



Islamic Republic of Iran

Ministry of Economic Affairs and Finance

General Department of Economic Affairs and Finance of North Khorasan

Aluminum Wrapper Jajarm Industrial park

Center of Investment Services of North Khorasan

2021 April

Summary of Technical-Economical Pre-Feasibility Study

The name: Aluminum Wrapper

Sector: Industrial

Subsector: Metal products

ISIC Code: 2899412526

The owner of:

Organization of Economic Affairs and Finance (North Khorasan)



The ADDRESS:

Iran, North Khorasan, Jajarm

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1 Abstract

1.1 Project Profile - Summary Sheet

Table 1: Summary Sheet

Project Introduction			
Project Title	The Aluminum wrapper		
Sector	Industrial		
Sub Sector	Metal Products		
Location	Iran, North khorasan, Jajarm		
The County	Jajarm		
Products / Services	Aluminum wrapper		
Annual Nominal Capacity	900		Ton
The Raw Material	Alloy aluminum foil with a thickness of more than 6 microns, impermeable paper against grease and slack wax		
Employment	20		Person
Land Area	8,000		m ²
Floor Area	1,770		m ²
Energy and Water Consumption	Water Consumption	1,800	m ³ in year
	Electricity Consumption	250	KW
	Gas Consumption	900,000	m ³ in year
Fixed Capital	311,600		Million Rial
Working Capital (The First Year)	87,170		Million Rial
Payback Period	3.11		Year
Net Present Value (NPV)	668,620		Million Rial
Internal Rate Of Return (IRR)	58		%
Modified Internal Rate of Return (MIRR)	29		%
Break Even Point	26		%
The Exchange Rate (Dolar)	240,000		Rial
Description	In this project, all the materials related to the study of the Aluminum wrapper market especially domestic and foreign supply and demand, are examined.		

Table 2: Legal Authorizations

Licensure Status	
Issuance Status	Descriptions
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	281,248	240,000	1.17	1.17	1.17
Working Capital	87,170		0.36	0.36	0.36
Total Investment	368,418		1.53	1.53	1.53

- Value of Foreign Equipment / Machinery: 0 Million Euro
- Value of Local Equipment / Machinery: 0.6 Million Euro
- Net Present Value (NPV): 2.78 Million Euro in Years
- Internal Rate of Return (IRR): 58%
- Payback Period: 3.11 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: Jajarm

Jajarm county is a county in North Khorasan Province in Iran. The capital of the county is Jajarm. The county has three districts: Central District, Jolgeh Sankhvast District, and Jolgeh Shoqan District. The county has three cities: Jajarm, Sankhvast, and Shoqan.

This project will be construct in part 46 and 47 with coordinates (4094145,446848) in Jajarm industrial park. Location of project is shown in Figure 1 **Error! Reference source not found.**



Figure 1: Location of Proposed Land in Jajarm Industrial Park

2.3 The Project: The Aluminum wrapper

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	157	is provided
8	Amirabad Port (Behshahr)	333	is provided
9	Bandar Abbas Port	1,452	is provided
10	Rail way station of Joveyn	118	is provided
11	Rail way station of Jajarm	35	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
Aluminum Wrapper	2899412526	76072000	3

In this project, all the materials related to the study of the Aluminum wrapper market especially domestic and foreign supply and demand, are examined. Since in some activities, aluminum can't play a protective role alone, a protective layer is used next to them. Due to the wide range of applications, aluminum sheets, coils, and foils with different alloys and also the combination of these products with different coatings, layers, and materials, various definitions of aluminum wrappers are offered. One of the most important of these definitions is the synonym of the aluminum wrapper with the aluminum jacket and aluminum base wrapper. Aluminum jackets are thermal insulators that have a protective role in industries and factories. The aluminum sheet is an aluminum insulation jacket that is composed of organic materials such as polyethylene and a layer of aluminum sheet and is used as a raw material for thermal insulation. Application Aluminum jackets are used for insulation in motorhomes, petrochemical sites, as well as factories operating at temperatures below or above ambient temperature. All aluminum jackets are also made of a dehumidifying layer. Aluminum-based wrapper consists of a layer of aluminum foil 7-10 microns thick (with annealing operation) and a layer of greaseproof papers with a weight of 40 grams per square meter, which are glued together by wax and part Its aluminum foil is lacquered. The aluminum wrapper is used in food packaging (mainly butter, cheese, yogurt, sweets), cigarette packs, etc. with a maximum weight of 1 kg. Multi-layer packaging wrappers for food industry products are classified into the following groups according to the method of their preparation and application:

- Laminated wrappers, which are gluing two layers of wrappers together with glue or wax or heat.
- Cryogenic wrappers, which are a combination of 2 or more layers of thermoplastic material through a mold (DIE)
- Extrusion-coated wrappers are two layers of the extruded film when melted.

- The packaging envelope considered in this design is part of the first group and laminated with wax according to the above classification.

According to studies on the production of aluminum wrappers, the production of this product is expected to increase from 2,021 to 2,025, which reassures new investors. Also, its demand will increase by about 3,000 tons from 2,020 to 2,023, which by reducing the capacity of factories with progress (above 75%), the country's need by 2,023 is about 2,800 tons. It should be noted that the capacity of this factory is 900 tons, so from the perspective of the country's needs, there is no need to worry about the construction of this factory. It is also possible to plan for the export of this product due to the increasing amount of exports.

3.2 Project's Requirements

The standards of this project are as follows:

- Aluminum and its alloys - Foil and thin strip - Dimensional inverters with standard number 17,695
- Packaging - Aluminum foil and aluminum alloy foil for use in contact with food - Features and test methods with standard number 3,010
- Aluminum-lined wrappers for food packaging - Features with standard number 3,115

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
A piece of land in Jajarm	8,000	0.5	0	0	4,000

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

Description	Working Capacity	Unit	Unit Price	Paid Cost	Needed Fund	Total
Excavation	8,000	cm	0.3	0	0	2,400
Wall Construction and door	360	Sm	9	0	0	3,240
Street Construction (5% of the amount of land)	400	Sm	7	0	0	2,800
Green space and Lighting (1% of the amount of land)	800	No	8	0	0	6,400
Total				0	0	14,840

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

Description	Area (m ²)	Unit Price	Paid Cost	Needed Fund	Total
Production Hall	700	25	0	0	17,500
Raw Material Warehouse	450	30	0	0	13,500
Product Warehouse	300	25	0	0	7,500
Laboratory	30	40	0	0	1,200
Office Building & Services	200	45	0	0	9,000
Guardroom	30	45	0	0	1,350
Facilities	60	25	0	0	1,500
Total			0	0	51,550

Table 10: Infrastructures

No	Description	Unit	Annual Consumption	Unit Cost (Rial)	Total (Million Rial)
1	Water consumption	m ³	1,800	7000	13
2	Electricity consumption	Kw	1,250,000	1100	1375
3	Gas consumption	m ³	900,000	1200	1080
4	Gasoline	Litr	900	30000	270
Total					2738

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)		
Waxing machine (laminante)	136,700	136,700	240,000	0.56	136,700	136,700
Cutting machine	2,000	2,000		0.0083	2,000	2,000
Installation costs	-	6,935		0.02	6,935	6,935
Total Cost of Machinery		145,635		0.6	145,635	145,635

- 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
Alloy aluminum foil	Ton	324	835	270,540
Oil-impermeable paper	Ton	500	353	176,500
Slack Wax	Ton	74	275	20,350
Other raw materials (7%) Ton				32,717
Total				500,107

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	skilled production staff	-	-	5	60	5,400
2	unskilled production staff	-	-	10	32	4,800
3	non-productive employees			5	57	4,275
Total				20		14,475

4 Market Study and Competition

4.1 Examining Supply and Demand Trends

The amount of domestic supply or production of aluminum wrapper 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 Aluminum Wrapper

Year	Nominal Capacity (Tons)
2015	850
2016	1,850
2017	3,180
2018	4,030
2019	11,930
2020	17,430

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	750
2016	1,632
2017	2,806
2018	3,556
2019	10,527
2020	15,380

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

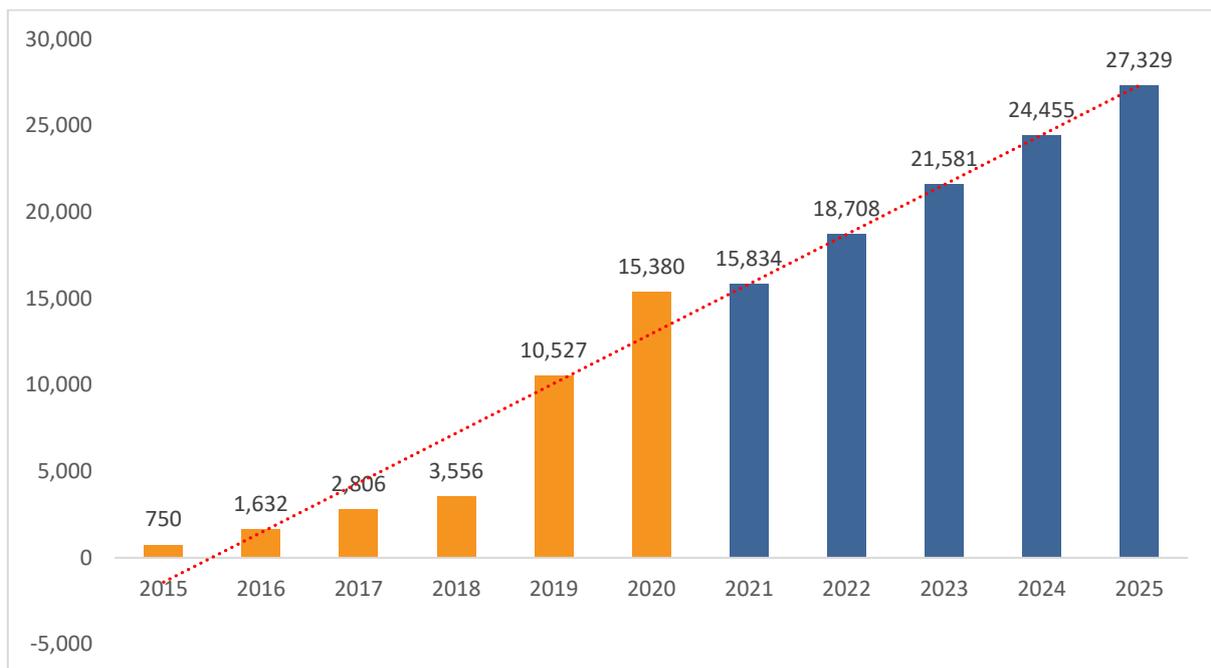


Figure 2: The Prediction of Production

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 following table.

Table 16: The Amount of Imports with Customs Code 76072000 From 2015 to 2020

Year	Imports (ton)	Price (Million Dolar)	Countries
2015	1,363	6	Turkey 59.2% - UAE 12.5% - China 11.9%
2016	1,841	7	Turkey 70.7% - China 14.8% - UAE 8.1%
2017	594	2	China 76.4% - UAE 17% - Germany 4.6%
2018	2,204	10	Swiss 35.9% - Turkey 24.6% - Singapore 19%
2020 (9 Month)	1,424	7	UAE 34.5% - China 27.1% - Swiss 20.3%
Total	7,426	32	Turkey 38.2% - China 19.8% - UAE 14%

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

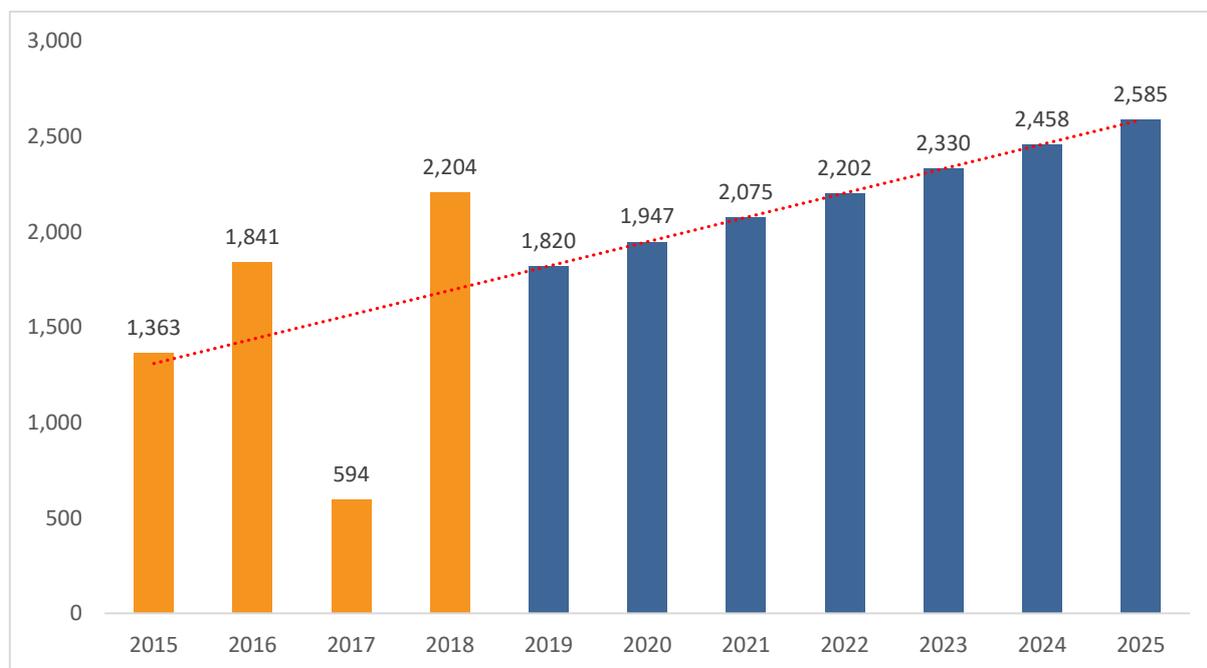


Figure 3: The Prediction of Imports

As Figure 3 shows the prediction of imports is increasing.

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 following table.

Table 17: The Amount of Exports with Customs Code 76072000 From 2015 to 2020

Year	Imports (ton)	Price (Million Dollar)	Countries
2015	35	0.15	Afghanistan 79.6% - Iraq 20.4%
2016	45	0.30	Iraq 67.2% - Afghanistan 32.8%
2017	46	0.18	Turkey 43% - Iraq 42.6% - South Korea 14.3%
2018	138	0.47	Iraq 89.3% - Turkey 7.1% - Afghanistan 3.2%
2020 (9 Month)	154	0.45	Iraq 58.4% - Afghanistan 41.6%
Total	417	1.54	Iraq 64.7% - Afghanistan 26.5% - Turkey 7.1%

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

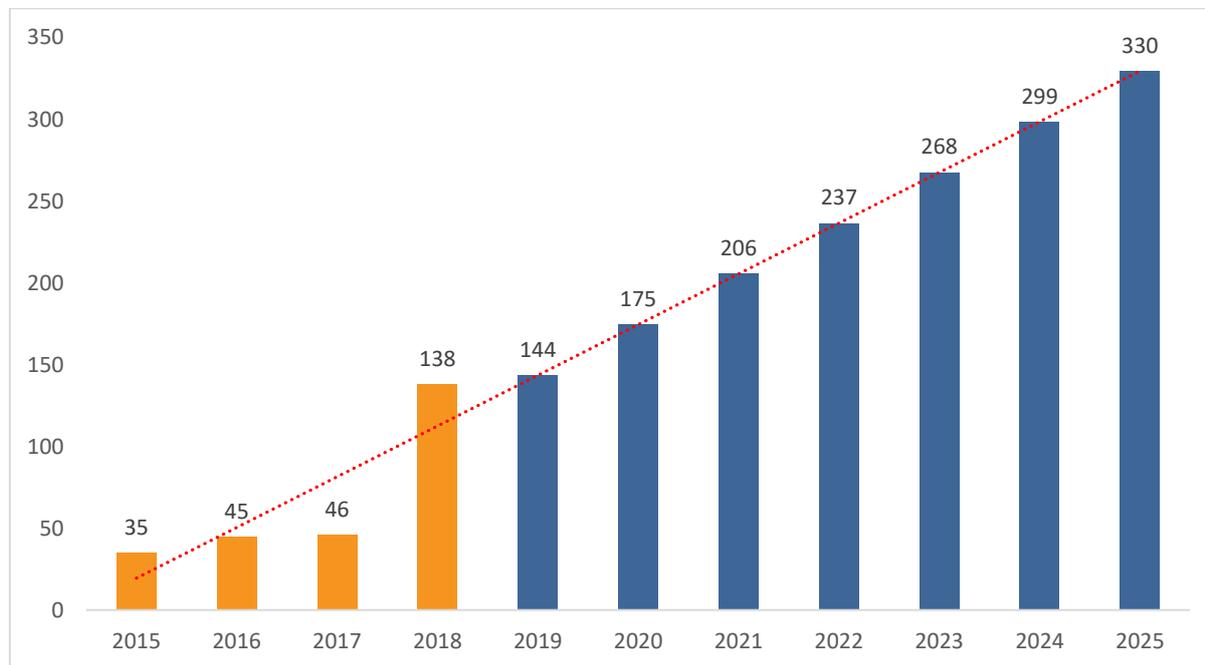


Figure 4: The Prediction of Exports

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	2,078
2016	3,428
2017	3,354
2018	5,622

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

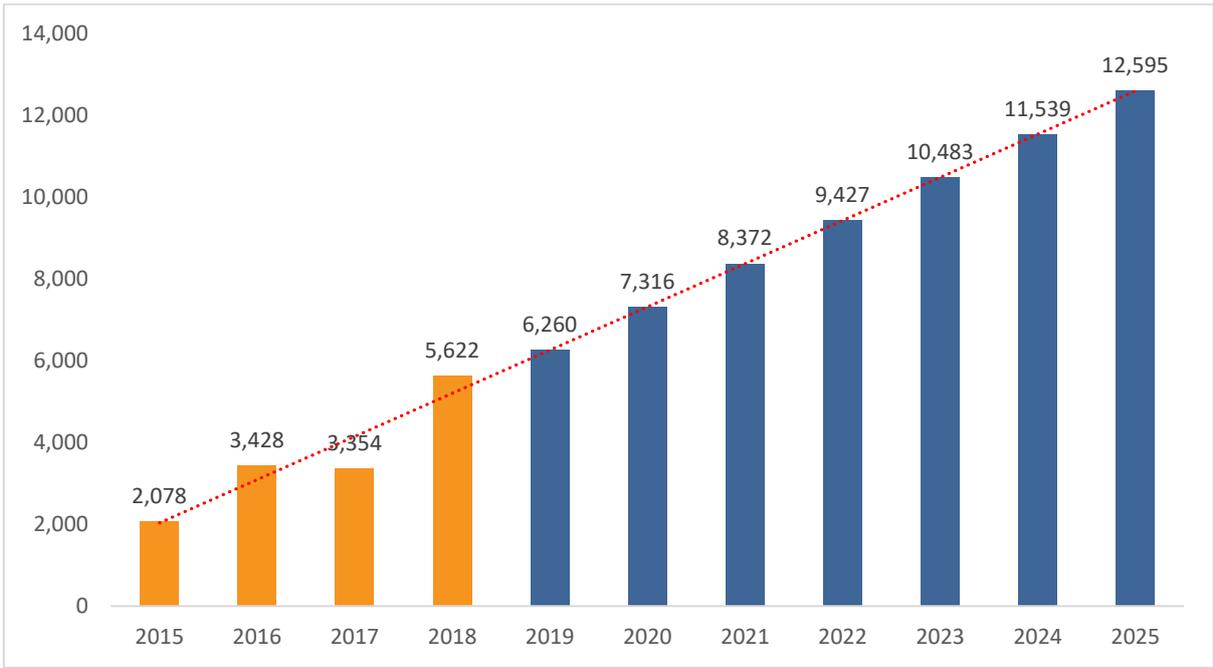


Figure 5: The Prediction of Domestic Demand of of Aluminum Wrapper

As Figure 5 **Error! Reference source not found.** and Table 18 shows, the amount of domestic demand of of aluminum wrapper is increasing. 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 Lisence

Progress Percent	Capacity (Ton)
0% - 25%	13,700
25% - 50%	-
50% - 75%	5,155
75% - 100%	160
Total	19,015

5 Financial Projection

5.1 The Cost Estimate

Table 20: Total Investment (Million Rial)

No.	Subject	Cost
1	Fixed investments	281,248
2	Working Capital	83,053
Total Investment		364,301

Table 21: Fixed Capital (Million Rial)

Subject	Paid Cost	Cost Required			Total Cost	
		Local Cost	Foreign Exchange Cost			
			Rate	(€)		
Land Purchase	0	4,000	240,000	0.01	0	4,000
Landscaping	0	14,840		0.06	0	14,840
Building	0	51,550		0.21	0	51,550
Machinery, Equipment and Laboratory Equipment	0	148,985		0.62	0	148,985
Facilities	0	15,867		0.06	0	15,867
Transportation	0	18,200		0.07	0	18,200
Office and Services Equipment	0	2,565		0.01	0	2,565

Subject	Paid Cost	Cost Required			Total Cost	
		Local Cost	Foreign Exchange Cost			Needed Fund
			Rate	(€)		
Unforeseen (10% Of The Above Items)	0	25,241		0.1	0	25,241
Total Fixed Investment	0	281,248		1.17	0	281,248

Table 22: Working Capital (Million Rial)

Subject	Day	Total
Required raw materials, auxiliary and packaging	60	82,209
Salary	60	2,379
Imprest fund	15	2,582
Total		87,170

Table 23: Fixed and Variable Costs

No.	Production Cost	Fixed Cost		Variable Cost	
		%	Cost	%	Cost
1	Raw material	0	0	100	500,107
2	Energy & utility	20	548	80	2,190
3	Repair & Maintenance	20	2,594	80	10,377
4	Production salary	70	10,133	30	4,343
5	Depreciation	100	28,148	0	0
Total Production Costs			41,423		517,017

5.2 Break-Even Analysis

Table 24: Break-even Analysis

Period	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Break-even ratio (%)	26.03	21.75	18.45	17.42	16.29	14.46	13.79	13.19	12.63	12.13

5.3 Sensitivity Analysis of IRR

Table 25: Sensitivity Analysis of IRR

Variation (%)	Sales Revenue	Increase in Fixed Assets	Operating Costs
-20.00%	11.74%	69.24%	89.23%
-16.00%	22.45%	66.57%	83.02%
-12.00%	31.89%	64.13%	76.78%
-8.00%	40.78%	61.88%	70.52%
-4.00%	49.41%	59.81%	64.22%
0.00%	57.88%	57.88%	57.88%
4.00%	66.26%	56.10%	51.49%
8.00%	74.57%	54.43%	45.03%
12.00%	82.83%	52.87%	38.46%
16.00%	91.03%	51.41%	31.71%
20.00%	99.20%	50.04%	24.67%

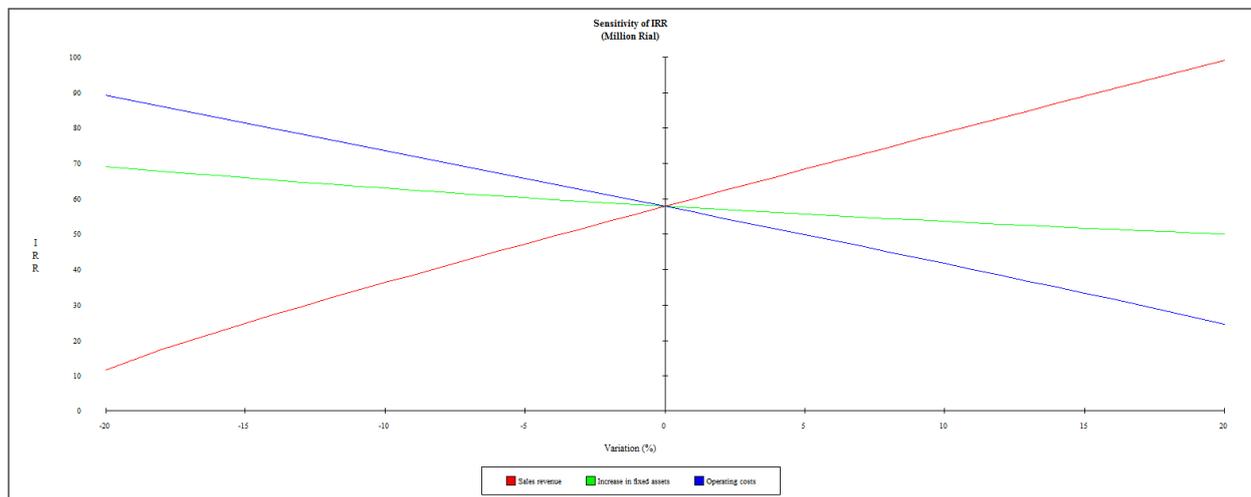


Figure 6: Sensitivity Analysis of IRR

6 Duration of Project Operation

The time of doing early stages and completing its process is about 17 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.