In the name of Allah

## **Pre-feasibility studies**

**Project Name:** 

**Production of Ice Cream** 

Project Owner: Tohfeh Nesfe Jahan Company

> Advisor of the project: Zahra Badoei

Project address: Khuzestan, Izeh Industrial Estate

Date of P.F.S: March, 2021

## Summary of pre-feasibility plan

General Specification	
Name of The Project	Ice cream production
Project Capacity	2500 tons
Personnel Number	16 persons
Working Days	250 days
Product Usage	Middle meal and dessert
Marketing	
Product Global Price	2-5 Euro/kg
Domestic Demand	284 thousand ton
Domestic Production	359 thousand ton
Import	-
Export	41925ton
Technical Study	
Land Area	$7000 \text{ m}^2$
Building Area	1107 m <sup>2</sup>
Main Raw Materials	Sugar, milk, Stabilizers and emulsifiers
Supplying Place of Raw Materials	Domestic
Power Requirement	250 KW
Water Requirement	3000 m <sup>3</sup>
Fuel Requirement	100,000 m <sup>3</sup> gas
Economical & Financial Study	
Fixed Investment Cost	222,645.0 million Rails $\cong$ 0.813 million Euro
Working Capital	48,298.50 million Rail's $\approx 0.176$ million Euro
Total Investment Cost	270,943.50 million Rail's $\approx 0.989$ million Euro
Annual Sale	450,000.0 million Rail's≅ 1.64 million Euro
Net Present Value(NPV)	379,509.08 million Rail's≅ 1.385 million Euro
Break Even Point(BEP)	20.48 %
Internal Rate of Return(IRR)	63.09 %
Investment Return Period	2.62 years
Investment Sources Ratio:	
Equity:23%	62,015.00 million Rails $\cong$ 0.226 million Euro
Finance: //%	$208,928.50$ million Rails $\cong 0.763$ million Euro

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## **Introduction:**

Ice cream is a food that is made up of carbohydrates, proteins, fats and minerals. 70 grams of ice cream produces about 130 calories of energy in body. Due to the presence of ice crystals and fat cells, the ice cream has a special taste, so it is an enjoyable and enjoyable meal.

Nowadays ice cream is out of the luxury category and has become a food item, and its production creates high added value. The value of ice cream exports in 2018 was \$ 63 million and in 2019 it was \$ 159 million which is a significant figure. Therefore investing in ice cream production is quite economical and affordable. One of the most important reasons for the implementation of the project in Khuzestan province (Izeh) can be mentioned as follows:

- Existence of a significant consumer population in Khuzestan province (population 4.7 million)
- Long heat season
- No import
- Existence of high quality raw materials (due to rangelands and suitable climatic conditions in Izeh and livestock boom)
- Access to land, rail and water links for export to southern neighbor countries
- Ensuring security
- 10 year exemption tax

Therefore, "Tohfeh Nesfe Jahan" Company realizes the major advantages of Khuzestan province and Izeh city, in the field of livestock production and ease of access to high quality raw materials and markets inside and outside the country. Regarding to the scientific and practical experience of the company executives in the field of ice cream production (20 years of experience) and innovation and variety in production, the success of production and competition in sales is not out of the question. The physical progress of the project is 80% and requires financial resources to purchase machinery and provide working capital.

It should be noted that it will be welcomed if the investor wishes to import and supply up-to-date machinery with high technology and regarding to the Market elasticity and technical capability, the capacity may be doubled.



## **1.Product introduction:**

The purpose of the present project is to produce 2,500 tonnes of ice cream per year in different types of popsicle, magnum, teddy, glass, family (liter), Ice cream sandwich are milk-based and ice with different flavors.

Ice cream is a food that contains carbohydrates, protein, fat, minerals, and some vitamins; ice cream is a milk nutrient product obtained from freezing and aeration of homogenized and pasteurized blend of raw materials. Ice cream is a foam product in which small bubbles of air are dispersed in a semi-frozen phase.

Ice cream is a funny and energetic product that is produced in various types of Popsicle, magnum, teddy, glass, family (liter), Ice cream Sandwich and etc. Ice cream has all the characteristics of milk and because of its appeal to children and adolescents, it can greatly compensate for their lack of milk intake. If stored at -25  $^{\circ}$  C, it will have a shelf life of about one year.



## 1.1. Product name and ISIC code

ISIC is the most common classification and categorization of economic activities. ISIC classification is defined as: classification and categorization of the international standard industrial classification of all economic activities. This classification is allocated to one of the 2, 4, and 10 digit codes based on the type of industry and product. the ISIC codes related to ice cream types are given in the table below.

Product name	ISIC Code	Unit
ice cream	1520312450	ton
Pasteurized ice cream	1520312747	ton
Fruit ice cream	1520412451	ton
Plain ice cream (vanilla)	1520412454	ton
Flavored ice cream	1520412458	ton
Ice cream based on milk	1520412748	ton
Popsicle Ice Cream	1520412759	ton
Fruit ice cream with milk	1520512453	ton
Simple Milk Ice Cream	1520512455	ton
Cereal plain ice cream	1520512456	ton
Fruit flavored ice cream	1520512459	ton
Cocoa-flavored ice cream or brainless chocolate	1520512460	ton
Cocoa-flavored ice cream or nutritious chocolate	1520512461	ton
Traditional Ice Cream (Saffron Ice Cream)	1520512462	ton
Traditional ice cream with slices of cream (saffron ice cream)	1520512463	ton
Milk ice cream	1520512749	ton
Cocoa or chocolate milk cream	1520512750	ton

Source: organization of Industry, mine and trade

## **1.2.** Customs tariff code

Based on the export and import regulation of Islamic republic of Iran the custom tariff for ice cream is as follows:

Heading subheading No.	Description
21050000	Ice cream and other edible ice, whether or not containing cocoa.

Source : export-import regulations (2020)

## **1.3. Import and export products conditions**

Given the conditions for product import and export in Islamic republic of Iran, conditions and tariffs for import and export of the ice cream is as follows:

Heading Subheading No.	Description	SUQ	Import duty
21050000	Ice cream and other edible ice, whether or not containing cocoa.	kg	55

Source : export-import regulations (2020)

Import terms:

1. Import and entry of the ice cream is subject to the substantive of Article 16 of the Food and Drinks and ... approved in 1967 (in addition to compliance with general regulations and having a health certificate and usability from the country of origin, it requires a license, import and clearance and export documents from the Ministry of Health).

2. Ice cream is subject to mandatory export standards.

## 1.4. Review and presentation of standard (national or international)

## - national Standard

Number	Title	Country
2450	Ice cream	Iran

Source: Institute of Standards and Industrial Research of Iran

## **International Standard**

No.	Topic of standard	Number of standard
1	Australia New Zealand Food Standards Ice cream	2.5.6
2	Ice cream standard	243:2003
3	European industry standards for ice cream, milk ice and dairy ice cream	EU1169:2011

# **1.5.** Review and provide information about domestic production prices and global price of the product

The ice cream industry is very competitive in the world. Given the variety of ice cream, it is difficult to determine a price for it, but on average it costs between  $\notin$  2 and  $\notin$  5 per kilogram. In Iran, the price of ice cream varies from 180 to 300 thousand Rials per kilogram.

## **1.6.** Explaining the usage and application of the product in the domestic and foreign markets

In all countries of the world including Iran, ice cream is a food that is mostly consumed as a snack; the nutritional value of ice cream depends on the nutritional value of the raw materials used in making ice cream. Milk as the main ingredient of ice cream has many benefits. The major constituents of milk are water, fat, protein, lactose, vitamins and minerals and milk is the most important source of calcium too.

Milk containing fat which is saturated 60% and the rest unsaturated fat. Milk fat is also nutritionally valuable in addition to being energetic due to the presence of vitamin A and D. Milk also contains proteins which fall into two categories: casein and whey proteins which help metabolize the body by producing essential amino acids. The sugar in milk is called lactose which is decomposed by specific enzymes in the digestive tract and converted to simpler sugar. Phosphorus, magnesium, zinc, iron, vitamins A,  $B_{12}$  and  $B_2$  are other nutrients in milk that contribute to its richness.

In Iran, ice cream is mainly used for edible purposes and in most of the festivities, ice cream is used for the greater vitality and is given to children and adolescents as a snack. But overseas, including the United States, in addition to human consumption, some ice cream is also given to pets such as dogs and cats to control their behavior.

In Iran, per capita consumption of ice cream has increased from 3.5 kg per person in 2016 to 5 kg per person in 2019. On average, every American consumes about 23 pounds of ice cream (10.5 kg) a year.

# **1.7.** Evaluation of alternative products, competitors and analysis and its effects on consumption of the product

Although it can be mentioned as other competitors such as desserts, carbonated drinks, pastries and other snacks as well as ice cream competitor but in the dairy industry every dairy product has a special place, especially ice cream has high consumption in the high summer.

Now a days, the consumption of frozen yogurt, a low-sugar and diet-based ice cream has increased in the world and has gained its fans.

Kalleh, Mihan, Zarin Ghazal (Daity) and Pak dairy companies are the competitors in the field of ice cream production in the country. If the cost product in this company is less than competitors, it is possible to compete.

## **1.8.** The strategic importance of the product in Iran and foreign markets

According to the researches, the design product in Iran has not strategic importance because the technical knowledge and skills required for its production are quite simple and its related technology in country is native. This product can be manufactured in most countries and at the same time it does not have any political, social or other barriers to market entry. But the importance of ice cream at present to the country's economy is in the aspect of its pricing in terms of policies toward a non-oil resisting economy and the producers and exporters have focused on that.

## 1.9. The major producing countries and product consumer

The United States, the United Kingdom, and several European countries are other major producers of ice cream. 9% of milk that produced in the US is used in ice cream production.

0					
No	Country	Company			
1	England -Netherlands	Unilever (Magnum)			
2	United States	Häagen-Dazs			
3	Europe	Cornetto			
4	United States	Ben & Jerry's			
5	-	conglomerate			
6	Switzerland	Nestle			

Big producer companies of ice cream in the world

Per capita consumption of ice cream in some of the world's most consumed countries is as follows:

- 1. New Zealand (28.4 liters per year)
- 2. USA (20.8 liters per year)
- 3. Australia (18.0 liters per year)
- 4. Finland (14.2 liters per year)
- 5. Sweden (12.0 liters per year)
- 6. Canada (10.6 liters per year)
- 7. Denmark (9.8 liters per year)
- 8. Ireland (8.4 liters per year)
- 9. Italy (8.0 liters per year)
- 10. England (7.0 liters per year)

China is also one of the largest consumers of ice cream with 4.3 billion liters of consumption per year.

Although consumption of ice cream has declined in Western countries due to rising public awareness of medical care, it has increased significantly in East Asian countries. The ice cream market has now grown dramatically in India, Indonesia and Vietnam bit it has declined dramatically in Switzerland, Denmark and the US over the past five years.

#### Top 10 Flavors of Ice Cream in America



## 2. Situation of supply and demand in Iran and foreign markets

2.1. Study of utilization capacity and production process since the beginning of the Sixth Five Year Economic Development Plan, unit location, the number and level of technology of available units, nominal capacity, practical capacity, lack of full capacity utilization reasons, the name of country and manufacturer of machinery used in production

According to the statistics of the units with active operating licenses presented by the Organization of Mines, Trade and Commerce, there are currently 214 industrial units with a nominal capacity of 717,887 units in the field of ice cream production in the whole country which are the major producers. The major producers are located in Tehran, Alborz and Fars provinces.

At present, the actual production capacity of ice cream in the country is 350,000 tons that about 12% is exported and the rest is consumed in the country. Due to the hot climate of Khuzestan, the consumption of ice cream is very significant, but there is no active ice cream maker in the province (although 5 workshops have operating licenses). One of the reasons for the lack of full capacity utilization can be factors such as relatively high inflation rate and increased production costs especially the packaging sector.

Fewer goods are produced in Iran which are not imported in the market. Ice cream is one of the few food products that is less competitive with its foreign counterparts and is not imported into the country because the variety of production in the Iranian ice cream market is very high and consumers have a great choice in the ice cream market. There are also high quality fruits and nuts in Iran that are also used in ice cream production.

Kaleh, Mihan, Zarin Ghazal (DAITY) and Pasteurized Pak Dairy are the most important ice cream companies in the country and even the Middle East. In a 2016 report by Forbes Magazine, Mihan ice cream from Iran is the world's 10th best-selling ice cream brand which has a remarkable 31% growth in sales from 2011 to 2016.

According to the studies it was determined that all the machines and equipment of the ice cream production line are manufactured in Iran, but some of the big companies that have good financial ability are buying ice cream machines from countries like Germany, Italy and Switzerland. They buy all automatic machinery and human has not working in this process because of the hygiene tips that are very important in the food industry. The status and amount of production of these units are presented in the following table:

No Province		Number of	Capacity	inves	tment
110.	TIOVINCE	units	(tons)	Million Rials	Million EUR
1	Ardabil	4	1,580	80,962	0
2	Esfahan	12	14,298	380,283	1.03
3	Alborz	20	27,319	2,693,143	63.618
4	Eest Azerbaijan	14	17,242	1,730,276	6.1
5	West Azerbaijan	4	11,000	76,408	1.609
6	Bushehr	1	510	6,469	0
7	Tehran	70	244,843	5,221,248	91.158
8	Chahar Mahaal and Bakhtiari	2	5,500	110,851	0
9	Khorasan Razavi	18	29,907	655,347	6.413
10	Khorasan North	1	300	4,190	0
11	Khuzestan	5	23,670	125,795	0
12	Zanjan	1	650	22,242	0
13	Semnan	2	1,100	34,144	0
14	Sistan and Baluchestan	2	1,300	40,909	0
15	Fars	10	130,280	1,826,958	5.424
16	Qazvin	6	43,040	51,565	0
17	Qom	4	6,650	40,600	0.318
18	Kurdistan	2	41,000	199,025	0
19	Kerman	2	20,250	99,573	0
20	Kermanshah	3	11,840	37,891	0
21	Kohgiluyeh and Boyer-Ahmad	1	600	8,620	0
22	Golestan	8	13,325	119,884	0
23	Gilan	7	20,780	236,989	68.79
24	Lorestan	2	700	11,720	0
25	Mazandaran	3	35,460	84,229	0
26	Markazi	2	4,700	108,100	2.35
27	Hormozgān	2	1,100	27,096	0
28	Hamadan	2	1,030	4,541	0
29	Yazd	4	7,900	13,100	0
nom	inal Total capacity	214	717,874	1/ 052 159	246 81
Practical capacity (55%)		107	358,937	14,032,138	240.01

## Of licensed operation unit in the field of ice cream production

Source: organization of Industry, Mine and Trade

# 2.2. Study of the status of new projects and under construction development projects (In terms of number, capacity, operation place, the physical progress rate and the level of their technology and investments by both foreign exchange and other required) and semi-finished projects

Based on information from the organization of Industry, Mine and Trade, ice cream production units under construction and their production levels are presented in the table below. Due to the high quality products of the leading companies in the field of ice cream production such as Mihan, Domino, Kalleh, Pak and Daity in order to compete with these products, we must inevitably use the high technology to produce high quality products, which are currently being managed by industrial units They are paying attention to this issue.

No	Province	Number of Capacity		investment	
110.		units	(tons)	Million Rials	Million EUR
1	Ardabil	1	440	40,200	0
2	Esfahan	3	15,000	634,946	7.161
3	Alborz	5	6,900	164,481	0
4	Eest Azerbaijan	2	660	25,200	0
5	West Azerbaijan	1	500	43,000	0
6	Tehran	12	28,900	4,344,926	66.525
7	Chahar Mahaal and Bakhtiari	2	3,300	183,699	0
8	Khorasan, South	1	400	44,000	0
9	Khorasan Razavi	2	380	61,249	0
10	Khuzestan	3	5,200	84,569	0
11	Qazvin	4	7,400	151,215	0
12	Kermanshah	1	1,000	41,800	0
13	Golestan	2	2,700	41,400	0
14	Lorestan	2	2,100	26,205	0
15	Mazandaran	5	9,500	326,707	0
16	Markazi	2	2,410	252,464	6.213
Total		48	86,790	6,466,061	79.899

#### Under Construction Units of ice cream production with 60-99% of physical progress

Source: organization of Industry, Mine and Trade

No	Province	Number Capacity		investment	
INU.		of units	(tons)	Million Rials	Million EUR
1	Esfahan	3	1,150	124,900	1
2	Alborz	5	54,340	8,368,877	7.9
3	Eest Azerbaijan	1	10,000	353,062	0.93
4	West Azerbaijan	2	3,550	108,312	0.9
5	Tehran	16	84,350	436,437	55
6	Khorasan Razavi	2	825	20,985	
7	Sistan and Baluchestan	1	1,000	5,200	
8	Qazvin	1	4,000	21,700	5
9	Kerman	1	600	7,868	
10	Golestan	1	1,000	31,600	
11	Gilan	1	360	8,835	
12	Mazandaran	2	3,200	11,000	
13	Markazi	1	3,000	62,479	0.5
Total		37	167,375	9,561,255	71.23

Under Construction Units of ice cream production with 20-59% of physical progress

Source: organization of Industry, Mine and Trade

#### 2.3. The trend of imports of the product in the last five years

According to the customs statistics of the country during the 5 years, no import of the mentioned goods has been carried out into the country.

## 2.4. The trend of consumption in the last five years

One of the common methods of calculating the amount of internal consumption is to estimate the amount of apparent consumption, which is calculated in the following table.

As shown in the following tables, the apparent consumption of ice cream in 2019-2020 was estimated at 283,841 tons.

Estimating apparent consumption of sausage and lunch meat and hamburger products in the country over the past 5 years (2014-2019)

	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Domestic production (tons)	251,256	264,982	273,904	288,602	305,656	358,937
Imports (tons)	0	0	0	0	0	0
Export (tons)	42,359	41,462	36,973	37,455	41,952	41,952
The apparent consumption	208,897	223,520	236,931	251,147	263,704	283,841

# 2.5. The trend of export product in the last five years and the possibility of its development

The figure shows the export of ice cream and more significantly, the export of ice cream which is remarkable.

It is worth noting that more than 98% of exports are exported to Iraq, which may be a golden opportunity in the first place, but it must pay close attention to its high risk in terms of fragile political and security relations.

Therefore, Exporters should seek to identify and evaluate other markets in the region to minimize the economic risk to their firms if the Iraqi market loses.

year	Weight (Kg)	Rail's value	Dollar value	Description
2018-19	41,346	7,055,587,344,983	137,294,576	98% Iraq
2017-18	36,956	4,337,929,724,998	128,442,690	98% Iraq
2016-17	36,973	3,750,489,570,976	120,638,716	
2015-16	41,462	2,697,289,746,968	92,089,838	
2014-15	42,359	2,272,564,710,558	86,637,612	

#### Exports of ice cream in the last 5 years

Source : The Islamic Republic of Iran Customs Administration (2020)



## The chart of exported ice cream in the last 5 years

counterparty country	Weight (Kg)	Rail's value	Dollar value	Weight ratio (Wt%)	
Iraq	41,346,680	7,055,587,344,983	137,294,576	98.55	
Pakistan	264,138	55,513,561,633	924,358	0.63	
Oman	103,983	13,945,395,285	234,028	0.25	
Bahrain	65,289	12,731,476,028	219,456	0.16	
United Arab	11 651	10.060.481.042	127 760	0.11	
Emirates	44,031	10,000,481,942	137,709	0.11	
Kuwait	36,798	6,790,831,716	117,619	0.09	
Qatar	33,263	6,619,448,464	101,498	0.08	
Georgia	30,847	4,362,899,765	103,391	0.07	
Afghanistan	24,237	4,866,135,400	69,275	0.06	
United States	2,952	468,006,000	11,143	0.01	
Malaysia	150	19,840,500	450	0.00	
Total	41,952,988	7,170,965,421,716	139,213,563	100.00	

Exports of ice cream divided by country in 2018-2019

Source: Islamic Republic of Iran Customs Administration (2020)

Exports of ice creatil divided by country in 2017-2018	Exports of ice	cream divided	l by country in	2017-2018
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counterparty country	Weight (Kg)	Rail's value	Dollar value	Weight ratio (Wt%)
Iraq	36,956,484	4,337,929,724,998	128,442,690	98.67
Pakistan	303,497	35,699,890,319	1,039,243	0.81
Bahrain	63,708	7,232,994,197	214,709	0.17
Kuwait	46,755	5,540,525,097	163,641	0.12
Qatar	41,073	4,546,681,614	131,460	0.11
Georgia	17,650	2,005,506,825	61,775	0.05
Oman	13,526	1,639,514,230	46,735	0.04
United Arab Emirates	11,904	1,101,913,341	31,026	0.03
United States	1,294	196,603,500	5,500	0.00
Total	37,455,890	4,395,893,354,121	130,136,779	100.00

Source: Islamic Republic of Iran Customs Administration (2020)

## 2.6. Reviewing of products needs based on export priority

Regarding to the growth trend of ice cream consumption over the past 5 years, which represents an average of 7% growth annually, it also accounts for approximately 7% as consumption growth for the year 2020 to 2025 are considered. Also considering export resistance, oil sanctions and the need to focus on the development of non-oil currency exports, the export growth is estimated at about 12% of domestic production and ice cream deficiency or surplus is estimated for the next 5 years.

As shown in the following table, the country will face approximately 41.7 thousand tonnes of ice cream shortage in 2025, to overcome this shortage, units need to be expanded or building new units or importing the product.

Production	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
The domestic consumption (tons)	384,063	410,947	439,713	470,493	503,428
Export (tons)	46,088	49,314	52,766	56,459	60,411
Total demand (tons)	430,150	460,261	492,479	526,952	563,839
Output of current units (tons)	358,937	358,937	358,937	358,937	358,937
Production of new operational units (tons)	47,734	110,655	129,315	147,974	163,162
Total supply (tons)	406,671	469,592	488,252	506,911	522,099
(Shortage) / surplus	(23,479)	9,331	(4,227)	(20,041)	(41,740)

## Estimates of product demand over the next 5 years

## **3-** Overview of technology and production methods and product supply in the country and compare it with other countries

Nowadays in Iran and other advanced countries in the technology of ice cream is used HTST method and is currently the best method of ice cream production. Organizations overseeing production are the Food and Drug Administration as well as the Standard Organization. It is also worth nothing that product launches are in collaboration with broadcasting companies as well as capillary distribution (direct delivery to stores and supermarkets).

Conditions	Time	Temperature	The pasteurization method	
Non-continuous in	30 min	60°C	Slow I TI T	
double-walled tanks	50 1111	09 C	Slow LILI	
Continuous on plate	25 min	80°C	Fast HTST	
pasteurizer	23 11111	80 C		

	**	
Raw material	Sources	Application
Fat and milk fat	Butter, condensed milk, cream, milk, butter, vegetable fat	Aerating, stabilizing the floor, texturing
Fat-free solids	Condensed milk, skim milk, milk, cream	Emulsifier, flavoring, improving melting quality, creating soft texture, water holding capacity
Sweeteners	Sucrose, corn syrup, Anvertebrate sugar, dextrose	Sweetener, increase volume, increase viscosity, decrease melting point
Stabilizers	Guar gum, xanthan gum, alginate gum, carboxymethyl cellulose	Air bubble fixation, texture improvement, improved melt quality, viscosity enhancement, improved oral sense
Emulsifiers	Mono and Diglycerides, Lecithin	Emulsify ice cream fat
Flavors	Vanilla, vanilla extract, cocoa, chocolate and kernels	To taste

#### Some sources and applications of ice cream raw materials

#### The ice cream production process briefly includes the following:

- 1. Getting raw milk
- 2. Sampling
- 3. Quality control tests
- 4. Weighing and mixing
- 5. Thermal process
- 6. Pasteurization (HTST) and homogenization
- 7. Reaching: aging & storing vat
- 8. Freezing and aeration
- 9. Initial molding and packaging
- 10. Tightening: Harding
- 11. Final packaging
- 12. Transfer to cold storage
- 13. Final product quality control
- 14. Distribution and sale



# 4. Determine the strengths and weaknesses of known technologies (in outline) in the production process

Traditional technologies have many weaknesses such as low production capacity, declining quality and nutritional value and increased pollution; But new technologies have prominent strengths such as high production capacity and efficiency, increased quality and nutritional value, pollution reduction, manpower reduction, decrease production costs.

5. Determine the minimum economic capacity includes the estimated volume of fixed investment estimated volume with the separation of Rials and foreign exchange (Using information of available and under construction units, UNIDO, internet, the global data banks, technology selling companies and equipment, etc.)

Regarding the need of the domestic market especially Khuzestan province and considering the export, the nominal annual capacity of the project is:

## Ice cream types: 2500 tons

The practical capacity of the project is predicted to be 75, 90 and 100 percent of nominal capacity, respectively, considering the need for cash to supply raw materials, manpower efficiency and unforeseen factors during the first three years of operation.

It should be noted that if the esteemed investor wishes to increase investment, it is possible to increase production due to the appropriate market demand and selection of machinery with higher production capacity.

It takes about 6 months to complete and purchase the equipment. The product is also expected to be produced in 250 working days and a 12-hour shift per day.

Years of operation		first year	second year	third year
Percentage of capacity		75	90	100
Ice cream		397.5	2250	2500
Total production		397.5	2250	2500
The outcor	ne of selling			
Ice cream( 180 million Rails /ton)		168,750.0	405,000.0	405,000.0
	million Rails	168,750.0	405,000.0	405,000.0
Total sales	Million Euro	0.62	1.48	1.64

## Plan production and sales over the next 3 years

## Table of Project Investment

			requir	Total			
Description	incurred Costs	The Fo	reign currency	Local Currency	Total		Equivalent
Description	(million Rails)	Million Euro	Equivalent Rails (Million Rails)	Million Rails	(Million Rails)	Million Rails	in Million Euro
land	8,400.00	0.0	0.0	0.00	0.00	8,400.00	0.031
landscaping	6,710.00	0.0	0.0	1250.00	1250.00	7,960.00	0.029
Construction	31,210.00	0.0	0.0	1600.00	1600.00	32,810.00	0.120
utilities	4,715.00	0.0	0.0	2,350.00	2,350.00	7,065.00	0.026
Equipment& Machinery	9,350.00	0.0	0.0	145,690.00	145,690.00	155,040.00	0.566
laboratory equipment	0.00	0.0	0.0	1200.00	1200.00	1200.00	0.004
transportation	0.00	0.0	0.0	0.00	0.00	0.00	0.000
Office Equipment & Supplies	130.00	0.0	0.0	540.00	540.00	670.00	0.002
Other and unpredicted	0.00	0.0	0.0	8,000.00	8,000.00	8,000.00	0.029
total	60,515.00	0.0	0.0	160,630.00	160,630.00	221,145.00	0.807
Pre-Production expenditures	500.00	0.0	0.0	1,000.00	1,000.00	1,500.00	0.005
Total of fixed Capital	61,015.00	0.0	0.0	161,630.00	161,630.00	222,645.00	0.813
Working capital	0.00	0.0	0.0	48,298.50	48,298.50	48,298.50	0.176
Total Investment	61,015.00	0.0	0.0	209,928.5	209,928.5	270,943.50	0.989

Exchange rate:

1 Euro  $\cong$  274,000.0 Rails

1 dollar≅ 228,000.0 Rails

## land specification of project as follows as:

Area(m <sup>2</sup> )		Cost	t (million R	Equivalent in		
Description	done	required	done	required	Total	Euro
land	7000.0	0.0	8400.0	0.0	8400.0	30,657.0

## landscaping price as follows as:

	Area(m <sup>2</sup> )		Cos	t (million I	Equivalent in	
Description	done	required	done	required	Total	Euro
Excavation and leveling	4000 m <sup>3</sup>	0.0	600.0	0.0	600.0	2,189.8
Wall (2.5 meters high)	336 m	0.0	3,360.0	0.0	3,360.0	12,262.8
Sidewalk building and						8,211.7
filling the area with the	1500 m <sup>2</sup>	0.0	2,250.0	0.0	2,250.0	
sand						
Green space and lighting	200 m <sup>2</sup>	500 m <sup>2</sup>	500.0	1250.0	1750.0	6,386.9
total			6,710.0	1250.0	7,960.0	29,051.1



## **Construction items Information:**

Description	Puilding Type	Square r	neters area	Total c	ost (millio	n Rails)	Equivalent in
Description	Building Type	Done	Required	Done	Required	Total	Euro
Production salon	Industrial shed - Tiling up to ceiling - Anti-acid ceramic floor - False ceiling	430	0	12,900.0	0.0	12,900.0	47,080.3
Raw materials and product warehouse	Industrial shed - Tiling up to the ceiling - Ceramic floor	180	40	5,400.0	1,200.0	6,600.0	24,087.6
Process part	Metal structure shed	120	0	3,600.0	0.0	3,600.0	13,138.7
Office of Supervision	In the shed	5	0	150.0	0.0	150.0	547.4
Administrative buildings and welfare building	Concrete structure, Exterior design of stone, two floors	232	0	6,960.0	0.0	6,960.0	25,401.5
Lab	Half floor upstairs of shed	60	0	1,800.0	0.0	1,800.0	6,569.3
electronic room	Made of bricks	5	20	100.0	400.0	500.0	1,824.8
Gate guard	Made of bricks	15	0	300.0	0.0	300.0	1,094.9
Total infrastructure and costs		1047	60	31,210.0	1,600.0	32,810.0	119,744.5

## the view of the factory





## Administrative buildings



## Utilities:

Description	Technical	Numbe	r/amount	H (	sts l's)	Equivalent in	
Description	Specifications	Done	Required	Done	Required	Total	Euro
Electrification	Electric power 200 KW	112	90	2,000.0	900.0	2,900.0	10,583.9
Electric supply	Electrical of all buildings	0	0	1,000.0	600.0	1,600.0	5,839.4
Water	Split 1 ", water supply and piping	0	0	1,000.0	0.0	1,000.0	3,649.6
Gas	Split and Mannesmann piping	0	0	400.0	0.0	400.0	1,459.9
Telecommuni cations	3 line	0	0	15.0	0.0	15.0	54.7
Security camera	Night vision type	0	16	0.0	150.0	150.0	547.4
Air compressor	2 cubic meters	0	1	0.0	700.0	700.0	2,554.7
Fuel tank	6000 liter	1	0	100.0	0.0	100.0	365
Heating and Cooling Appliances	Split Air conditioner	2	0	200.0	0.0	200.0	729.9
То	tal			4,715.0	2,350.0	7,065.0	25,784.7

## Equipment& Machinery product line:

Description		Qty	The cu (1	foreign rrency EUR)	Equivalent Rails (million	Local Currency (million Rails)		Total costs (million	Equivalent in
	Done	Required	Done	Required	Rails)	Dama	Demined	Rails)	Euro
Stainless steel tanks	2	3	0	0	0	<i>4 4 2</i> 0 0		8 840 0	32 262 0
Filling Popsicle, Sandwich and cone ice creams	0	1	0	0	0	0	76,500.0	76,500.0	279,197.0
Linear liter ice cream filler	0	1	0	0	0	0	10,200.0	10,200.0	37,226.0
Filler the glass of ice cream	0	2	0	0	0	0	6,800.0	6,800.0	24,818.0
Pasteurizer	0	1	0	0	0	0	5,440.0	5,440.0	19,854.0
Homogenizer	0	1	0	0	0	0	1,360.0	1,360.0	4,964.0
three blender	0	1	0	0	0	0	850.0	850.0	3,102.0
freezer	0	4	0	0	0	0	14,960.0	14,960.0	54,599.0
Cooler Plate	0	1	0	0	0	0	1,360.0	1,360.0	4,964.0
Ice Filling	0	1	0	0	0	0	7,650.0	7,650.0	27,920.0
Jet Printer	0	1	0	0	0	0	986.0	986.0	3,599.0
CIP	0	A series	0	0	0	1,360.0	0	1,360.0	4,964.0
Full boiler	0	1	0	0	0	0	2,550.0	2,550.0	9,307.0
Ice Bank	0	1	0	0	0	2,550.0	0	2,550.0	9,307.0
Air compressor	0	Complete line	0	0	0	0	1,020.0	1,020.0	3,723.0
Cooling Tower	0	2	0	0	0	1,020.0	0	1,020.0	3,723.0
Lab	0	Complete series	0	0	0	0	1,020.0	1,020.0	3,723.0
Steel Pump	0	4	0	0	0	0	374.0	374.0	1,365.0
Filter	0	4	0	0	0	0	340.0	340.0	1,241.0
Steel pipe and fittings	0	A series	0	0	0	0	2,550.0	2,550.0	9,307.0
Fruits Feeder	0	1	0	0	0	0	2,550.0	2,550.0	9,307.0
Full installation and Setting up	0		0	0	0	0	4,760.0	4,760.0	17,372.0
Total			0	0	0	9,350.0	145,690.0	155,040.0	565,839.0

## laboratory equipment

Description	Qty		The foreign currency (EUR)		Equivalent Rails (million	Local Currency (million Rails)		Total costs (million	Equivalent in Euro	
	Done	Required	Done	Required	equired Rails)		Required	Rails)		
55 liter incubator	0	1								
Rotary Ice Incubator	0	1								
25 liter autoclave	0	1								
Electric furnaces	0	1	0.0	0.0	0.0	0.0	1200.0	1200.0	4,379.5	
Ben Murray	0	1								
Laboratory tableware and dishes	0	Complete series								
Total	1	0	0	0	0	0.0	1200.0	1200.0	4,379.5	

## Transportation

Description		Qty	The cui (I	foreign rrency EUR)	Equivalent Rails (million	Local Currency (million Rails)		Total costs (million	Equivalent in Euro
	Done	Required	Done	Required	Rails)	Done	Required	Rails)	Euro
-	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0

<b>Office Equipment</b>	&	<b>Supplies</b>	and	Services:
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Description	Qty		The foreign currency (EUR)		Equivalent Rails (million	Local Currency (million Rails)		Total costs (million	Equivalent in
-	Done	Required	Done	Required	(Infinition Rails)	Done	Required	(minion Rails)	Euro
Panasonic ATX	1	0	0.0	0.0	0.0	30	0.0	30	109.5
Cannon scanner	1	0	0.0	0.0	0.0	30	0.0	30	109.5
Safe Box	1	0	0.0	0.0	0.0	20	0.0	20	73.0
12-foot refrigerator	1	0	0.0	0.0	0.0	50	0.0	50	182.5
HP Triple Printer	0	1	0.0	0.0	0.0	0.0	60	60	219.0
Table and chair management	0	1	0.0	0.0	0.0	0.0	80	80	292.0
Conference table and chair	0	1	0.0	0.0	0.0	0.0	150	150	547.4
LED TV	0	1	0.0	0.0	0.0	0.0	100	100	365
Computer	0	1	0.0	0.0	0.0	0.0	150	150	547.4
Total			0.0	0.0	0.0	130.0	540	670	2,445.3

## Working capital:

Description	duration	The fo Million	<b>reign currency</b> Equivalent Rails	Local Currency Million	Total (Million Pails)	Equivalent in Million
		Euro	(Million Rails)	Rails	Kalis)	Euro
Supplementary Raw Material and Packaging	1 Month	0	0	21,554.17	21,554.17	0.079
Energy	1 Month	0	0	88.42	88.42	0.0003
Cash in hand	1 Month	0	0	2,319.17	2,319.17	0.008
Account receivable	1 Month	0	0	24,336.75	24,336.75	0.089
Total		0	0	48,298.50	48,298.50	0.176

## **Production costs:**

Description	Amount ( Million Rials)	Equivalent in (Million Euro)
Costs of materials	258,650.00	0.944
Cost of production personnel salary	7,281.00	0.027
Cost of utilities (fuel and electricity, water)	1,061.00	0.004
Cost of repair and maintenance	9,847.00	0.036
cost of unforeseen production(5%)	5,537.00	0.020
Depreciation expense	18,106.56	0.066
Administrative personnel salary	4,723.00	0.017
Costs of administrative and sales	4,500.00	0.016
Factory insurance	442.00	0.002
Total sum	310,147.56	1.132

# 6-The annual major required raw materials and annual and to supply outside or inside the country, domestic and foreign exchange and checking the major developments in the supply of essential required items in the past and future

The main raw materials for ice cream production are milk that can be obtained from Izeh city. Sugar will also be supplied from sugar factories in Khuzestan province. Packaging will also be purchased from Khuzestan province and the provinces of Tehran and Isfahan. Other additives used in ice cream are mainly imported from domestic importing companies.

Descripti	ion per t unit	.t ıption	The amount	Price of unit	Curren	cy prices	Cost (million	g Place	Total cost	ent in Euro
on	Consumpt	Uni Consum	required for all capacity	million) ( Rails	The currency (million dollar)	Equivalen t Rails million) (Rails	Rails)	Supplying	(million Rails)	Equival Million
Sugar	0.26	ton	650	77	0	0	50,050.0	Domestic	50,050.0	0.183
Raw milk	0.7	ton	1750	50	0	0	87,500.0	Domestic	87,500.0	0.319
milk powder	0.032	ton	80	350	0	0	28,000.0	Domestic	28,000.0	0.102
Oil	0.052	ton	130	95	0	0	12,350.0	Domestic	12,350.0	0.045
Emulsifier stabilizer &	0.005	ton	12.5	2100	0	0	26,250.0	Domestic	26,250.0	0.096
cacao powder	0.003	ton	7	1000	0	0	7,000.0	Domestic	7,000.0	0.026
cellophane	0.015	ton	37.5	600	0	0	22,500.0	Domestic	22,500.0	0.082
carton	250.0	pcs	625,000	0.04	0	0	25,000.0	Domestic	25,000.0	0.091
Total					0	0	258,650.0		258,650.0	0.944

## Required Raw materials:2500 ton ice cream

## 7. The risk analysis of the project

## **Strengths**:

- Existence of high quality raw materials (due to rangelands and suitable climatic conditions in Izeh and livestock boom)
- Possibility of mass production and variety of production
- High internal rate of return
- No import
- There is no active producer of ice cream in Khuzestan
- The production method is the same in Iran and other countries of the world
- Appropriate communication infrastructures such as transit roads, railways and waterways are available to access domestic and foreign markets especially Iraq and the Gulf States.
- Izeh is close to important commercial ports such as Imam Khomeini Port and Khorramshahr for export

## Weakness:

- Lack of liquidity to supply machinery
- Perfect competition market

## **Opportunities:**

- Long heat season
- Existence of a very large consumption market within the project area (4.7 million population of Khuzestan province)
- Supporting domestic production
- Supporting to attract foreign investors
- Access to major axes and infrastructure such as freeway, south-north rail, access to open water for export
- Ensuring security
- 10 year exemption tax

## **Threats:**

- US sanctions
- Variable inflation rates and rising production prices

# Sensitivity analysis of IRR based on the changes in sale revenue, increased in fixed assets and operational cost



## 8. Human resources and employment status

The project Employment rate is 16 people, 10 of these rate will be in production and 6 persons in office. Due to the existence of universities and Valid technical and professional centers in Khuzestan province and Izeh province, access to specialist human resources is provided.

	Sex		Required			Monthly	Monthly	Annual	
Job Title	F	М	Qty	Shift	Sum	salaries per person (million Rails)	salaries (million Rails)	salaries (million Rails)	Equivalent in Euro
CEO		✓	1	1	1	70	70	1,148.0	4,189.8
Finance director, sales, administrative		~	1	1	1	50	50	820.0	2,992.7
Financial personnel, sales office	~	~	1	1	1	42	42	688.8	2,513.9
warehouse keeper		~	1	1	1	42	42	688.8	2,513.9
Processes manager		~	1	1	1	50	50	820.0	2,992.7
Line Supervisor	1	1	1	1	1	50	50	820.0	2,992.7
Food Industry Engineer	~		1	1	1	50	50	820.0	2,992.7
Worker	✓		6	1	6	42	252	4,132.8	15,083.2
Guard		✓	1	2	1	42	84	1,377.6	5,027.7
Secretary	✓		1	1	1	42	42	688.8	2,513.9
Total			15		16		732	12,004.8	43,813.1

# **9.** Determine the amount of water, electricity, gas, telecommunications and communication facilities (road - rail - Airport - Port ...) and how to provide them in the appropriate area to implementation

Izeh Industrial City has basic infrastructure such as water, electricity, gas and telecommunication facilities. It is 180 kilometers from Izeh to Ahvaz (the capital of the province), providing access to all airport, rail and transit facilities, these possibilities is facilitating trade.

Description	unit	Annual consumption	Price per unit (Rails)	Total price (million Rails)	Equivalent in Euro
Electricity	KW	250,000	1,300	325	1,186.1
water	m <sup>3</sup>	3,000	20,000	60	219
Gas	m <sup>3</sup>	100,000	1,400	140	510.9
Gasoline	lit	6,000	6,000	36	131.4
Other				500	1,824.8
	t	otal		1,061.0	3,872.3

## 10. Economic and trade support for plan

To stimulate the industrial section and related to the resistance to economy, several projects are implemented and the following are mentioned

In order to study, exchange of views and coordination to resolve the problems and obstacles faced by manufacturing units, "the Working Group of facilitate and remove of production obstacles " is formed in all provinces and with membership of the governor (chairman), head of the provincial Ministry of Industry, Mine and Trade ( Secretary), management and planning organization chairman, President of the Chamber of commerce, Industries, mines and Agriculture of province and chairman of the house of industry, mine and trade. The main tasks of this working group can be mentioned as follows:

- Helping to expedite the completion and commissioning of the production of semifinished projects and develop

- Support and contribute to the export development of provincial products.

- Investigating slowdown causes or production units suspension and problem solving coordination.

- Working Group on Economy of Resistance (boom): Regarding to the economy resistive of Ministry of Industries and Business in Act 12868 dated 2016.21.4, the funding are considered in order to completing industrial plans with a physical progress more than 60% and also improving the competitiveness of small and medium production units to increase exports.
- **Investment Guarantee Fund of Small Industries**: The credit guarantees issuance is guaranteed to facilitate financing was through small business facilities and securitized principal and interest and credit facilities granted by banks and financial institutions to small firms. This credit guaranties have been issued for applicants after expert review and validation, obtaining fees with the required securities and warranty credit.

## 10.1. Supporting of Customs tariff (products and machines) with global tariff

In order to support domestic production and ease of technology supply, the machines input rights to the project are relatively low at around 10%. Also the import right of the product for import is very high and about 55%, thus supporting domestic production.

## 10.2. financial support (existing units and projects) banks - investment firms

The most important sources of financial credit from banks, can be cited as follows.

1. **Foreign exchange reserves:** The surplus proceeds from the sale of crude oil facility will be provided support and finance of part of the foreign exchange needs of producers and exporters of private and cooperative sectors. In the framework of contracts and Islamic banking laws and regulations enacted by the opening credits are awarded based on the provisions of the import and export of goods and services.

2. Economy of Resistance Committee (boom): Now, funding is considered for the completion of a physical progress with 60% and industrial production units as well as enhance the competitiveness of small and medium enterprises to increase exports.

## **3. Foreign Investment Promotion and support Act:**

Since 1955, the legal framework for foreign investment in Iran has been the Attraction and support of Foreign Investments law. In line with reforms in the economic structure of the country, the Iranian parliament has offered the foreign investment plan as a Foreign Investment Promotion and Support Act which legislated finally in 1381. This will lead to the development of the legal framework and operational environment for foreign investors in Iran. Some of the new developments in the field of foreign investments include:

• Islamic Republic of Iran is welcome of foreign investments by foreign persons, whether natural or legal persons in all areas of economic activity.

- Recognition of new investment methods in addition to foreign direct investment
- Short and quick process and approval application and foreign investment approval.

• Creating an unique organization called the Center for Foreign Investment Service Organization for Investment, Economic and Technical Assistance of Iran in order to focused and effective support of the activities of foreign investors in Iran

• Further liberalization of foreign exchange mechanisms for more use by foreign investors

In case of absorbing foreign investor, the government considers some bonus, such as:

- 1. Tax exemption for the products of foreign investing companies
- 2. Presenting insurance coverage for the investors
- 3. Presenting customs exemptions for importing equipment required by foreign investing companies
- 4. Granting subside for training local manpower
- 5. Preparing free zones for investment
- 6. Granting infrastructure facilities and less expensive public services such as water and power
- 7. Guaranteeing return on profit and the main capital and prevention from their confiscation and nationalization

## 11. Analyzes And providing summary and final offer

Regarding to the growth trend of ice cream consumption over the past 5 years, which represents an average of 7% growth annually, it also accounts for approximately 7% as consumption growth for the year 2020 to 2025 are considered. Also considering export resistance, oil sanctions and the need to focus on the development of non-oil currency exports, the export growth is estimated at about 12% of domestic production and ice cream deficiency or surplus is estimated for the next 5 years.

As shown in the following table, the country will face approximately 41.7 thousand tonnes of ice cream shortage in 2025, to overcome this shortage, units need to be expanded or building new units or importing the product.

Thus, the country will be faced with shortage about 41.7 thousand tonnes of ice cream by the end of 2025.

Therefore, as mentioned above, the ice cream product has a shortage of production and supply until 2025. Given the general policies of the system and the detrimental effects of foreign sanctions, this deficiency must definitely be remedied through domestic production. In order to supply the domestic demand, using the opportunity created in Iraq's export market and in the near future in Syria, as well as reducing dependence on single-product oil exports, it is essential to complete and launch new units, such as Tohfe Nesfe Jahan company located in the Khuzestan province.

One of the most important reasons for the implementation of the project in Khuzestan province, Izeh can be mentioned as follows:

- Existence of a significant consumer population in Khuzestan province (population 4.7 million)

- Long heat season
- No import

- Existence of high quality raw materials (due to rangelands and suitable climatic conditions in Izeh and livestock boom)

- Access to land road, rail and waterways links for export to neighboring countries
- Ensuring security
- 10 year exemption
- High rate of return
- Low capital return period
- Target Markets:

1. Internal sector: firstly Khuzestan, secondly the neighboring provinces and then the whole country

2. External Sector: Iraq, Afghanistan and the Gulf States, Pakistan, India, etc.

Cost of ice cream(kg)	129,650.0 Rails≅ 0.473 Euro
Sale price of ice cream (kg)	180,000.0 Rails≅ 0.657Euro
total Sales	450,000.0 million Rails≅ 1.64 million Euro
Present sales in break-even point	20.48%
Profit	125,867.2 million Rails≅ 0.459 million Euro
Gross value added	180,442.0 million Rails≅ 0.658 million Euro
Net value added (million Rail's)	162,335.4 million Rails≅ 0.592 million Euro
The Gross value added to total Sales	40%
The Net value added to total Sales	36%
The Gross value added to Investment	67%
Investment Return Period	2.62 years

Exchange rate:

1 Euro  $\cong$  274,000.0 Rails 1 dollar $\cong$  228,000.0 Rails

## 12- Summary of pre-feasibility plan

General Specification	
Name of The Project	Ice cream production
Project Capacity	2500 tons
Personnel Number	16 persons
Working Days	250 days
Product Usage	Middle meal and dessert
Marketing	
Product Global Price	2-5 Euro/kg
Domestic Demand	284 thousand ton
Domestic Production	359 thousand ton
Import	-
Export	41925ton
Technical Study	
Land Area	7000 m <sup>2</sup>
Building Area	1107 m <sup>2</sup>
Main Raw Materials	Sugar, milk, Stabilizers and emulsifiers
Supplying Place of Raw Materials	Domestic
Power Requirement	250 KW
Water Requirement	3000 m <sup>3</sup>
Fuel Requirement	100,000 m <sup>3</sup> gas
Economical & Financial Study	
Fixed Investment Cost	222,645.0 million Rails $\cong$ 0.813 million Euro
Working Capital	48,298.50 million Rail's $\cong$ 0.176 million Euro
Total Investment Cost	270,943.50 million Rail's $\approx 0.989$ million Euro
Annual Sale	450,000.0 million Rail's≅ 1.64 million Euro
Net Present Value(NPV)	379,509.08 million Rail's≅ 1.385 million Euro
Break Even Point(BEP)	20.48 %
Internal Rate of Return(IRR)	63.09 %
Investment Return Period	2.62 years
Investment Sources Ratio:	
Equity:23%	62,015.00 million Rails $\cong$ 0.226 million Euro
Finance: 77%	208,928.50 million Rails $\cong$ 0.763 million Euro