

Exploring the Blue Economy Potential in Algeria: A Case Study of Aquaculture SME SARL ELMOKRETAR Aqua

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Abstract:

The article aims to present an overview of the blue economy, including the emerging sectors that offer the best opportunities for eco-entrepreneurs.

In Algeria, a national strategy for the blue economy is being developed, particularly for SMEs in the aquaculture sector [†] (SwitchMed, 07/03/2022). To illustrate this effort, we have chosen to focus on the SME SARL ELMOKRETAR Aqua, located in the Daïra Beni Haoua in the wilaya of Chlef.

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[†] The work of the National Commission responsible for revising the legal framework for aquaculture and fisheries in 2021

This first aquaculture farm specializes in rearing two species of fish: sea bream and sea bass, using floating cages in the waters of Oued Goussine.

This study examines the production levels of the two species over the period (2015-2022), and the project's financing arrangements at the time of its creation.

Keywords: Blue Economy, eco-entrepreneur, aquaculture, SMEs, economic growth

Jel Classification Codes : Q56, Q22, L26, M13.

Résumé :

Le but de cet article est de présenter une vue d'ensemble de l'économie bleue, y compris les secteurs émergents qui offrent les meilleures opportunités pour les éco-entrepreneurs. En Algérie, une stratégie nationale pour l'économie bleue est en cours de développement, en particulier pour les PME du secteur aquacole (SwitchMed, 07/03/2022). Pour illustrer cet effort, nous avons choisi de concentrer sur la PME SARL ELMOKRETAR Aqua, située dans la Daïra Beni Haoua de la wilaya de Chlef. Cette première ferme aquacole se spécialise dans l'élevage de deux espèces de poissons : la dorade et le loup de mer, en utilisant des cages flottantes dans les eaux d'Oued Goussine. Cette étude examine les niveaux de production des deux espèces dans la période (2015-2022), ainsi les modalités de financement du projet lors de la création.

Mot

clés : Economie Bleue, éco-entrepreneurs, aquaculture, PME, croissance économique.

Jel de classification : Q56, Q22, L26, M13

1. INTRODUCTION

Economic versatility is seen as the foundation of a country's development and the guarantee of its future; the eco-entrepreneur plays an important role in economic growth because he or she is seen as the source of value creation.

The study's main conclusions are multi-faceted, shedding light on the dynamics shaping all of these sectors, from fishing to coastal tourism, port activity, and wind power. Certain sectors are priorities for a group of countries. For example, tourism (Egypt, Lebanon, Jordan, Morocco, Tunisia), aquaculture, and fishing (Algeria, Morocco, Palestine, Tunisia) are sectors in which most countries in the region are developing and strengthening incentives for the creation of SMEs (technical support instruments, legislative, fiscal, financial and regulatory instruments, etc.). As a result, the majority of developed and developing countries are using a range of tools to promote growth in these sectors, particularly specific sustainable sectors.

If the population continues to grow at the same rate, experts estimate that food production will have to double by 2050. The solution to this problem is to farm fish stocks. That's why the blue economy is a source of opportunity and motivation for eco-entrepreneurs.

Algeria's economy is largely based on the exploitation of hydrocarbons.

However, according to a 2019 World Bank report, oil and gas exports have declined over the years and now account for almost 96% of the country's total exports and 48% of tax revenues. As a result, Algeria's "rent" is eroding.

To counterbalance this trend, it is important to find alternative means of growth that do not depend on fossil fuel production. This is underlined by a recent OECD

report (2021), which recommends that Algeria invest in "bluer" sectors to promote inclusive and sustainable growth. The blue economy is therefore seen as an alternative strategy for Algeria's economic development (CNESE, 2021). Our country has an interesting field of study for the transition from an economy based on carbon energies to a low-carbon economy. The CNESE report stresses the importance of innovation and entrepreneurship in transforming the economy towards a more environmentally-friendly model.

The article is based on the importance of the blue economy in Algeria and the opportunities offered to eco-entrepreneurs. Among the projects created and completed in our country, we chose the SME SARL ELMOKRETAR AQUA from the Wilaya of Chlef, an aquaculture company created in March 2014, this investment project has been successfully developed, given the increase in fish production of the two species "Sea bream" and "Sea bass" and the financing of this production for the period (2015-2022).

Our research problem is: "How can we encourage the development of the blue economy to set up an aquaculture business in Algeria? »

1.1. The blue economy: an advantage for the eco-entrepreneur:

The blue economy is an economic model that focuses on the sustainable management of marine and coastal resources. This concept, developed by the United Nations Industrial Development Organization (UNIDO), is based on the idea that sustainable management of the oceans can be a source of economic growth and job creation.

The blue economy aims to reconcile economic development objectives with the protection of marine ecosystems and the preservation of fisheries resources. For example, sustainable aquaculture or coastal ecotourism can contribute to the blue economy while preserving marine ecosystems. In short, the blue economy offers a unique opportunity to develop viable economic activities while preserving the health of the oceans for future generations. (ONUDI, 2022).

The World Bank defines the blue economy as a "sustainable ocean economy": "the sustainable use of ocean resources for economic growth, improved livelihoods and jobs while preserving the health of ocean ecosystems" achieving "triple goals" that balance economic, environmental, and social outcomes (World Bank and United Nations Department and Social Affairs 2017).

1.1.1. The Entrepreneur and the Eco-entrepreneur:

Entrepreneurship is seen as a driver of economic development (FACCHINI, 2007) and job creation (BOUTILLIER, 2015) which is why it deserves special attention from governments (ACS, 2016) For developing countries, enterprise creation is a major challenge (FRISCH AVIRAM, 2020) and entrepreneurial activities play a key role in the growth of these countries (J.DORAN, 2018). Entrepreneurship focused on environmental issues is gaining interest due to the challenges of climate change (E. EMBRY, 2018), and the importance of innovation and entrepreneurship in this area (B. MRKAJIC, 2019).

Eco-entrepreneurship is a topic of growing interest among researchers and practitioners and can be defined as the identification, creation, and implementation of

new sustainable business opportunities that aim to solve environmental challenges while generating profits (UHLANER, 2015).

An eco-entrepreneur is an entrepreneur who engages in sustainable economic activities with a focus on environmental protection and sustainability. They use an ecological approach to design and manage their business, aiming to minimize the negative impact on the environment and maximize social and environmental returns. Several key issues for eco-entrepreneurs, such as creating stakeholder value, solving environmental problems, financial sustainability, and developing a business with a positive ecological impact (Uhlener, 2016).

Eco-entrepreneurs can work in a wide range of sectors, such as renewable energy, sustainable food production, environmentally friendly products, and clean technologies. They aim to reconcile economic success with environmental responsibility, creating businesses that are sustainable and profitable over the long term.

2. Literature review:

2.1 Emergence of the blue economy concept:

The "Blue Economy" concept emerged in the 1990s and was initiated by Gunter Pauli, a Belgian economist and entrepreneur. He owned a company called Recover, which produced washing powder. Throughout his career, he implemented numerous solutions to reduce the environmental impact of his detergents. Despite his determination, he was shocked to see the consequences of the introduction of his palm oil. It was responsible for the massive destruction of the rainforest in Indonesia. Shortly afterward, he decided to sell his company to pursue his reflections on the impact of human activities

on the environment (Madiba & Nature, 2020). In April 1994, he set up the "Zeri" foundation, with the mission of developing solutions that would make it possible to produce without emissions or waste, and that would have a positive impact on job creation without costing more than current economic models. Hence the genesis of the "Blue Economy" concept.

The concept of the Blue Economy was born. A tribute to planet Earth, in the colors of the sky and its oceans. Now based in Japan, Gunter Pauli also founded the Zero Pollution Research and Initiatives Foundation, whose mission is to meet the basic needs of humanity by drawing inspiration from nature and emitting zero pollution.

The Blue Economy takes the form of port activities, Mari culture, aquaculture, blue ecotourism, marine bio products and biotechnology (International Conference on the Blue Economy, 2018).

It is about regeneration, not preservation and conservation; it does not recycle, it regenerates. In a way, the Blue Economy is about ensuring that an ecosystem maintains its evolutionary rules so that everyone can benefit from Nature's infinite flow of creativity, adaptability and abundance (Gunter, 2017).

The concept of the Blue Economy is an economic model that encourages the use of what is locally available, that does not produce secondary effects (emissions and waste) and that, instead of costing more, ensures competitiveness and increased productivity while creating jobs and better social cohesion (Gunter P. , 2020).

This new name, attributed to the maritime economy, seems to indicate that the ocean has become a new focal point in the discourse on growth and sustainable

development, both nationally and internationally. The world is therefore, in many ways, at a turning point in defining its economic priorities in the ocean.

At a time when the traditional instruments of international law, appear powerless to act against the erosion of marine biodiversity, alleviate anthropic pressures, and counter the major threats to this biodiversity,

This new paradigm of the maritime "blue economy" is part of a sustainable development approach, *"aimed at reconciling economic growth with current ecological imperatives and bringing together the various public and private stakeholders involved in the maritime sector"* (Ricard, 2021).

The Blue Economy model is based on three principles (Gunter P. 2011), which can also be seen as three lines of thought and action. The first principle is to consume and use what is available locally. The second principle involves generating benefit rather than waste; materials should be reinvested as often as possible. The third principle is to meet society's needs, including happiness, resilience and health. Creativity is the main driving force behind this model. Promote sustainable fisheries and aquaculture, establish coastal and marine protected areas, combat pollution, integrate coastal resource management and develop knowledge and capacity to improve the health of the oceans (The World Bank, 2020). This is the strategy that the World Bank has set itself with its PROBLUE fund, to promote solid governance of marine and coastal resources so that they contribute more to sustainable and inclusive growth. This multi-donor trust fund is structured around four main areas, which can serve as models for application throughout the world:

- The first action, aimed at *fisheries and aquaculture*, involves improving fisheries by remedying the causes of overfishing and promoting more sustainable development of aquaculture.
- The second area focuses on *marine pollution*, to combat pollution from marine and land-based sources that threaten the health of the oceans, in particular litter and plastics.
- The third action relates to the *marine sectors*, to ensure the sustainable development of essential marine sectors such as tourism, maritime transport and marine renewable energies.

Finally, to *manage the seascape* by strengthening the capacity of governments to manage their marine resources, including through nature-based solutions, and to mobilize funding from the private sector.

2.2 Blue economy and aquaculture: a promising future

Fishing and aquaculture provide 17% of the world's animal protein and the livelihoods of around 660-820 million people (10-12% of the world's population). Twenty percent of average animal protein consumption currently depends on fishing for 3 billion people. This figure is higher for Low-Income Food Deficit Countries (LIFDCs) and much higher for the population of many SIDS.

It is in the sense that the spectacular development of aquaculture is today confronted with the challenge of sustainable development. In addition to the criticism leveled at the farming of carnivorous species, which involves the use of fishmeal, the intensification of farming systems is having an impact on the environment and has led to several crises that have tarnished the image of the industry. One example is the destruction of

mangroves by shrimp farming. The last decade has been marked by the determination of institutions and professionals to move towards sustainable practices, with various projects aimed at laying the foundations for sustainable aquaculture (EVAD (Rey-Valette et al., 2008); IDAQUA (CIPA/ITAVI, 2011); INDAM (Mathé and Rey-Valette, 2011); ECASA (Black and Wilson, 2008); AQUAMED (Blancheton et al., 2012); Aqua-Innova; Mediterranean (FOESA, 2010)). These sustainable production approaches are generating new needs for innovation in terms of eco-innovations and environmental innovations (Aggeri, 2000; 2011), as well as new forms of governance for aquaculture systems.

3. Aquaculture and eco-entrepreneurship in Algeria :

3.1 The blue economy in Algeria:

Algeria's blue economy is an emerging sector that uses marine and coastal resources to create sustainable economic opportunities. This includes activities such as fishing, coastal tourism, and the production of seafood products and the protection of the marine environment. Algeria has a long and diverse coastline, vast marine areas and considerable fisheries resources, making it an ideal breeding ground for the development of the blue economy.

However, the sustainable management of marine and coastal resources remains a major challenge for the development of the blue economy in Algeria. The protection of the marine environment, the implementation of sustainable fishing practices and appropriate regulations are key elements for the sustainable development of the blue economy in Algeria. Algerian governments have taken steps to encourage the development of the blue economy in Algeria, notably by

investing in research and development, strengthening coastal infrastructures and putting in place strict environmental regulations.

3.2 Setting up an aquaculture business in Algeria :

Setting up an aquaculture business in Algeria can be a complex process involving various stages and administrative procedures. Firstly, it is important to select the type of company you wish to set up (for example, a SARL or SAS) and to choose a name for your business. Next, you need to draw up the company's articles of association and file them with the Center of Formalities and Enterprises' (CFE).

Once the articles of association have been approved, you need to register with the Chamber of Commerce and Industry (CCI) and apply for a SIRET number and an SIPSI number. You will also need to register with the Register of Commerce and declare your company to the Directorate General of Taxation (DGI).

Finally, to operate an aquaculture business in Algeria, you need to hold an operating license issued by the relevant authorities, such as the Directorate-General for Maritime Fisheries (DGPM) and the Directorate-General for Fisheries Resources (DGRH). This authorization is issued after a technical and financial analysis of your project and verification of environmental compliance.

In summary, setting up an aquaculture business in Algeria requires careful planning, a thorough knowledge of the laws and regulations in force, and a substantial financial investment. It is advisable to enlist the help of a business advisor to guide you through the process.

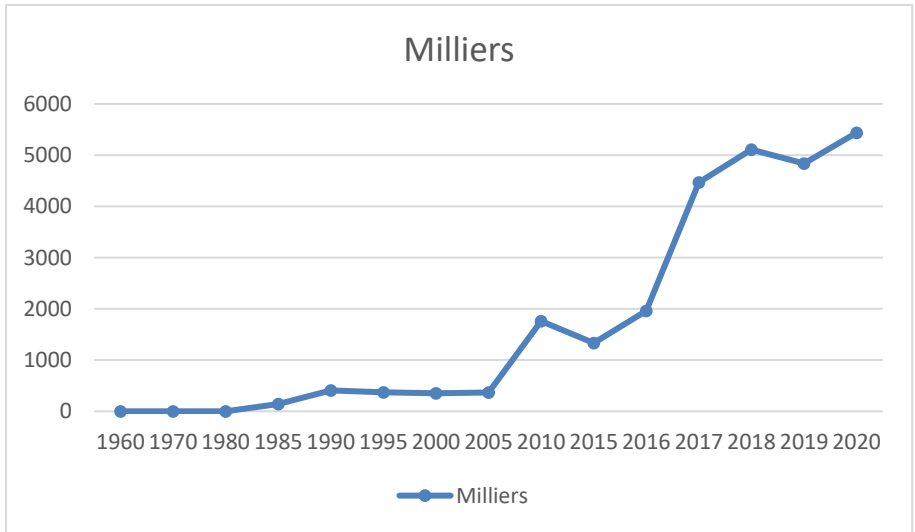
3.3 Aquaculture production in Alegria :

Our country has completed its efforts on the elaboration of a national strategic project in the sustainable development of aquaculture and freshwater filtering in order to adopt preliminary measures and a technical document directed to the public and private sectors. (FAO, 2016).

In the case of Mari culture, three thematic fact sheets have been developed to assess and validate the various phases of implementation of the project's auxiliary tools, focusing on sea bass and sea bream fattening in cages, sea bass, and sea bream fattening in basins, and mussel farming using long lines.

Generally speaking, Algeria's natural conditions are very favorable to the development of aquaculture. The environmental conditions for Mari culture are favorable (water quality, depth, temperature, etc.). Similarly, for continental aquaculture, the countries have significant potential in terms of natural water resources, which have not been fully and effectively exploited. Farmers (small and medium-sized) are increasingly interested in the development of aquaculture integrated with agriculture, which can guarantee the diversification of aquaculture. Produced locally and enables better management/use of water (Laurent Gennari, 2018).

Fig.1 : Aquaculture production in Alegria (1960-2020)



Source: Survey Results on World Bank 2020 data

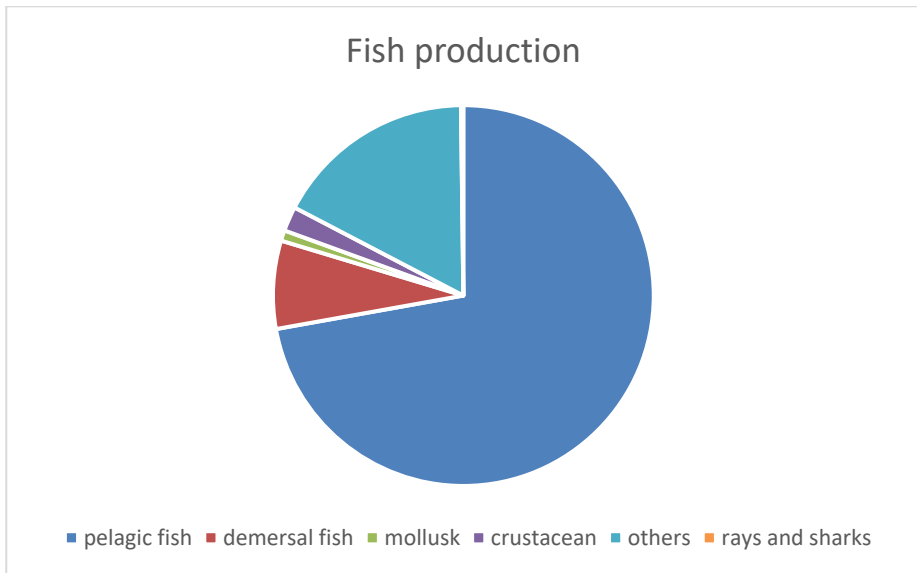
The figure above shows aquaculture production in our country from 1960 to 2020; using data from the World Bank, the results show that production began in 1983, with a timid increase between 1984 and 1980, followed by a small decrease from 1991 to 1993.

The increase was triggered in 2008, when aquatic production reached 2,780,000 tons, followed 10 years later by an increase of 5,108,000 tons to 5,436,000 tons in 2020.

This shows that it was from 2008 onwards that the spirit of setting up a business in aquaculture developed, and continued to increase until 2018, in order to raise the nutritional level and satisfy the needs of Algerian consumers and promote the export of our fish products. Fig.2 shows the breakdown of fisheries production in Algeria by type of species, using data from Statist 2024;

the results obtained show that pelagic fish accounted for the vast majority of total fisheries production in Algeria, i.e. over 72%. Products derived from recreational fishing and aquaculture accounted for around 17 per cent of the total, while demersal fish production was 7.5 per cent.

Fig.2: Breakdown of Algerian fisheries production by type in 2019



Source: Statista May 2024, Algeria: fishery production by type 2019 | Statista consulted on 29/03/2024

In Algeria, the types of fish species produced in aquaculture generally include sea bream, tilapia, sea bass, carp, pike, salmon and trout.

However, fish production can vary depending on the region, climatic conditions, water resources and the

technical capabilities of producers. The Algerian authorities are encouraging the diversification of aquaculture production to boost the country's food security and develop its economic sector.

4. Empirical study :

Aquaculture is seen as a new area for investment in Algeria. Given its importance, the Algerian government has opted for development and industrialization. To achieve this, companies specializing in this area of activity need to be set up. According to the farm's owner, Mahfoud El-Mokretar, who claims to have obtained all the facilities needed for the project's success from the relevant authorities?

The choice of this sector was based on the decline in fish production in the area over the years.

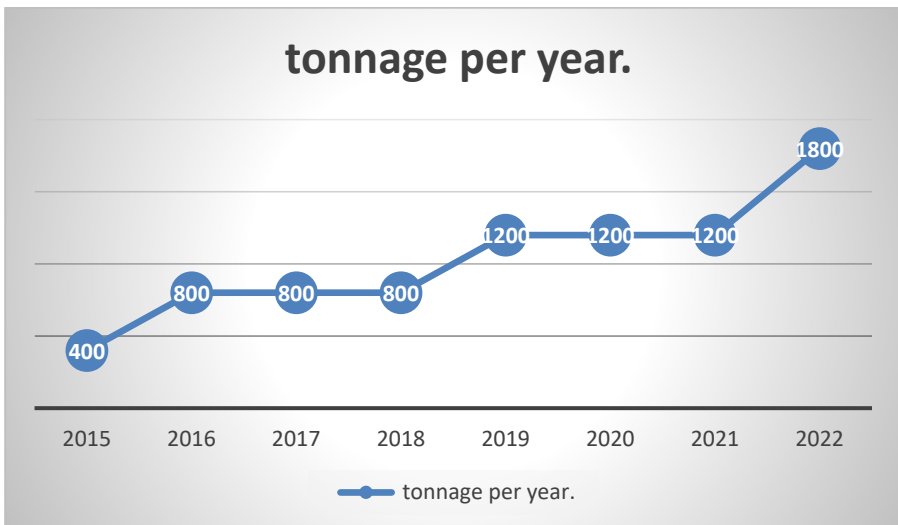
In recent years, farmed fish production in the province of Chlef has been considerable, surpassing even marine fishing. This is thanks to the commitment of a number of private investors who, against all the odds, have succeeded in introducing aquaculture to the region, aided by public authorities equally determined to make aquaculture a prosperous and creative activity. Mahfoud El Mokretar, manager of the eponymous El Mokretar SARL, is one of the pioneers of aquaculture in Chlef and the rest of the country.

4.1 The production of "sea bream" and "sea bass " at SARL EL MOKRETAR Aqua :

In 2015, the SME began aquaculture activities in earnest in-house, with a production capacity of just 400 tons/year of snapper in eight floating cages. A year later, they expanded and added eight more cages for a

production capacity of 800 tons/year. In 2019, eight 29-metre diameter net cages were added, with a production capacity of 1,200 tons per year. Currently, the launch of a second cage of eight more cages to reach an annual production capacity of 1800 tons, only that we have been delayed by the health crisis related to COVID-19. (Explained in the figure below).

Fig.3: Production of two fish species (sea bream and sea bass)



Source: Information provided by the company

4.1.1 The choice of two species :

Sea bream and sea bass have been chosen for their ability to adapt to the Mediterranean climate. This guarantees a healthy environment for their rearing and optimum growth. What's more, these species are widely known and in high demand on the market, making them easy to market. The recognition of these fish by

consumers increases the chances of success for the SME SARL ELMOKRETAR Aqua. However, to diversify the products offered, it could be envisaged to extend the range of fish raised in the cages if the technical and financial conditions are favorable. This will enable the company to develop and maximize its revenue opportunities.

4.1.2 Market needs in terms of quantities produced:

To guarantee the quality of our products and meet our customers' expectations, we adapt our production to market demand.

This enables us to maintain a balance between the quantity produced and the needs of the market, and thus maximize our sales.

However, it is important to note that fluctuations in demand can have an impact on our business. For example, during periods of confinement, demand for fish may fall, which may lead to additional costs associated with storing and feeding the remaining fish. Nevertheless, we have sufficient capacity to deal with all situations and guarantee the satisfaction of our customers.

4.2 Financing arrangements: There are several ways of financing an aquaculture business:

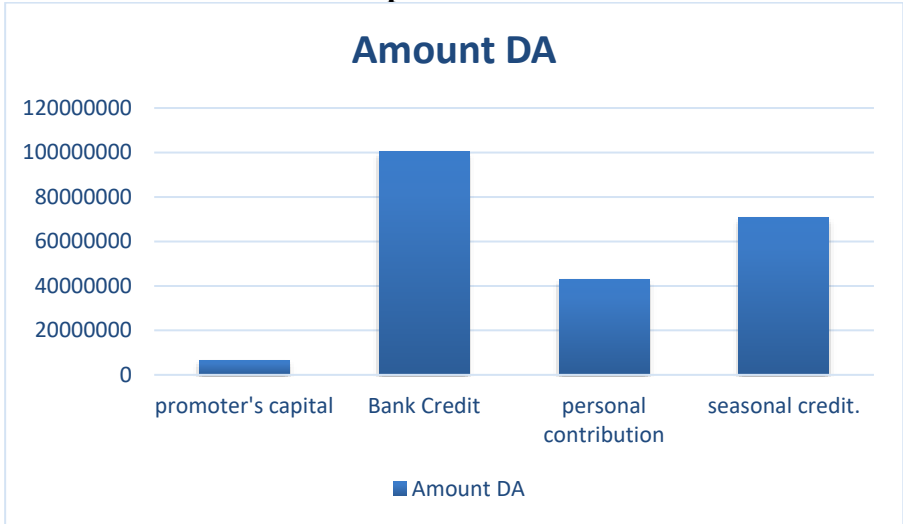
- **Self-financing:** The company can use its funds to finance its development.
- **Bank loans:** Banks can offer loans to finance aquaculture business activities. Interest rates and repayment terms depend on the company's profile and financial viability.
- **Public subsidies and aid:** The public authorities can offer subsidies and aid for the development of

aquaculture businesses. This may take the form of tax credits, bonuses, or loan guarantees.

- Partnerships and investors: The company can find partners to finance its activities, in particular private investors or partner companies wishing to become involved in the development of the aquaculture industry.
- Equity crowdfunding: Companies can also use equity crowdfunding platforms to raise funds from the public.
- It is important to note that each financing method has its advantages and disadvantages and that the aquaculture business must carefully evaluate its options to choose the best solution for its financial needs.

The financing requirements (investment and exploitation) of the SME ELMOKRETAR AQUA during the development of the project of the intensive fish production unit amount to an amount of 220 743 184.31 DA. The amount of expenses incurred is 6,448,095 DA; the investment cost is 143,551,905 DA, 70% of which represents the bank loan and 30% the personal contributions, and the value of the company loan is 70,743,184.31, i.e. 32.05% of the total investment amount (fig.4).

Fig.4: Financing arrangements when the project was set up March 2014



Source: Information provided by the company

4.3 Synthesis :

From the case study of Algeria, we highlight that environmental values guide entrepreneurs' desire to do business in this sector, even when faced with multiple regulatory and administrative barriers, as well as a lack of guidance on the technology/technical knowledge of the project.

The company "Sarl El Mokretar" has achieved a remarkable performance in the field of aquaculture production. This is due to a combination of two key factors: the financial investments made with own funds and the dedication of the team.

Equity investment is important for the development of any business. It provides the financial resources needed to purchase the equipment, materials, and supplies

required for production. What's more, equity investment avoids the need to take out a bank loan, which can be costly in terms of interest.

Team dedication is also a key success factor in aquaculture. Team members must be trained to be able to carry out the tasks entrusted to them. They must also be motivated and determined to achieve the company's objectives. The fact that the team is trained on the job further strengthens their commitment and determination to succeed.

Indeed, the success of the company "Sarl El Mokretar" is proof that investment in equity capital and the dedication of the team can be key success factors in the aquaculture sector. This company can therefore be considered a model and an example to follow for developing companies in this sector.

5. Conclusion and recommendations:

In Algeria, aquaculture production is developing, but is still limited due to the limited availability of freshwater resources and adequate infrastructure. However, the Algerian government has taken steps to encourage the development of aquaculture in Algeria by investing in the construction of new facilities and supporting research and development in this field. The products of aquaculture production mainly include fish, crustaceans, and mollusks, which are sold on the local market and exported to neighboring countries. Aquaculture in Algeria offers opportunities for job creation, economic development, and food security for the population.

Algeria's aquaculture industry is still young and developing, but the prospects for exports are promising. For this to happen, however, the problem of integration needs to be resolved. At present, most of the products needed for aquaculture are imported, which considerably increases the final cost of the product. However, by increasing the rate of integration and producing these necessary products locally, it would be possible to reduce the final cost of fish and make it more accessible to a greater number of consumers.

Consumers often complain about the high cost of fish. However, to solve this problem, it is necessary to work on increasing the rate of integration. If the products needed for aquaculture are produced locally, this will reduce costs and make the end product more accessible to consumers. Those in charge of the aquaculture industry in Algeria have raised this problem with the public authorities and have proposed solutions to strengthen integration. By working together, it will be

possible to increase fish production in Algeria and make it more affordable for consumers.

To further develop aquaculture in Algeria, it may be advisable to :

- Improve access to fresh water by building reservoirs or using water-saving techniques.
- Modernizing existing infrastructure to improve the quality and quantity of production.
- To encourage research and development in the field of aquaculture in order to improve production methods and increase productivity.
- Develop public-private partnerships to provide additional investment and technical expertise in the field of aquaculture.
- To raise consumer awareness of the importance of aquaculture for food safety and economic development.
- Encourage the export of aquaculture products to diversify income and create opportunities for local producers.

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