Volume 25, Special Issue **Print ISSN: 1099-9264**
Online ISSN: 1939-4675

INVESTMENT IN WESTERN DESERT AND ITS EFFECT OF INCREASING NATIONAL INCOME AT IRAQ ECONOMIC FEASIBILITY OF THE FISH FARMING PROJECTS

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ABSTRACT

The issue of fish farming in desert areas is one of the important topics, as it deals with a desert environment known for its sandy soil, scarcity of water and its mild climate throughout the year. Therefore, the implementation of such projects in the desert environment, would work to increase the animal production of fish, which are characterized by high nutritional value, being one of the sources rich in protein, mineral salts and vitamins, as well as achieving the best use of groundwater, which is characterized by clean water microbiologically because it is free from plant pollutants On the other hand, fish farming projects work to create an environmental balance of the natural elements in the desert, absorb unemployment through employment, stabilize the desert environment, and increase the country's national income

The research found that each (4) kg of feed produces about (1) kg of meat, and that the number of larvae obtained from each egg meal from the hatchery and placed in fingerling ponds reaches about one million.

The return to cost ratio was used to calculate the feasibility of establishing such projects in the desert environment for five basins, each basin area reaching 5 dunams. The results were that investing one dinar as costs would generate an internal return of more than two dinars. Therefore, the trend to raise fish through establishing fish farming projects in desert areas is economically feasible due to the increase in animal production from fish meat, as well as the economic, social and environmental returns that the project achieves.

Keywords: Fish Farming, Desert Areas, High Nutritional Value, Iraq Economic Feasibility

INTRODUCTION

Investment is one of the most important components of increasing production, which is an individual and social return. Investment means giving up money that an individual possesses at a certain moment and for a certain period of time that may be lengthened or shortened and linking it to one or more assets that he keeps for that period of time with the intention of obtaining future financial flows, investment means “any investment with the aim of increasing the productive capacity of society, and hence the use or exploitation of economic resources in a way that adds either goods, new products or services that did not exist before, or the increase of those goods or services in society is considered an investment” in the sense. Economic, which is the real investment. Others believe that investment means "sacrificing a current benefit that can be

obtained from greater future consumption. As for the investment decision, it is defined as" the process that includes all stages of the decision preparation, starting "from defining the goal and diagnosing the problem in question through" collecting data and information. " And crystallize it and define a set of alternatives and differentiate them, leading to "choosing the best alternative that is issued with the goal in a unified form that embodies the required decision, meaning that decision-making is a continuous process that ends with issuing or making decisions. Investment in the desert has economic, environmental and social implications especially that Iraq extends over an area that is estimated." With about (435.5) thousand square kilometers, equivalent to (174) million denims, deserts constitute (38.7%). This phenomenon began to grow since 1981 due to the military operations that destroyed the environment that lasted for decades and resulted in the lands of Iraq being exposed to multiple degrees of desertification (Ziyad, 2005).

It is noticed that almost half of the land area is decertified or subject to desertification. It is possible to exploit these lands by establishing agricultural projects to make them productive lands instead of being dead lands. Hence the idea of research, which is investment in the Western desert, considering that the lands of that desert are mostly deserting. The idea of fish farming came in In desert areas, as it will achieve two goals simultaneously, which is to exploit the same amount of water used in cultivating crops to obtain a product of high nutritional and economic value for the inhabitants of desert areas, namely fish of high nutritional value as well as that its production will bring profit and add to the national income

The fish wealth sector is one of the main sectors that the world countries depend on, including the Arab countries (Saudi Arabia, Oman, Bahrain, Egypt), because fish is one of the foodstuffs rich in many important elements necessary for the growth and building of the human body, as it provides a high percentage of animal protein estimated at about 18.5% compared to other meats, in addition to containing essential and rare vitamins and amino acids (not found in red meat) They also contain rare minerals, in addition to their meat being free of cholesterol, delicious taste and easy to digest. Also, the interest in the fish sector opens many horizons for employing the workforce. The average annual per capita consumption of fish at the global level is about 16.7 kilograms per year, and in some countries of the world, such as Japan and Spain, 35.9 kilograms and 26.1 kilograms, respectively, while in Iraq this rate is low, estimated at about 1 kg, while the World Health Organization indicates that the per capita share The usual during one year should be no less than 6.5 kg annually in order to obtain good health for the body (6). Not only that, but fisheries produce more than (20%-25%) of the number of animal protein that is used in poultry raising projects in particular, and thus benefit humans. However, despite the fact that fish is an important economic resource in the agricultural resource base, the unsustainable human intervention of that wealth led to its diminution, as per capita consumption of it decreased over time.

Based on the foregoing, increasing fish production has many benefits, including providing food for the Iraqi individual by meeting his needs of this basic substance, and improving the exploitation of the vast areas of desert lands and groundwater in the Western Badia and the rest of the desert places in Iraq. For the sake of optimal and sustainable exploitation of fish production, we need to invest in fish farming projects, by encouraging investment in desert places where groundwater is available or close to lakes, and thus we have achieved two goals, the first of which is to increase investment in the fish sector, which is one of the economic resources. The second important thing, and the second is the best exploitation of desert areas, and of course this will result in providing job opportunities, diversifying sources of income, enhancing food security from that basic material that has food benefits and improving the trade balance if the level of export is enhanced by surplus production after covering the local market demand.

And since the production of fodder in the Western Badia is within the agricultural cycle, so animal feeding in these areas is seasonal and leads to competition for the animal for humans over the cultivated area, so the quick way to overcome the problem of lack of animal protein is the orientation to fish production through fish farming, and we mean fish farming Developing fish wealth in an area of water that is under human control in order to increase the benefit (Al-Wadi, 2010).

Based on that, it can be said that the importance of the research stems from the fact that it creates important investment opportunities to diversify the sources of national income in Iraq by raising the rates of economic return for investors in fish farming projects, as well as developing fish wealth to enhance food security and improve the country's trade balance. Settling the nomadic Bedouins and securing their food needs, achieving optimal utilization of the vast desert lands and groundwater simultaneously, showing the aesthetic aspect of the desert, and paving the way for the establishment of investment projects related to the farming process, such as setting up fish canning factories, which would create forward links to fish farming operations. In this piece of work we will

1. Introducing the concept of fish farming and stating its importance as one of the alternatives and solutions to ensure food security by providing white meat and fish is one of the main resources.
2. Preparing the economic feasibility study for a fish farming project in the western desert.
3. Clarify the requirements and stages of fish breeding and production

Investing in fish farming projects is a way to enhance food security from animal protein, improve the trade balance, provide investment opportunities to diversify sources of national income, and open new horizons for projects that have forward links to the fish sector so that they employ labor.

Accordingly, the research was divided into several axes. In the first axis we dealt with a conceptual framework for the concept of fish farming and its types, as is the case in some countries of the world, including some Arab countries such as Egypt and Saudi Arabia.

In the second axis, we dealt with the reality of fisheries in Iraq, the challenges it faces, and indicators of fish production. In the third axis, the economic feasibility of establishing a fish farming project in the Western Desert of Iraq was discussed, and some projects established in some Arab countries and the economic returns achieved were highlighted. The conclusions and recommendations came in a fourth axis, and the sources that were used to complete the research were confirmed (Al-Issawi, 2011).

CONCEPTUAL FRAMEWORK FOR FISH FARMING

Concept of Fish Farming

It is the development of certain types of aquatic organisms, such as fish of all kinds, whether they are saltwater fish or freshwater fish, used as food for humans, under controlled conditions of sustenance, feeding, growth, hatching, harvesting, water quality and environmental conditions under the management and control of humans. And in certain areas, whether they are breeding ponds or cages, with the intention of developing production (7) in other words, it is underwater cultivation and the provision of appropriate environmental conditions. Fish farming is a fast way to address the serious environmental challenges facing aquaculture, including fish.

Types of Fish Farming

There are several types of fish farming in desert areas

a. The greenhouse
b. Earthen basins
c. Concrete basins
d. The use of polyethylene tarpaulins in earthen ponds
e. Fish production integrated with animal production

Investment Objectives

The investment objectives differ according to the entity that undertakes the investment process. The aim of the investment process may be to achieve public benefit, and the goal of the investment process may be to achieve a return or profit, as is the case for projects undertaken by the business sector (Al-Douri, 2010). The most important goals of the investment process can be summed up as follow:

1. Achieving an adequate return, as the goal of any investor is to obtain a suitable return, which helps the continuity of the project.
2. Preserving the value of the real assets: that is, preserving the value of the original invested capital in the project, and in order to ensure this, one must resort to the method of differentiation and selection, which is included in the economic feasibility studies, leading to the choice of the alternative or the appropriate investment opportunity from among several selected opportunities or Proposed
3. Continuity of obtaining income and working to increase it. This means that the investor is always seeking, from behind investing his money in investment projects, to obtain a continuous return, and to increase and develop it continuously.
4. Ensuring the necessary liquidity: Another goal of the investor is to provide an appropriate amount of liquidity to cover the requirements of the work and the production process, in order to be able to cover emergency and unmetered situations that may face the production process
    i. The risk and the safety of the capital: the investor must take into consideration the size of the risk that he may be prepared to accept, because the risk tends to be closely related to the return. Most financialians believe that those who consistently prove returns of 20% or more will be the risk that They are exposed to it above normal
    ii. Current income versus the increase in the value of capital: the investor must understand the existence of a reciprocal relationship between growth and income and their presence in one type of investment, "far-fetched," so if the investor goes to high-return institutions, he can expect a low growth "in the share price.
    iii. Liquidity considerations: Liquidity is measured by the investor’s ability to cover a specific investment with cash within a relatively short time at its fair market value or with a slight capital loss.
    iv. Investment time horizon: Investors with long-term investments need less liquidity and can deal with investment risks, as any decrease or losses can be overcome through the returns achieved in other years.
    v. Tax interests: Investment plans are usually affected by tax laws, which are reflected in the objectives of investors. The type of returns that are subject to tax must be taken into consideration when making an investment decision.
    vi. Legislative and regulatory factors: In some cases, some laws impede or impede the achievement of investment strategies, which requires taking into account those laws and regulations when building goals for the investor's investment plan

The and Stages of Fish Breeding and Production

Fish production activity is one of the branches of animal activity and its most important characteristics are:

Seasonality Characteristics of the Activity

The activity begins at the beginning of February, when the project begins with the preparation of fingerling production. If the project is late, this leads to a lack of production and not obtaining the required growth of fish.

The Overlap between Inputs and Outputs in the Activity Stages

It is noticed that the larvae that are produced inside the hatchery are transferred to the fingerling ponds, and that these fingerlings are transferred to the breeding and fattening ponds for fish production, and then part of this production is transferred to the broiler pond for the purpose of obtaining the eggs that are transferred to the hatchery to produce the larvae and thus the production process continues (Wilson, 2006).

Rates of Production Measurement

There are several units of measurement that must be relied upon when determining the cost of a product, the most important of which are

A- There is a percentage of the number of fish in each dunam of the basin and the percentage of fish species in each denim as well
B- The rate of each (4) kg of feed produces (1) kg of meat
C- The number of larvae obtained from each egg meal from the hatchery and placed in fingerling production ponds reaches the limits of (one million larvae) and are very small and have little weight
D- The percentage of production spoilage

The activity may face a percentage of wear and tear at a stage when producing fingerlings, including natural spoilage, but in the stage of complete fish production, necessary means must be provided to reduce losses by providing water and sterilizing materials

Phases of fish breeding and production activity

The project produces carp fish through two stages

a. Fingerling production stage: at the beginning of February, the project begins with caring for mothers in terms of feeding them and preparing the special requirements to obtain eggs in large quantities, with the preparation of the hatchery and the number of incubators for the purpose of accommodating eggs according to the types of carp fish. The fingerling production center consists of three departments, Maternal basin, Hatcher, and Fingerling production ponds.

   The cost unit for the above sections is defined as (kg/finger). For the purpose of obtaining fingerlings, a brood stock tank must be established to obtain eggs, and it is not possible to calculate the number of egg weight. As for the hatchery, it must befrom

its establishment to obtain eggs to the production of larvae that lead to production of fingerlings. Note that the costs of the brood stock and the hatchery are transferred to the nursery ponds of larvae, where the costs of the brood stock, the hatchery and the production ponds of fingerlings can be determined. The cost of the fingerlings can be determined. Fingerlings can be sold based on their number and weight, thus generating revenue for the project

b. Fish production stage (full production): This stage starts after the fingerling production, which consists of (5) ponds where fish are produced and sold on the basis of weight and number, so the cost unit will be (kg/fish).

The Economic Feasibility Study of the Fish Farming Project

It reveals the project data has been distributed over the years of its establishment, as follows:

A Statement of Operating Expenses for a Record Year

Operating costs are the total outflows directed towards producing and processing the product until it is suitable for final consumption. The process of determining the elements of these costs during the first year in which the production activity reaches the level of full capacity is a basis for measuring the profitability of the project. The annual operating costs include the following elements

Investment Costs

Table 1
INVESTMENT COSTS OF THE PROJECT
(AMOUNTS IN MILLIONS OF DINARS)

	Statement	Amount (partial)	The total amount
1	Buildings for ponds	60000	
2	For hatcheries	98000	158000
3	Transportation	25000	
4	furniture	30000	
5	Devices	14790	
6	machinery	44000	
			271790

From the above table 1, we find that the total investment costs of the project for the two phases of the fingerling production phase and the complete fish production are (271,790) million dinars. Also, we can realize that the total investment costs of the project for the two phases of the fingerling production phase and the complete fish production are (271,790) million dinars (Al-Samman, 2019).

Production and Marketing Costs

Through Table (2), the annual production and marketing costs are calculated, which include the raw materials for the production of the fingerings and the finished production stages, the wages of workers and the marketing expenses needed by the project, as follows:

Table 2
PRODUCTION AND MARKETING COSTS (AMOUNTS IN MILLIONS OF DINARS)

Statement	Amount per part	The total amount
Fodder Fish Window	2.25	4750
	1500	
	1000	
Workers' wages	42	
Marketing materials	--------	
Total	46.75	

From the above table, we find that the production and marketing costs amounted to (46,750) million dinars.

Other Operational Costs

They are what is spent on water, electricity, fuel, maintenance expenses and others, as in the following table

Table 3
ANNUAL OPERATING COSTS (AMOUNTS IN MILLIONS OF DINARS)

Statement	the amount
Water and electricity	
Fuel	40000
Maintenance	-------
Total	40000

So, the total investment, production and operational costs are as shown in Table (4) in order to find out the net cash flow for 5 years.

Table 4
TOTAL INVESTMENT COSTS AND OTHER COSTS AND REVENUES FOR THE PROJECT (IN MILLION DINARS)

Costs and revenues	1	2	3	4	5
investment	271.79	--	---	-----	-----
output	750.46	51.425	56.567	62.223	68.446
other operational	40000	44000	48000	52800	58.08
Total	358.54	95.425	104.567	115.023	126.526
Net Cash flow=revenue - total costs					
	8.54-	289.575	350.827	385.909	
Total return	350000	385000	423.5	465.85	512.435

Source: Calculated by the researcher based on Table (1, 2, 3)

The Internal Rate of Return Standard

The internal rate of return criterion was relied upon to evaluate this project by finding a discount rate that gives a current value to the project=zero and since this requires the use of a specific discount rate to convert the current cash flows into current values as it measures the marginal efficiency of the invested capital and represents this the economic standard is a discount rate that makes the current values of return equal to the current values of the investment and production costs of the project during its economic life as shown in Table 5.

Table 5
CALCULATING THE INTERNAL RATE OF RETURN (MILLION DINARS)

The year Statement	Net cash flow	The value of the discount factor 10%	The present value at the discount rate of 10%	The value of the discount factor 15	Present value at the discount rate of 15%
1	8.540-	0.909	-7.762	0.869	7.421-
2	263.25	0.826	217.442	0.756	199.017
3	289.6	0.751	213.489	0.657	190.267
4	318.5	0.983	313.085	0.571	181.635
5	350.4	0.62	217.248	0.497	174.148

Calculated by the researcher based on Table 4

Net Present Value

This method is based on the time value of money because the current value of a dinar for the day is greater than its current value after a year, because this dinar can be reinvested again in addition to taking into account other factors such as inflation (3) and we note from table (6) that the project is subject. The research achieves a "cash" flow after a year of production, the amount of which is (1336,704) million dinars, while the current value of it was (1467,131) billion dinars. Thus, with regard to costs, where we note that the value of costs amounted to (800,081) billion dinars. The current value of costs was estimated at (605,272) billion dinars at the present time. The discount rate was adopted, which reflects the alternative cost of capital, which is (12%)

Net Present Value=Present Value of Returns-Present Value of Costs

Table 6
THE PRESENT VALUE OF COSTS AND REVENUES (MILLION DINARS) 12% DISCOUNT

Year Statement	discount value	Total costs	Present value of costs	Net cash flow	Present value of returns
1	0.892	358.54	319.817	8.54-	7.617-
2	0.797	95.425	76.054	289.575	230.791
3	0.618	104.567	64.622	318.933	1,97,100
4	0.635	115.023	73.039	350.827	222.775
5	0.567	126.526	71.74	385.909	218.81
Total		800.081	605.272	1336.704	1467.131

Calculated by the researcher based on the data in Table (1 and 2).

Cost Return Ratio Criterion

This criterion was arrived at by dividing the present value of the return on the present value of the costs. The quotient represents the single monetary unit spent as costs from the project. As a general rule when using this criterion in evaluating projects is to accept those projects in which the ratio of return to costs exceeds one.

$$\text{Return of the invested dinar} = \frac{\text{Present value of total returns}}{\text{The present value of total costs}}$$

$$= \frac{1467.131}{605.272} = 2.4$$

It is evident from the above data that one dinar invested as costs in this project will generate a return "slightly more than two dinars, and therefore this project are economically feasible" (Albu-rghaif, 2019).

CONCLUSION

1. The results showed an increase in the economic criteria indicators used in the research, as the net present value reached (861,859) dinars.
2. We note that the project may cover its investment costs during the first year of the project, as shown in Table (3 and 4).
3. The return of the dinar invested in the project achieves a return of (2,4 dinars). It is also noted that the internal rate of return is less than (15%) and more than (10%), meaning that the net profit rate is equal to (3%).
4. The project will also help cultivate the surrounding lands by investing the project's water.

RECOMMENDATIONS

1. Exploiting desert lands far from city centers and not exploited by fish breeding projects, as well as exploiting groundwater by using the latest technical means to provide food security.
2. Creating new job opportunities and reducing unemployment rates for graduates of agricultural specializations.
3. Raise the standard of living for desert residents and diversify sources of national income.
4. The research recommends expanding the establishment of this project because of its good economic return as well, Increase the green area of the desert.
5. Increasing the green area in desert areas that are subject to desertification because of its positive economic and environmental implications.

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