

# UKRAINE'S BLUE ECONOMY: POTENTIAL AND PROSPECTS FOR INTEGRATION INTO THE EUROPEAN SPACE

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**Abstract.** *The purpose* of the work is to analyze the state of affairs in the Ukrainian blue economy. This study limited its scope to regions that are not currently occupied by the Russian army. These are geographical boundaries. In terms of types of economic activity, these include fishing and fish processing, aquaculture, coastal and marine tourism, and maritime transportation. *The subject* of the study is the theoretical and applied aspects of determining trends in the development of key types of economic activity in the maritime complex. *Methodology.* The authors used the methods of analysis, synthesis, systematization and generalization to solve the problems that appeared. According to the *results* of the conducted research, it was found out that governments, research community, academia, business investors are paying more and more attention to the blue economy. The main reason is that the resources humanity has had on land are running out. And there are no other resources on the planet. In addition, there are the economic growth prospects associated with the maritime industry. These are new jobs, the contribution of blue economy enterprises to the improvement of macroeconomic indicators, social stabilization in the coastal regions of coastal states. In this context, it is important to unite the efforts of the coastal states around the urgent problems of developing the resources of the World Ocean. The Black Sea and the countries bordering it are no exception. Each of them is trying to understand what its potential is, what needs to be done to mobilize it, what can be offered to partners for the development and implementation of joint projects. Ukraine has always positioned itself as a maritime power. There are good reasons for this. It has a long coastline, large areas of internal waters, territorial sea and exclusive economic zone. *Conclusion.* The wealth of new data presented in this article provides valuable insights into important aspects of business activity in key sectors of the Ukrainian blue economy. Now it is possible to better understand its needs and contribution to the development of all stakeholders. The presented generalizations are important for practitioners, especially for owners and management of enterprises.

**Key words:** Ukraine, Economy, Blue Economy, fisheries, aquaculture, coastal maritime tourism, maritime transport.

**JEL Classification:** L10, L60, O18, R10

## 1. Introduction

The increased attention paid to the blue economy in recent years is due to the growing role of the World Ocean as one of the largest providers of vital ecosystem services to humanity, as a source of food, and as an area of activity for numerous marine industries that provide jobs for hundreds of thousands of people in coastal areas and contracts for businesses beyond its borders. These include shipbuilding, maritime freight and passenger transport, aquaculture,

offshore wind, tidal and wave energy, mariculture, extraction of minerals from and under the seabed, recreation, etc.

Objectively, the prospects of the blue economy do not pass by Ukraine with its internal sea waters of the area of 27,000 km<sup>2</sup>, a territorial sea of the area of about 30,000 km<sup>2</sup>, a maritime state border of the length of 1,355 km, and an exclusive economic zone of the area of 82,000 km<sup>2</sup>.

The detailed Blue Economy Agenda developed by the European Commission aims to bring

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together the potential of industry, finance, academia and public authorities to create synergies from relevant investments in research, skills and innovation. In Ukraine, the center of blue economy enterprises is a part of the Northern Black Sea region within the geographical boundaries of the Odesa and Mykolaiv Oblasts. A general presentation of some of its varieties is given below.

The purpose of this study is to identify the key players of the Ukrainian Blue Economy in its key sectors: fisheries and aquaculture, coastal maritime tourism, and maritime transport.

The sources of information were public registers, reports of the State Statistics Service of Ukraine, information published on the official websites of registered enterprises, organizations and institutions, databases of public associations (in particular, the Business Support Center, the Maritime Cluster of Ukraine, Regional Chambers of Commerce and Industry).

## 2. Fishing and fish processing

Odesa and Mykolaiv Oblasts accounted for 15 and 22 percent, respectively, of aquatic living resources produced by domestic fishermen (Fish and Seafood, 2019). Plaice, mullet, trachurus, bluefish, diplodus, goby, and other species were the basis of marine fish catch (Figure 1).

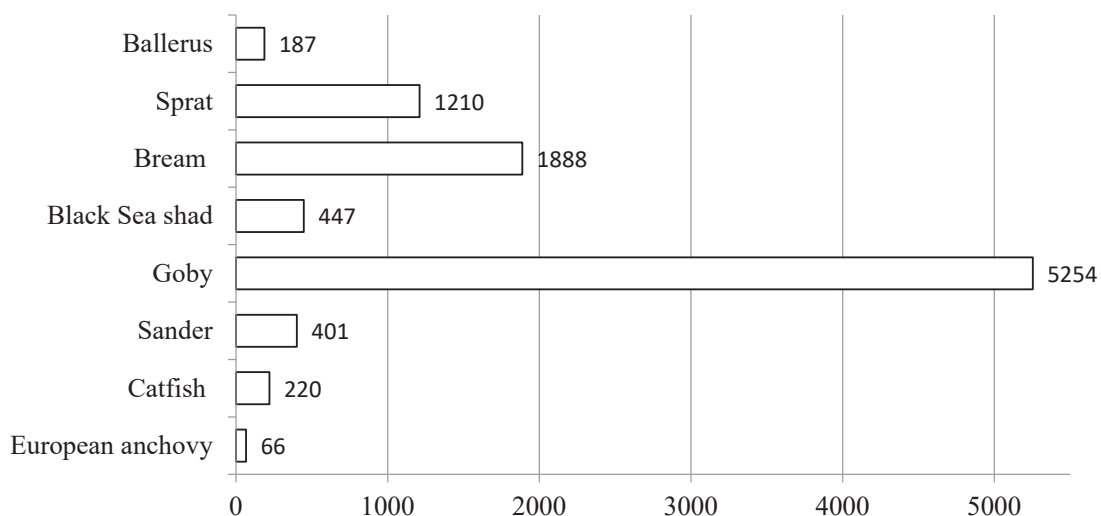
In some of them there are facts of overfishing, influence of unfavorable anthropogenic factors, violations of fishing rules and, as a result, a decrease in the volume of industrial production.

(Demianenko, 2019) This makes it urgent to initiate mariculture projects, on the one hand, and to introduce programs for the preservation of biological diversity in natural reservoirs of inland, territorial sea and exclusive economic zone, on the other hand.

As a result of the military aggression by Russia and the introduction of martial law in Ukraine, in 2022 the industrial catch of aquatic biological resources in internal fishery waters (parts thereof), internal sea waters and the exclusive (maritime) economic zone of Ukraine decreased by more than 62% and amounted to 20.0 thousand tons (in 2021 – 53.4 thousand tons). About 80% of the users of aquatic bioresources stopped their economic activity. In the Black Sea basin, the industrial activity of Ukrainian business entities has de facto stopped.

As a result, there were insurmountable obstacles to scientific research activities in the field of fisheries, and fishing in waters outside the jurisdiction of Ukraine suffered significant losses. Despite the fact that it retains membership and capacity for expeditionary fishing in the area of responsibility of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Northwest Atlantic Fisheries Organization (NAFO). As of August 1, 2022, the losses of the subjects of the fishing industry of Ukraine due to the actions of the terrorist state amount to almost 40 million US dollars. (Because of the war, 2022)

The fishery complex of the Odesa Oblast consists of the Black Sea seaport, 6 fish processing



**Figure 1. Structure of fish catch of Ukrainian fishermen, tons**

Source: (*The catch of fish ...*, 2019)

factories and plants, 104 fishery enterprises of various forms of ownership, 7 fish farms, 4 of which have the status of tribal farms.

### 3. Aquaculture

Aquaculture opens wide prospects for the development of the fishery complex in Odesa and Mykolaiv Oblasts. Their coastal sea waters are favorable ecosystems for the cultivation of molluscs (mussels, oysters, rapans), the industrial cultivation of which does not require the cost of artificial feed. A raft of 16×25 m, with 600 ten-meter collectors suspended from it, produces more than 4 tons of oyster meat per year. Since the life of molluscs is linked to the filtration of water, they also purify it. Especially from pathogenic bacteria. (Consolidated report, 2018) According to scientists' calculations, one mollusc can purify up to 100 liters of water per day.

In the south of Ukraine it is promising to cultivate euryhaline species of marine fishes that live in conditions of moderate and variable salinity and temperature ranges of this zone. They include:

- Mullet (Flathead grey mullet, So-iuy mullet, Golden grey mullet) – due to artificial reproduction, grazing in estuaries and lagoons;
- Pleuronectidae (Platichthys – Black Sea turbot) – possible artificial reproduction, controlled culture in pools, recirculation systems;
- Sturgeon (Russian sturgeon, Starry sturgeon, Bester, Beluga, various sturgeon hybrids) – by artificial propagation, controlled commercial breeding in ponds, recirculation systems;
- Gobiidae – reproduction and pasture cultivation using artificial reefs. (Ukrainian shalanda, 2021)

In 2020, 33 specialized commercial fish farms and 56 aquaculture units operated in Mykolaiv Oblast. The implementation of the Aquabator project – an incubator for the creation of enterprises in the field of aquaculture – began here. It provides for the creation of an ecosystem for the development of aquaculture in the south of Ukraine. It is implemented by the Business Support Center, Mykolaiv City Council and Halytsynove Village Council as part of the Sectoral Policy Support Program. (Aquabator, 2022) The total cost of Aquabator is 8.9 million UAH. The state budget provided UAH 5.9 million of this amount, and the rest came from partners. It is expected that in the future Aquabator will become an attractive tourist attraction. It is

planned to conduct tours and treat guests with freshly prepared meals.

### 4. Coastal and marine tourism

The Black Sea coast of the Odesa and Mykolaiv Oblasts has a great recreational potential. Among its components the following deserve special attention:

- Sports and recreation. In turn, it is divided into subsystems: water and underwater recreation;
- Health resort. It is based on the mobilization of a number of favorable balneological factors (sea water, air, mineralized waters and mud) to restore vitality and maintain the health of patients;
- Cognitive. It is about the organization of excursions to architectural structures, historical and cultural monuments (including those located in the coastal areas of the country), familiarization with the ethnographic features of the regions, unique natural phenomena, excavations of ancient civilizations.

The therapeutic profile of the resorts of Odesa and Odesa Oblast is characterized by the presence of natural curative resources: mineral waters of Odesa, Kuialnyk and Black Sea deposits, poloids of Kuialnyk and Khadzhibey Estuary, brine of estuaries and lakes. Sea beaches, natural sites and complexes are conducive to treatment, health improvement and medical rehabilitation due to climatic conditions. In 2022, there were 321 health resorts in Odesa Oblast that could accommodate more than 40,000 clients. Among the most prosperous health resorts are Bilhorod-Dnistrovskyi (141 facilities), Tatarbunary (80), Kiliia (75), and Ovidiopol (56) Raions. (Development, 2020)

The main recreational areas of Mykolaiv Oblast are also located on the Black Sea and estuaries. According to the Main Department of Statistics in Mykolaiv region, 271 health and recreation facilities with 29,229 beds provide health and recreation services. These include 79 hotels (3,332 beds), 13 health resorts (3,273 beds), 12 boarding houses (2,416 beds), and 167 recreation centers (1,9357 beds).

The most promising areas of tourism development in Mykolaiv Oblast are ecological, rural (green), historical and cultural, industrial, youth, and active types of tourism (rafting, kiting, jumping, hiking, orienteering). (The program ..., 2020)

The Law of Ukraine "On Tourism" declared it one of the priority areas of economic and cultural development. Appropriate programs developed in this context constitute a complex of interrelated legal, economic and organizational measures aimed at realizing the constitutional rights of citizens to rest and a healthy lifestyle.

The sphere of tourism and resorts relates to the work of enterprises of more than 50 types of activities, contributes to increasing the level of employment of the population in the coastal regions, preservation and development of their cultural potential, as part of its international component, contributes to the harmonization of relations between countries and peoples. (The Law of Ukraine "On Tourism", 2023; The Programs ..., 2020)

### 5. Maritime transportation

The economy of Ukraine depends on the efficient functioning of ports. About 39% of its foreign trade (by volume) passes through ports. In particular, 90% of the gross export of agricultural products. In recent years, the volume of cargo processing in seaports has a tendency to increase (in 2015 – 144.7 million tons, in 2016 – 131.7 million tons, in 2017 – 132.6 million tons, in 2018 – 135.2 million tons, 2019 – 160.0 million tons). In 2019, container terminals handled more than 1,003.5 thousand TEU, and the volume of container transportation increased by 18.6%. (Sea ports of Ukraine ..., 2020)

The seaport of Odesa is one of the largest on the Black Sea. Its 55 berths have a total annual throughput capacity of 51 million tons of various cargoes. Five elevators and three indoor warehouses are designed to protect and handle 12 million tons of grain per year. The ports of Pivdennyi, Chornomorsk, Izmail, Bilhorod-Dnistrovsk, Reni and Ust-Danube are also integrated into the logistics scheme of sea cargo transportation.

There are 34 ports and port terminals in Mykolaiv and Mykolaiv Oblast, which form the structure of the Buzka-Dnipro maritime transport hub. The most efficient of them are Mykolaiv Sea Port, Olvia Specialized Sea Port, Ochakiv Port, Mykolaiv River Port, NIBULON, Mykolaiv Specialized Port Nika Tera. (Ports in Mykolaiv Oblast, 2023) Their geographical location, proximity to enterprises exporting

products, a developed network of related river, railway, road and air communications contribute to the organization of cargo transit. According to the data of the Administration of sea ports of Ukraine, the increase in the volume of transshipment through the ports of Mykolaiv in 2018 compared to 2017 was 5.7%. (On the approval..., 2020)

Since the beginning of the war, the Russian Navy has paralyzed commercial shipping in the Black Sea. The Danube navigation route became an alternative to sea transportation. The ports of the largest river in Europe have become the main alternative to sea agricultural export, their throughput capacity has reached 1.5 million tons per month. Cargo turnover of Danube ports for 9 months of 2022. amounted to more than 11 million tons, which is 3.5 times more than in the same period last year. (The Danube ports ..., 2022)

Another segment of the marine transportation market is the construction and maintenance of offshore energy facilities. Blue energy is a tool to free humanity from hydrocarbons, the quantities of which are constantly being depleted on the planet. It also has the potential for sustainable energy production, which is important in the face of increasing environmental threats and challenges. The implementation of new legislation, the introduction of relevant standards, and the development and implementation of projects contribute to increasing the capacity of companies in this sector of the energy industry.

The blue economy cannot fulfill its mission without the main component of fixed capital – ships. It requires more and more technical means:

- the ability to solve more and more new tasks arising from the development of the world's oceans (both in terms of their complexity and the amount of work to be done);
- maximum possible economic efficiency during operation;
- minimal or zero harmful impact on the environment.

For this reason, shipbuilding is not left out. Since independence, the number of shipbuilding companies in the Southern Industrial Region has almost doubled. This has happened thanks to the initiative of private capital. Investors and management would certainly welcome government incentives. But in an environment

where they have to wait, they are looking for their own ways to develop their business.

The military-political confrontation between Ukraine and Russia had a significant impact on the number of ships built. In 2014, the production volume decreased by 33.3% compared to 2010. At the same time, the number of ships built in 2020 doubled in comparison with the first year of the war (2014). Almost 30% of the total of 176 structures belongs to the Mykolaiv shipyard "NIBULON" (50 vessels).

The structure of the order portfolio has changed significantly. Military facilities appeared in it, the construction of which was started by February 25, 2022 in cooperation with the State Defense Concern of the Republic of Turkey (corvettes) and the United Kingdom (missile boats). As for civilian shipbuilding, it is dominated by individual production. This favors the use of modular technologies and the rational management of supply chains. This allows contracts to be completed quickly, with high quality and at competitive costs.

The peculiarity of pre-war Ukraine is the dynamic development of ship repair and conversion. Looking at the number of completed orders, it is obvious that their volume is much higher than that of shipbuilding. Ship repair was much less affected in 2014 and recovered more quickly. In 2019 the number of orders almost reached the level of 2010.

The reality of modern shipbuilding is the flourishing of engineering. There are more than 12 design offices in Mykolaiv and Odesa. Only one is part of the Ukroboronprom group. The rest is privately owned and is constantly increasing the volume of services provided to foreign and domestic customers. The lion's share of the operating companies represents a new generation of investors, managers and engineers with a unique way of thinking and acting.

This means, first, that thanks to their enthusiasm and capital, an industry of intellectual services has been created that can only be compared to the IT business. They have discovered and implemented a new development strategy based on the standards of the digital economy. Another characteristic feature is the acceptable cost of the work performed, which is not burdened by the high overhead costs typical of organizations with sprawling bureaucratic

management structures. As a result, the cost of projects will decrease and their competitiveness will increase.

## 6. Conclusions

As a result of this study, a number of useful conclusions were drawn. It turned out that despite all the problems of business in pre-war Ukraine, the blue economy exists and has a desire to develop in each of the sectors that were the focus of the study. Representatives of the business community (mostly small and medium-sized enterprises) provided qualitative practical evidence that they are well aware of the principles of the blue economy.

At the same time, they understand the problems they face in implementing these basic postulates. The monitoring showed the dependence of enterprises on local infrastructure and the ability of private initiative to withstand external challenges (threats) by mobilizing internal potential. The study made it possible to understand innovative ways of repositioning blue economy enterprises (their marketing strategy, products) in the national and international markets. An important condition for the development of the Blue Economy is the creation of an institutional basis for it, the implementation of normative legal acts, programs that regulate the activities of the government, private investors, trade and industrial associations, research institutions and universities, and encourage civil society to take active actions.

Much has been done in this regard, and much more needs to be done in the future. After the exhausting and destructive war is over, it will be extremely useful for Ukrainian entrepreneurs to feel the support of foreign investors and donors. That is why it is so important to focus efforts on participation in international programs supporting the Blue Economy and EU grant programs.

## 7. Practical implications

The wealth of new data presented in this report provides valuable insight into important aspects of business activity in key sectors of the Ukrainian blue economy, the needs and contributions of all stakeholders to its development. The presented generalizations,

conclusions and recommendations are important for practitioners, especially for owners and management of enterprises.

By joining forces and working together, they can gain competitive advantages and protect themselves against many threats and risks. National authorities and local governments

must recognize that creating the right conditions for the development of the Blue Economy can be a global benefit: the creation of jobs, especially in high-tech, intellectual and digital businesses, the opening of sources of wealth for maritime communities, and the well-being of coastal residents.

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Received on: 10th of March, 2023

Accepted on: 16th of April, 2023

Published on: 28th of April, 2023