

# **General Department of Economic and Financial Affairs of Khuzestan**

Preparation and Compilation of Investment Opportunities in The Province  
Investment Opportunity Studies Report

## **Greenhouse complexes construction plan**

(Attachment Number 1)

Date: 2023/06/01

V2

## In the name of God

### Table of content

(Attachment Number 1) .....	1
1) Location of the project .....	4
1-1- Province .....	4
1-2- County .....	4
2) roject Status.....	5
2-1- Access to infrastructures .....	5
3) Technical specifications of the project .....	6
3-1- Product .....	6
3-2- Project Requirement .....	7
3-2-1- Land And Required Infrastructure.....	7
3-2-2- Plant Machinery and Equipment.....	7
3-2-3- Raw Materials .....	9
3-2-4- Management and human resource.....	9
4) Ownership and legal permissions.....	9
4-1- land ownership .....	9
4-2- Intellectual Property and Concessions .....	9
4-3- Legal permissions .....	9
5) market research and competition .....	10
5-1- Target market introduction .....	10
6) Physical progress of the project .....	11
7) Operational plan and implementation scheduling.....	11
8) Financial Plan.....	12
8-1- Cost Estimation.....	12
8-2- Sales Revenue.....	14
8-3- Length of Production Phase .....	14
8-4- Break-Even Analysis.....	14
8-5- Cost-Benefit Analysis .....	16
8-6- Sensitive Analysis.....	17
8-7- Conclusion .....	17
8-8- Estimation of currency rate fluctuation during the project implementation .....	18
9) Investment Required, method of fundraising and guarantees .....	19
9-1- Foreign Currency Required.....	19
9-2- Model Of Partnership and Fundraising .....	19
9-3- Payback Period .....	19
10) Incentives, features and benefits of the plan.....	20
(Attachment Number 2) .....	21

## Tables and Figures

Table (1): access to infrastructures .....	5
Table (2): Amount of investment in land, landscaping and building .....	7
Table (3): Plant Machinery and Equipment .....	7
Table (4): Auxiliary and service plant Equipment .....	8
Table (5): Costs of Raw Material for Production .....	9
Table (6): Management and Human Resource .....	9
Table (7): The level, the amount of production of greenhouse products in the year 1400 .....	10
Table (8): Project Scheduling .....	11
Table (9): Cost Estimations .....	12
Table (10): Fixed Capital Estimations (Capital Costs) .....	12
Table (11): Total Net Working Capital Requirements (Production Costs) .....	13
Table (12): Pre-Production Expenditure .....	13
Table (13): Project Revenue in The First 5 Years of Production Phase (Billion Rials) .....	14
Table (14): Planning Horizon .....	14
Table (15) : Project break-even point estimation .....	15
Table (16): Project Return Index .....	16
Table (17): Sensitivity Analysis (Percentage of IRR changes caused by sales revenue, fixed assets and operating costs alteration) .....	17
Table (18): Summary of Economic Features .....	18
Table (19): Currencies exchange Rate .....	18
Table (20): Foreign (Fixed) Currency Required .....	19
Figure (1): The Province location in Iran .....	4
Figure (2): Shush location in Khuzestan province .....	4
Figure (3): Political divisions of Khuzestan province .....	4
Figure (4): Project location map .....	5
Figure (5): The image of the greenhouse town .....	5
Figure (6): Access routes to the project .....	5
Figure (7): Pictures of greenhouse products and greenhouse complexes .....	6
Figure (8): Percentage changes in IRR caused by the sales revenue, fixed assets and operating costs alteration .....	17

## 1) Location of the project

### 1-1- Province

**Khuzestan province** is located in the southwest of Iran (in 47° 42' to 50° 39' east of the Greenwich meridian and 29° 58' to 32° 58' north of the equator). The area of Khuzestan province is 63,238 square kilometers. With a population of 4,994 thousand people in 1400SH, it is the fifth most populous province in Iran (after Tehran, Khorasan Razavi, Isfahan and Fars provinces). **Ahvaz** is the capital of Khuzestan province and is located in the 880km of Tehran. This province is bordered by ILAM province from the northwest, Lorestan province from the north, CHAHARMAHAL and BAKHTIARI, KOHGILUYEH and BOYERAHMAD provinces from the northeast and east, the Persian Gulf (330km long) from the south and Iraq (330km long) from the west. The location of Khuzestan is in the west of Zagros mountains. Due to the vastness of its plains, the border with Iraq and the Persian Gulf, and the distance from other provincial centers have placed this province in a strategic position.

### 1-2- County

According to the latest national divisions of 1401 of the Ministry of Interior, this province has 29 counties, 70 districts, 145 villages, 90 cities and 3 special governorates. The latest political divisions of the province are described in figure (3).

**BANDAR MAHSHAHR** city is one of the cities of Khuzestan province, centered in **BANDAR MAHSHAHR** city. **MAHSHAHR** city, with a population of over 300 thousand people, has 6% of the province's population.

This city has a common border with **HENDIJAN**, **OMIDIYEH** and **RAMSHIR** cities from the east, **SHADEGAN** city from the west, **AHVAZ** city from the north, and the Persian Gulf from the south. This city is located 18 km from Imam Khomeini Port, 95 km from **ABADAN** and 110 km from **AHVAZ**.

**BANDAR MAHSHAHR** city is located in the arid and extra-arid geographical region and is located in a wide and flat area with an area of 591 thousand hectares in the plains. The rapid increase in temperature in spring makes the nature of the area dry and rough and the value of the pastures decreases drastically.

**BANDAR MAHSHAHR** city is located in the plains of Khuzestan, and it is not very rough, low and high, and is mostly flat. **MAHSHAHR** has hot and humid weather. Its temperature varies between 50 degrees in summer and zero degrees in winter.

**MAHSHAHR** has intense and annoying humidity in the summer so that its relative humidity reaches 100%. The average rainfall in this area is 195 mm. Due to its salty and alkaline soil, the port of **MAHSHAHR** has poor vegetation and there are scattered trees and shrubs.

**MAHSHAHR** is a port and industrial city and the highway of land, sea and rail transit routes for goods from the important and strategic port of Imam Khomeini, and the most important industries of **MAHSHAHR** are petrochemicals and shipping. The presence of water borders and proximity to Iraq and Kuwait have made this region an important industrial and import and export point.

The activity and economic development of **MAHSHAHR** port is mostly based on port capability and proximity to the coasts and proximity to oil and gas resources of the Khuzestan plain and related activities.

With the construction of the oil and goods export port and after that with the construction of the Imam Khomeini Petrochemical Port (Iran, formerly Japan) and also with the creation of the special petrochemical economic zone (industries can use the facility of importing goods) and the construction of huge petrochemical industries, this city has turned it into a dense and immigrant-friendly city.

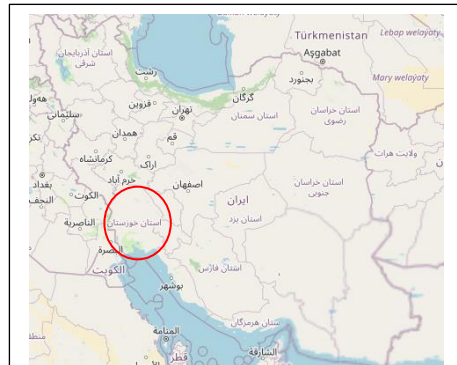


Figure (1): The Province location in Iran



Figure (2): Shush location in Khuzestan province

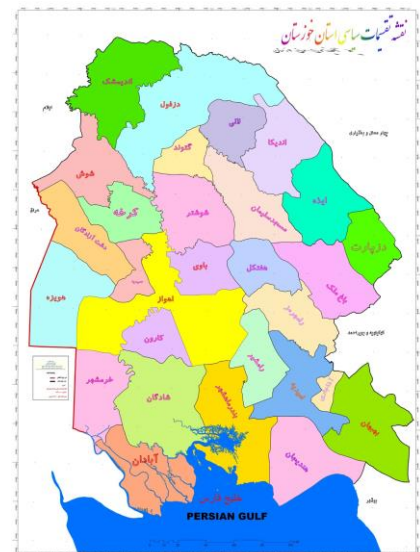


Figure (3): Political divisions of Khuzestan province

## 2) Project Status

The location of this project is proposed in MAHSHAHR city and an area of about 190 hectares. The cultivated area of the greenhouse is 107 hectares. This special area is located 3 km from TALEGHANI town. The coordinates of the land for establishing the greenhouse are as described in the table below.

latitude	Longitude	points
30.619500	49.166700	a
30.614948	49.166826	b
30.622497	49.187563	c
30.625914	49.183891	d

### 2-1- Access to infrastructures

Currently, there are water, electricity and gas infrastructures in this industrial town. In terms of access to transportation, this town is in a good location. The distance between the selected location and AHVAZ-ABADAN highway is 4 km and it is 100 km from IMAM KHOMAINI Port. Bandar ABADAN airport is also located 16 km away from the place.



Figure (4): Project location map



Figure (5): The image of the greenhouse town

Table (1): access to infrastructures

No.	Required Infrastructure	Distance From Project Status(km)	Location Of Infrastructure Provision
1	Water	0	underground water
2	Electricity	0	Nationwide Grid - Electricity infrastructure is in place
3	Gas	3	Nationwide Grid
4	Telecommunication	3	Nationwide Grid
5	Main road	4.5	RAMSHIR - MAHSHAHR road
6	Side road	1	BEASAT Blvd
7	Airport	12.5	MAHSHAHR Airport
8	Port	30	IMAM KHOMAINI
9	Railway Station	21	MAHSHAHR Railway

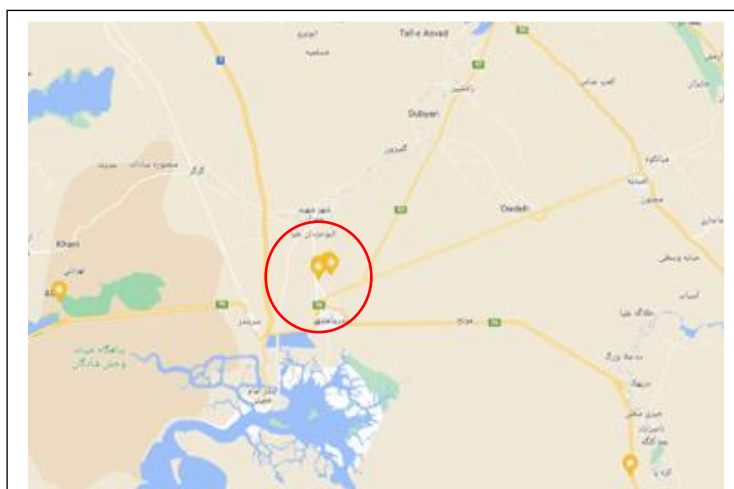


Figure (6): Access routes to the project

## 3) Technical specifications of the project

### 3-1- Product

Greenhouse refers to a limited space that has the ability to control suitable environmental conditions for the growth of plants from different areas during different seasons of a year. According to this definition, among the functions of the greenhouse is providing the necessary and required environmental conditions for a certain product.

In the greenhouse of the current design, three types of products including tomatoes, strawberries and bell peppers are considered. Obviously, other greenhouse products can replace the mentioned products, depending on the market conditions, users can choose other products.

Since the targeting of the project is based on product production and export, the sorting and packing hall, product storage warehouse and above-zero cold storage are considered in the 107-hectare complex.

yield per unit area (tons per hectare)	Plant yield (kg per plant)	Number of plants per square meter	Physical performance per unit area (tons per hectare)	Number of plants per hectare	Length of growth period (days)	Type of greenhouse cultivation
126	1.4	9	120-80	90,000	four years old	Strawberry
200	5.0	4	200-150	40,000	223	tomato
225	4.5	5	200-150	50,000	193	pepper

The amount of cultivated area in a greenhouse complex is influenced by the cultivation period and the frequency of cultivation of different crops. The performance of the surface unit is also determined according to the performance of the individual in delivering nutrients, pest control and optimal cultivation conditions. The cultivated area is determined according to the halls created in the site of the complex. The total allocated land is 190 hectares. The number of complex farms is 15 farms and the area of farms is 7 to 8 hectares. Obviously, each farm can be divided into 10 to 15 separate halls.

The total area of the halls of the complex is 107 hectares, of which 100 hectares are dedicated to crop cultivation and the rest, including 70,000 square meters, is used as a place of transportation, installation of facilities, etc. If the cultivation systems are traditional, the greenhouse cultivation system should be changed periodically.



Figure (7): Pictures of greenhouse products and greenhouse complexes

## 3-2- Project Requirement

### 3-2-1- Land And Required Infrastructure

A land of 190 hectares has been considered for the construction of greenhouse complexes in MAHSHAHR. A greenhouse complex with an area of 107 hectares will be designed and built on this land. In the current plan, the said greenhouse complex is divided into 13 7-hectare farms and two 8-hectare farms.

In addition, a 5000-ton cold room and a sorting and packing hall along with three sorting and packing lines and a 50-ton scale have been planned for MAHSHAHR Greenhouse Complex to enable the direct export of greenhouse products. The crops that can be grown in this greenhouse are three crops: pepper, tomato and pepper.

that this basket can be different in practice according to market conditions. The specifications of the land, main buildings and other required side buildings and investment in them are as described in the table below.

Table (2): Amount of investment in land, landscaping and building

No.	Requirements	Description	Investment Required		Total Cost (Million Rials)
			Required Area	Unit Price of Purchase/Construction	
1	agricultural land	The main part of the land	1,900,000	0	0
2	Landscaping operations	According to the relevant calculations	808,950	326,349	264,000
3	Construction	greenhouse structure	1,070,000	10,000,000	10,700,000
		Office and management building	1,000	85,000,000	85,000
		Engine house and central facilities	500	45,000,000	22,500
		Cold storage above zero	4,200	12,000,000	50,400
		Sorting and packing hall	6,000	10,000,000	60,000
		Weighbridge	300	80,000,000	24,000
		Construction of a pool	2,000	25,000,000	50,000
		Parking and loading area (truck loading area)	7,000	7,000,000	49,000
		Guard and janitor building	50	60,000,000	3,000
Total			-	-	11,316,720

### 3-2-2- Plant Machinery and Equipment

The complex equipment in the three sections of greenhouse, cold storage and sorting and packing line is as follows:

Table (3): Plant Machinery and Equipment

No.	Equipment/Machinery	Required investment			Total cost (Million Rials)
		Amount	Purchase Price	Currency	
1	Cold storage equipment above zero	1	400,000,000,000	Rials	400,000
2	Complete sorting and packing line equipment	3	100,000,000,000	Rials	300,000
3	Weighing equipment	1	15,000,000,000	Rials	15,000
4	Greenhouse heater - FAMCO (ventilation 36000 cubic meters, gas burner and diesel burner 220 thousand calories - 4 horse power)	1,070	200,000,000	Rials	214,000
5	Irrigation system	1,070,000	180,000	Rials	192,600
6	Intelligent automation system for greenhouse management	1,071	450,000,000	Rials	481,950
7	Circulation fans	840	65,000,000	Rials	54,600
8	Circulating fans (40 cm size with ZHENIRAN motor)	1,720	70,000,000	Rials	120,400
9	Circulating fans (35 cm)	1,720	60,000,000	Rials	103,200
10	exhaust fan	2,140	180,000,000	Rials	385,200
11	Fogger	1,070,000	800,000	Rials	856,000
12	Shading system (canopy mesh)	1,070,000	400,000	Rials	428,000
13	Cellulose pads	2,140	50,000,000	Rials	107,000
14	Garden tractor EURO 50B + accompanying accessories	15	6,200,000,000	Rials	93,000
15	Cultivator tiller 12 horses + accessories (plough, rake, auger, iron wheel, weeder, auger, goose claw, etc.)	15	420,000,000	Rials	6,300
16	Sheds and cargo containers	15	800,000,000	Rials	12,000
17	Back-breaking tractor cart / 3ton trailer with dumper jack	15	700,000,000	Rials	10,500
18	Wheelbarrow sprayer - gasoline 100 liters 45 bar + hose and...	15	120,000,000	Rials	1,800
19	backpack sprayer 25-liter four-stroke gasoline	15	65,000,000	Rials	975
20	16liter Hyundai rechargeable sprayer	15	30,000,000	Rials	450
21	Tucson gasoline lawnmower	15	30,000,000	Rials	450
22	Honda lawn mower	15	150,000,000	Rials	2,250
23	Trailer tiller cultivator with damper	15	90,000,000	Rials	1,350
24	Other greenhouse items	1	2,975,000,000	Rials	2,975
Total		-	-	-	3,790,000

Table (4): Auxiliary and service plant Equipment

No.	Equipment/Machinery	Unit of measurement	Type of equipment	Required investment		Total cost (Million Rials)
				Amount	Unit Price (Million Rials)	
1	Distribution Of Electricity / Demand Price	Kw	Facility	600	5	3,000
2	Power transmission line (main part done)	Kw	Facility	2	2,500	5,000
3	All kinds of electrical cables and lighting equipment	m	Facility	40,000	1	40,000
4	The cost of electrical panels and related electrical equipment	Amount	Facility	30	350	10,500
5	diesel generator	Machine	Facility	1	35,000	35,000
6	Emergency electric motor	Machine	Facility	15	600	9,000
7	branching of water	-	Facility	1	4,000	4,000
8	Other water transfer equipment	Amount	Facility	1	12,000	12,000
9	External water supply line (two-inch pipe)	m	Facility	5,500	2.0	11,000
10	Drinking water piping, internal fire water (2-inch pipe)	m	Facility	4,000	5.0	20,000
11	Pumps and water pumping equipment	Machine	Facility	15	3,000	45,000
12	5-inch water pipe	m	Facility	5,000	6	30,000
13	Water tank (10000 liters)	Amount	Facility	15	250	3,750
14	Rainwater collection routes	m	Facility	4,000	1.2	4,800
15	Human sewage transfer route	m	Facility	300	5.0	1,500
16	human sewage disposal well (three rings)	m	Facility	36	40	1,440
17	Other plumbing (electricity, etc.)	m	Facility	600	5.0	3,000
18	Firefighting, safety and health equipment and...	-	Facility	40	20	800
19	gas piping	m	Facility	6,000	5	30,000
20	Gas branching	-	Facility	3	4,000	12,000
21	Main gas meter (diaphragm) and related equipment and installation	-	Facility	3	6,000	18,000
22	Gas transmission line	m	Facility	3,000	42	126,000
23	Water heater and heater	Machine	Facility	4	300	1,200
24	Ventilation systems for toilets and bathrooms	Machine	Facility	40	30	1,200
25	Air Conditioner	Set	Facility	15	800	12,000
26	Internal pallet jack	Machine	Vehicle	15	60	900
27	3ton forklift	Machine	Vehicle	3	18,000	54,000
28	pickup truck	Machine	Vehicle	15	7,000	105,000
29	car	Machine	Vehicle	10	8,000	80,000
30	Laboratory and workshop tools and equipment	Machine	Equipment	3	20,000	60,000
31	Wheelbarrow, pickaxe, planting tool and reaper	Machine	Equipment	760	600	456,000
32	CCTV system - environmental data system	Set	Equipment	15	3000	1,840
33	Office Equipment	Set	Equipment	35	1,200	42,000
34	Restaurant Equipment	Set	Equipment	396	300	118,800
35	Medical Equipment	Set	Equipment	1	7,500	7,500
36	Other Facilities	-	Facility	1	70,610	70,610
Total				-	-	1,480,000



### 3-2-3- Raw Materials

The costs of raw materials can be different according to the cultivation pattern in each year.

Table (5): Costs of Raw Material for Production

No.	Title	Unit	Consumption	The average price of a purchase unit (Rials)	The cost of materials at the nominal capacity (Million Rials)
1	Nitrate fertilizer, phosphate, ammonium fertilizer, biological supplements, and...	kilogram	0.40	2,000,000	796,000
2	Strawberry seeds / sprouts	Amount	10	100,000	195,000
3	Tomato seeds/seedlings	Amount	4	60,000	78,000
4	Pepper seeds/sprouts	Amount	4	80,000	152,000
5	All kinds of herbicides	kilogram	0.0001	10,000,000	995
6	Types of agricultural pesticides	kilogram	0.0005	10,000,000	4,975
7	Cardboard and nylon packaging of strawberries	Amount	2.0	120,000	351,000
8	Tomato packaging basket	Amount	6	80,000	173,333
9	Carton packing pepper	Amount	5	170,000	516,800
<i>Total</i>		-	-	-	2,268,103

### 3-2-4- Management and human resource

For the construction of greenhouse complexes, 1310 manpower will be needed in the production, management and support department as described in table (6).

Table (6): Management and Human Resource

No	Level of skill	Number of staff	Average basic salary
1	Senior	160	138,297,872
2	Mid-level	300	100,000,000
3	Junior	850	92,000,000

Number Of Direct Mid-Level Staff Required	300	Person
Number Of Direct Junior Staff Required	850	Person
Number Of Direct Senior Staff Required	160	Person
<b>Total</b>	<b>1310</b>	<b>person</b>

## 4) Ownership and legal permissions

### 4-1- land ownership

The suitable place for the implementation of the project is near the city of MAHSHAHR. After the construction of the complex, only the right to exploit the built structures will be given to the operators (experienced farmers, agricultural graduates and investors with suitable records). Operators can cultivate and operate farm equipment and structures on a leased basis.

### 4-2- Intellectual Property and Concessions

Production and cultivation in the greenhouse require experience and agricultural knowledge. For this purpose, the right to operate the greenhouse is given to qualified people (such as experienced farmers, agricultural graduates and investors with appropriate records).

### 4-3- Legal permissions

In order to build and operate a greenhouse, legal permits such as (establishment permit and operating permit) are required from the Jihad Agricultural Organization of Khuzestan province.

## 5) market research and competition

### 5-1- Target market introduction

The agriculture and natural resources sector, which provides 15% of GDP, 22% of employment, more than 85% of food needs and a third of non-oil exports of the country, has many potentials and possibilities. Paying attention to the existing potentials in the agricultural and natural resources sector, and the production facilities and specialized manpower of this sector, can play an important role in achieving national development.

The location of a large part of our country in the territory of arid and semi-arid climate and the decrease of rainfall in the last decade has increased the desire to create greenhouse complexes. In greenhouses, because growth factors such as humidity, light, temperature and air conditioning can be controlled, the amount of production is 10 times higher than cultivation in the open space.

In 2019, the area of greenhouses in the country was more than 9,800 hectares, and the total number of greenhouses in the country was estimated to be 22,477, which has grown by 3.1% compared to 2018. Also, according to the evaluations, the number of active greenhouses in the country has reached 20,632, which has increased by 1.6 percent compared to the same period of 2018. Among active greenhouses, 16,067 greenhouses are dedicated only to annual plants. This amount compared to 2018 has faced a slight growth of 0.4%. Also, according to estimates, 4119 greenhouses are dedicated to the cultivation of annual and perennial plants, which has grown by 6% compared to the same period of 2018. The share of greenhouses that only grow permanent plants is less than other fields of greenhouses. According to the data announced by the Statistics Center of Iran, only 446 greenhouses have planted permanent plants in 2019, which has grown by 5.2% compared to 2019. Meanwhile, 1,845 cases of inactive greenhouses have been identified, which has been faced with a significant growth of 24.4% based on the surveys. According to statistics of horticulture management of the Ministry of Agricultural Jihad, out of 3.5 million hectares of greenhouses in the world, 16 thousand hectares are located in Iran, which have different simple and advanced types and their capacities are different in terms of technology, application, etc. Considering the capacities and advantages of the greenhouse, it is planned to build 48,000 hectares of greenhouses in a 10-year horizon in Iran.

The level of production of greenhouse products in 1400 is as described in the following table:

Table (7): The level, the amount of production of greenhouse products in the year 1400

Product Name	The country's total production (tons)	Production amount of Khuzestan province (tons)	The share of Khuzestan province
Cucumber	1,525,280	3,709	0.24%
Tomato	365,448	1,776	0.49%
pepper	315,109	1,497	0.48%
Eggplant	110,580	2	0.00%
leafy vegetables	55,815	28	0.05%
Other JALIZI products	12,762	523	4.10%
A collection of green and summer greenhouses	2,384,994	7,535	0.32%
Strawberry	15,760	622	3.95%
Other fruits	26,894	200	0.74%
A collection of greenhouse fruits	42,654	822	1.93%
A collection of medicinal plants in the greenhouse	5,924	0	0.00%
Collection of greenhouse products	2,433,572	8,357	0.34%

Continuous production, off-season production and controlled production are among the advantages of greenhouse cultivation, liquidity and financial circulation of greenhouses is another advantage for farmers; Because the greenhouse products are more than the open space, therefore the cash circulation of the farmer increases. Regarding the amount of water saving in advanced greenhouses, it is up to 90%, also, each hectare of greenhouse provides 10 direct jobs, so greenhouses can provide high employment. Increasing the quality of products produced in greenhouses through better control of pests and diseases, increasing income per surface unit for producers of vegetable and summer greenhouse products due to the increase in performance per surface unit and the high selling price of production in off-season periods) and the use of biological methods and Reducing the consumption of pesticides, the possibility of proper marketing by adjusting the cultivation program according to market needs, and finally increasing exports and earning more money due to the increase in product quality are among the positive results of vegetable and summer production in the greenhouse.



## 8) Financial Plan

### 8-1- Cost Estimation

Generally, there are two ways to fundraise for this project, fixed capital and initial working capital. The required investment before utilization is provided through fixed capital. Initial working capital will be used during utilization. Fixed capital includes, purchasing land, construction and landscaping, machinery and equipment, facilities, office stuff and pre-production costs. These types of costs are incurred at the beginning and before operation and are consumed during the life of the project according to their service life. Working capital includes the capital required during the operation of the project. The working capital of a production unit is the set of facilities, inventories and work in progress, as well as the liquidity required for the exploitation of fixed capital in order to maintain the operation.

Determining the basic amount for inventories, work in progress and claims depends on the supply, production and sales capacity and business environment. In this section, the evaluation and estimation of the required investment (based on the price of the base year 1402 SH) is proposed.

Table (9): Cost Estimations

No.	Subject	Amount (Million Rials)
1	Total Fixed Investment Costs	17,636,200
2	Total Net Working Capital Requirements	2,370,021
3	Total Production Costs (Annual)	6,805,227
4	Depreciation	1,489,296
5	Total Investment	20,006,221
6	Unit Cost (By Product Type)	-
7	Strawberries (Rials/kg)	375,557
8	Tomatoes (Rials/kg)	169,001
9	Bell pepper (Rials/kg)	144,540

Table (10): Fixed Capital Estimations (Capital Costs)

No.	Subject	Cost (Million Rials)	
1	Purchasing land	0	
2	Landscaping and land improvement	264,000	
3	Civil operations and construction of buildings	10,857,900	
4	Production machinery and equipment	3,790,000	
5	Service equipment	1,502,000	
6	Protection and environmental equipment	0	
7	Overhead costs	0	
8	Pre-Production Expenditure (As described in Table (12))	Pre-investment studies	17,140
		Project management and organization	437,927
		Technology education	40,133
9	Unexpected costs	727,100	
Total		17,636,200	

The primary items included in working capital are:

- Raw materials (local and foreign): To prevent any interruptions in production process, production capacity, source and method of supplying materials, length of time during ordering and receiving materials, time of delivery and transportation, the amount of required raw materials, auxiliary materials and packaging are determined as one of the working capital items for one period. In this project, the material inventory coverage period is equal to 120 days.
- Finished product and work in progress: Considering the steps and methods of production, the required time for production and storage has been determined and the related costs are considered as working capital. In this plan, the duration of the coverage of the final product and work in progress is not included.
- Claims of expected funds from sold products that are collected in a short period of time. The duration for expected funds must be determined. According to the economic condition of Iran, cash is preferred.
- Revolving fund to finance the company's current expenses is considered as cash balance or revolving fund for a period of time in working capital based on production costs (without considering the cost of raw material production and depreciation). 12 days is considered in this plan.

Table (11): Total Net Working Capital Requirements (Production Costs)

No.	Subject	Amount (Million Rials)
1	Raw Materials Inventory	492,006
2	Work In Progress	0
3	Finished Product	0
4	Accounts Receivable	0
5	Cash-In-Hand	743,542
6	(Commercial Accounts Payable)	0
<b>Total Net Working Capital Requirements</b>		<b>1,235,547</b>

Table (12): Pre-Production Expenditure

No.	Subject	Description	Total (million Rials)	
1	Incorporation	-	200	
2	Obtaining Licenses / Production License	-	600	
3	Studying, Consulting, Research and Development, Traveling, Visiting and Participating in Local Exhibitions, etc.	1 thousandth of the investment costs of the project	17,140	
4	Property Insurance	2 thousandth of depreciable fixed assets	34,280	
5	Survey Fee, Financing, Contract and So On	Expert fee 0.5 thousand facilities, facility supervision 1.5 thousand + contract conclusion 1 percent of the facility	0	
6	Cartography, Supervising	2 thousandth of contract expenses	29,820	
7	Other's	Staff Training	Equivalent to 7 days of Staff salary	10,313
		Wages And Salaries During the Construction	Equivalent to the salary of 75 personnel in 48 months	393,120
		Other Expenses	2.0	9,727
<b>Total</b>			<b>495,200</b>	

## 8-2- Sales Revenue

According to the production plan, the total sales amount of the project in 1405 at the constant prices of 1402 is estimated to be equal to 726 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 2,106 billion Rials.

Table (13): Project Revenue in The First 5 Years of Production Phase (Billion Rials)

No.	Subject	Q <sub>1</sub>	Q <sub>2</sub>	Q <sub>3</sub>	Q <sub>4</sub>	Total 1 <sup>st</sup> Year	Total 2 <sup>nd</sup> Year	Total 3 <sup>rd</sup> Year	Total 4 <sup>th</sup> Year	Total 5 <sup>th</sup> Year
1	Strawberry	181	181	181	181	726	1,701	2,646	2,268	2,106
2	tomato	284	284	284	284	1,138	1,463	2,730	1,950	3,800
3	Bell pepper	293	293	293	293	1,170	2,527	3,276	3,370	3,744
Total		758	758	758	758	3,033	5,691	8,652	7,588	9,650

## 8-3- Length of Production Phase

The construction period of all the structures of the plan is equal to 48 months and it is considered to start from April 1403. Due to the long construction period, the plan has been used since 1405 with 25% of the built structure. The duration of the project is considered to be 10 years.

Table (14): Planning Horizon

Title	Month	-	year	Length of construction phase (months)	Start of phase (months)	Length of production phase (years)
Project identification	2	/	1402	48	12	10
Beginning of construction phase	1	/	1403			
Beginning of production phase	1	/	1405			
End of production phase	12	/	1414			

## 8-4- Break-Even Analysis

From an economic point of view, break-even point analysis is an important technique that is used to study the relationship between costs, income and profit. The break-even point is the point at which total cost and total revenue are equal. In other words, it is used to analyze the effect of product volume change on the profit. The break-even point is calculated for 100% of practical capacity (year 1410SH onwards) below.

$$\text{Break-even sales value (Rials)} = \frac{\text{Total fixed costs}}{1 - \frac{\text{Total variable costs}}{\text{Sales value}}}$$

$$\text{The number of sales at the break-even point} = \frac{F_C}{S - V_C}$$

FC = Total Costs    VC= Average Variable Costs    Q = Quantity of Sales    S = Unit Price

$$\text{Break-even sales value} = \frac{2,966,376}{1 - \frac{3,622,345}{12,722,500}} = 4,147,151 \text{ (Million Rials)}$$

$$\text{Break-even ratio (\%)} = \frac{12,722,500}{3,622,345} = 32.6\%$$

Table (15) : Project break-even point estimation

(Million Rials)

Title	Production 1405	Production 1406	Production 1407	Production 1408	Production 1409	Production 1410	Production 1411	Production 1412
Sales revenue	3,033,350	5,690,700	8,652,000	7,587,600	9,650,000	12,722,500	12,062,500	12,722,500
Variable costs	1,937,702	2,450,041	2,992,722	2,828,804	3,128,960	3,624,315	3,527,960	3,624,315
Variable margin	1,095,648	3,240,659	5,659,278	4,758,796	6,521,040	9,098,185	8,534,540	9,098,185
Variable margin ratio (%)	36	57	65	63	68	72	71	72
Fixed costs	941,827	1,642,233	2,534,301	2,433,748	2,742,525	2,966,884	2,932,321	2,924,644
Break-even sales value	0	0	0	0	0	0	0	0
Break-even ratio (%)	2,607,492	2,883,814	3,874,483	3,880,458	4,058,458	4,148,759	4,144,467	4,089,693
break-even ratio	86.0	50.7	44.8	51.1	42.1	32.6	34.4	32.1
In terms of financial expenses (%)	2,607,492	2,883,814	3,874,483	3,880,458	4,058,458	4,148,759	4,144,467	4,089,693
Selling value in head	86.0	50.7	44.8	51.1	42.1	32.6	34.4	32.1

- According to COMFAR Results

Based on the calculations of COMFAR software, the break-even point including operating and non-operating costs, is 4.148 thousand billion Rials and it will be achieved in the % 32.6 of the practical capacity.

In the mentioned formula, the break-even point is determined by the relationship between fixed costs and the difference between unit sales price and unit variable costs. Therefore, three practical results are obtained from it:

- The higher the fixed costs, the higher the break-even point.
- The greater the difference between unit sales price and variable operating costs, the lower the break-even point. In this case, fixed costs are absorbed faster through the difference between unit sales price and unit variable costs.
- One of the break-even points is disproportionate. Since it makes the company vulnerable to changes in production (sales) levels.

## 8-5- Cost-Benefit Analysis

In project analysis, one of the most common methods is the **Benefit-Cost Ratio**. In this method, the ratio of the current value of possible benefits to the current value of costs is obtained. If this ratio is greater than one, the plan has economic justification for implementation. In terms of this index, the plan has favorable conditions.

**Net Present Value** is one of the other evaluation methods which is calculated according to the following relationship:

$NPV = \text{The Present Value of The Total Cost of The Period of Construction Phase and Production Phase} - \text{The Present Value of The Total Income of Construction Phase and Production Phase}$

$NPV = \text{The Present Value of The Fixed Assets Depreciation} + \text{Initial Investment} - \text{The Present Value of The Future Cash Flows}$

The **net current value** of the project at a discount rate of 20% is over 1.969 billion Rials, which shows that the project is economically feasible.

One of the other methods of evaluating investment plans **internal rate of return**. In fact, the internal rate of return is the interest rate or the discount rate in which the current value of all the plan benefits is equal to the current value of its expenses.

According to the calculations, the internal rate of return of the project is estimated at 23.3% and compared to the Minimum Attractive Rate of Return, it is favorable.

Table (16): Project Return Index

Index	Amount	Unit of measurement
The Present Value of The Total Cost of The Period of Construction Phase and Production Phase	35,772,621	Million Rials
The Present Value of The Total Income of Construction Phase and Production Phase	37,741,185	Million Rials
NET PRESENT VALUE (NPV)	1,968,564	Million Rials
Cost-benefit RATIO (B/C)	1.06	-
INTERNAL RATE OF RETURN (IRR)	23.3%	Percent
NPV RATIO (PI)	0.14	Rial per Rial of investment
NORMAL PAYBACK	4.29	Year

**Profitability Index (PI)** indicates how much economic profit will be obtained for each unit of money invested during the lifetime of the project.

**Project Investment payback** is the period of time required to recover the project investment from net income, measured in years. In other words, it shows the length of time taken for the initial investment to be returned. This index shows the speed of investment return and the amount of project risk coverage. The ROR (simple) of the plan is estimated to be 4.29 years (equal to the year 1410) according to the calculations.



## 8-6- Sensitive Analysis

In the sensitivity analysis of the plans, the percentage of changes in the internal rate of return (IRR) is measured in relation to the change in some basic parameters and variables. In this plan, the analysis has been carried out by major variables such as sales, fixed and operating costs. Table (17) shows the results of the sensitivity analysis regarding the variables of sales income, fixed assets and operating costs.

### 8-7-1- Sales Revenue

Changes in sales revenue are mainly caused by alteration in two variables: planned sales amount and product sales price. The results of the sensitivity analysis regarding sales income show; 20% increase in sales revenue of the plan, the internal rate of return will increase from 23.3% to 32%. On the contrary, in the case of a 20% decrease in sales revenue, the internal rate of return of the project will decrease to 13%.

Table (17): Sensitivity Analysis (Percentage of IRR changes caused by sales revenue, fixed assets and operating costs alteration)

Variation (%)	Sales revenue	Increase in fixed assets	Operating costs
-20%	13%	29%	28%
-4%	21%	24%	24%
0%	23.3%	23.3%	23.3%
4%	25%	22%	22%
20%	32%	19%	19%

### 8-7-2- Fixed Assets

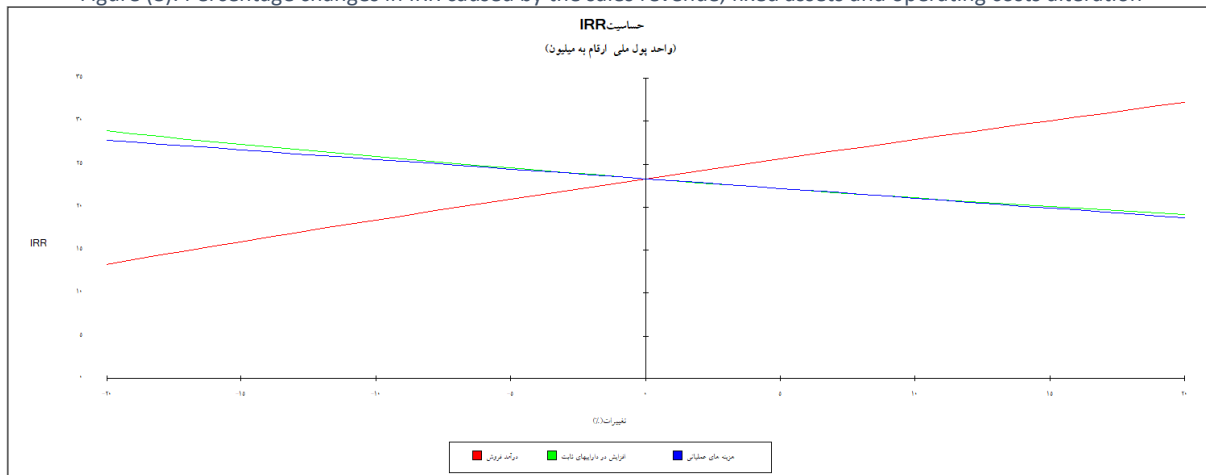
The change in the fixed assets is due to the fixed costs of the initial investment alterations. The results of the sensitivity analysis according to the fixed costs of the plan have been done and it shows that in case of an unexpected 20% increase in the fixed capital costs of the project, the internal rate of return will decrease from 23.3% to 19%. Conversely, if there is a 20% reduction in the fixed capital costs, the internal rate of return will increase and reach 29%.

### 8-7-3- Operating Costs

The operating costs of the plan is one of the crucial items in terms of sensitivity analysis regarding its changes. Therefore, unexpected and possible changes should be investigated.

The change in project operating costs is mainly caused by changes in raw material, supply, human resource and finally changes in other overhead costs of projects. If these parameters change, it can be as a result of the change in the technical coefficients of product production or the change in their purchase price. The sensitivity analysis indicates that in case of a 20% increase in the operating costs, the efficiency rate of the plan will decrease to 19%. On the contrary, if the total operating costs of the project are reduced by 20%, the internal rate of return will increase to 28%. Finally, the results of the sensitivity analysis show that the current project has a very high sensitivity to changes in sales revenue (changes in sales amount or sales price) and more considerations should be taken in this regard.

Figure (8): Percentage changes in IRR caused by the sales revenue, fixed assets and operating costs alteration



As you can see, the slope of the IRR change curve is higher relative to the changes in sales revenue compared to other items while the slope of the IRR change curve is lower relative to the changes in fixed assets, which indicates the greater sensitivity of the plan's internal rate of return to sales revenue and its lower sensitivity relative to operating costs and fixed assets.

## 8-7- Conclusion

It is planned to implement the project by building a greenhouse structure with an area of 107 hectares and carrying out construction for construction (sorting bin, cold storage, etc.) in the basement of 21,050 square meters. The total investment in land and building is estimated at 14,558 billion Rials and the total investment in main and auxiliary equipment is estimated at 2,319 billion Rials. The total pre-operational

costs are estimated at 495 billion Rials, including the total required fixed capital of 17,636 billion Rials and the total working capital required for the project is 2,370 billion Rials. The total investment of the project is expected to come from the resources of the company's shareholders.

The sale of the project in the year of the production plan during the operation of the project is predicted at fixed prices equal to 3,033 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 12,723 billion Rials. The net profit of the plan has been positive in all years. The profit figure in 1405 is equivalent to 154 billion. The profit will increase in the following years and will reach a maximum of 6,131 billion Rials. The average annual profit of the mature plan is 3,760 billion Rials and the average profit margin is expected to be 42.2%. The internal rate of return (IRR) of the project is also estimated at 23.3% and the payback period (PBP) is estimated at a maximum of 4.29 years. Also, the net present value of the project's cash flows (NPV) is positive and, considering the expected interest rate of 30%, is equal to 1,970 billion Rials.

The liquidity status of the plan and the payment of dividends to the shareholders from the company's funds are also appropriate. Therefore, if the assumptions and predictions are fulfilled, the plan under consideration has favorable profitability and according to the financial results obtained, its implementation is recommended. The economic discussions of the plan are summarized as follows.

Table (18): Summary of Economic Features

Nominal Capacity and Unit of Measurement	Product Name	Title Of the Project with ISIC Code	Title Of the Project
107 hectares	Strawberry, tomato, bell pepper	Strawberry, tomato, bell pepper (0125-0128-0113)	Greenhouse complex construction plan
Required Human Resource (Person)	Equity Shares (Million Rials)	Total Fixed Capital (Million Rials)	Project Duration
1,310	2,370,021	17,636,200	48
B/C	Applicant Available Cash (Million Rials)	Net Present Value (NPV) (Million Rials)	IRR (%)
1.1	20,006,221	1,968,564	23.3%
ROI (%)	NPV Ratio / Profitability Index (Rial per Rial invested)	Dynamic Payback Period (Year)	Normal Payback Period (Year)
17	0.14	7.94	4.29
Average Assets Turnover Ratio	Average Net Profit Margin (%)	Average Annual Profit (Million Rials)	Maximum Annual Sales (Million Rials)
0.46	42.2%	0	10.94

## 8-8- Estimation of currency rate fluctuation during the project implementation

The currency rate at the time of evaluation is included as described in Table (19). The purchase and sale prices are determined with the energy exchange transactions and are adjusted to a large extent under the influence of the currency rate increase.

Therefore, currency rate fluctuations regarding the purchase of foreign equipment will be compensated to some extent by the income from sales which will have a little effect on the evaluation results. So, in the construction and implementation phase, if the financing of the project provided through foreign currency sources, the amount of required investment will not change much.

Table (19): Currencies exchange Rate

Unit of Measurement	Unit Price	Currency
Rials	413,204	USD
Rials	451,531	EURO

Exchange rate of Central Bank, Exchange Trading System (ETS) dated 05/25/1402

## 9) Investment Required, method of fundraising and guarantees

### 9-1- Foreign Currency Required

The plan does not need currency and the total fixed capital of the plan is Rial.

Table (20): Foreign (Fixed) Currency Required

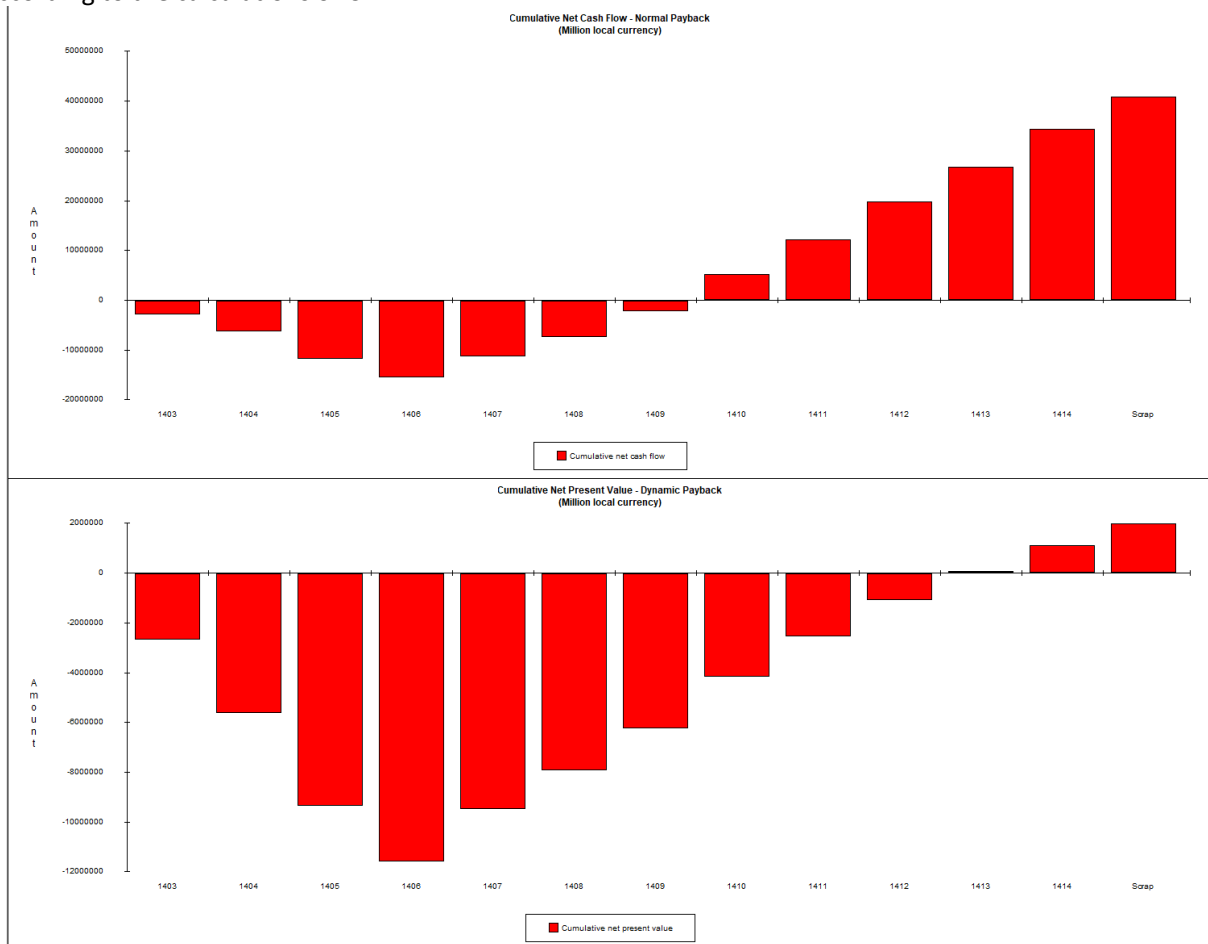
No.	Year	Required Investment
1	Year 1(405 SH)	0
2	Year 2	0
3	Year 3	0
4	Year 4	0
5	Year 5	0

### 9-2- Model Of Partnership and Fundraising

Participation in the present project and its fundraising process is predicted to be in the form of establishing a company inside Iran. The total required investment is predicted through the investor's contribution. Financing through local banks has not been included in the fundraising process.

### 9-3- Payback Period

The payback period is the period of time when the initial investment of the plan is compensated from the annual cash funds. The payback period (simple) of the plan is estimated to be 4.29 years (equal to 1410) according to the calculations of CAMFAR.



Dynamic Payback Period of the plan is also estimated at 7.94 years.

## 10) Incentives, features and benefits of the plan

Some of the financial supports for production companies are loans and bank facilities and tax exemptions which can facilitate the project implementation and provide the favorable condition for investment. In the following, some of these supports will be discussed.

One of the important bank facilities for production units is the long-time repayment period loans up to 70% of fixed capital by the Iran's state banks. This amount can be increased up to 90% for deprived areas if foreign machinery is used. The interest rate of long-term facilities in the industry sector is 23%, which in case of financial prudence, only a part of the interest can be repaid. The repayment period of long-term bank facilities is up to 8 years according to the production plan, the type of technology and the possibility of product exportation.

Another important bank facility is short-term bank loans (6 to 12 months) to use as working capital needed to carry out production processes, which will be provided up to 70% by bank communities. Obtaining short-term facilities to this extent depends on gaining the trust of the operating banks and having an acceptable financial history.

Tax exemption is another incentive for investors to establish factories. To name a few;

- Tax exemption for up to 10 years for implementation in deprived areas
- Tax exemption for up to 4 years for implementation in industrial towns

Investments in the project during implementation is of the investments in developed towns with industrial and mining activities. Since it is located within 30 kilometers of cities with more than 300,000 people, it doesn't have any tax exemption. But if it establishes in another industrial town within a range of more than 30 kilometers from cities with a population of more than 300 thousand people, it can get exempted from Article 132 of the Direct Taxes Law and up to 80% until four years after the date of operation from Article 105 (Direct Taxes Law)<sup>1</sup>.

So, the effective performance tax rate (annual profit) can be reduced to 4% in the first 4 years, and then it will be considered on the basis of 20%. Obviously; If the project location is in one of the deprived areas, it will be subject to 10 years of 100% exemption.

If the produced Manufactured products (provided that it is in excess of the local market) can be exported to foreign markets, it can be exempted from Article 141 and 100% of the income from exports is exempt from taxes.

Obviously, If the legal personality of the partnership is defined as a public company accepted in the stock exchange market during its operation (in such a way that its shares can be traded with stock brokers), this type of company is subject to Article 143 of the Direct Taxes Law and up to 10% of the company's tax will be exempted.

---

1 - The exemptions of this article will not include the income of production and mining units located within a radius of 120 kilometers from the center of Tehran and 50 kilometers from the center of Isfahan, 30 kilometers from the centers of provinces and cities with more than 300 thousand people (according to the latest census).

## (Attachment Number 2)

### Summary Sheet

Project introduction	
<b>1. Project Title:</b>	Greenhouse complex construction plan
<b>2. Sector:</b>	construction sub-sector: agriculture
<b>3. Products/services:</b>	Strawberry, tomato, bell pepper
<b>4. Location:</b>	Khuzestan province, Mahshahr city
<b>5. Project description:</b>	<p>It is planned to implement the project by building a greenhouse structure with an area of 107 hectares and carrying out construction for construction (sorting bin, cold storage, etc.) in the basement of 21,050 square meters. The total investment in land and building is estimated at 14,558 billion Rials and the total investment in main and auxiliary equipment is estimated at 2,319 billion Rials. The total pre-operational costs are estimated at 495 billion Rials, including the total required fixed capital of 17,636 billion Rials and the total working capital required for the project is 2,370 billion Rials. The total investment of the project is expected to come from the resources of the company's shareholders.</p> <p>The sale of the project in the year of the production plan during the operation of the project is predicted at fixed prices equal to 3,033 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 12,723 billion Rials. The net profit of the plan has been positive in all years. The profit figure in 1405 is equivalent to 154 billion. The profit will increase in the following years and will reach a maximum of 6,131 billion Rials. The average annual profit of the mature plan is 3,760 billion Rials and the average profit margin is expected to be 42.2%. The internal rate of return (IRR) of the project is also estimated at 23.3% and the payback period (PBP) is estimated at a maximum of 4.29 years. Also, the net present value of the project's cash flows (NPV) is positive and, considering the expected interest rate of 30%, is equal to 1,968 billion Rials.</p>
<b>6. Annual Capacity:</b>	107 hectares

Project Status	
<b>7. Local/internal raw material access:</b>	100%
<b>8. Sales:</b>	48,000 billion Rials
<b>Anticipated local market:</b>	30%
<b>Anticipated export market:</b>	70%
<b>9. construction period:</b>	48 months
<b>10. project status:</b>	<ul style="list-style-type: none"> <li>- Feasibility study available? Yes. The feasibility of the project has been evaluated from different aspects and the results of the feasibility study are favorable in terms of market, engineering, financial and economic indicators.</li> <li>- Required land provided? Yes. Currently, there is industrial land in Shush Industrial Estate, and it has been selected based on geospatial criteria for the implementation of the project.</li> <li>- Legal permission (establishment license, foreign currency quota, environment) taken? In order to place the door, he must obtain legal permits from the Agricultural Jihad Organization of the province.</li> <li>- Partnership agreement concluded with local/foreign investor? No. So far, no partnership agreement has been prepared for the implementation of the project. This plan has the necessary features to attract shareholders' financial resources.</li> <li>- Agreement with local/foreign contractor(s) concluded? No. so far, no agreement or contract has been concluded for the purpose of manufacturing domestic and foreign machinery.</li> <li>- Infrastructural utilities procured? If the project is established in MAHSHAHR port, infrastructure facilities such as water and electricity, roads, etc. are available.</li> <li>- List of know-how, machinery and equipment concluded? Production and cultivation in the greenhouse require experience and agricultural knowledge. For this purpose, the right to operate the greenhouse is given to qualified people (such as experienced farmers, agricultural graduates and investors with appropriate records).</li> <li>- Financing agreement for machinery, equipment and know-how concluded? No</li> </ul>

## Financial structure

### 11. Financial table:

Description	Local Currency Required			Foreign Currency Required	Total Euro
	Million Rial	Exchange Rate	Euro		
Total Fixed Investment Costs	17,636,200	451,531	39,058,669	0	39,058,669
Total Net Working Capital Requirements	2,370,021	451,531	5,248,855	0	5,248,855
Total Investment	20,006,221	-	44,307,524	0	44,307,524

- Value Of Foreign Equipment/Machinery:	0	Euro		
- Value Of Local Equipment/Machinery:	11,720,126	Euro		
- Value Of Foreign Technical Know-How:	0	Euro		
- Value Of Local Technical Know-How:	0	Euro		
- Net Present Value (NPV):	4,359,754	Euro	Net present values discounted to:	1403
- Internal Rate of Return (IRR):	23.3%	%	Equivalent to	51.48 months
- Normal Payback:	4.29	year		
- Minimum Attractive Rate of Return:	20%	%		

## General information

**12. Project Type:** new Project  Explanation / Rehabilitation project   
 Name / Company name: -  
 Address: Khuzestan province, Mahshahr city  
 Tel: +98-9166035912 +98-6133359568 Fax:  
 Email: [a.taheri58@gmail.com](mailto:a.taheri58@gmail.com) Website:  
 Local entrepreneur: Private Sector  government /public sector