



Islamic Republic of Iran

Ministry of Economic Affairs and Finance

General Department of Economic Affairs and Finance of North Khorasan

Micronized Calcium Carbonate Powder

Bojnourd Special Economic Zone

Center of Investment Services of North Khorasan

2021 April

Summary of Technical-Economical Pre-Feasibility Study

The name: Micronized Calcium Carbonate Powder

Sector: Industrial

Subsector: Mineral Products

ISIC Code: 2699412415

The owner of:

Organization of Economic Affairs and Finance (North Khorasan)



The ADDRESS

Iran, North Khorasan, Bojnourd

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1 Abstract

1.1 Project Profile - Summary Sheet

Table 1: Summary Sheet

Project Introduction			
Project Title	Micronized Calcium Carbonate Powder		
Sector	Industrial		
Sub Sector	Mineral Products		
Location	Iran, North Khorasan, Bojnourd		
The County	Bojnourd		
Products / Services	Micronized Calcium Carbonate Powder		
Annual Nominal Capacity	200,000		Ton
The Raw Material	Calcite Over 97%		
Employment	15		Person
Land Area	3,198		m ²
Floor Area	1,300		m ²
Energy and Water Consumption	Water Consumption	7,000	m ³ in year
	Electricity Consumption	600	KW
	Gas Consumption	60,000	m ³ in year
Fixed Capital	189,172		Million Rial
Working Capital (The First Year)	35,823		Million Rial
Payback Period	4.01		Year
Net Present Value (NPV)	326,268		Million Rial
Internal Rate Of Return (IRR)	45		%
Modified Internal Rate of Return (MIRR)	27		%
Break Even Point	27		%
The Exchange Rate (Dolar)	240,000		Rial
Description	In this project, all the materials related to the study of the Micronized calcium carbonate powder market especially domestic and foreign supply and demand, are examined.		

Table 2: Legal Authorizations

Licensure Status	
Descriptions	Issuance Status
Principal Agreement (Establishment licensure)	☒
Land Allocation	☒
Environmental Inquiry	☒
Possibility of Water Supply	☒
Possibility of Electricity Supply	☒
Possibility of Electricity Supply	☒
Possibility of Gas Supply	☒

Table 3: Total Investment

Descriptions	Local Currency Required			Foreign Currency Required (Million Euro)	Total (Million Euro)
	(Million Rial)	Rate	Equivalent in (Million Euro)		
Fixed Capital	189,172	240,000	0.78	0.78	0.78
Working Capital	35,823.6		0.14	0.14	0.14
Total Investment	224,995.6		0.93	0.93	0.93

- Value of Foreign Equipment / Machinery: 0 Million Euro
- Value of Local Equipment / Machinery: 0.35 Million Euro
- Net Present Value (NPV): 1.36 Million Euro in Years
- Internal Rate of Return (IRR)(for 5 years): 45%
- Payback Period: 4.01 Years

Table 4: General Information

Company Profile	
Project Type	Establishment <input checked="" type="checkbox"/>
Company Name	North Khorasan Organization of Industry, Mine and Trade
Contact Person (Name and Position)	Morteza HoseyniMasoom
Email	smt.nkh1383@gmail.com
Mobile	+989153864144
Tel	+985831552
Website	nkh.mimt.gov.ir
Address	North Khorasan Province, Bojnurd, North Khorasan Organization of Industry, Mine and Trade
Company's Legal Structure	Government <input checked="" type="checkbox"/>

2 Project Location

2.1 Province: North khorasan

2.2 The County: Bojnourd

Bojnourd is the capital city of North Khorasan Province, Iran. It is about 701 km from Tehran. Bojnourd is located in the plains enjoying a mild and mountainous weather.

There are several reason for investing in bojnourd, such as:

2.2.1 Agriculture Section Advantages

- Suitable and diverse climatic conditions and having relatively suitable rainfall
- Having far more livestock per capita than the national average
- Having a considerable supply of diverse fruits
- The Possibility of establishing agricultural conversion industries in industrial parks

2.2.2 Tourism Section Advantages

- Having the presence of different ethnicities and producing handicrafts related to the culture of each ethnic group
- Being in a special geographical position and traveling 24 million passengers annually (ten percent of the total number of traveling passengers in the country) through North Khorasan

2.2.3 Mine and Industry Section Advantages

- Having large industries of alumina, steel, piping, petrochemical, cement and the availability of the development of industrial activities in downstream industries and creating a value chain.
- Conducting mineral exploration studies in Bojnourd, and valuable minerals for processing
- The existence of the Bojnord special economic zone has distinct advantages, including the shortest distance to the provincial capital among all special economic zones in the country, as well as its proximity to the Bidak industrial town.

2.2.4 Urban Development Section Advantages

- Appropriate and significant justification of urban and commercial projects and plans according to the characteristics and advantages of tourism, agriculture and industrial areas.
- The existence of transferable lands with suitable location.
- The need for commercial and tourism spaces in Bojnord due to the low per capita.

This project will be construct in part 61 with coordinates (521758,4146426) in Bojnourd Special Economic Zone. Proposed location of project is shown Figure 1.

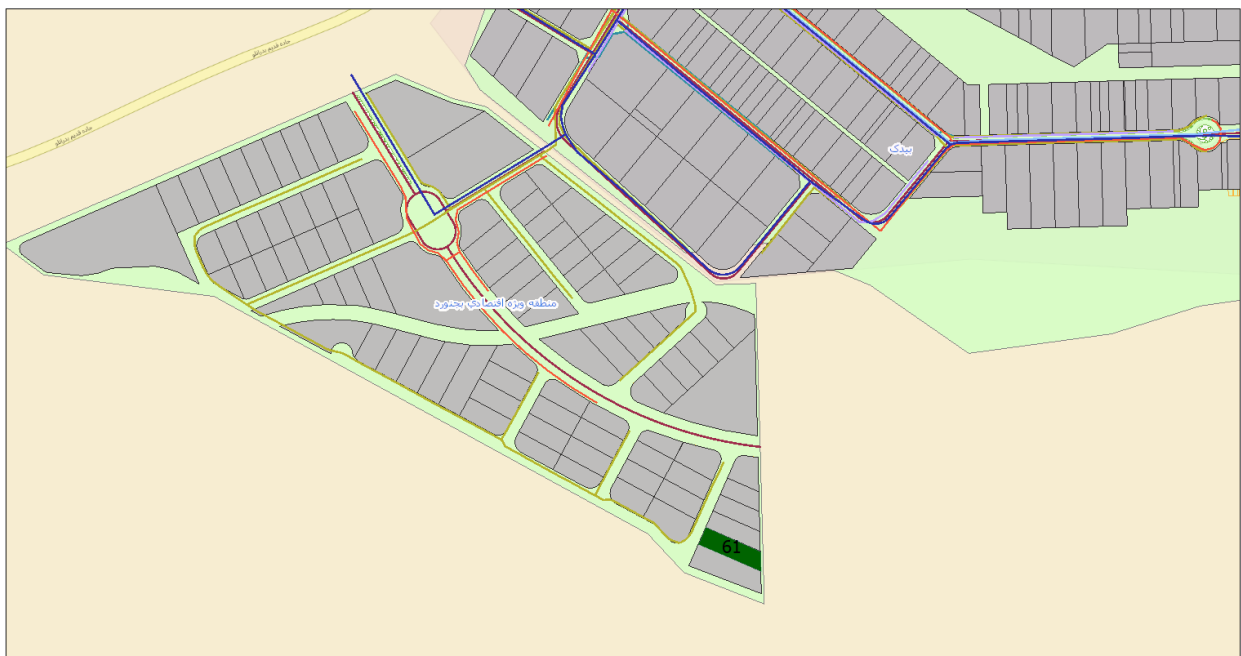


Figure 1: Location of Proposed Land in Bojnourd Special Economic Zone

2.3 The Project: The Micronized Powder

2.4 Access to the Infrastructures

Table 5: Access to Infrastructures

No.	Needed Infrastructures	Distance to the Project	The Supply Infrastructures
1	Water	0	is provided
2	Electricity	0	is provided
3	Gas	0	is provided
4	Telecommunications	0	is provided
5	High way	<1 km	is provided
6	Sub way	0	is provided
7	Airport	8	is provided
8	Amirabad Port (Behshahr)	417	is provided
9	Bandar Abbas Port	1,493	is provided
10	Rail way station of Joveyn	170	is provided
11	Rail way station of Jajarm	192	is provided

3 Technical Specifications of Plan

3.1 Product

Table 6: Project Specifications Based on ISIC Code

The Project	ISIC Code	Customs Tariff	Environmental Category
Micronized Calcium Carbonate Powder	2699412415	28365000	5

In this project, all the materials related to the study of the Micronized calcium carbonate powder market especially domestic and foreign supply and demand, are examined.

Calcium carbonate is a white solid that is abundant in many geological units around the world. It is most important minerals are aragonite, limestone, and travertine. Dissolves very little in water. Micronized and granulated powder of calcium carbonate or calcite for use as a filler for all industrial applications such as paint, paper, rubber and plastic, PVC, oil well drilling, porcelain and ceramics, glass, glaze, cement, gypsum, Isolation,

pharmaceutical, textile, electrode, cosmetic, and animal and poultry feed and that at a reasonable price are ready to supply for industrial and export use. Micronized calcium carbonate powder or micronized rock powder in all granulations (mesh 100 to 2,500) can be supplied according to customer needs. The limestone used has a very high purity (above 97%).

According to studies on the production of micronized calcium carbonate powder, production is projected to increase from 2,021 to 2,025, which reassures new investors. So that this amount will increase by about 600,000 tons from 2,020 to 2,023, which by reducing the capacity of factories with physical progress (75% and above), the country's production should be about 500,000 tons by 2,023. It should be noted that the capacity of this factory is 200,000 tons, so from the perspective of the country's needs, there is no need to worry about the construction of this factory. On the other hand, the amount of exports will increase by about 50,000 tons from 2,020 to 2,023, so this factory can allocate a share of this capacity with proper planning.

3.2 Project's Requirements

It is necessary to check the unit quality control system and observe the necessary standards. Presenting inspection steps in different sections such as raw materials, product, wastewater, etc. by mentioning the control parameters of each stage and the results obtained from it and how to apply the results in material processing is of major importance and its explanation is necessary. The quality control of the products of this unit is done for different powders and statistically in different stages of production (obtaining raw materials, grinding, and packaging). Control of mineral powders in terms of purity and type of compounds using physical and chemical methods as well as granulation is very important. The activity of micronized powder production units on the outskirts of cities has pollutants in various dimensions, among which we can mention the dust resulting from the activity of these rocks, their wastes, and wastes. Dust that forms when crushing rocks or pulverizing them can cause respiratory illness.

3.3 Space and Infrastructure Required

Table 7: Land Purchase Costs (Million Rial)

Specifications	Area (m ²)	Price per m ²	Cost		
			Paid Cost	Needed Fund	Total
Land	3,197	1.9	0	0	6,074.3

Table 8: Site Preparation and Development Costs (Million Rial)

Description	Working Capacity	Unit	Unit Price	Paid Cost	Needed Fund	Total
Excavation	1,000	cm	0.3	0	0	300
Wall Construction and door	2*(106+30) =254	Sm	9	0	0	2,448
street construction (5% of the amount of land)	159.8	Sm	7	0	0	1,118.9
Green space and Lighting (1% of the amount of land)	31.9	No	8	0	0	255.7
Total				0	0	4,122.6

Table 9: Civil Works, Structures and Buildings Costs (Million Rial)

Description	Area (m ²)	Unit Price	Paid Cost	Needed Fund	Total
Production Hall	400	25	0	0	10,000
Raw Material Warehouse	400	30	0	0	12,000
Product Warehouse	300	30	0	0	9,000
Office Building	160	45	0	0	7,200
Welfare and Guardroom	40	45	0	0	1,800
Total			0	0	40,000

Table 10: Infrastructures

No	Description	Unit	Annual Consumption	Unit Price	Total
1	Water Consumption	m^3	7,000	7,000	49
2	Electricity Consumption	KW	850,000	1,100	935
3	Gas Consumption	m^3	60,000	1,200	72
4	Gasoline	Liter	90,000	6,000	540
5	Petrol	Liter	5,000	30,000	150
Total					1,746

3.3.1 Equipment and Machinery

Table 11: Plant Machinery and Equipment Costs(Million Rial)

Description	Unit Cost	Costs Required				Total
		Local Costs	Costs of Currency		Cost to Complete	
			Rate	(Million Euro)		
Vibrating Feeder (Model 120)	1,400	1,400	240,000	0.005	0	1,400
Jaw Crusher (Model 580 * 800)	4,600	4,600		0.01	0	4,600
Conveyor	1,562	1,562		0.006	0	1,562
Vibrating Screen	2,350	2,350		0.009	0	2,350
Conveyor	1,136	1,136		0.004	0	1,136
Mill Of 24 Hammers	3,300	3,300		0.01	0	3,300
Conveyor	1,136	1,136		0.004	0	1,136
Conveyor	1,420	1,420		0.005	0	1,420
Mill	39,000	39,000		0.01	0	39,000
Lifting Device	3,600	3,600		0.01	0	3,600
Powder Storage Silo	1,750	1,750		0.007	0	1,750
Separator (Classifier)	4,900	4,900		0.01	0	4,900
Airlock	300	900		0.003	0	900
Screw Conveyor	490	980		0.003	0	980
Powder Storage Silo (30 Tons)	1,750	3,500	0.01	0	3,500	

Description	Unit Cost	Costs Required				Total
		Local Costs	Costs of Currency		Cost to Complete	
			Rate	(Million Euro)		
Bag Filling	1,050	2,100		0.008	0	2,100
Screw Conveyor	490	980		0.003	0	980
Conveyor Base	700	700		0.002	0	700
Magnet	100	200		0.008	0	200
Fee For Installation, Commissioning And Presentation Of The Foundation Plan	1,700	1,700		0.007	0	1,700
Total Cost of Machinery		84,163		0.35	0	84,163

- The exchange rate is: 1 € = 240,000 Rial

3.3.2 Raw Material and Intermediate Components

Table 12: Raw Material and Intermediate Components (Million Rial)

Description	Unit	Total Consumption of the Raw Material	Price per Unit of Raw Material	Annual Cost of Providing Material
Calcite with high purity of 97%	Ton	-	-	200,000
polypropylene bags 50 kg	Ton	-	-	80
Total		-	-	200,080

3.3.3 Management and Human Resources

Table 13: Salary of Administrative Staff (Million Rial)

No.	Position	Number of Shifts	Personnel per Shift (No.)	Total Staff (People)	Monthly Salary (per Person)	Annual Salary
1	manpower (in Administrative sector)	-	-	5	72	4,320
2	manpower (in Production sector)	-	-	10	66	7,920
Total				15		12,240

- Number of skilled personnel required: 10
- Number of non- skilled personnel required: 5
- Total number: 15

4 Market Study and Competition

4.1 Examining Supply And Demand Trends

The amount of domestic supply or production of micronized calcium carbonate powder based on production licenses (according to the information of the ministry of industry, mine and trade) from 2015 to 2020 is as follows.

Table 14: The Amount of Domestic Supply of Micronized Calcium Carbonate Powder

Year	Nominal Capacity (Tons)
2015	419,576
2016	614,176
2017	883,776
2018	967,276
2019	1,200,126
2020	1,458,878

The real production capacity of active units in 2015 up to 2020 is shown in Table 15.

Table 15: The Real Production Capacity of Active Units in 2015 up to 2020

Year	Nominal Capacity (Tons)
2015	413,729
2016	605,617
2017	871,460
2018	953,797
2019	1,183,402
2020	1,438,548

The following chart shows the prediction of production according to the Table 15 based on linear regression.

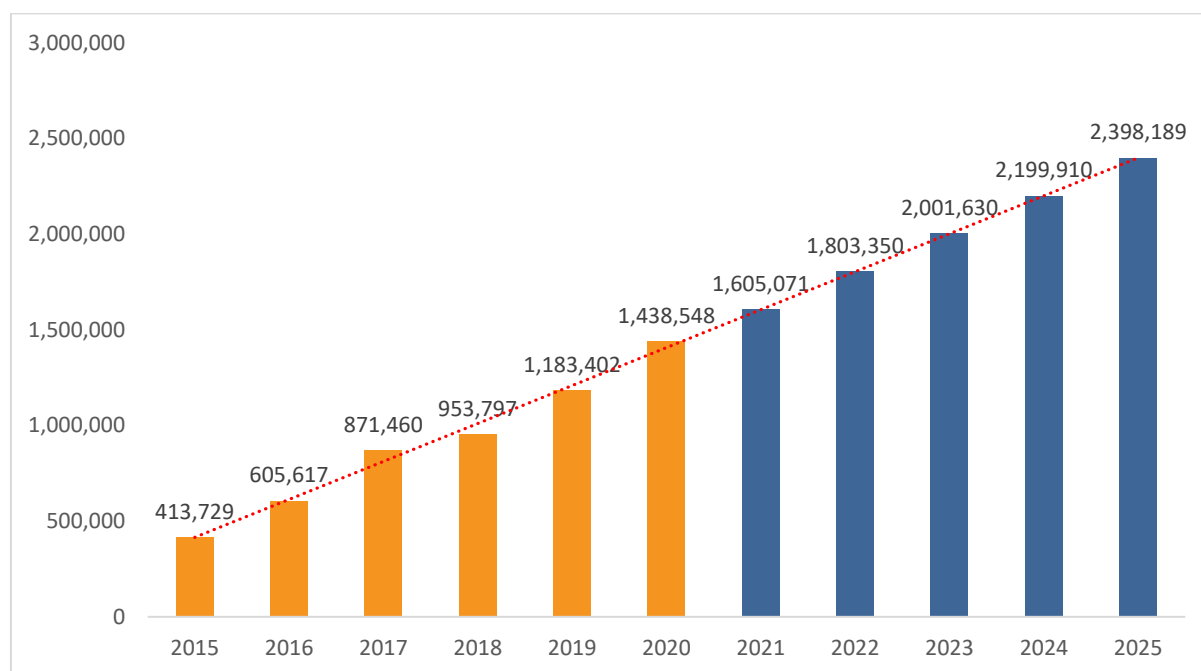


Figure 2: The Prediction of Production

As Figure 2 shows, the amount of micronized calcium carbonate powder production is increasing, so there is the capacity to create new factories.

The amount of imports to the country is based on the information of the Tehran Chamber of Commerce, Industries, Mines and Agriculture at <http://www.tccim.ir> according to the (There is no data for 2019 and 2020 so the information is considered as the initial data for the forecast for the coming years from 2015 to 2018) following table.

Table 16: The Amount of Imports From 2015 to 2018

Year	Customs Tariff	Imports (ton)	Countries
2015	28365000	2,200	Spain, Turkey, India, Taiwan, Malaysia, Slovenia, Italy, Germany, China, UAE, France
2016	28365000	4,077	Spain, Turkey, India, HongKong, Taiwan, Vietnam, Slovenia, Italy, Germany, China
2017	28365000	7,622	Spain, Turkey, India, Taiwan, Vietnam, Slovenia, Italy, Germany, China, Swiss, Qatar, UAE, France
2018	28365000	2,697	Spain, Turkey, Vietnam, Slovenia, Italy, Germany, China, Swiss, UAE, France

The following chart predicts the amount of imports according to the Table 16 by 2025, It shows based on linear regression.

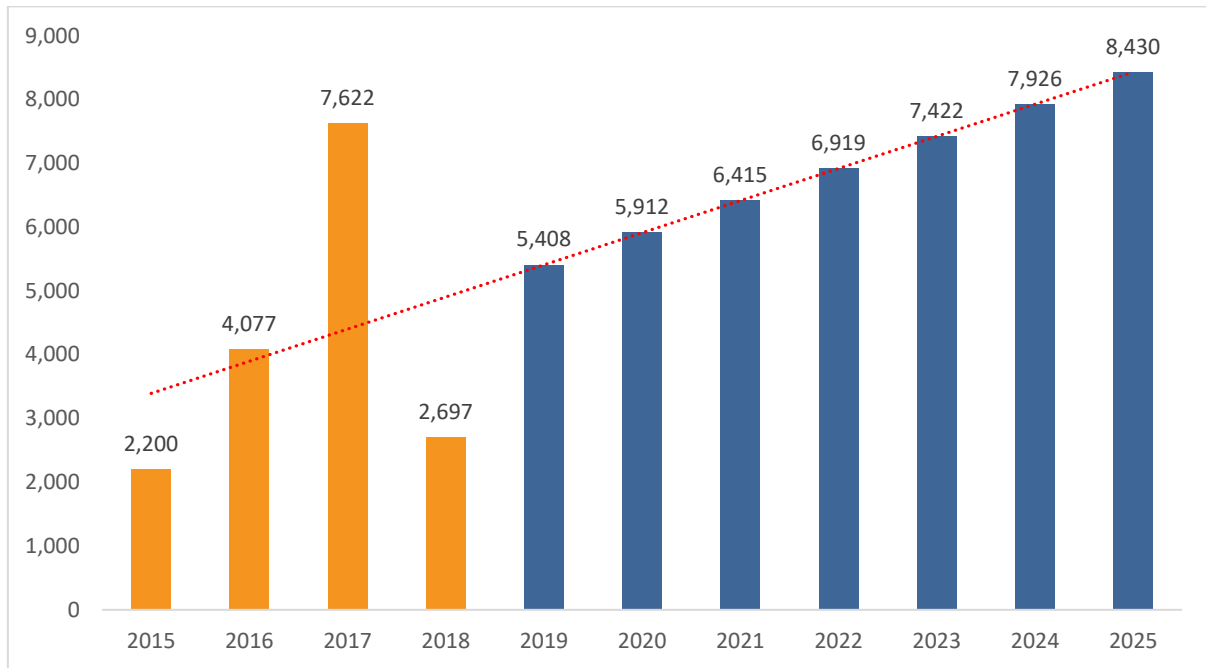


Figure 3: The Prediction of Imports

As Figure 3 shows the prediction of imports is decreasing.

The amount of exports to the country is based on the information of the Tehran Chamber of Commerce, Industries, Mines and Agriculture at <http://www.tccim.ir> according to the (There is no data for 2019 and 2020 so the information is considered as the initial data for the forcast for the coming years from 2015 to 2018) following table.

Table 17: The Amount of Exports

Year	Customs Tariff	Exports (Tons)	Countries
2015	28365000	165,595	UAE, Azerbaijan, Iraq, Kazakhstan, Armenia, Afghanistan, Qatar
2016	28365000	180,245	Kuwait, UAE< Azerbaijan, Iraq, Armenia, Afghanistan, Qatar, Malaysia, Turkmenistan
2017	28365000	199,906	Azerbaijan, Iraq, Kuwait, Armenia, Afghanistan, Qatar, Turkmenistan, Uzbekistan, India
2018	28365000	218,581	UAE, Azerbaijan, Iraq, Kuwait, Armenia, Afghanistan, Qatar, Senegal

The following chart shows the prediction of exports based on linear regression.

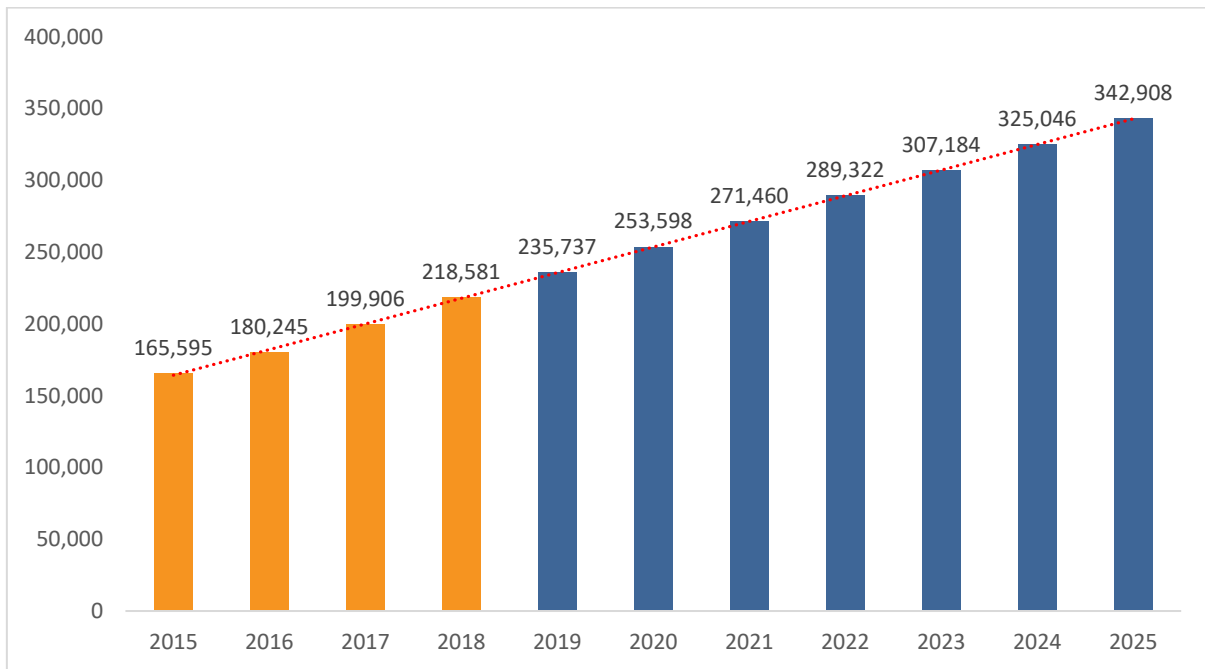


Figure 4: The Prediction of Exports

The Figure 4 shows the prediction of exports is increasing and this is an opportunity to further produce and export the product.

The amount of domestic demand that is equal to the amount of domestic production plus the amount of imports minus the amount of exports is in Table 18.

Table 18: The Amount of Domestic Demand form 2015 to 2018

Year	Demand (Tons)
2015	250,334
2016	429,449
2017	679,176
2018	737,913

The following chart shows the prediction of domestic demand based on linear regression.

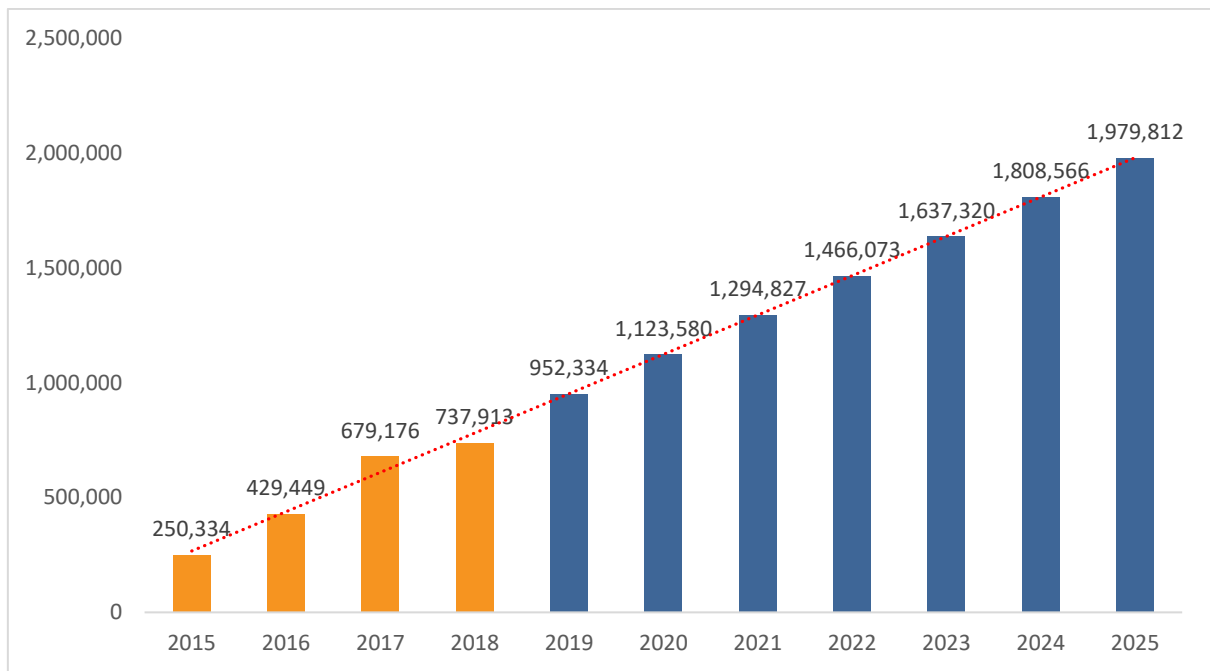


Figure 5: The Prediction of Domestic Demand

As Figure 5 and Table 18 shows, the amount of domestic demand is increased. In the Table 19, the information of the units that have obtained a lisencc is provided based on the amount of progress according to the information of the ministry of Industry, Mine and Trade.

Table 19: The Amount of Progress of Units that have Lisencc

Progress Percent	Capacity (Ton)
0% - 25%	1,387,968
25% - 50%	142,000
50% - 75%	368,000
75% - 100%	82,750

5 Financial Projection

5.1 The Cost Estimate

Table 20: Total Investment (Million Rial)

No.	Subject	Cost
1	Fixed Capital	189,172
2	Working Capital	35,823.6
Total Investment		224,995.6

Table 21: Fixed Capital (Million Rial)

Subject	Paid Cost	Cost Required				Total Cost
		Local Cost	Foreign Exchange Cost		Needed Fund	
			Rate	(€)		
Land Purchase	0	6,074.3	240,000	0.02	0	6,074.3
Landscaping	0	4,122.7		0.01	0	4,122.7
Building	0	40,000		0.16	0	40,000
Equipment and Machinery	0	84,163.2		0.35	0	84,163.2
Laboratory and Workshop Supplies and Equipment		0		0	0	0
Facilities	0	10,450		0.04	0	10,450
Transportation	0	17,000		0.07	0	17,000
Office and Services Equipment	0	500		0.002	0	500
Pre-Operation Costs		9,664.2		0.04	0	9,664.2
Unforeseen (10% Of The Above Items)	0	17,197		0.07	0	17,197
Total Fixed Investment		189,172			0.78	189,172

Table 22: Working Capital (Million Rial)

Subject	Day	Total (Million Rial)
Raw materials	60	33,346.6
(2 months of Raw materials and packaging)	60	2,040
Accounting receivables	15	437
Total		35,823.6

Table 23: Fixed and Variable Costs

No.	Production Cost	Fixed Cost		Variable Cost	
		%	Cost	%	Cost
1	Raw material	0	0	100	200,080
2	Energy & utility	20	349	80	1,397
3	Repair & Maintenance	20	1,749	80	6,995
4	Production salary	70	8,568	30	3,672
5	Depreciation	100	16,982	0	0
Total Production Costs			27,648		212,144

5.2 Break-Even Analysis

Table 24: Break-even Analysis

Period	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Break-even ratio (%)	27.03	22.68	19.32	18.32	17.35	15.05	14.44	13.88	13.38	12.92

5.3 Sensitivity Analysis of IRR

Table 25: Sensitivity Analysis of IRR

Variation (%)	Sales Revenue	Increase in Fixed Assets	Operating Costs
-20.00%	23.57%	51.52%	55.64%
-16.00%	28.47%	49.94%	53.55%
-12.00%	32.93%	48.47%	51.41%
-8.00%	37.07%	47.11%	49.21%
-4.00%	40.95%	45.83%	46.95%
0.00%	44.63%	44.63%	44.63%
4.00%	48.13%	43.50%	42.23%
8.00%	51.49%	42.44%	39.75%
12.00%	54.72%	41.44%	37.18%
16.00%	57.83%	40.50%	34.50%
20.00%	60.85%	39.60%	31.70%

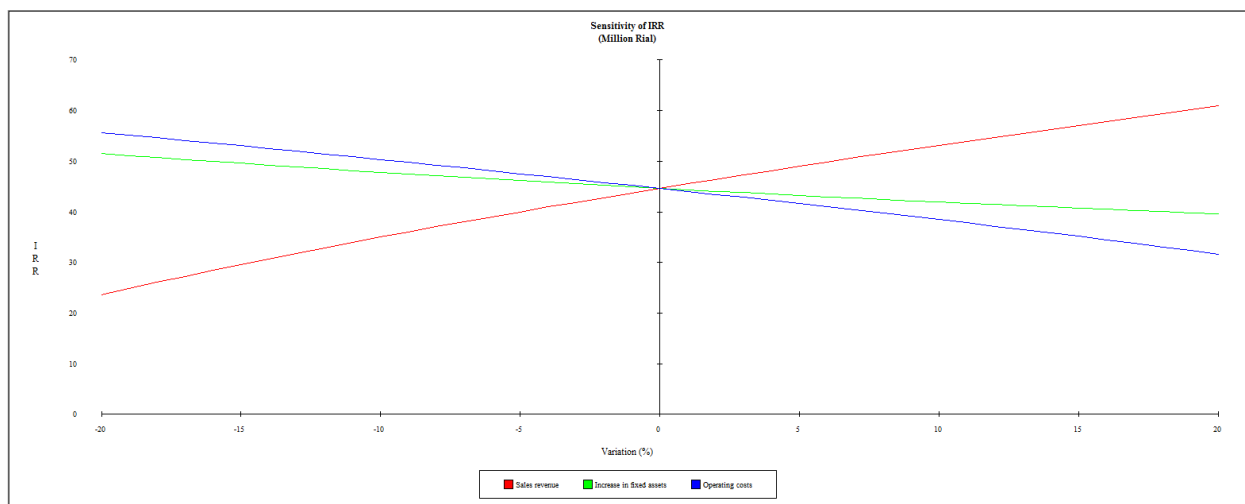


Figure 6: Sensitivity Analysis of IRR

6 Duration of Project Operation

The time of doing early stages and completing its process is about 16 months.

Table 26: Action Plan and Implementaion Schedule

Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Land Purchase																									
Constructing Buildings																									
Execution of Facilities																									
Order, Purchase of Machinery																									
Landscaping																									
Machinery Strat-up and Trial Production																									

7 Incentives, Features And Advantages of Project

North Khorasan Province is a province located in northeastern Iran. Bojnord is the capital of the province. This province contains many historical and natural attractions, such as mineral water springs, small lakes, recreational areas, caves and protected regions, and various hiking areas. Advantages of the agriculture of this province involves favorable and diverse climatic conditions and other parameters affecting growth.