

General Department of Economic and Financial Affairs of Khuzestan

Preparation and Compilation of Investment Opportunities in The Province

Investment opportunity studies report

«Breeding Buffalo Plan»



(Attachment Number 1)

Date: 2023/02/07

V2

In the name of God
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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).

GOTVAND city is one of the cities of Khuzestan province. The center of this city is the city of GOTVAND and it is located 680 km from Tehran and 125 km from Ahvaz. GOTVAND city is bordered by DEZFUL city from north to west, Lali city from northeast, Masjid Suleiman city from east and SHUSHTAR city from south.

This city was separated from SHUSHTAR city in 2003 and became independent. This city had more than 65 thousand people in the last census in 2015.

Two rivers flow in this area, one is the big Karun River, which originates from the Bakhtiari mountains and reaches the north at the beginning of entering the KHUZESTAN JALGE, which is restrained by a huge dam and irrigates the lands of the central and AGHILI parts, and a huge canal branching from it. It also flows towards DIMCHEH in order to supply water for Karun Agriculture Company and its ancillary industries.



Figure (1): The Province Location In Iran

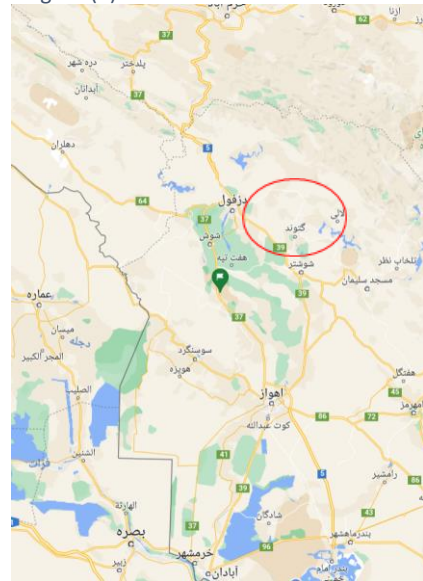


Figure (2): GOTVAND city Location in Khuzestan Province

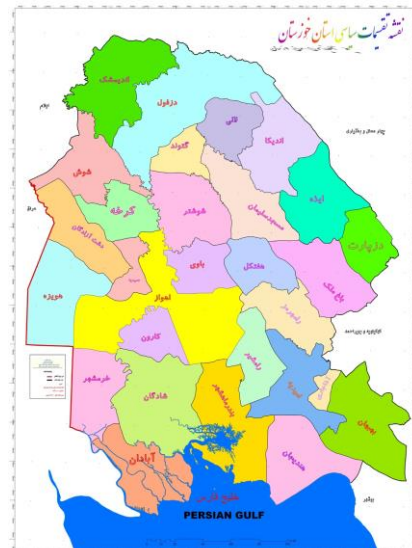


Figure (3): Political Divisions of Khuzestan Province

2) Project Status

The selected location in the present plan is near DUPIRAN village in GOTVAND city. The area of the selected land is equal to 33 hectares. The map of the mentioned geographic location is depicted in the opposite figure.



Figure (4): The Province location in Iran

This place is 7 km from KUSHK village, 11 km from SHUSHTAR city, 20 km from GOTVAND city, 60 km from DEZFUL city, 76 km from Shush.

Based on the surveys conducted, the cities of DEZFUL, shush, SHUSHTAR and Shadgan and the areas near them have the most favorable conditions for buffalo breeding and animal feed supply in Khuzestan province.

studies show that; The total buffalo population of the country in 1400 was 226 thousand heads. Meanwhile, the total buffalo population of Khuzestan province has reached 98.7 thousand heads, and the provinces of West AZARBAIJAN (23%), Ardabil (17%) and East AZARBAIJAN (15%) have the largest population of buffaloes in the country.

In Khuzestan province, respectively, the cities of DEZFUL (15%), AZADEGAN plain (14%), Shadgan (13%), SHUSHTAR (11%), Shush (11%), Ahvaz (8%), Karun (8%) have the largest POPULATION of buffalo.

In terms of feed supply, surveys indicate that the cities of Abadan (41%), DEZFUL (21%), and Shadgan (16%) have the largest area of alfalfa cultivation and production, respectively. The cities of DEZFUL (35%), Shush (32%), ANDIMSHEK (9%) respectively have the largest area under cultivation and fodder corn production. The cities of HAMIDIYEH (16%), SHUSHTAR (15%) and AZADEGAN plain (12%) respectively have the largest area under cultivation and production of other fodder products.

Statistical investigations have been done on the statistical data of the cities regarding the population and food supply, and the results of the top ranked cities are summarized in the table below.

Table (1): Ranking of cities with potential in buffalo breeding

	Buffalo population	hay	fodder corn	Other fodder products	barley	wheat	Rank in buffalo breeding
Importance factor	50	10	15	5	5	15	-
DEZFUL	15%	21%	35%	1%	1%	6%	16%
Shush	11%	7%	32%	4%	4%	15%	14%
SHUSHTAR	11%	0%	6%	15%	7%	11%	9%
SHADEGAN	13%	16%	0%	5%	9%	2%	9%
AZADEGAN plain	14%	0%	0%	0%	0%	0%	7%
Ahvaz	8%	0%	0%	3%	4%	10%	6%
Karon	8%	0%	0%	0%	0%	0%	4%

Based on the surveys conducted, the cities of DEZFUL, SHUSH, SHUSHTAR and Shadgan have the most favorable conditions for buffalo breeding and animal feed supply in Khuzestan province.

2-1- Access to infrastructures

The selected place is within 550 meters of the Karun River and accordingly there is access to water. This place is 7 km from Kushk village, 11 km from Shushtar city, 20 km from Gotvand city, 60 km from Dezful city, 76 km from Shush.

The nearest port to this area is Imam Khomeini Port at a distance of 220 km, the nearest railway station (Shoshtar Railway) is located at a distance of 15 km, and the nearest airport (Mahshahr) is located at a distance of 11 km.



Figure (5): Access routes to the project

Table (2): access to infrastructures

No.	Required Infrastructure	Distance From Project Status	Location Of Infrastructure Provision
1	Water	0.55	It is possible to take water from Karun River
2	Electricity	0	Electricity infrastructure has been established in the place
3	Gas	-	It is not predicted
4	Telecommunication	-	It is not predicted
5	Main road	11.5	DEZFUL - SHUSHTAR
6	Side road	4.73	The road from KUSHK to SHUSHTAR
7	Airport	71	DEZFUL Airport
8	Port	220	IMAM KHOMEINI SEAPORT
9	Railway Station	15	SHUSHTAR Railway

3) Technical specifications of the project

3-1- Product

The buffalo is an animal from the cattle family and has played an important role in our country as a beast of burden and producer of milk, meat and leather for nearly five thousand years. Buffalo breeding and keeping has been done in Iran around 2500 years before Christ. Buffalo is a gluttonous animal and semi-tropical and humid areas are more suitable for it. The weight of a male buffalo is between 300 and 700 kg and the weight of a female is between 250 and 600 kg. The duration of buffalo pregnancy is 300 to 320 days.

Buffalo breeding is more suitable than native cows; The body of the buffalo is resistant to diseases and has less casualties, it is very satisfied in terms of feed and has a good production compared to the consumed feed, the valuableness of buffalo dairy products¹, the fatness and the valuableness of the skin of this animal. It is one of the reasons for breeding buffalo. One of the prominent characteristics of the buffalo is that it feeds on wood fodder in large quantities, and in this respect, it is superior to the cow because, firstly, the digestive system of the buffalo is larger than that of the cow, and secondly, its folds are more. Thirdly, rumen microorganisms of buffalo are more extensive in terms of number and diversity than cows.

Today, this animal is seen in most parts of the world due to its benefits; But its main origin is Asian countries, especially India and Pakistan. The best areas for raising this animal are tropical and subtropical areas and they are rarely raised in cold or mountainous areas.

One of the most important areas of buffalo breeding has been East Asia and West Asia. In these areas, buffaloes have actually been the tractors of the East, and in addition to agricultural work, they have been the most important source of production of all kinds of animal products. In large parts of the African continent, buffalo breeding has been very common. In our country, after Khuzestan province, which is the pole of buffalo breeding, GILAN has the potential to be the second pole of buffalo breeding.

Buffalo provides about 6.5% of the world's milk. Buffalo milk is richer in fat than cow's milk and has less dry matter and a higher lactose percentage. Buffalo milk has more salts and proteins than cow's milk. The percentage of buffalo meat and carcasses is less than the percentage of meat and beef cattle carcasses. Buffalo has thick skin and is used to make thick leather gloves and leather belts, shoe soles, horse saddles, and waterproof leather; Also, the thickness of buffalo hair is twice that of cow and it is used for making brushes. The density of hair in buffalo is less than that of cattle, and its density decreases with age. Buffalo horn is also used to make shoulder buttons, knife handles, umbrellas and canes, musical instruments and decorative items. Buffalo manure is one of the best fertilizers for agricultural land fertility and especially mushroom cultivation. In some villages, buffalo excrement is used as a fuel to produce heat.



Figure (6): Pictures of buffalo

¹ -Buffalo milk has a very high quality and is worth almost twice as much as cow's milk, while feeding it is cheaper than cows. The obtained milk can be marketed raw or even exported to neighboring countries.

3-2- Project Requirement

3-2-1- Land And Required Infrastructure

The economic scale for buffalo breeding in each farm is equal to 200 primary breeding buffaloes. For this purpose, the selected land should be divided into 10 farms. The area of each farm should be at least 15,000 square meters. Accordingly, for the buffalo breeding complex, 15 hectares of land is needed only for breeding farms. In addition, the buffalo breeding complex needs a place to build a milk building, a weighing scale building, and a central management and support building in a land area of 10,000 square meters. According to the area required for the access roads, 330,000 square meters of land seems to be sufficient. The specifications of the land, main buildings and other required side buildings and investment in them are as described in the table below.

Table (3): Amount of investment in land, landscaping and building

No.	Requirements	Description	Investment Required		Total Cost (Million Rials)
			Required Area m ²	Unit Price (Rial)	
1	Land purchase	Khuzestan- GOTVAND city, DUPIRAN village (Area of farms and central management and support complex)	160,000	0	0
2	Site preparation and development	According to relative calculations	54,600	2,443,223	133,400
3	Civil works, structures and buildings	Roofed stable	20,000	15,000,000	300,000
		barnyard	50,000	3,000,000	150,000
		Roofed manger hall	10,000	20,000,000	200,000
		Livestock immersion ponds	6,400	800,000	5,120
		feed store	6,000	30,000,000	180,000
		Corn silage chopper	6,000	20,000,000	120,000
		MILKING building	4,000	80,000,000	320,000
		milk building	2,100	80,000,000	168,000
		bascule building	300	50,000,000	15,000
		Laboratory, administrative and central management building	500	70,000,000	35,000
		Labor building and support	300	50,000,000	15,000
		Water, electricity and gas facilities building	100	30,000,000	3,000
Guard and janitor building	100	50,000,000	5,000		
Total			-	-	1,649,520

In general, the buffalo rearing place should be in such a way that in addition to protecting the animal from the sun, it provides the possibility of proper ventilation and promenade. Do not use sharp edges. Do not use colors that cause discomfort to the animal. The place has enough light. Access to the animal should be done easily. Slope should be done properly. Good and proper drainage should be done. A suitable manger and drinker should be used, and a suitable place for milking should be available. Fodder should be easily available to the animal. Canopy height should not be less than 4 meters. It is better to plant trees for shade in the summer and windbreaks in the winter. Suitable exits for livestock, fodder and fertilizer should be considered.

Two open or closed systems can be used in buffalo breeding:

Open system: In the open system, buffaloes are kept in the open space by the river. This type of breeding system is often used in tropical or subtropical regions of the south such as Khuzestan.

Closed system: In the closed system, which is often used for industrial buffalo breeding, the animal is raised in a closed place. This place has a roofed space and a non-roofed space; Also, the breeding place should be equipped with facilities such as drinking system, ventilation, lighting, misting system, heating and cooling system. This type of system is used in areas with cool climate. In Iran, provinces such as West and East AZARBAIJAN are the pioneers of using this type of system in the country.

3-2-2- Plant Machinery and Equipment

Industrial buffalo breeding: Although the industrial buffalo breeding in Iran is not as widespread as it should be, but this method is one of the most effective and efficient methods of breeding in order to produce higher yields. The existence of goals such as preserving the superior breed, producing higher meat and milk has made breeding in this way have acceptable economic benefits. In this way, the breeder can achieve a profession with low risk and high income by providing the necessary infrastructure (such as creating a pool and special showers) and creating suitable breeding conditions.

Buffaloes have a lifespan of about 30 years, of which 25 years they are able to do useful work. Buffaloes have the ability to give birth up to the age of 28 years, but breeders usually set the time for them to give birth until the age of 10 years. Usually, buffaloes are prevented from becoming pregnant after 12 years of age. The gestation period of Buffaloes is 10 months and they experience their first birth at the age of 4-5 years. Usually, the interval between their two births is 553 days and their pregnancy rate is 60%. In the industrial breeding of buffaloes, the pregnancy ratio has increased to 68.8% and the first insemination

occurs at the age of 2.2 to 3 years. Also, in this situation, the interval between two births is set to be about 3 years.

It is difficult to detect the estrus of female buffaloes. Each estrus period of buffaloes is about 43 hours and the interval between two estrus periods is approximately 24 days. Buffaloes usually mate in autumn. According to the pregnancy period of buffaloes, the delivery time is after the harvest season. A buffalo produces an average of 7 liters of milk per day.

Table (4): Plant Machinery and Equipment

No.	Equipment/Machinery	Required investment			Total cost (Million Rials)
		Amount	Unit Price	Currency	
1	Movable threshing silo	6	300	(Million Rials)	1,800
2	Movable mixer feeder (23 cubic meters)	2	22,000	(Million Rials)	44,000
3	Electric mobile hay shredder	2	8,000	(Million Rials)	16,000
4	Fixed feed mixer	2	3,000	(Million Rials)	6,000
5	Scale	10	1,300	(Million Rials)	13,000
6	chain hoist	2	800	(Million Rials)	1,600
7	Parallel milking machine	20	20,000	(Million Rials)	400,000
8	12 cubic meter mobile fertilizer collector	2	13,000	(Million Rials)	26,000
9	Fog system	400	300	(Million Rials)	120,000
10	Ceiling fans	200	50	(Million Rials)	10,000
11	Grain mill	1	2,650	(Million Rials)	2,650
12	Tractors and related equipment	2	8,300	(Million Rials)	16,600
13	mobile milking machine	10	300	(Million Rials)	3,000
14	Steel tanks of 5 cubic meters	4	2,500	(Million Rials)	10,000
15	Steel tanks of 2 cubic meters	14	1,300	(Million Rials)	18,200
16	10 cubic meter milk ice bank	1	700	(Million Rials)	700
17	2-ton scale	2	380	(Million Rials)	760
18	0.5-ton scale	1	150	(Million Rials)	150
20	Other main equipment - domestic	1	14,540	(Million Rials)	14,540
Total		-	-	-	705,000

Table (5): 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	800	6	4,800
2	Several Electrical Cables	M	Facility	2,500	4.0	10,000
3	Electrical Equipment of The Greenhouse Lighting System	Amount	Facility	3,570	4	14,279
4	The Cost of Panel Boards and Related Electrical Equipment	Amount	Facility	26	320	8,320
5	Water Branch	-	Facility	1	3,000	3,000
6	Other Water Conveyance Equipment	Amount	Facility	1	4,000	4,000
7	Firefighting, Safety and Health Equipment, etc.	Capsule	Facility	25	30	750
8	Gas Piping	M	Facility	600	5	3,000
9	Gas Branching	-	Facility	1	4,000	4,000
10	Water Heater and Heater	Machine	Facility	4	350	1,400
11	Air conditioning equipment	Fan	Facility	10	36	360
12	Air Conditioner	Set	Facility	10	1,000	10,000
14	Gas Heater	Ton	Facility	4	150	600
18	pickup truck	Machine	Vehicle	5	6,000	30,000
19	car	Machine	Vehicle	1	5,000	5,000
20	Workshop and laboratory tools	Machine	Laboratory and workshop equipment and tools	1	12,000	12,000
21	CCTV System	Set	Facility	11	800	8,800
22	Office Stuff	Set	Office Equipment	24	700	16,800
23	Restaurant Equipment	Set	Office Equipment	27	30	820
24	Medical Equipment	Set	Office Equipment	1	3,000	3,000
25	Other Facilities	Set	Facility	1	3,071	3,071
Total				-	-	75,000

3-2-3- Raw Materials and Intermediate Parts

The specifications of the required feed are as described in the table below.

Table (6): Costs of Raw Material for Production

No.	Title	Average price (Rials)	Purchase unit	Amount of consumption in nominal capacity	The cost at the maximum nominal capacity (Million Rials)
1	dry hay	59,700,000	Ton	18,631	312
2	SILATED CORN	119,400,000	Ton	29,417	246
3	barley	119,017,000	Ton	9,514	80
4	Feed (concentrate) for dairy cows	172,500,000	Ton	37,778	219
5	Livestock feed	190,000,000	Ton	24,966	131
6	Dairy calf feed	250,000,000	Ton	17,338	69
7	bran	68,125,000	Ton	5,446	80
8	straw	18,188,000	Ton	34,600	1,902
9	fat powder	555,000,000	Ton	24,106	43
10	Other food items	18,188,000	Ton	5,039	277
11	drinkable water	0	-	0	8,012
Total		-	-	-	206,834

3-2-4- Management and human resource

The goal of implementing the current plan is to employ 82 people. The required human resources are described in the table below.

Table (7): Management and Human Resource

No	Level of skill	Number of staff	Average basic salary
1	Senior	24	137,916,667
2	Mid-level	10	100,000,000
3	Junior	48	88,125,000

Number Of Direct Mid-Level Staff Required	10	Person
Number Of Direct Junior Staff Required	48	Person
Number Of Direct Senior Staff Required	24	Person
Total	82	person

4) Ownership and legal permissions

4-1- land ownership

The implementation of this project is considered in the vicinity of Do PIRAN village in GOTVAND city. The selected area is specified in paragraph 2. In order to build farms and exploit them, documents under the title of establishment license and exploitation license (in accordance with the terms and conditions mentioned in paragraph 4-3-4) will be provided to the investors. These documents do not mean that the investors own the assigned lands. Based on the mentioned licenses, only the right to exploit the land is given to the operators until the continuous operation.

4-2- Intellectual Property and Concessions

Buffalo breeding in farms, according to established standards and regulations, requires necessary knowledge and experience in this regard. Buffalo farming should have minimal environmental impact. Standards and sanitary inspection for live animals are found in standard No. 1027. There are other proposed standards for animal feed and animal breeding products that can be considered.

4-3- Legal permissions

Currently, the Agricultural Jihad Organization has conducted the necessary legal studies and measures regarding buffalo breeding in the selected location. In order to establish animal husbandry, investors need an establishment permit from the Agricultural Engineering System Organization and a health permit from the Khuzestan Veterinary System Organization. Animal husbandry exploitation license is also a document that is issued by Khuzestan Agricultural Engineering System Organization after the exploitation of animal husbandry and the completion of construction.

Health permit is another license that is issued by the General Department of Veterinary Medicine of Khuzestan Province after the completion of the construction and according to the regulations of the Medical Sciences Organization of the country.

It is worth noting; In order to issue an establishment permit, the provincial and city units of the Engineering System Organization are required to obtain inquiries and approval from the following organizations:

- Provincial or city units of the veterinary system organization
- General Department of Environmental Protection of Khuzestan Province or General Department of Environmental Protection of GOTVAND City
- Electricity distribution company of Khuzestan province (or GOTVAND city)
- General Department of Natural Resources and Watershed Management of Khuzestan Province (or GOTVAND City)
- Management of land affairs in Khuzestan province (or GOTVAND city)
- Cultural heritage and tourism organization of the province (or GOTVAND city)

It is worth noting; The provincial and city units of the engineering system organization are required to comply with and receive the following documents in order to issue an operating license:

- Principle of agreement in principle and establishment license
- Completed application form for issuance of exploitation license
- Form for completion of construction operations and installation of facilities and equipment completed by the supervising engineer
- Completion form at the end of work
- the principle of the health license and the basic agreement of exploitation
- Introducing the technical officer

5) market research and competition

5-1- Target market introduction

Buffalo is one of the domestic animals that is considered one of the most important sources of food supply, especially protein, and its breeding can be a suitable management solution in developing countries.

The estimate of the buffalo population in 1400 by province is as described in the following table. Khuzestan province, Ardabil, East and West AZARBAIJAN have more population of buffalo.

Table (8): Buffalo population estimate in 1400

province	buffalo population (head)
East AZARBAIJAN	33,744
WESTERN AZERBAIJAN	51,367
ARDABIL	37,848
ESFAHAN	114
ALBORZ	58
ILAM	572
BUSHEHR	0
TEHRAN	59
CHAHARMAHAL VA BAKHTIARI	0
SOUTHERN KHORASAN	0
KHORASAN RAZAVI	0
NORTH KHORASAN	0
KHUZESTAN	89,742
ZANJAN	0
SEMNAN	114
SISTAN AND BALUCHESTAN	0
FARS	228
QAZVIN	114
QOM	0
KURDISTAN	0
KERMAN	0
KERMANSHAH	114
KOHILOYEH AND BOYERAHMAD	0
GOLESTAN	1,850
GILAN	7,410
LORESTAN	228
MAZANDARAN	2,622
MARKAZI	0
HORMOZGAN	0
HAMEDAN	0
YAZD	0
SOUTH OF KERMAN PROVINCE	0
Total	226,184

Currently, there are 89,000 buffaloes in Khuzestan and 37,000 productive livestock. With the capacity of raising 10,000 buffaloes, shush city ranks first in Khuzestan province and the country in this field.

According to official statistics, the estimate of buffalo population during the years 1395 to 1400 is as described in the following table.

Table (9): Estimation of buffalo population from 1390 to 1400 (head)

Year	whole country	Khuzestan province	The share of Khuzestan province in the country
1395	210,900	83,700	٪39.7
1396	215,300	85,400	٪39.7
1397	218,600	86,700	٪39.7
1398	221,727	87,973	٪39.7
1399	223,400	99,913	٪44.7
1400	226,184	89,742	٪39.7

Buffalo breeding is one of the professions that is done in order to produce milk and red meat. Native buffaloes produce an average of 6-8 liters of milk per day, which, of course, is very high-fat and suitable, and is sold at a higher price than cow's milk in the market.

Table (10): Production amount of red meat and red buffalo meat during the years 1395 to 1400

year	Red meat (thousand tons)	red buffalo meat (thousand tons)	The share of red buffalo meat from the total
1395	823.00	9.70	1.18%
1396	835.10	10.10	1.21%
1397	829.50	10.21	1.23%
1398	859.00	10.26	1.19%
1399	884.30	10.48	1.19%
1400	909.50	10.60	1.17%

The production of buffalo milk is 160,000 tons per year, which is about 1.4 percent of the country's milk production, but in terms of economic value, it is 2.5 to three times that of cow's milk.

Table (11): Production amount of milk and buffalo milk during the years 1395 to 1400

year	milk (thousand tons)	buffalo milk (thousand tons)	The share of buffalo milk from the total
1395	9,653.40	139.00	1.44%
1396	10,183.70	147.50	1.45%
1397	10,588.60	149.66	1.41%
1398	11,002.00	156.00	1.42%
1399	11,268.00	157.56	1.40%
1400	11,049.10	159.10	1.44%

Table (12): Per capita consumption of red meat and milk in 1400 (by place of production and import) (kilograms)

year	Red meat (thousand tons)	milk (thousand tons)
1395	11.47	111.24
1396	12.11	114.85
1397	12.04	121.08
1398	12.55	124.88
1399	10.95	119.65
1400	11.10	111.10

The capacity and number of industrial cattle farms in the country are as follows.

Table (13): Capacity of industrial cattle farms in the country (Ras)

year	The total capacity of cattle breeding	Active cattle breeding capacity	Inactive cattle breeding capacity
1392	3,264,593	2,572,999	691,594
1395	3,619,696	2,829,667	790,029
1398	3,670,796	3,118,303	552,493
1401	5,023,554	4,672,297	351,257

Table (14): Statistics of the country's cattle farms in different years in the country

year	The number of industrial cattle farms in the country	The number of inactive industrial cattle farms in the country	The number of inactive non-industrial cattle farms in the country	The Number of cattle with fattening activity	The number of cattle with milk production activity
1392	25,353	7,054	18,299	9,058	16,295
1395	26,061	7,514	18,547	8,929	17,132
1398	26,983	5,466	21,517	10,147	16,836
1401	27,018	3,370	23,648	9,629	17,389

Buffalo breeding is more optimal compared to cows, because this animal feeds on any fodder, but dairy cows do not have the ability to digest different fodder, and for this reason, the cost of keeping buffalo is about 50% lower than that of cows.

Due to the optimal consumption of feed and the production of valuable products such as meat and milk, buffaloes are completely justified from an economic point of view and equal or even higher than the breeding of other livestock such as cattle and sheep, which investment in this sector can bring income for the rancher, provided First, it should be cultivated industrially or semi-industrially, and secondly, it should be directed and promoted to the consumption market of manufactured products.

Buffalo is one of the forgotten livestock that will have a high potential and ability to generate profit if the breeding is properly managed and the necessary infrastructure is provided.

6) Physical progress of the project No Yes

This is a creative plan and it is defined in order to cover the needs of the whole country and export the product abroad. There has been no progress in the implementation of this project so far.

7) Operational plan and implementation scheduling

The implementation of the project stages until its operation is planned for 36 months and the operation of the project is expected from the beginning of 1406. The schedule of the project is presented in Table (15).

Table (15): Project Scheduling

year	1402				1403				1404				1405			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Operations/Season																
Pre investment studies	■															
Fundraising and starting	■	■	■	■												
Obtain legal permissions					■	■										
Land purchase and preparation								■								
Selecting contractor								■								
Equipping site								■								
Construction and landscaping									■	■	■	■	■	■	■	■
Order, purchase and transportation of machinery												■	■	■	■	■
Machinery installation																■
Facilities												■	■	■		
Hiring and onboarding of staff																■
Unexpected delays															■	■
Trial production																■
production phase																■

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 staff 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 (16): Cost Estimations

No.	Subject	Amount (Million Rials)
1	Total Fixed Investment Costs	2,950,500
2	Total Net Working Capital Requirements	178,059
3	Total Production Costs (Annual)	805,891
4	Depreciation	234,144
5	Total Investment	3,128,559
6	Unit Cost (By Product Type)	-
7	Breeding buffalo(cow) (riyal/head)	583,080,171
8	Meat (livestock) (Rials/kg)	423,612
9	Buffalo milk (Rials/kg)	296,859
10	Animal manure (Rials/ton)	425,816

Table (17): Fixed Capital Estimations (Capital Costs)

No.	Subject	Cost (Million Rials)	
1	Purchasing land	0	
2	Landscaping and land improvement	133,400	
3	Civil operations and construction of buildings	1,516,120	
4	Production machinery and equipment	705,000	
5	Service equipment	144,000	
6	Protection and environmental equipment	0	
7	Overhead costs	0	
8	Pre-Production Expenditure (As described in Table (19))	Pre-investment studies	3,940
		Project management and organization	313,549
		Technology education	9,511
9	Unexpected costs	124,980	
Total		2,950,500	

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 150.
- 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 the present plan, there is no coverage period for goods under construction and manufactured goods.
- 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). 150 days is considered in this plan.

Table (18): Total Net Working Capital Requirements (Production Costs)

No.	Subject	Amount (Million Rials)
1	Raw Materials Inventory	86,731
2	Work In Progress	0
3	Finished Product	0
4	Accounts Receivable	0
5	Cash-In-Hand	91,328
6	(Commercial Accounts Payable)	0
Total Net Working Capital Requirements		178,059

Table (19): Pre-Production Expenditure

No.	Subject	Description	Total (million Rials)	
1	Incorporation	-	200	
2	Obtaining Licenses / Production License	-	1,200	
3	Studying, Consulting, Research and Development, Traveling, Visiting and Participating in Local Exhibitions, etc.	1.5 thousandth of the investment costs of the project	3,940	
4	Property Insurance	2 thousandth of depreciable fixed assets	5,250	
5	Survey Fee, Financing, Contract and So On	Survey fee 0.5 thousandth, other 2.5 thousandth	6,300	
6	Cartography, Supervising	2 thousandth of contract expenses	4,710	
7	Other's	Staff Training	Equivalent to 10 days of Staff salary	4,801
		Wages And Salaries During the Construction	Equivalent to the salary of 14 personnel in 36 months	97,742
		BUFFALOE	equivalent to 200 buffaloes	200,000
		Other Expenses	٪2.3	2,858
Total			327,000	

8-2- Sales Revenue

The main source of income of the plan is the sale of breeding buffaloes. The number of salable breeding buffaloes of each livestock farm (which started its activity by raising 200 breeding cows) is considered to be more than 90 heads. Obviously, non-productive cows (males) are sent to the slaughterhouse for slaughter every period. Also, the milk from the breeding buffaloes that give birth every year is collected and transferred to the milk building located in the complex and can be sold in the market. Another source of income is animal manure, the income from which is also considered. The total sales amount of the project in 1406 at the fixed prices of 1402 is estimated to be equal to 11,586 billion Rials. This figure will increase in the following years due to the possibility of selling productive buffaloes as well as abattoir buffaloes and will increase to a maximum of 1,681 billion Rials.

Table (20): Project Revenue in The First 5 Years of Production Phase (Billion Rials)

No.	Subject	Q ₁	Q ₂	Q ₃	Q ₄	Total 1 st Year	Total 2 nd Year	Total 3 rd Year	Total 4 th Year	Total 5 th Year
1	Sale of breeding buffalo	0	0	0	0	0	900,000	900,000	900,000	900,000
2	meat (livestock)	189	189	189	189	756	770,000	770,000	770,000	770,000
3	milk	308	308	308	308	1,230	1,740	1,650	1,560	750
4	animal manure	2,400	2,400	2,400	2,400	9,600	9,600	9,600	9,600	9,600
Total		2,897	2,897	2,897	2,897	11,586	1,681,340	1,681,250	1,681,160	3,216,350

8-3- Length of Production Phase

The construction period of the plan is 36 months and it is considered to start from April 1403. The duration of the project is considered to be 5 years.

Table (21): Planning Horizon

Title	Month	-	year	Length of construction phase (months)	Start of phase (months)	Length of production phase (years)
Project identification	1	/	1402	36	12	5
Beginning of construction phase	1	/	1403			
Beginning of production phase	1	/	1406			
End of production phase	12	/	1410			

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 1407SH onwards) below.

$$\text{Break-even sales value (Rials)} = \frac{\text{Total Fixed Costs}}{1 - \frac{\text{Total Variable Costs}}{\text{Sales Value}}}$$

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

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

$$\text{Break-even sales value} = \frac{361,793}{1 - \frac{404,099}{1,681,340}} = 476,258 \text{ (Million Rials)}$$

$$\text{Break-even ratio (\%)} = \frac{476,258}{1,681,340} = 28.3\%$$

Table (22): Project break-even point estimation

Title	Production 1406	Production 1407	Production 1408	Production 1409	Production 1410	Production 1411	Production 1412
Sales revenue	766,830	1,681,340	1,681,250	1,681,160	3,216,350	1,697,310	1,697,250
Variable costs	380,898	403,311	403,311	403,311	2,323,308	423,311	423,311
Variable margin	385,932	1,278,029	1,277,939	1,277,849	893,042	1,273,999	1,273,939
Variable margin ratio (%)	50	76	76	76	28	75	75
Fixed costs	360,421	361,455	361,455	361,455	350,584	347,590	347,590
Break-even sales value	716,141	475,521	475,528	475,536	1,262,650	463,084	463,089
Break-even ratio (%)	93.4	28.3	28.3	28.3	39.3	27.3	27.3

- According to COMFAR Results

Based on the calculations of COMFAR software, the break-even point including operating and non-operating costs, is 476 billion Rials and it will be achieved in the 28.3 % 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 254 billion Rials, which shows that the project is economically feasible.

One of the other methods of evaluating investment plans is **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 22.1 % and compared to the Minimum Attractive Rate of Return, it is favorable.

Table (23): Project Return Index

Index	Amount	Unit of measurement
The Present Value of The Total Cost of The Period of Construction Phase and Production Phase	4,475,785	Million Rials
The Present Value of The Total Income of Construction Phase and Production Phase	4,729,681	Million Rials
NET PRESENT VALUE (NPV)	253,896	Million Rials
Cost-benefit RATIO (B/C)	1.06	-
INTERNAL RATE OF RETURN (IRR)	22.1	Percent
NPV RATIO (PI)	0.10	Rial per Rial of investment
NORMAL PAYBACK	3.50	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 3.50 years (equal to the year 1409) 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 (24) 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; 4% increase in sales revenue of the plan, the internal rate of return will increase from 22.1 % to 24%. On the contrary, in the case of a 4% decrease in sales revenue, the internal rate of return of the project will decrease to 20%.

Table (24): Sensitivity Analysis (Percentage of IRR changes caused by sales revenue, fixed assets and operating costs alteration)

Variation (%)	Sales revenue	fixed assets	Operating costs
-20%	13%	27%	26%
-4%	20%	23%	23%
0%	22.1%	22.1%	22.1%
4%	24%	21%	21%
20%	29%	18%	18%

8-7-2- Fixed Assets

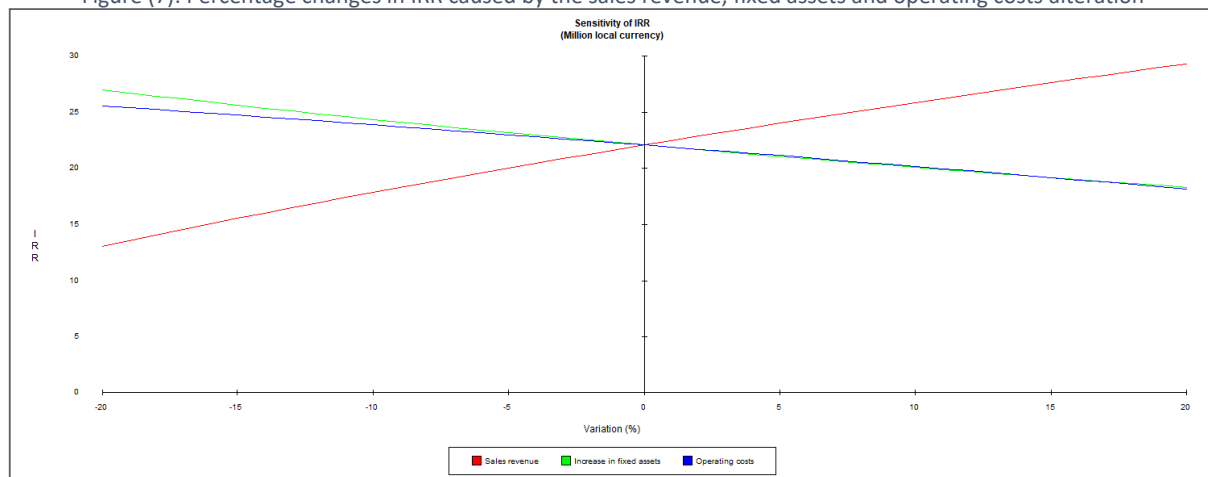
The change in the fixed assets is due to the fixed costs of the initial investment alterations. The results of the sensitivity analysis according to the fixed costs of the plan have been done and it shows that in case of an unexpected 20% increase in the fixed capital costs of the project, the internal rate of return will decrease from 22.1 % to 18%. Conversely, if there is a 20% reduction in the fixed capital costs, the internal rate of return will increase and reach 27%.

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 4% increase in the operating costs, the efficiency rate of the plan will decrease to 21%. On the contrary, if the total operating costs of the project are reduced by 4%, the internal rate of return will increase to 23%. 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 (7): 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

The implementation of the productive cattle breeding plan will be implemented on a land of 33 hectares. The total area of animal husbandry units is considered to be more than 15 hectares. The area of the central management units and the central milk collection and maintenance building and the scale and other needs of the complex are projected on a land of over one hectare. Based on this, the useful area of animal husbandry and side constructions has been considered as a total area of 160,000 square meters. Roofed and non-roofed infrastructure is planned to be 104,500 square meters. The total investment in the building is estimated at 1,650 billion Rials and the total investment in the main and auxiliary equipment is estimated at 974 billion Rials. The total pre-operational costs are estimated at 327 billion Rials, including the total required fixed capital of 2,951 billion Rials and the total working capital required for the project is 178 billion Rials. The total investment of the project is expected to come from the resources of the company's shareholders.

The sale of the plan in 1406 is predicted at fixed prices equal to 767 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 3,216 billion Rials. The net profit of the plan has been positive in all years. The profit figure in 1406 is equivalent to 26 billion. The profit will increase in the following years and will reach a maximum of 926 billion Rials. The average annual profit of the plan is 857 billion Rials and the average profit margin is expected to be 40.4%. The internal rate of return (IRR) of the project is also estimated at 22.1% and the payback period (PBP) is estimated at a maximum of 3.50 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 254 billion Rials.

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

Table (25): Summary of Economic Features

Nominal Capacity and Unit of Measurement	Product Name	Title Of the Project with ISIC Code	Title Of the Project
2000 head	Animal husbandry (breeding buffalo)	Animal husbandry (breeding buffalo) (121412309)	Business plan for buffalo farm
Required Human Resource (Person)	Equity Shares (Million Rials)	Total Fixed Capital (Million Rials)	Project Duration
82	178,074	2,950,500	36
B/C	Applicant Available Cash (Million Rials)	Net Present Value (NPV) (Million Rials)	IRR (%)
1.1	3,128,574	253,896	22.1%
ROI (%)	NPV Ratio / Profitability Index (Rial per Rial invested)	Dynamic Payback Period (Year)	Normal Payback Period (Year)
24	0.10	8.84	3.50
Average Assets Turnover Ratio	Average Net Profit Margin (%)	Average Annual Profit (Million Rials)	Maximum Annual Sales (Million Rials)
0.42	40.4%	738,597	3,216,350

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

The exchange rate at the time of evaluation is included as described in Table (23). The purchase and sale prices are under the energy exchange transactions and are adjusted to a large extent under the influence of the exchange rate increase. Therefore, exchange rate fluctuations regarding the purchase of foreign equipment will be compensated to some extent by the income from sales, and exchange rate fluctuations will have little effect on the evaluation results. Therefore, in the construction and implementation phase, if the financing of the project is through foreign currency sources of finance, the number of financial resources required will not change much.

Table (26): Currencies exchange Rate

Unit of Measurement	Unit Price	Currency
Rials	52.300	USD
Rials	560.500	EURO

Market Currency rate- 31/02/1402 SH

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.

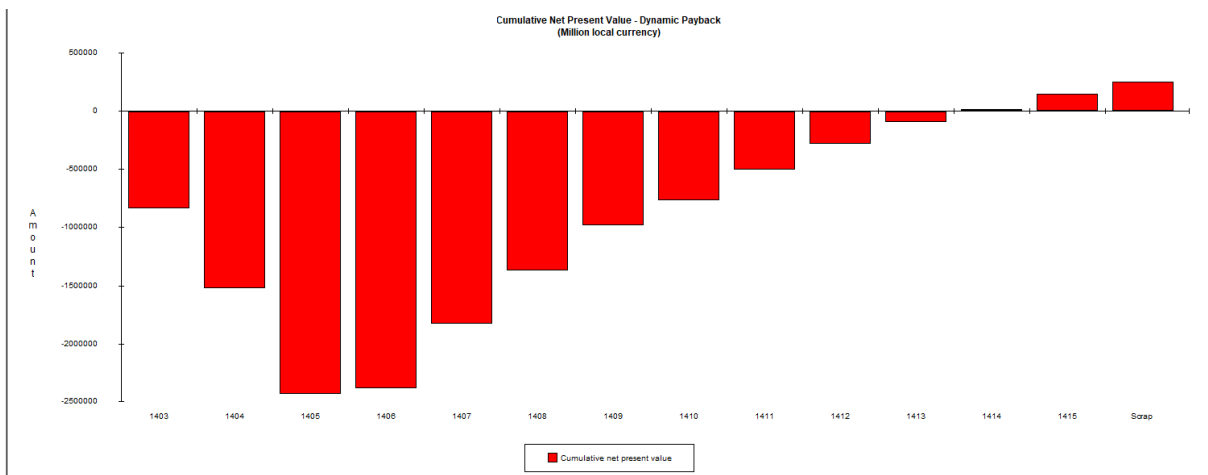
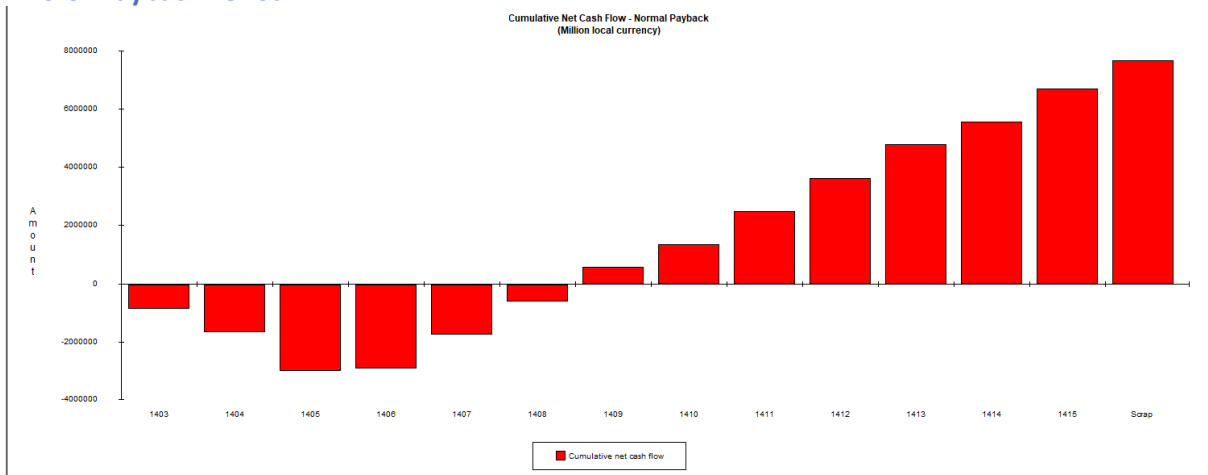
Table (27): Foreign (Fixed) Currency Required

No.	Year	Required Investment
1	Year 1	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 financing is foreseen in the form of establishing a company inside the country. The total financial resources required are predicted through the investor's contribution and have not been included in order to implement the facility plan of domestic banks.

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 (normal) of the plan is estimated to be 3.50 years (equal to 1409) according to the calculations of CAMFAR.

Dynamic Payback Period of the plan is also estimated at 8.84 years.

10) Incentives, features and benefits of the plan

The financial support of the production units includes the granting of bank facilities and how to repay them, as well as tax exemptions, which, if appropriate, facilitate the implementation of the plan and provide the conditions for investment. In the following, some of these conditions will be discussed.

One of the important banking facilities for production units is the payment of long-term bank loans up to 70% of fixed investment by the country'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 riyal facilities in the industry sector is 23%, which in case of good calculations, a part of the interest of the facilities can be repaid - the repayment period of long-term bank facilities according to the nature of the production plan, the type of technology and the possibility of exporting the product to the maximum It has been 8 years and there is a possibility of using a one- to two-year breathing period to repay the installments.

Another important bank facility is short-term bank loans (6 to 12 months) for use as working capital needed to carry out production processes, which the banking network provides up to 70% of. Taking short-term facilities to this extent depends on gaining the trust of the operating banks and having a favorable record in repaying the previously received facilities.

In the tax department: according to Article 81 of the country's tax law, the income from all activities of agriculture, animal husbandry, fish and bee breeding and poultry breeding, fishing and fishing, animal husbandry, restoration of pastures and forests, gardens and trees of all kinds and plants of all kinds. They are exempt from paying taxes.

(Attachment Number 2)

*Summary Sheet***Project introduction****1. Project Title:** Breeding Buffalo Plan**2. Sector:** Agriculture sub-sector: Animal Husbandry**3. Products/services:** Animal husbandry (breeding buffalo)**4. Location:** Khuzestan, GOTVAND city, near DUPIRAN village**5. Project description:**

The implementation of the productive cattle breeding plan will be implemented on a land of 33 hectares. The total area of animal husbandry units is considered to be more than 15 hectares. The area of the central management units and the central milk collection and maintenance building and the scale and other needs of the complex are projected on a land of over one hectare. Based on this, the useful area of animal husbandry and side constructions has been considered as a total area of 160,000 square meters. Roofed and non-roofed infrastructure is planned to be 104,500 square meters. The total investment in the building is estimated at 1,650 billion Rials and the total investment in the main and auxiliary equipment is estimated at 974 billion Rials. The total pre-operational costs are estimated at 327 billion Rials, including the total required fixed capital of 2,951 billion Rials and the total working capital required for the project is 178 billion Rials. The total investment of the project is expected to come from the resources of the company's shareholders.

The sale of the plan in 1406 is predicted at fixed prices equal to 767 billion Rials. This figure will increase in the following years due to the increase in production capacity and will increase to a maximum of 3,216 billion Rials. The net profit of the plan has been positive in all years. The profit figure in 1406 is equivalent to 26 billion. The profit will increase in the following years and will reach a maximum of 926 billion Rials. The average annual profit of the plan is 857 billion Rials and the average profit margin is expected to be 40.4%. The internal rate of return (IRR) of the project is also estimated at 22.1% and the payback period (PBP) is estimated at a maximum of 3.50 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 254 billion Rials.

6. Annual Capacity: 2000 heads (breeding 2000 head buffalo, 180 head dairy buffalo, male and female calves) total 3800 heads

Project Status

7. Local/internal raw material access: 100%

8. Sales: 3,216 (Billion Rials)

Anticipated local market: 20%

Anticipated export market: 80%

9. construction period: 36 months

10. project status:

- 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.

- Required land provided?

Yes. Currently, industrial land has been selected in the place. Based on the geospatial criteria, this area is a suitable place for the construction of the plan. Other suitable places for cattle breeding in the province include DEZFUL, Shush, SHUSHTAR, Shadgan and AZADEGAN plain respectively.

- Legal permission (establishment license, foreign currency quota, environment) taken?

In order to settle in the desired location, legal permits must be obtained from the Agricultural Engineering System Organization and the Veterinary Medicine System Organization of Khuzestan province.

- Partnership agreement concluded with local/foreign investor?

Yes - in the past years, contracts have been given to local operators for the purpose of operating the site, but due to the delay in the cases of termination of the concluded contracts and the issue of partnership with new investors is being pursued.

- Agreement with local/foreign contractor(s) concluded?

So far, no agreement or contract has been concluded for the purpose of manufacturing domestic and foreign machinery.

- Infrastructural utilities procured?

If the project is established in industrial towns (such as Ahvaz Industrial Town 5), infrastructure facilities such as water and electricity, roads, etc. are available.

- List of know-how, machinery and equipment concluded?

Yes - the desired equipment, according to the studies, includes a silo cutter, mobile mixer feeder, electric mobile hay chopper, feed mixer, chain elevator livestock, milking machine, manure collector, misting system, ceiling fans, grain mill, tractor, steel tanks, Ice Bank, BASKOL.

- Financing agreement for machinery, equipment and know-how concluded?

No

Financial structure

11. Financial table:

Description	Local Currency Required			Foreign Currency Required	Total Euro
	Million Rial	Exchange Rate	Euro		
Total Fixed Investment Costs	2,950,500	451,531	6,534,435	0	6,534,435
Total Net Working Capital Requirements	178,059	451,531	394,345	0	394,345
Total Investment	3,128,559	-	6,928,780	0	6,928,780

- Value Of Foreign Equipment/Machinery:	0	Euro			
- Value Of Local Equipment/Machinery:	1,880,270	Euro			
- Value Of Foreign Technical Know-How:	0	Euro			
- Value Of Local Technical Know-How:	0	Euro			
- Net Present Value (NPV):	562,300	Euro	Net present values discounted to:		1403
- Internal Rate of Return (IRR):	22.1%	%			
- Normal Payback:	3.50	year			
- Minimum Attractive Rate of Return:	%20	%			

General information

12. Project Type: new Project Explanation / Rehabilitation project
 Name / Company name: -
 Address: Khuzestan, GOTVAND city, near DUPIRAN village
 Tel: +98-9166035912 +98-6133359568 Fax:
 Email: a.taheri58@gmail.com Website:
 Local entrepreneur: Private Sector government /public sector