point estimation

(Million Rials)

Title	Production 1405	Production 1406	Production 1407	Production 1408	Production 1409
Sales revenue	493,200	554,850	616,500	616,500	616,500
Variable costs	179,419	200,223	221,025	221,025	221,025
Variable margin	313,781	354,627	395,475	395,475	395,475
Variable margin ratio (%)	64	64	64	64	64
Fixed costs	66,556	67,529	68,501	68,501	68,334
Break-even sales value	104,613	105,656	106,786	106,786	106,525
Break-even ratio (%)	21.2	19.0	17.3	17	17

- According to COMFAR Results

Based on the calculations of COMFAR software, the break-even point including operating and non-operating costs is 106.7 billion Rials and it will be achieved in the 17.3% of the practical capacity.

In the mentioned formula, the break-even point is determined by the relationship between fixed costs and the difference between unit sales price and unit variable costs. Therefore, three practical results are obtained from it:

- The higher the fixed costs, the higher the break-even point.
- The greater the difference between unit sales price and variable operating costs, the lower the break-even point. In this case, fixed costs are absorbed faster through the difference between unit sales price and unit variable costs.
- One of the break-even points is disproportionate. Since it makes the company vulnerable to changes in production (sales) levels.

8-5- Cost-Benefit Analysis

In project analysis, one of the most common methods is the **Benefit-Cost Ratio**. In this method, the ratio of the current value of possible benefits to the current value of costs is obtained. If this ratio is greater than one, the plan has economic justification for implementation. In terms of this index, the plan has favorable conditions.

Net Present Value is one of the other evaluation methods which is calculated according to the following relationship:

$NPV = \text{The Present Value of The Total Cost of The Period of Construction Phase and Production Phase} - \text{The Present Value of The Total Income of Construction Phase and Production Phase}$

$NPV = \text{The Present Value of The Fixed Assets Depreciation} + \text{Initial Investment} - \text{The Present Value of The Future Cash Flows}$

The **net current value** of the project at a discount rate of 30% is over 106.7 billion Rials, which shows that the project is economically feasible.

One of the other methods of evaluating investment plans **internal rate of return**. In fact, the internal rate of return is the interest rate or the discount rate in which the current value of all the plan benefits is equal to the current value of its expenses.

According to the calculations, the internal rate of return of the project is estimated at 39.4 % and compared to the Minimum Attractive Rate of Return, it is favorable.

Table (15): Project Return Index

Index	Amount	Unit of measurement
The Present Value of The Total Cost of The Period of Construction Phase and Production Phase	856,340	Million Rials
The Present Value of The Total Income of Construction Phase and Production Phase	963,050	Million Rials
NET PRESENT VALUE (NPV)	106,710	Million Rials
Cost-benefit RATIO (B/C)	1.12	-
INTERNAL RATE OF RETURN (IRR)	39.4%	Percent
NPV RATIO (PI)	0.30	Rial per Rial of investment
NORMAL PAYBACK	2.13	Year

Profitability Index (PI) indicates how much economic profit will be obtained for each unit of money invested during the lifetime of the project

Project Investment payback is the period of time required to recover the project investment from net income, measured in years. In other words, it shows the length of time taken for the initial investment to be returned. This index shows the speed of investment return and the amount of project risk coverage. The ROR (simple) of the plan is estimated to be 2.13 years (equal to the year 1407) according to the calculations.

8-6- Sensitive Analysis

In the sensitivity analysis of the plans, the percentage of changes in the internal rate of return (IRR) is measured in relation to the change in some basic parameters and variables. In this plan, the analysis has been carried out by major variables such as sales, fixed and operating costs. Table (16) shows the results of the sensitivity analysis regarding the variables of sales income, fixed assets and operating costs.

8-6-1- Sales Revenue

Changes in sales revenue are mainly caused by alteration in two variables: planned sales amount and product sales price. The results of the sensitivity analysis regarding sales income show; 20% increase in sales revenue of the plan, the internal rate of return will increase from 39.4 % to 51%. On the contrary, in the case of a 20% decrease in sales revenue, the internal rate of return of the project will decrease to 27%.

Table (16): Sensitivity Analysis (Percentage of IRR changes caused by sales revenue, fixed assets and operating costs alteration)

Variation (%)	Sales revenue	Investment costs	Operating costs
-20%	27%	48%	44%
-4%	37%	41%	40%
0%	39.4%	39.4%	39.4%
4%	42%	38%	38%
20%	51%	33%	35%

8-6-2- Fixed Assets

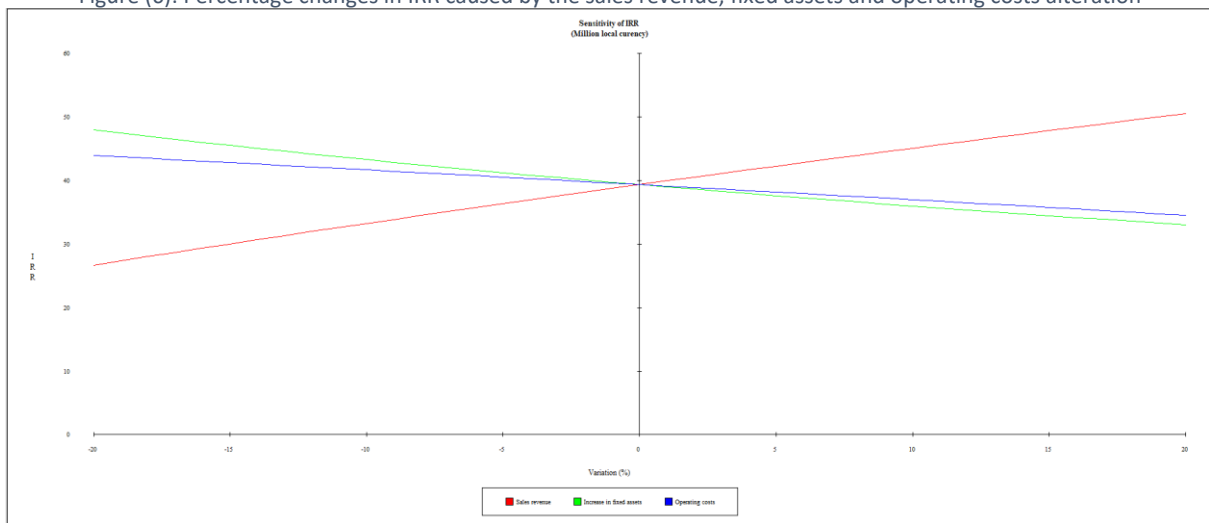
The change in the fixed assets is due to the fixed costs of the initial investment alterations. The results of the sensitivity analysis according to the fixed costs of the plan have been done and it shows that in case of an unexpected 20% increase in the fixed capital costs of the project, the internal rate of return will decrease from 39.4 % to 33%. Conversely, if there is a 20% reduction in the fixed capital costs, the internal rate of return will increase and reach 48%.

8-6-3- Operating Costs

The operating costs of the plan is one of the crucial items in terms of sensitivity analysis regarding its changes. Therefore, unexpected and possible changes should be investigated.

The change in project operating costs is mainly caused by changes in raw material, supply, human resource and finally changes in other overhead costs of projects. If these parameters change, it can be as a result of the change in the technical coefficients of product production or the change in their purchase price. The sensitivity analysis indicates that in case of a 20% increase in the operating costs, the efficiency rate of the plan will decrease to 35%. On the contrary, if the total operating costs of the project are reduced by 20%, the internal rate of return will increase to 44%. Finally, the results of the sensitivity analysis show that the current project has a very high sensitivity to changes in sales revenue (changes in sales amount or sales price) and more considerations should be taken in this regard.

Figure (6): Percentage changes in IRR caused by the sales revenue, fixed assets and operating costs alteration



As you can see, the slope of the IRR change curve is higher relative to the changes in sales revenue compared to other items while the slope of the IRR change curve is lower relative to the changes in fixed assets, which indicates the greater sensitivity of the plan's internal rate of return to sales revenue and its lower sensitivity relative to operating costs and fixed assets.

8-7- Conclusion

The implementation of the project is planned by obtaining a land with an area of 2,000 square meters and carrying out construction in the substructure of 860 square meters. The total investment in land and building is estimated at 142.3 billion Rials and the total investment in main and auxiliary equipment is estimated at 361.8 billion Rials. The total pre-operational costs are estimated at 14.6 billion Rials, including the total fixed capital required of 518.8 billion Rials and the total working capital required for the project is 13 billion Rials. The total investment of the project is expected to come from the resources of the company's shareholders.

The sale of the project in 1405 is expected at fixed prices equal to 493.2 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 616.5 billion Rials. The net profit of the plan has been positive in all years. The profit figure in 1405 is equivalent to 185.4 billion. The profit will increase in the following years and will reach a maximum of 245.4 billion Rials. The average annual profit of the mature plan is 232.5 billion Rials and the average profit margin is expected to be 41.3%. The internal rate of return (IRR) of the plan is estimated at 39.4% and the payback period (PBP) is estimated at a maximum of 2.13 years. Also, the net present value of the project's cash flows (NPV) is positive and, taking into account the expected interest rate of 30%, is equal to 106.7 billion Rials.

The liquidity situation of the plan as well as the payment of dividends to the shareholders from the company's funds will not be suitable. Therefore, if the assumptions and forecasts are carried out, the plan under consideration is not profitable and considering the financial results obtained, its implementation is not recommended.

Table (17): Summary of Economic Features

Nominal Capacity and Unit of Measurement	Product Name	Title Of the Project with ISIC Code	Title Of the Project
1500 kg	Composite silver	Composite silver (-)	Composite silver Production Plan
Required Human Resource (Person)	Equity Shares (Million Rials)	Total Fixed Capital (Million Rials)	Project Duration
9	13,043	518,830	30
B/C	Applicant Available Cash (Million Rials)	Net Present Value (NPV) (Million Rials)	IRR (%)
1.1	531,873	106,710	39.4 %
ROI (%)	NPV Ratio / Profitability Index (Rial per Rial invested)	Dynamic Payback Period (Year)	Normal Payback Period (Year)
44	0.30	4.48	2.13
Average Assets Turnover Ratio	Average Net Profit Margin (%)	Average Annual Profit (Million Rials)	Maximum Annual Sales (Million Rials)
0.62	39.4%	232,503	616,500

8-8- Estimation of currency rate fluctuation during the project implementation

The currency rate at the time of evaluation is included as described in Table (18). In the present plan, it is an important part of the cost of buying foreign equipment and requires foreign currency. Considering the currency of buying equipment and raw materials, both in the construction phase and in the implementation phase, the following are significant:

- As long as the financing of the project is through foreign currency sources, the number of financial resources required will not change much.

- If the financial resources of fixed and circulating capital are provided through internal sources, the increase in the exchange rate will directly increase the fixed and circulating investment costs and will make it difficult to provide financial resources for the implementation of the plan.

Table (18): Currencies exchange Rate

Unit of Measurement	Unit Price	Currency
Rials	413,204	USD
Rials	451,531	EURO

Exchange rate of Central Bank, Exchange Trading System (ETS) dated 05/25/1402

9) Investment Required, method of fundraising and guarantees

9-1- Foreign Currency Required

The foreign currency investment of the project is estimated at 530 thousand euros, which is planned to be paid within two years (30 months according to the physical progress of the project).

Table (19): Foreign (Fixed) Currency Required

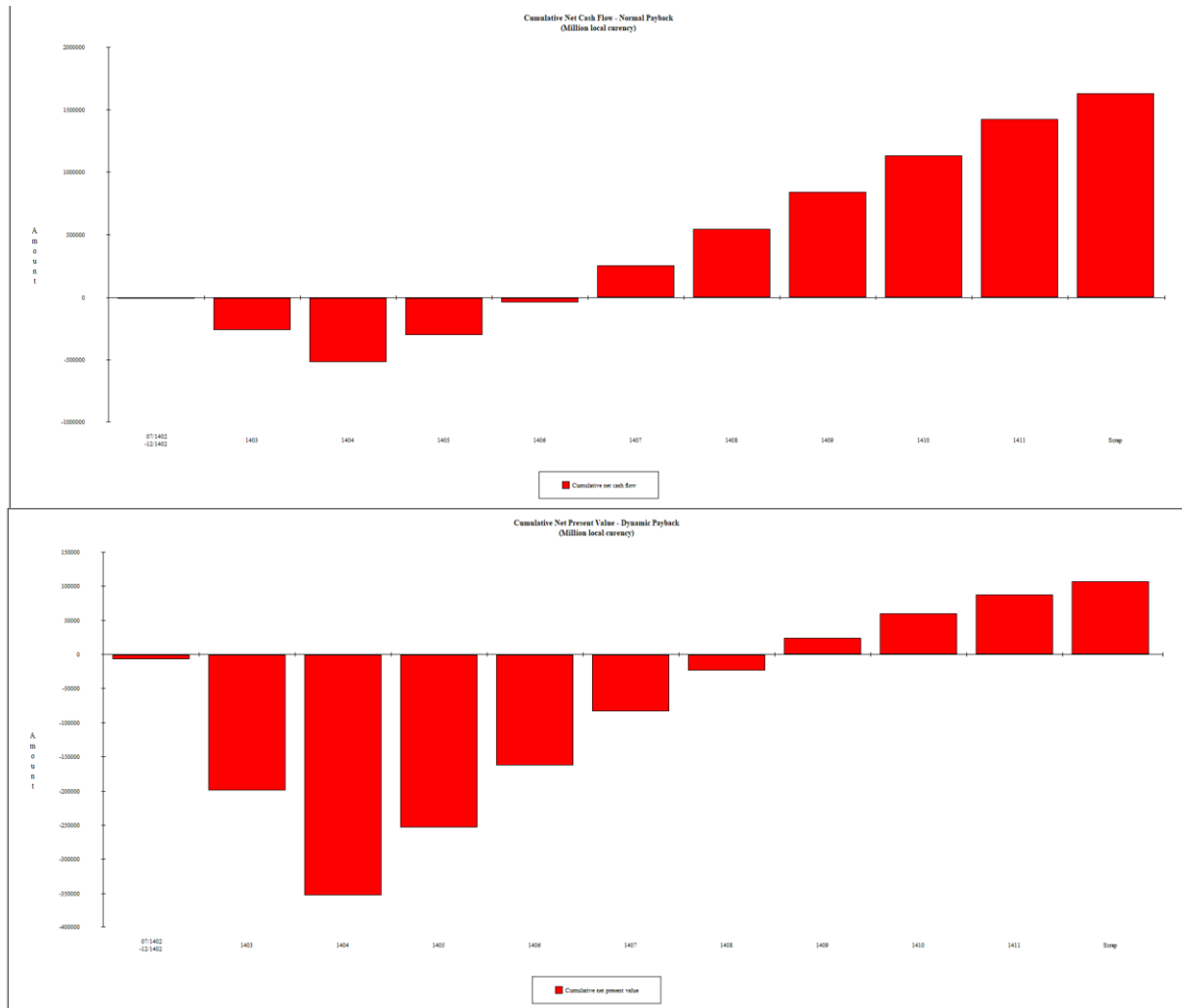
No.	Year	Required Investment
1	Year 1 (1403)	106,000
2	Year 2	424,000
3	Year 3	0
4	Year 4	0
5	Year 5	0

9-2- Model Of Partnership and Fundraising

Participation in the present project and its fundraising process is predicted to be in the form of establishing a company inside Iran. The total required investment is predicted through the investor's contribution. Financing through local banks has not been included in the fundraising process.

9-3- Payback Period

The payback period is the period of time when the initial investment of the plan is compensated from the annual cash funds. The payback period (normal) of the plan is estimated to be 2.13 years (equal to 1407) according to the calculations of CAMFAR.



10) Incentives, features and benefits of the plan

Some of the financial supports for production companies are loans and bank facilities and tax exemptions which can facilitate the project implementation and provide the favorable condition for investment. In the following, some of these supports will be discussed.

One of the important bank facilities for production units is the long-time repayment period loans up to 70% of fixed capital by the Iran's state banks. This amount can be increased up to 90% for deprived areas if foreign machinery is used. The interest rate of long-term facilities in the industry sector is 23%, which in case of financial prudence, only a part of the interest can be repaid. The repayment period of long-term bank facilities is up to 8 years according to the production plan, the type of technology and the possibility of product exportation.

Another important bank facility is short-term bank loans (6 to 12 months) to use as working capital needed to carry out production processes, which will be provided up to 70% by bank communities. Obtaining short-term facilities to this extent depends on gaining the trust of the operating banks and having an acceptable financial history.

Tax exemption is another incentive for investors to establish factories. To name a few;

- Tax exemption for up to 10 years for implementation in deprived areas
- Tax exemption for up to 4 years for implementation in industrial towns

Investments in the project during implementation is of the investments in developed towns with industrial and mining activities. Since it is located within 30 kilometers of cities with more than 300,000 people, it doesn't have any tax exemption. But if it establishes in another industrial town within a range of more than 30 kilometers from cities with a population of more than 300 thousand people, it can get exempted from Article 132 of the Direct Taxes Law and up to 80% until four years after the date of operation from Article 105 (Direct Taxes Law)¹.

So, the effective performance tax rate (annual profit) can be reduced to 4% in the first 4 years, and then it will be considered on the basis of 20%. Obviously; If the project location is in one of the deprived areas, it will be subject to 10 years of 100% exemption.

If the manufactured products (provided that it is in excess of the local market) can be exported to foreign markets, it can be exempted from Article 141 and 100% of the income from exports is exempt from taxes.

Obviously, If the legal personality of the partnership is defined as a public company accepted in the stock exchange market during its operation (in such a way that its shares can be traded with stock brokers), this type of company is subject to Article 143 of the Direct Taxes Law and up to 10% of the company's tax will be exempted.

1 - The exemptions of this article will not include the income of production and mining units located within a radius of 120 kilometers from the center of Tehran and 50 kilometers from the center of Isfahan, 30 kilometers from the centers of provinces and cities with more than 300 thousand people (according to the latest census).

(Attachment Number 2)

Summery Sheet

Project introduction	
1. Project Title:	Composite silver Production Plan
2. Sector:	Production sub-sector: Industry
3. Products/services:	composite silver
4. Location:	Khuzestan, Ahvaz city, Ahvaz Industrial Estate No 5
5. Project description:	<p>The implementation of the project is planned by obtaining a land with an area of 2,000 square meters and carrying out construction in the substructure of 860 square meters. The total investment in land and building is estimated at 142.3 billion Rials and the total investment in main and auxiliary equipment is estimated at 361.8 billion Rials. The total pre-operational costs are estimated at 14.6 billion Rials, including the total fixed capital required of 518.8 billion Rials and the total working capital required for the project is 13 billion Rials. The total investment of the project is expected to come from the resources of the company's shareholders.</p> <p>The sale of the project in 1405 is expected at fixed prices equal to 493.2 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 616.5 billion Rials. The net profit of the plan has been positive in all years. The profit figure in 1405 is equivalent to 185.4 billion. The profit will increase in the following years and will reach a maximum of 245.4 billion Rials. The average annual profit of the mature plan is 232.5 billion Rials and the average profit margin is expected to be 41.3%. The internal rate of return (IRR) of the plan is estimated at 39.4% and the payback period (PBP) is estimated at a maximum of 2.13 years. Also, the net present value of the project's cash flows (NPV) is positive and, taking into account the expected interest rate of 30%, is equal to 106.7 billion Rials.</p>
6. Annual Capacity:	1500 kg

Project Status

7. Local/internal raw material access: 100%

8. Sales: 617 (billion Rials)

Anticipated local market: 100%

Anticipated export market: 0%

9. construction period: 30 months

10. project status:

- Feasibility study available?

Yes. The feasibility of the project has been evaluated from different aspects and the results of the feasibility study are favorable in terms of financial and economic indicators.

- Required land provided?

Yes. Currently, there is industrial land in Ahvaz Industrial Town 5, and it has been selected based on geospatial criteria for the implementation of the project.

- Legal permission (establishment license, foreign currency quota, environment) taken?

Yes. It is possible to obtain legal permits for this plan. In order to settle in the industrial town, the project must obtain legal permits from the organization of industry, mining, trade and environment of Ahvaz city.

- Partnership agreement concluded with local/foreign investor?

So far, no partnership agreement has been prepared for the implementation of the project. This plan has the necessary features to attract shareholders' financial resources.

- Agreement with local/foreign contractor(s) concluded?

So far, no agreement or contract has been concluded for the purpose of manufacturing domestic and foreign machinery.

- Infrastructural utilities procured?

If the project is established in industrial towns (such as Ahvaz Industrial Town 5), infrastructure facilities such as water and electricity, roads, etc. are available.

- List of know-how, machinery and equipment concluded?

Yes- in order to produce design products, research teams with related production knowledge should be used.

- Financing agreement for machinery, equipment and know-how concluded?

No

Financial structure					
11. Financial table:					
Description	Local Currency Required			Foreign Currency Required	Total Euro
	Million Rial	Exchange Rate	Euro		
Total Fixed Investment Costs	279,519	451,531	619,046	530,000	1,149,046
Total Net Working Capital Requirements	13,043	451,531	28,885	0	28,885
Total Investment	292,561	-	647,932	530,000	1,177,932
- Value Of Foreign Equipment/Machinery:	530,000	Euro			
- Value Of Local Equipment/Machinery:	218,102	Euro			
- Value Of Foreign Technical Know-How:	0	Euro			
- Value Of Local Technical Know-How:	0	Euro			
- Net Present Value (NPV):	236,329	Euro		Net present values discounted to:	12/1402
- Internal Rate of Return (IRR):	39.4%	%			
- Normal Payback:	2.13	year			
- Minimum Attractive Rate of Return:	30%	%			

General information	
12. Project Type: new Project <input checked="" type="checkbox"/> Explanation / Rehabilitation project <input type="checkbox"/> Name / Company name: Industrial- Mohammad Hossein Rahim Zadeh Address: Khuzestan, Ahvaz city, Ahvaz Industrial Estate No 5 Tel: +98 916 3418900 +98 061 34451004 Fax: Email: mh_rahimzade@yahoo.com Website: Local entrepreneur: Private Sector <input checked="" type="checkbox"/> government /public sector <input type="checkbox"/>	