Honey Beeswax

Shirvan Industrial Park

Center of Investment Services of North Khorasan

2021 April

Summary of Technical-Economical Pre-Feasibility Study

The Name: Honey Beeswax

Sector: Agricultural

Subsector: Alterant Industries

ISIC Code: 1514512402

The owner of:

Organization of Economic Affairs and Finance (North Khorasan)

The ADDRESS

Iran, North Khorasan, Shirvan

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1 Abstract

1.1 Project Profile

Table 1: Summary Sheet

Project Introduction			
Project Title	Honey beeswax		
Sector	Agricultural		
Sub Sector	Alterant Industries		
Location	Iran, North khorasan, Shirvan		
The County	Shirvan Industrial Park		
Products / Services	Honey Beeswax		
Annual Nominal Capacity	20		*Ton*
The raw material	Honey Beeswax		
Employment	7		Person
Land Area	3,000		m^2
Floor Area	280		m^2
Energy and Water Consumption	Water Consumption	10,000	m^3 in year
	Electricity Consumption	10	*KW*
	Gas Consumption	300,000	m^3 in year
Fixed Capital	29,373		Million Rial
Working Capital (The First Year)	4,085		Million Rial
Payback Period	4.69		Year
Net Present Value (NPV)	14,570		Million Rial
Internal Rate of Return (IRR)	30		%
Modified Internal Rate of Return (MIRR)	23		%
Break Even Point	51		%
The Exchange Rate (Dolar)	240,000		*Rial*
Description	In this project, all the materials related to the study of Honey beeswax 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	29,373	240,000	0.1223	0	0.1223
Working Capital	4,085		0.0170	0	0.0170
Total Investment	**33,458**	**240,000**	**0.1395**	**0**	**0.1395**

- Value of Foreign Equipment / Machinery: 0 Million Euro
- Value of Local Equipment / Machinery: 0.0212 Million Euro
- Net Present Value (NPV): 0.0607 Million Euro in 15 Years
- Internal Rate of Return (IRR): 30 %
- Payback Period: 4.69 Years

Table 4: General Information

Company Profile	
Project Type	Establishment ☒
Company Name	North Khorasan Organization of Agriculture Jehad
Contact Person (Name and Position)	Mr Rezvan Nikbakht
Email	et.1383@yahoo.com
Mobile	+989379094738
Tel	+9858-32257990
Website	http://portal.nkj.ir
Address	North Khorasan Province, Bojnurd, Chehelodometri Kamarbandi Blvd, North Khorasan Organization of Agriculture Jehad
Company's Legal Structure	Government ☒

2 Project Location

2.1 Province: North khorasan

2.2 The County: Shirvan

Shirvan is a city and capital of Shirvan County, North Khorasan Province, Iran. The history of Shirvan is more than 7000 years old, as archaeologists found some graves in Gelian an Khanlogh (Villages of Shirvan) which are related to Achaemenid Empire era.The city has been significant industrially with sugar beet factories. It is also significant historically (Nader hill), geographically (Honame), and anthropologically (caves around the city).

This project will be construct in part 241 and 242 with coordinates (4134940,590148) in shirvan industrial park. Proposed location of project is shown in Figure 1.

Figure 1: Location of Proposed Land in Shirvan Industrial Park

2.3 The Project: **Honey Beeswax**

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	74	is provided
8	Amirabad Port (Behshahr)	491	is provided
9	Bandar Abbas Port	1559	is provided
10	Rail way station of Joveyn	236	is provided
11	Rail way station of Jajarm	266	is provided

3 Technical Specifications of Plan

3.1 Product

Table 6: Project Specifications Based on ISIC Code

The Product	ISIC Code	Customs Tariff	Environmental Category
Honey Beewax	1514512402 7495412438	15219010	1

In this project, all the materials related to the study of Honey beeswax market especially domestic and foreign supply and demand, are examined. Beeswax is a natural wax made by bee activities. This wax is produced by 8 wax-producing glands in the abdomen of worker bees that drain into the hive. By collecting them, hive workers create shelf-like cells to store honey and protect larva inside the hive. Beeswax has many applications in the food industry and flavorings (for example, as a brightener or light / heat source). Due to the very low toxicity of plant waxes, beeswax is edible and has been approved in most countries and the European Union under the name E901 for use in the food industry. Due to the fact that beeswax monosters decompose to a small extent in the intestines of humans and other mammals, it can be said that they have little nutritional value. The most important use of corrugated wax sheet is in the beekeeping industry. In order to use the refined wax in the hive and attach it to the frames, the wax is corrugated in different ways with a wax tread machine. The term "tread" in beekeeping means hexagons carved on both sides of a sheet of wax that underlies the walls of the chambers. The treaded wax sheets are attached to the board frames using special tools and placed inside the hive for the bees. This causes the bees to use less energy to produce wax or so-called wax weaving, which increases honey production. To prepare the tread wax sheet, a wax tread machine is used, which is available in two types of manual tread wax machine and automatic wax tread machine. treaded wax sheets should be natural and pure to encourage bees to weave.

3.2 Project's Requirements

According to the rules of the Food and Drug Administration of Iran (IFDA), the product must meet the following quality standards.

Table 7: Quality Standards

Feature Name	Standards	Feature Name	Standards
Reducing sugars before hydrolysis (percentage)	at least 65	Free acidity (milliequivalents per kilogram)	Maximum 40
Sucrose (percentage)	Maximum 5	Diastasis activity in terms of diastasis unit	at least 8
Humidity (percentage)	Maximum 20	Fructose to glucose ratio	at least 0.9
PH	at least 3.5	Ash	Maximum 0.6
Electrical conductivity (milliseconds per centimeter)	Maximum 0.8	Hydroxymethyl furfural	Maximum 40
Insoluble solids in honey	Maximum 0.1	Proline (mg)	at least 180
Insoluble solids in honey (pressed honey)	Maximum 0.5		

3.3 Space and Infrastructure Required

Table 8: 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	3,000	0.75	0	0	2,250

Table 9: Site Preparation and Development Costs (Million Rial)

Description	Working Capacity	Unit	Unit Price	Paid Cost	Needed Fund	Total
Excavation	3,000	m^3	0.3	0	0	900
Wall Construction & Door	170	m^2	9	0	0	1,530
Street Construction (5% of the amount of Land)	150	m^2	7	0	0	1,050
Green Space & Lighting (1% of the amount of Land)	30	*No*	8	0	0	240
Total				**0**	**0**	**3,720**

Table 10: Civil Works, Structures and Buildings Costs (Million Rial)

Description	Area (m^2)	Unit Price	Paid Cost	Needed Fund	Total
Raw Matrial & Product Warehouse	200	25	0	0	5,000
Office Building	50	45	0	0	2,250
Welfare & Guardroom	30	45	0	0	1,350
Total			**0**	**0**	**8,600**

Table 11: Infrastructures

No	Description	Unit	Annual Consumption	Unit Cost (Rial)	Total (Million Rial)
1	Water Consumption	m^3	10,000	7,000	70
2	Electricity Consumption	*Kw*	500,000	1,100	550
3	Gas Consumption	m^3	300,000	1,200	360
Other					290
Total					**1,270**

3.3.1 Equipment and Machinery

Table 12: Plant Machinery and Equipment Costs (Million Rial)

Description	Unit Cost	Costs Required				Total
		Local Costs	Costs of Currency		Cost to Complete	
			Rate	(M€)		
Lifter Bar (For Clusters)	120	120	240,000	0.0005	0	120
Pistachio Peeler Machine	100	100		0.0004	0	100
Wet Pistachio Skin Separator	4,700	4,700		0.0188	0	4,700
Three-Layer Sieve (Gogir)	85	85		0.0003	0	85
Full Salted Pistachios	300	300		0.0012	0	300
Total Cost of Machinery		**5,305**	**240,000**	**0.0212**	**0**	**5,305**

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

3.3.2 Raw Material and Intermediate Components

Table 13: 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
Raw Material & Packaging	*Ton*	-	-	3,138
Salary	*Rial*	-	-	735
Energy Costs (Fuel, Electricity & Water)	*L/Kw/Cm*	-	-	1,270
Repair & Maintenance	*Rial*	-	-	1,017
Total				**6,160**

3.3.3 Management and Human Resources

Table 14: Salary of Administrative Staff (Million Rial)

No.	Position	Number of Shifts	Personnel per Shift	Total Staff (People)	Monthly Salary (per Person)	Annual Salary
1	Manpower (in Administrative Sector)	-	-	3	65	2,340
2	Manpower (in Production Sector)	-	-	4	4,312	2,070
Total				**7**		**4,410**

- Number of Skilled Personnel Required: 3
- Number of non- Skilled Personnel Required: 4
- Total Number of Personnel Required: 7

4 Market Study and Competition

4.1 Examining Supply and Demand Trends

Amount of honey beeswax products supply based on production licenses (according to the information of the ministry of industry, mine and trade) inside the country form 2015 up to 2020 is shown in Table 15.

Table 15: The amount of Honey Beeswax Domestic Supply

Year	Nominal Capacity (*Ton*)
2015	0
2016	150
2017	150
2018	150
2019	1,361
2020	1,361

The real production capacity of active units in 2015 up to 2020 is shown in Table 16.

Table 16: The Real Production Capacity of Active Units in 2015 up to 2020

Year	Nominal Capacity (Ton)
2015	0
2016	95
2017	95
2018	95
2019	861
2020	861

The following chart shows the prediction of production according to the Table 16 based on linear regression.

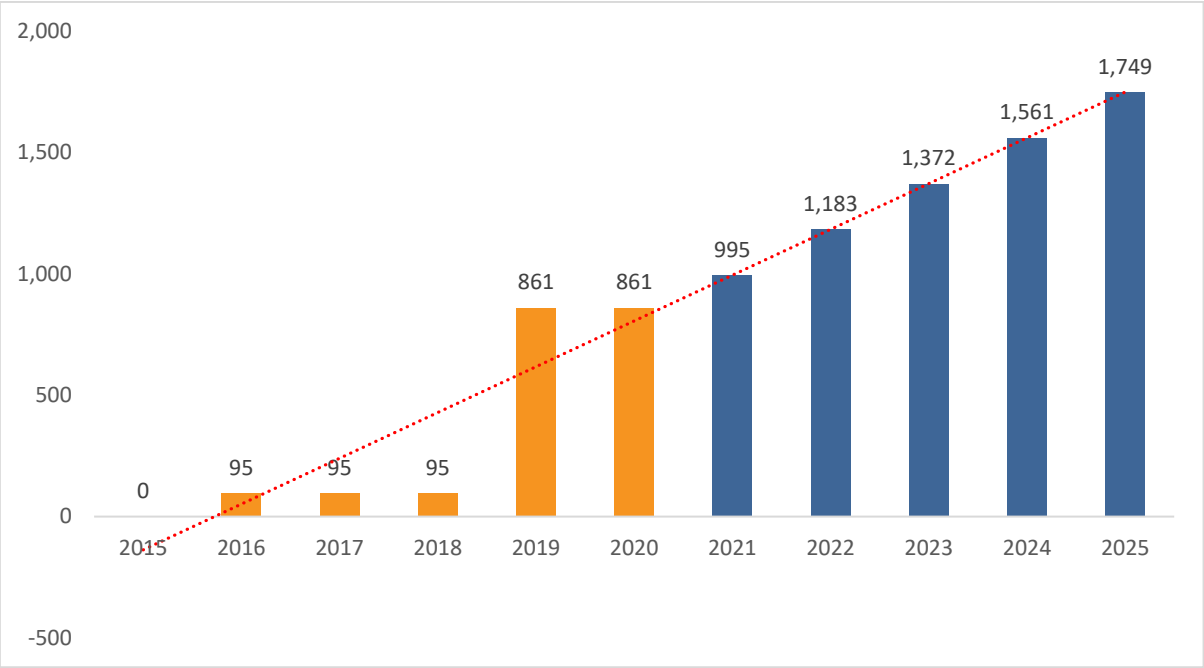

Figure 2: Prediction of Amount of Honey Beeswax Products Supply

Prediction of amount of honey beeswax products supply from 2021 up to 2025 is shown in Table 17. Obviously, from Table 17 we find out prediction of amount of honey beeswax products supply from 2021 up to 2025 is ascendant.

Table 17: Prediction of Amount of De-Skinning Pistachios Products Supply

Year	Nominal Capacity (*Ton*)
2021	995
2022	1,183
2023	1,372
2024	1,561
2025	1,749

The amount of imports to the country is based on the information of the Tehran Chamber of Commerce, Industries, Mine and Agriculture at http://tccim.ir is presented in Table 18.

Table 18: The Amount of Imports

Year	Customs Tariff	Weight (Ton)	Major Countries
2015	15219010	56	China, Germany, England, Turkey, Netherland

Year	Customs Tariff	Weight (Ton)	Major Countries
2016	15219010	107	China, Germany, Italy, Brazil, India, Turkey, France
2017	15219010	64	Germany, China, Belgium, India, Turkey, England
2018	15219010	37	China, Germany, UAE, India, Turkey, England

The following chart shows the prediction of imports according to the based on linear regression.

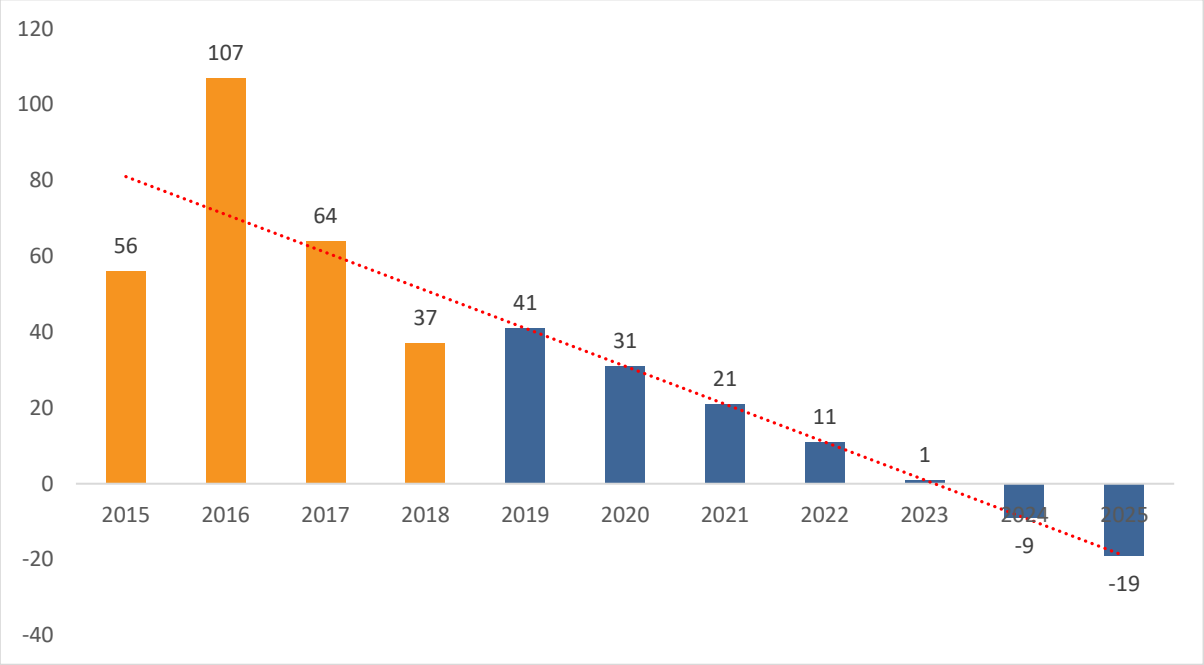

Figure 3: The Prediction of Imports

The amount of exports from the country is based on the information of the Tehran Chamber of Commerce, Industries, Mine and Agriculture at http://tccim.ir is presented in Table 19.

Table 19: The Amount of Exports

Year	Customs Tariff	Weight (Ton)	Major Countries
2015	15219010	7	China, Japan
2016	15219010	9	China, Azerbaijan
2017	15219010	0	-
2018	15219010	27	Turkey, Iraq, Afghanistan

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

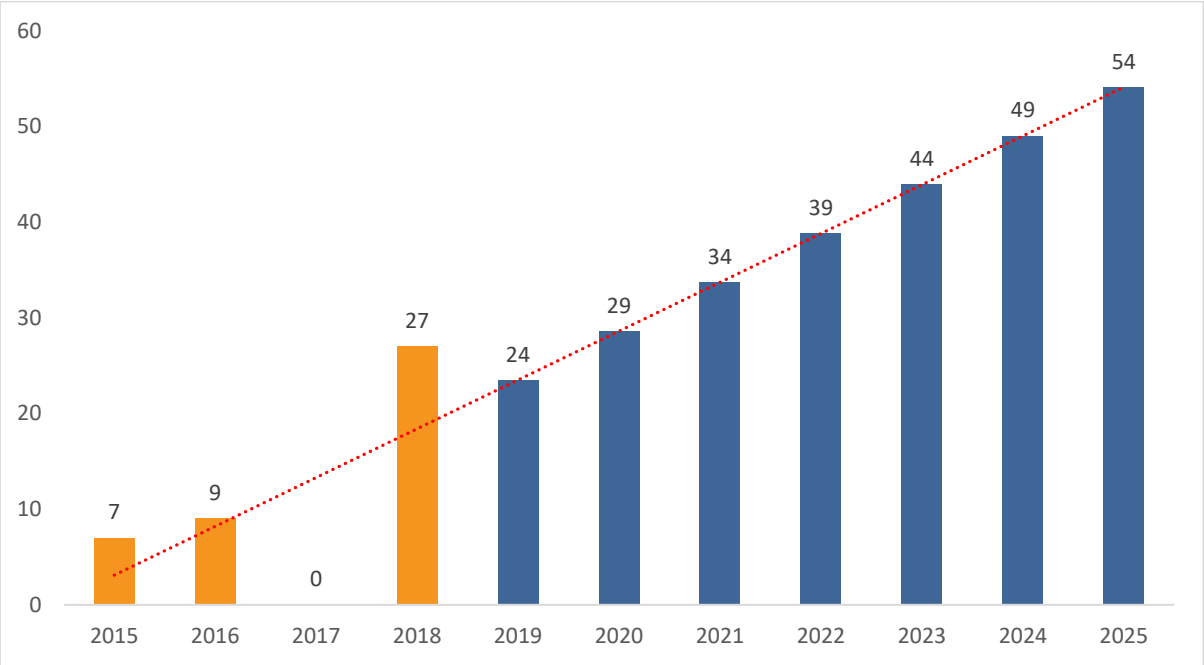

Figure 4: The Prediction of Exports

The amount of domestic demand, which is equal to the amount of domestic production plus the amount of imports minus the amount of exports, for the three products is given in the Table 20.

Table 20: The Amount of Domestic Demand

Year	Demand (Ton)
2015	49
2016	158
2017	124
2018	70

The following chart shows the prediction of domestic demand according to the Table 20 based on linear regression.

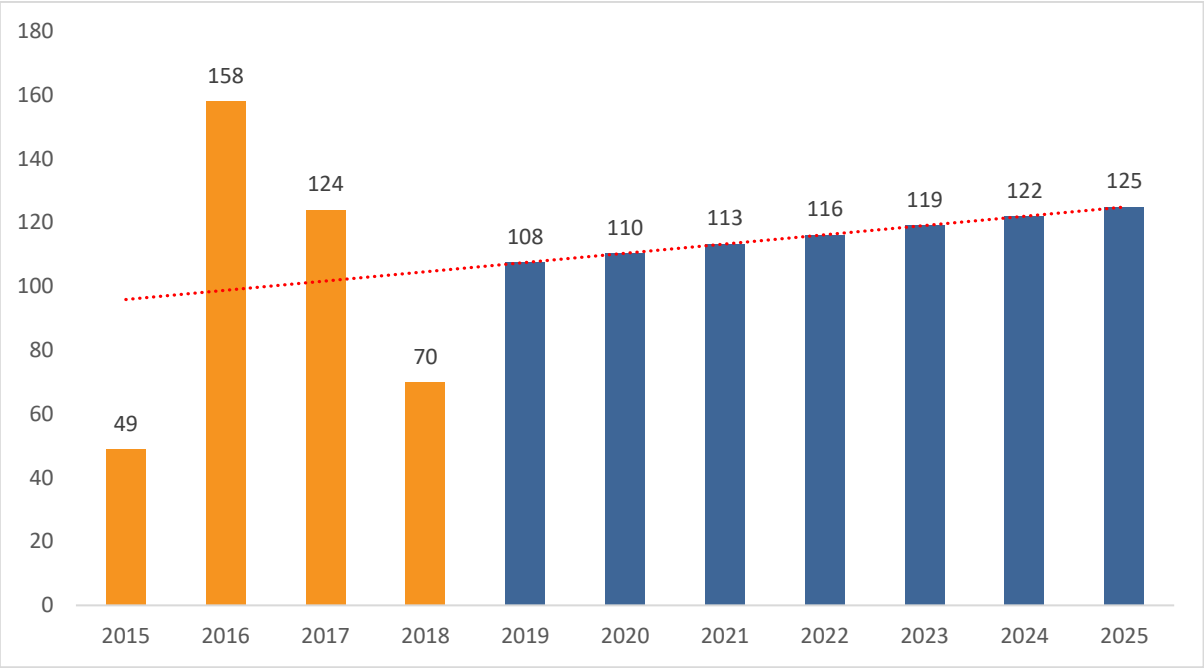

Figure 5: The Prediction of Domestic Demand

As the Figure 5 shows domestic demand of honey beeswax is increasing. So it can be claimed that the factory can be established without the concern of selling the product.

In the Table 21, the information of the units that have obtained license is presented based on the amount of progress.

Table 21: The Information of The Units that have Obtained License

Progress Percent	Capacity (Ton)
0% - 25%	3,895
25% - 50%	0
50% - 75%	0
75% - 100%	0

5 Financial Projection

5.1 The Cost Estimate

Table 22:Total Investment (Million Rial)

No.	Subject	Cost
1	Fixed Capital	29,373
2	Working Capital	4,085
Total Investment		**33,458**

Table 23: Fixed Capital (Million Rial)

Subject	Paid Cost	Cost Required				Total cost
		Local Cost	Foreign Exchange Cost		Needed Fund	
			Rate	(M €)		
Land Purchase	0	2,250	240,000	0.0094	0	2,250
Landscaping	0	3,720		0.0155	0	3,720
Building	0	8,600		0.0358	0	8,600
Equipment & Machinery	0	5,205		0.0217	0	5,205
Laboratory & Workshop Supplies & Equipment	0	498		0.0021	0	498
Facilities	0	4,650		0.0194	0	4,650
Transportation	0	0		0.0000	0	0
Office & Services Equipment	0	480		0.0020	0	480
Pre-Operation Costs	0	1,299		0.0054	0	1,299
Unforeseen (10% of the above Items)	0	2,670		0.0111	0	2,670
Total Fixed Investment	**0**	**29,373**	**240,000**	**0.1224**	**0**	**29,373**

Table 24: Working Capital (Million Rial)

Subject	Day	Total
Packaging Material (2 Months Raw Materials & Packaging)	60	3,138
Salary (2 Months Salary)	60	735
Imprest Fund (15 Days Of Water, Electricity Fuel & Repair Costs)	15	212
Total		**4,085**

Table 25: Fixed and Variable Costs

No.	Production Cost	Fixed Cost		Variable Cost	
		%	Cost	%	Cost
1	Raw Material	0	0	100	18,830
2	Energy & Utility	20	254	80	1,016
3	Repair & Maintenance	20	203	80	814
4	Production Salary	70	3,087	30	1,323
5	Depreciation	100	2186	0	0
Total Production Costs			**5,731**		**21,983**

5.2 Break-Even Analysis

Table 26: Break-even Analysis

Period	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Break-even ratio (%)	51.18	49.40	47.79	46.32	44.33	43.18	42.13	41.18	40.31	39.52

5.3 Sensitivity analysis of IRR

Table 27: Sensitivity Analysis of IRR

Variation (%)	Sales Revenue	Increase in Fixed Assets	Operating Costs
-20.00%	1.19%	36.60%	48.26%
-16.00%	8.78%	35.14%	44.74%
-12.00%	14.92%	33.81%	41.20%
-8.00%	20.40%	32.57%	37.63%
-4.00%	25.49%	31.43%	34.03%
0.00%	30.37%	30.37%	30.37%
4.00%	35.11%	29.38%	26.63%
8.00%	39.78%	28.45%	22.78%
12.00%	44.39%	27.58%	18.76%
16.00%	48.96%	26.77%	14.48%
20.00%	53.52%	26.00%	9.78%

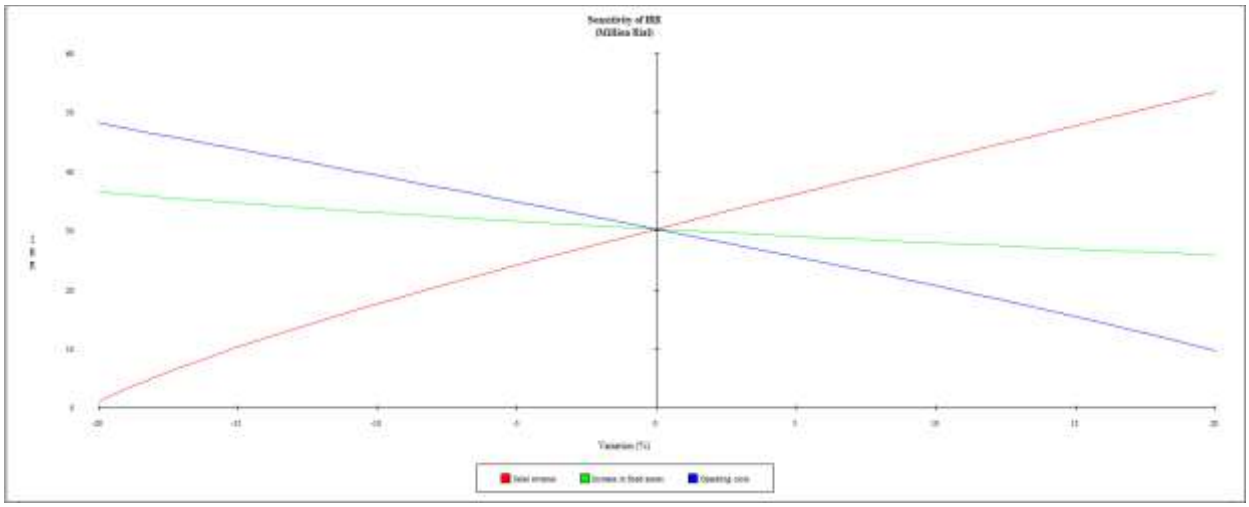

Figure 6: Sensitivity Analysis of IRR

6 Duration of Project Operation

The time of doing early stages and completing its process is about 14 month.

Table 28: 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 & 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.