

In the name of God

Pre-Feasibility Studies

Project Title:

Producing Bioethanol Alcohol and Sulfuric Acid

Project Owner:

Tab Yaran Jonoob

Advisor of the project:

Dornica Sustainable Development Company

**Project address: Ramshir Industrial Zone, Shush,
Khuzestan**

Preparation Date: February, 2021

Pre-Feasibility Study Summary:

General Information	
Project Title	Producing Bioethanol Alcohol and Sulfuric Acid
Capacity	30,000 tons Bioethanol and 50,000 tons Sulfuric Acid
Employment	110 individuals
Business days	300 days
Product consumption	Health and medical uses
Market	
Global Price of the Product	10 \$
Domestic demand:	10.000 ton
Domestic production	11.000 ton
Import	2 million \$
Export	883 milion #
Technical Information	
Land Area	40,000
Buildings Area	5,600
Core Raw Material	Saccharum Molasses - Sulfur
How to supply raw materials	internal
Power Requirement	2,300 kW
Water Requirement	4 inches
Fuel required	40.000
Financial Information	
Fixed Investment	1,346,135 million Rials
Working Capital	708,208 million Rials
Total Investment	2,074,343 million Rials
Annual Sales	5,650,000 million Rials
Net Present Value	55,405 million Rials
Internal Return Rate	89%
Payback Period	1.1 year
Ratio of investment resources	
Equity 32%	663789
Financing 68%	1410553

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Introduction

Ethanol, or ethyl alcohol, is a clear, colorless liquid that forms the main ingredient in many alcoholic beverages. On an industrial scale, ethanol can be obtained through the hydration of ethylene gas or the fermentation process. Using fermentation; Ethanol can be produced from any plant product that contains large amounts of sugar. Any compound that can be converted to sugar is used in the production of ethanol, such as starch and cellulose.

Ethanol is one of the most widely used alcohols in various industries and laboratories. Using ethanol as a renewable fuel will reduce greenhouse gas emissions and pollutants.

This substance can be used in the cosmetics industry. It is safe to say that these industries are among the most widely used markets for alcohol. Ethanol is also used in varnishes and lotions as a preservative. Alcohol is used to attach the sprays to the hair. In addition, alcohol kills microorganisms, including bacteria, viruses and fungi. This is why ethanol is used in hand sanitizers.

Nowadays one of the most widely used applications of alcohol is as a fuel for automobiles. Adding it to gasoline increases its performance, and most importantly, reduces environmental pollution. It is also used to produce antifreeze due to its low freezing point.

Product consumption in the country has a high statistics and currently there is no alternative to it, only changes in the type and evolution of products.

At present, the production capacity of fermented and synthesized ethanol is increasing day by day in different countries.

In the continuation of this report, more complete explanations about this product as well as the technical and economic dimensions of this project are provided.



1-Product Introduction

Introduction

Ethanol or ethyl alcohol is a clear, colorless liquid that is the main ingredient in many alcoholic beverages. On an industrial scale, ethanol can be obtained through the hydration of ethylene gas or the fermentation process. Ethanol can be produced from any plant that is sugar-rich through fermentation. Any compound such as starch and cellulose that can be turned into sugar can be used in the production of ethanol.

Ethanol is a widely used alcohol solution in various industries and laboratories. Ethanol as a renewable fuel will reduce greenhouse gas emissions and pollutants. Ethanol also burns better than other fuels. It is true that the burning of ethanol itself releases some greenhouse gases but compared to gasoline and diesel fuel, the emission is much less.

Volatility, flammability and colorlessness are the three main characteristics of ethanol. It has a molar mass of 46 grams per molar. Ethanol participates in reactions with active metals such as alkali and alkaline earth metals.

1-1-Alcohol Applications

Alcohol is used in the cosmetic industry. It is safe to say that the cosmetic industry is one of the most demanding markets for alcohol. Ethanol is also used in nail polishes and lotions as a preservative. Besides, alcohol eradicates microorganisms including bacteria, viruses and fungi which is why ethanol is widely used in hand sanitizers.

Nowadays, alcohol is widely considered fuel for automobiles. Adding it to gasoline increases its performance, and most importantly, reduces environmental pollution. It is also used to produce antifreeze due to its low freezing point

1-2-Investigation of alternatives and their effects on product consumption

Alcohol is widely used in the country and there is currently no alternative to it.

1-3-Strategic importance

Ethanol is one of the most important chemicals in the world today. This unique material has different applications as a solvent, disinfectant, alcoholic beverage, antifreeze, fuel, etc. It is also an important chemical intermediate for producing other chemicals. Currently, the production capacity of fermented and synthesized ethanol is increasing day by day in different countries. There are more than 40 synthetic ethanol production units in industrialized countries. In developing countries, the main method of ethanol production is fermentation.



1-4-Product Name and Code (ISIC 3)

The most common classification in economic activities is the ISIC classification. The ISIC code of ethyl alcohol preparation is presented in the table below.

ISIC Code	Product Name
15511110	Ethyl Alcohol

Source: Industry, Mining and Trade Organization

Ethanol is an organic chemical with many applications in the production of fuels and alcoholic beverages and acts as a raw material in chemical syntheses and solvents. Ethanol is mainly used as a very good solvent in the manufacturing of cosmetics (perfumes and colognes, deodorants, hair sprays), detergents, disinfectants, drugs, colors and also in food and pharmaceutical products including acetaminophen, iron supplements, ranitidine, furosemide, Mannitol, phenobarbital, trimethoprim/sulfamethoxazole and cough medicines.

Ethanol is used as a disinfectant, an important component of alcoholic beverages, fuels and solvents, and an important chemical intermediate for the manufacture of chemicals such as ethylene halides, ethylene esters, diethylene ether, acetic acid, and ethylamine. It is also used in antifreeze production due to its very low melting point.

Why ethanol is used as a disinfectant?

Ethanol can modify proteins, dissolve fats and eliminate their microorganisms, thereby disrupting their cellular metabolism which is used to fight bacteria and viruses. Therefore, it is widely used in the production of medical wipes. One of the most common

compounds is handwashing solutions and antibacterial gels and surface (i.e. plastic, glass and wood) disinfectors.

Alternative products

The product competing with fermented ethanol is the synthesized ethyl alcohol, which has no economic justification due to its higher cost, especially in countries that cannot supply quality molasses from the waste of sugar factories.

Ethanol production and packaging technical knowledge

There are two methods to produce ethanol: synthesis and fermentation. Synthetic ethanol from petroleum products is usually obtained from the hydration of ethylene.

Synthetic method

There are two general methods for making ethanol through the synthesis of ethylene: direct and indirect hydration of ethylene, the former includes the catalytic hydration of ethylene in the vapor phase. The advantage of the direct method over the indirect one is the removal of sulfuric acid in the ethanol production process, which is a very costly process. Also, the formation of carbon compounds in sulfuric acid is one of the problems caused by high concentrations of acid which can result in corrosion in the system.

Fermented ethanol is produced in two ways: classical batch and continuous. The batch method is attractive because of the simplicity in produce ethanol in small volumes but it has many disadvantages. Low productivity, difficulty in process automation, long sleep time of machines and high cost of manpower are some of the disadvantages of this method. In contrast, in continuous fermentation ethanol production processes, production machinery and equipment can operate continuously for long periods without the need to stop. As a result, resource productivity and product quality will improve. Reactor volume in continuous systems is smaller than batch systems, and processes can be implemented and managed accurately and automatically.

At the beginning of the fermentation ethanol production process, the molasses obtained from the wet-milling are placed in the storage tanks and the required compounds are added. Then, it is ready to enter the solution stage. Molasses is combined with water and other compounds in solution tanks and, transferred to a multi-stage fermentation stage using yeast or sugar-feeding bacteria.

Solution fermentation

In the fermentation stage, the solution is pumped to the multistage bioreactor and fermentation is done step by step. The solution is then stored in a storage tank to be transferred to the distillation tower. The distillation process is carried out continuously until the ethanol reaches the expected concentration. The distillation process consists of several tray towers by which the separation and distillation steps are performed. The final product is medical alcohol.

What materials can be used to produce ethanol?

Fermented ethanol can be obtained from various agricultural products such as cereals, sugar beets, sugarcane and a variety of fruits. Some agricultural products are not economical to produce ethanol due to their high price and some others are not economical due to the low volume of produced ethanol and high transportation costs.

1-5-Assessment and Presentation of Standards (National or International)

National standards for the properties of ethyl alcohol and its amendments are as follows.

Iranian National Standard 161: "Ethyl Alcohol - Features"

National Standard of Iran 337-1: "Counterfeit Alcohol"

National Standard of Iran 337-2: "Counterfeit Alcohols - Features - Review"

National Standard of Iran 337-2: "Counterfeit Alcohols - Features - Review"

National Standard of Iran 337-2: "Counterfeit Alcohols - Features - Review"

National Standard

Title	Standard Number
Ethyl Alcohol	161

Source: Institute of Standards & Industrial Research of Iran (2020)

Standards and Licenses

Operation license issued by Ministry of Industry, Mines and Trade

Establishment Permit issued by Institute of Standards and Industrial Research of Iran

1-6-Customs tariff code regarding the medical alcohol production industry

A tariff is a kind of numerical criterion for identifying and determining the position of goods in the clearance process. Customs tariff is the import fee payable for the import of goods. Customs tariff is designed and used in the context of history based on special systems and methods such as customs administration, statistics, transportation, insurance, etc. Customs tariff on ethyl alcohol - ethanol under tariff number 22071090 with customs duty is 5%,

1-7-Applications

Ethanol or ethyl alcohol (C_2H_5OH) is a flammable chemical compound with a specific odor that can be found in alcoholic beverages. This product is widely used in various industries including perfumes and colognes, vanilla and as a fuel in some new cars. Ethanol has been known to humans since ancient times because it is a major component of alcoholic beverages. Producing relatively pure ethanol was probably first performed by Jabir ibn Hayyan, who developed the distillation industry. However, it is more likely that pure ethanol was produced by the Iranian scientist "Mohammad Zakaria Razi". Different grades of ethanol are available in the market varying in water fraction, preparation method and final application. 99% ethanol (called absolute ethanol) is widely used in the pharmaceutical industry as a solvent, preservative, disinfectant and colognes. Ethanol is an important component of alcoholic beverages obtained from the fermentation of fermentable carbohydrates. If alcohol is used for non-drinking purposes, methanol, pyridine, formaldehyde or

sublimate are added to it. This alcohol is mostly used as a solvent in industry. Ethanol is also used to make some chemicals and it's considered as a fuel in some countries, such as Brazil. Synthetic ethanol from petroleum products is usually obtained from the hydration of ethylene. The chemical properties of ethanol are due to its hydroxyl (OH) functional group. The hydroxyl group can be subjected to various chemical reactions such as hydration, halogenation and ester formation. Ethanol is obtained not only through chemical synthesis using petroleum products but also through the fermentation of available organic matter. Hence the economic importance of ethanol as a raw material for the manufacture of various chemicals is growing.

1-8-Description of the product consumption in domestic and foreign markets

1-9-Product Market

Major providing and customer countries:

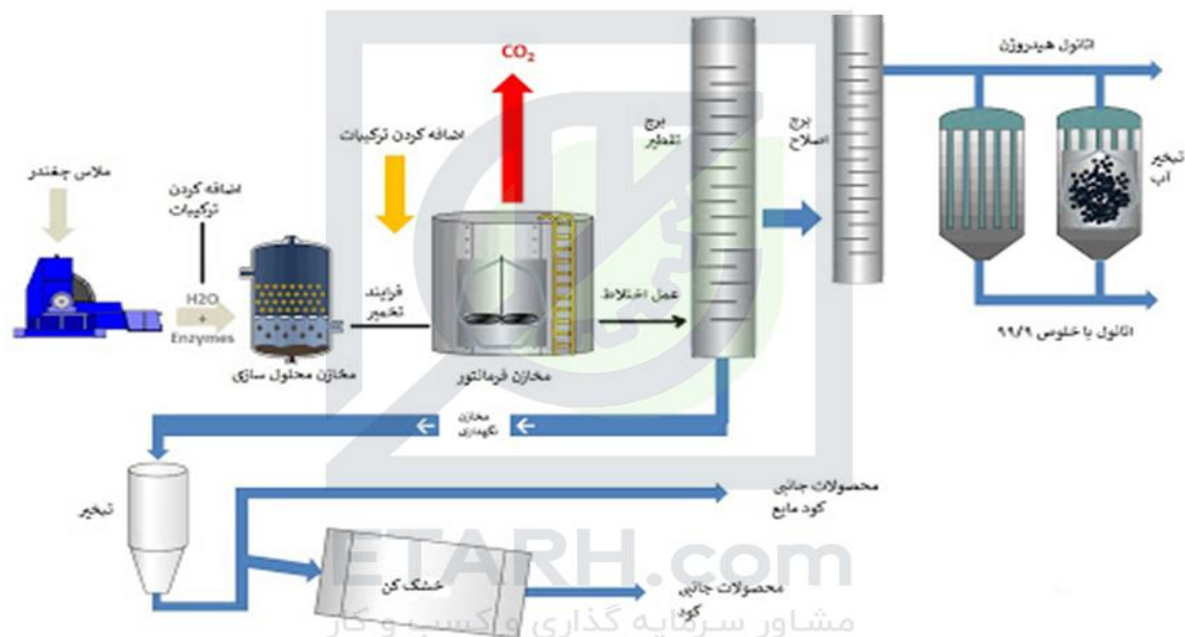
USA, Brazil, China, Canada, France, Germany, Columbia, Thailand, Guatemala, Spain and Belgium.

1-10-Import and export conditions

Most of the ethanol exported by Iran is delivered to Turkey. Statistics show that these exports have had a good exchange rate for the Islamic Republic of Iran. China, UK and even Turkey are some of the countries which export ethanol to Iran. China provides the cheapest ethanol.

Production Process

Sugar, sugar beet and sugarcane are extracted and processed. Products such as corn, wheat, and barley that contain starch are converted to sugar and then, to ethanol. Most of the ethanol produced in the United States is from starch. The starch is mainly supplied from cornfields. Another source is the sugar found in trees and other plants in the form of cellulose fibers. To use cellulose, it must first be broken down into sugar, and then the sugar is converted to ethanol through the fermentation process. By-products of forestry operations are also used to produce ethanol. Sawdust, wood chips, twigs and agricultural waste can be used to produce cellulosic ethanol. Some plants are also grown exclusively for ethanol production.



Milling Process

Ethanol production is mainly done in a four-step process:

- Raw materials containing agricultural products or plants are ground to facilitate the process.
- Sugar is separated from the raw materials. More precisely, cellulose is converted into degraded sugar or starch into sugar. This operation is performed during a cooking process.
- Yeasts and bacteria feed on sugar and ethanol is released. This process is called fermentation during which carbon dioxide is produced as a by-product. Many grape and malt-based beverages are produced by a similar process.
- To obtain high concentrations of ethanol, ethanol is separated from other products during the distillation process. To prevent this ethanol from being accidentally consumed by humans, diesel is added as an additive. The used corn can be separated after processing and used for livestock and poultry feed.

Wet-Milling

Wet milling is another method used by large-scale manufacturers to produce ethanol. In this process, there is a wetting step. The grain pulp, oil, starch and gluten are then separated and processed to become more valuable products. One of these products is corn syrup, which contains large amounts of fructose. This syrup is used as a

sweetener in the food industry. Corn oil is another product that is isolated from the environment and refined. Gluten is separated by the wet milling process and used as an additive in the feed.

Ethanol Purification

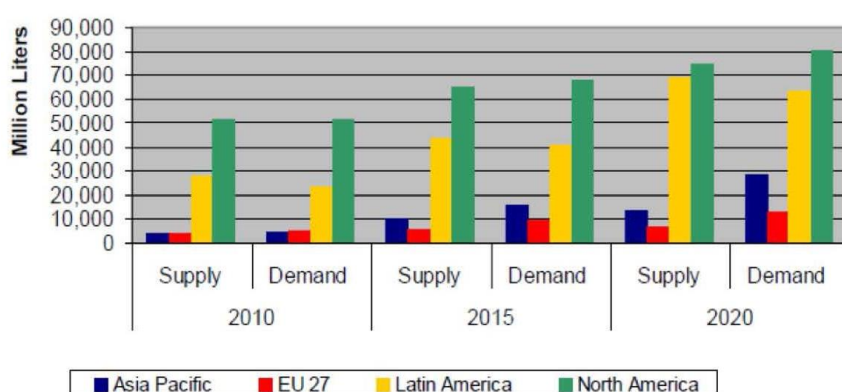
The distillation stage comes after fermentation. At this stage, the ethanol is purified to about 96 degrees. At this stage, there are several towers with trays or filled with steel. To obtain more purity, several methods can be used:

- (1) Molecular sieve: In this method, a molecular sieve is used to trap water molecules and increase the percentage of ethanol.
- (2) Vacuum pump: In this method, the azeotropic point is broken by reducing the pressure and pure alcohol is obtained.
- (3) Membrane distillation: In this method, 99.96% alcohol is obtained.

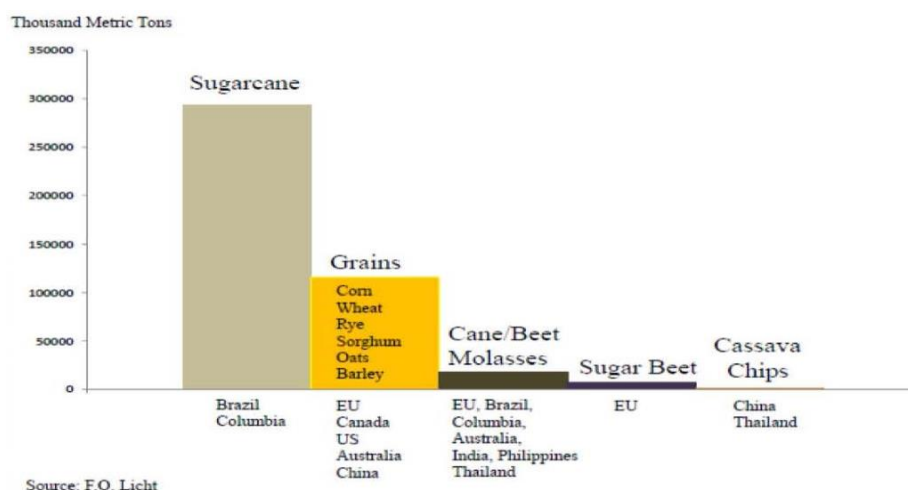
۱-۱- Consumption Trend

Due to the advantage of domestic ethanol production using molasses of sugar beet and sugarcane or wheat, there are 47 industrial production units of ethyl alcohol in the country with a nominal capacity of 1226 thousand tons. The number of projects under construction in the country with the physical progress of over 60%, is only 4 projects that are expected to create a new capacity of 7,000 tons. Iran's ethanol exports in 1997 were 18.1 million liters worth \$4.1 million to Turkey and Afghanistan.

The supply and demand of bioethanol in Europe, Asia, North America and Latin America are presented in the figure below. In Asia over the next decade, the supply and demand are not balanced and the demand is much higher than the supply capacity of this product by the Asian countries.



Currently, the major exporters of bioethanol are Brazil, Thailand, India and South Africa, and in recent years, Peru, Central America, Colombia and Pakistan have been added to this list. Currently, the main importers of this product are Japan and European countries and the United States, to some extent.



2-Assessment and Determination of the Minimum Economic Capacity including Fixed Investment Value in Rials and Dollars (Using the Available Data of Ongoing Units, UNIDO, Internet and Global Databases, Technology, Equipment, etc. Provider Companies)

Considering the domestic market demands, especially Khuzestan province and the export objectives, the annual nominal capacity of the project is:

30,000 tons of bioethanol

50,000 tons of sulfuric acid

Given that the company has been in production for the past years, the practical capacity is estimated to be the same as the nominal capacity.

A 12-month period is estimated to purchase the required equipment and complete the production line. This volume of products is anticipated to be prepared in 300 days by an 8-hour day shift.

Production and Sales Plan over the Next 5 Years

Year 5	Year 4	Year 3	Year 2	Year 1	Year of Operation / Title
100	100	100	100	100	Capacity Percentage
30,000	30,000	30,000	30,000	30,000	Bioethanol
					Sulfuric Acid
					Revenue
180	180	180	180	180	Bioethanol
500	500	500	500	500	Sulfuric Acid
5,650,000	5,650,000	5,650,000	5,650,000	5,650,000	Totla Sales

					Million Rials	Total Sales
					Million Euros (1€=280,000R)	

Project Investment Details:

Total Cost		Required Cost					Cost (million Rials)	Item
Million Euros	Millo n Rials	Total (Million Rials)	Rial	Foreign Currencies				
			Million Rials	Equivalent to Rials (Million Rials)	Milli on Yuan	Millio n Dollar s		
	22,000		-				22,000	Land
	24,185	24,185	24,185				-	Landscaping
	80,300	80,300	80,300				-	Construction
	12,500	8,500	8,500				4,000	Facilities
	1,120,000	1,120,000	336,000	804,000				Equipment and Machinery
	3,500	3,500	3,500				-	Laboratory Equipments
	5,350	5,350	5,350				-	Transportation
	3,300	3,300	3,300				-	Office Equipment
	5,000	5,000	5,000					Unforeseen Expenses
	1,276,135						26,000	Total Fix Assets

	90,000			-		-	90,000	Pre-Operation Costs
	1,366,135						116,000	Total Fixed Investment
	708,208							Working Capital
	2,074,343							Total Investment

- 1 Euro = 280,000 Rials
- 1 Dollar = 255,000 Rials
- 1 Yuan = 60,000 Rials

Land Details:

Equivalent to Euros	Total Cost of Available and Required	Total Cost (Million Rials)		Area (m ²)		Item
		Required	Available	Required	Available	
	22,000				30,000	Land

Building Details:

Equivalent to Euros	Total Cost (Million Rials)			Unit Price (Rials)	Area (m ²)		Item
	Total	Required	Accomplished		Required	Accomplished	
	18,000	18,000		18,000,000	1,000		Industrial and Production Section
	11,200	11,200		16,000,000	700		Raw Material Storage Shed
	4,500	4,500		15,000,000	300		Final Product Storage Shed
	2,200	2,200		11,000,000	200		Livestock Feed Storage
	21,000	21,000		14,000,000	1,500		Concrete and Industrial Foundations of Tanks and Equipment
	14,000	14,000		20,000,000	700		Offices, Laboratory, Power Substation and Power and Control Room
	7,000	7,000		7,000,000	1,000		Vinasse Area and Loading
	2,400	2,400		12,000,000	200		Cooling Towers and Pumping Structures

	80,300	80,300			5,600		Gross Floor Area and Total Costs
		24,185			9,000		Landscaping
	104,485	104,485					Total

Facilities Details:

Equivalent to Euros	Required Cost (Million Rials)			Technical Specifications	Item
	Total	Required	Accomplished		
	1,000		1,000		Power Subscription Charge
	1,000		1,000		Water Subscription Charge
	2,000		2,000		Gas Subscription Charge
	1,500	1,500			Heating and Cooling Equipment
	2,500	2,500		2,300 kW	Power Supply
	1,500	1,500		4 inches	Water Supply
	1,000	1,000			Gas Supply
	2,000	2,000			Fire Extinguishing
					Other
	12,500	8,500	4,000		Total

Production Line Machinery:

Equivalent to Euros	Total (Million Rials)	Cost (Million Rials)	Equivalent in Million Rials	Equivalent in Dollars	Number	Machinery	Number
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		Required	Accomplished		Required	Accomplished	Required	Available	
		264,000		72,000			2		Sulfuric Acid Machinery
		492,000		312,000					Dicalcium Phosphate Machinery
	1,140,000						Total		

Office and Service Equipment:

Equivalent to Euros	Required Cost (Million Rials)			Number		Items
	Total	Required	Accomplished	Required	Accomplished	
		800				Office Furniture
						Chairs
						Faxes
						Telephone/Modems
		1,000				Computers
						Printers
		1,500				Other
		3,300				Total

Vehicles

Num.	Item	Number	Unit Price (Rials)	Total Cost (million Rials)
1	Pickup Truck	1	2,000,000,000	2,000
2	Forklift	1	1,800,000,000	1,800
3	Loader Tractor	1	1,500,000,000	1,500
4	Workshop Handcart	1	50,000,000	50
Total				5,350

Cost of Raw Materials:

Num.	Item	Consumption	Unit Price (\$)	Unit Price (Rial/kg)	Total Cost
1	Sugarcane molasses	114,000		28,000	3,192,000
2	Sulfur	16,500		5,500	90,750
3	Additives and supplements	500		3,500	12,500
Cost of raw materials					3,295,350

Working Capital Costs:

Equivalent to Euros	Total Cost				Duratio n (month s)	Item
	Total (Million Rials)	Rials	Foreign Currencies			
		Million Rias	Equivalent to Million Rias	Million Yuan		
	549,208				2	Raw Material and Packaging
	100,000				1	Other
	40,000				1	Liability
	19,000				1	Petty Cash
	708,208					Working Capital

Production Costs:

Equivalent to Euros	Cost (Million Rials)	Items
	3,295,250	Raw Material and Packaging
	58,965	Energy (Power, Water, Fuel, . . .)
	74,987	Repair and Maintenance
	20,000	Unforeseen
	82,854	Depreciation
	128,150	Personnel
	120,360	Office and Sales
	10,000	Financial Facilities

	10,000	Factory Insurance
	3,800,566	Total

Salary Costs:

Num.	Personnel	Number	Monthly Salary (thousand rials)	Annual Salary (million rials)
a) Production Staff				
1	Factory Manager	1	150,000	1,800
2	Production, Technical and Quality Control Managers	4	90,000	4,320
3	Shift Supervisor	6	90,000	6,480
4	Production Engineers	9	80,000	8,640
5	Laboratory Specialist	3	70,000	2,520
6	Head of Repairs and Technical Affairs	3	65,000	2,340
7	Production Technician	21	65,000	16,380
8	Laboratory Technician	2	65,000	1,560
9	Repair and Facilities Technician	3	65,000	2,340
10	Skilled Worker	18	55,000	11,880
11	Worker and Loader Driver	31	40,000	14,880
12	Head of Warehouse	3	50,000	1,800
Total		104		72,672
b) Administrative and Head Office Staff				
1	Finance	2	45,000	1,080
2	Secretary	2	40,000	960
3	Janitor	2	35,000	840
Total		6		2,880
Total of (a) and (b)				75,552
Production Staff Insurance and Benefits (70%)				50,870
Administrative and Head Office Staff Insurance and Benefits (60%)				1,728
Total Paycheck of Production Staff				123,542
Total Paycheck of Administrative and Head Office Staff				4,608
Total Paycheck of All Staff				128,150

Depreciation and Maintenance Costs

Repair and Maintainance			
Num.	Item	Asset Value	Repair and Maintainance

		(Million Rials)	Percentage	Cost (million rials)
1	Buildings and Landscaping	104,485	5	5,224
2	Production Machinery and Equipment	1,140,000	6	68,400
3	Labrotary Machinery and Equipment	3,500	4	140
4	Facilities and Ancillary Services	12,500	5	625
5	Vehicles	5,350	5	268
6	Office and Kitcken Euipment	3,300	10	330
Total		1,269,135		74,987
Depreciation				
Num.	Item	Asset Value (Million Rials)	Repair and Maintainance	
			Percentage	Cost (million rials)
1	Buildings and Landscaping	104,485	5	5,224
2	Production Machinery and Equipment	1,140,000	7	76,000
3	Labrotary Machinery and Equipment	3,500	4	140
4	Facilities and Ancillary Services	12,500	5	625
5	Vehicles	5,350	10	535
6	Office and Kitcken Euipment	3,300	10	330
Total		1,269,135		82,854

3-The volume of Annual Required Raw Materials and Where to Supply Them From (Domestic or Foreign), The Cost (in Rials and Euros) and Examining the Fundamental Changes in the Process of Supplying the Required Items in the Past and Future

Total Price			Supply Location	Unit Price		Consumption Required per Total Capacity	Consumption Unit	Consumption per Unit of Product	
Total (Million Rials)	Foreign Currency (Yuan)	Domestic (Million Rials)		Foreign Currency (Yuan)	Domestic (Million Rials)				
		5,400,000	Iran		180	30,000	tons	Bioethanol	

			250,000	Iran		5	50,000	tons	Sulfuric Acid		
			5,650,000	Total							

4-Assessment and Determination of Power, Water and Fuel Supply and Telecommunication and Transportation Facilities (Roads, Railways, Airports, Ports, . . .) and How to Provide Those to a Zone Suitable for the Project

Khoramshahr industrial zone has all the necessary infrastructures such as power, water, gas and telecommunication facilities. The distance between Khoramshahr and Ahvaz (Khuzestan capital) is 110 km.

5-Commercial and Economic Support for the Project

Several supporting projects are ongoing to promote the industry.

- In order to evaluate, discuss and resolve the obstacles and problems facing the production units, a “Production Facilitation Committee” was appointed in all the provinces whose members are governor-general (chairman), provincial unit head of Ministry of Industry and Mines (secretary), head of provincial management and planning organization, head of the provincial chamber of commerce, industries, mines and agriculture, head of the provincial chamber of industry, mining and commerce, etc. The most important responsibility of the committee is to
 - facilitate, complete and launch semi-finished production projects and develop them
 - support and help the export of provincial products
 - evaluate the cause of stagnation or suspension of production unit operations and try to solve the problem
- **Resistive Economy (Economic Prosperity) Committee:** Ministry of Industry, Mines and Commerce issued a resolution (12868) on May 15th, 2016 by which the completion of industrial projects with more than 60% physical progress and support of small and medium production units were funded.
- **Small Industries Investment Guarantee Fund:** Issuing credit guarantees facilitates the financing of small businesses and warrants the payback of principal plus interest to the bank. The guarantee will be issued after a thorough inspection and validation and offering the proper collateral.

5-1-Supporting Custom Tariff (of Products and Machinery) by International Tariffs

The tariff for importing the machinery required for the project is 5 to 10 percent to facilitate the technology provision and support domestic production. The tariff for importing MDF sheets is 55% to prevent the importing and support domestic production.

5-2-Financial Support (of Available Units and Projects) by Banks - Investment Companies

The funding by banks can be accomplished by

- ١- **Foreign Exchange Reserve Fund:** The oil revenue surplus is allocated to manufacturers and exporters to finance some of their foreign currency needs in the shape of Islamic contracts and approved regulations and according to domestic import and export of commodity and services regulations.
- ٢- **Resistive Economy (Economic Prosperity) Committee:** Funding is considered to complete the industrial projects with more than 60% physical progress and support the small and medium production units.

٣- Foreign Investment Encouragement and Protection Law

Since 1955, the framework of foreign investment in Iran's law has been to attract and support foreign investment. In order to make reforms in the economic structure of the country, the Iranian parliament proposed new law on foreign investment called the Encouragement and Support of Foreign Investment Act which was finally approved in 2002. This new law has led to the development of the legal framework and the environment for foreign investors in Iran. Some of the progress made by the new law in the field of foreign investment are:

- The Government of the Islamic Republic of Iran welcomes the foreign investment of foreign entities, both natural and legal, in all areas of economic activity.
- Recognition of new investment methods in addition to foreign direct investment
- Facilitating the process of applying and approval of foreign investment
- Establishment of an organization called Foreign Investment Services Center within the Organization for Investment Economic and Technical Assistance of Iran in order to provide centralized and effective support to the activities of foreign investors in Iran

In case of attracting foreign investment, the government has considered incentives some of which are:

١. Tax exemption for products of foreign investment companies
٢. Providing insurance coverage to investors
٣. Granting customs exemptions on the import of inputs required by foreign investment companies
٤. Provide subsidies for local labor training
٥. Creating free-trade zones for investment
٦. Providing cheaper infrastructure and public services such as water and electricity
٧. Guaranteeing the return of profits and principal and preventing their confiscation and nationalization

6-Analysis, Conclusions and Suggestions

This project is very important because it is located near the center of the province and there is a lot of demand for this product.

- Environmental Expert Report

None of the environmental criteria including air, soil and noise pollution and waste disposal were violated and thus, the project can be completely implemented.

- Management Expert Report

Considering the high cost of imported products and the availability of raw materials and resources, the implementation of the project is highly recommended.

3,800,566 Rials	Product Final Cost
180,000 and 6,000 rials per liter for bioethanol and sulfuric acid, respectively	Product Sales Price
5,650,000	Total Sale (Million Rials)
64%	Sales Percentage at Break-Even Point
1,849,434	Profit (Million Rials)
89%	Internal Return Rate
55,405	Net Value Added (Million Rials)
1.1 year	Payback Period