The CAP and national priorities within the EU budget after 2020

INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

The CAP and national priorities within the EU budget after 2020

Editors:
dr Marek Wigier
prof. dr hab. Andrzej Kowalski

Proceedings of the International Scientific Conference
"The CAP and national priorities within the EU budget after 2020"
Multi-Annual Programme 2015-2019
"The Polish and the EU agricultures 2020+. Challenges, chances, threats, proposals"
11-13 June 2018
Lidzbark Warmiński, Poland

MULTI-ANNUAL PROGRAMME 2015 - 2019

THE POLISH AND THE EU AGRICULTURES 2020+
CHALLENGES, CHANCES, THREATS, PROPOSALS

Warsaw 2018

This monograph was prepared under the Multi-Annual Programme 2015-2019
"The Polish and the EU agricultures 2020+. Challenges, chances, threats, proposals".
The publication is a collection of selected papers delivered at the 23rd edition of the International Scientific Conference organized by the Institute of Agricultural and Food Economics - National Research Institute. The theme of the conference was "The CAP and national priorities within the EU budget after 2020". The conference was placed on 11-13 June 2018 in Lidzbark Warmiński in Poland.

ISBN 978-83-7658-751-6

DOI: 10.30858/pw/9788376587516

Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej
– Państwowy Instytut Badawczy
ul. Świętokrzyska 20, 00-002 Warszawa
tel.: (22) 50 54 444
faks: (22) 50 54 636
e-mail: dw@ierigz.waw.pl
http://www.ierigz.waw.pl

Contents

17. A paradigmatic view on the possibility of applying the provisions of the Common Agricultural and Fisheries Policy of the EU in the agrarian sector of the economy in Ukraine

DSc (Econ) Vasyl D. Zalizko[1], Prof. DSc (Econ) Nataliia M. Vdovenko[2], Sergiy S. Shepeliev[2]
[1]National Research Center "Institute of Agrarian Economy", Kyiv, Ukraine
[2]Ukraine National University of Life and Environmental Sciences of Ukraine, Kyiv Ukraine
zwd@ukr.net, nata0409@gmail.com, wepelev@ukr.net

DOI: 10.30858/pw/9788376587516.17

Abstract

The question of the possibility of applying experience in the implementation of Common Agricultural and Common Fisheries Policy of the EU in Ukraine was raised in the scientific work. Components of the Common Fisheries Policy of the EU in the context of the system for conservation and sustainable usage of fishery resources were analysed. The results of the survey of fishery producers during AGRO-2018 on the possibilities of implementation of the provisions of the Common Agricultural and Fisheries Policy of the EU in the fisheries were disclosed. It is proposed to set a fixed minimum rent amount for land plots used for the production of fisheries commodities in the context of EU-Ukraine Association Agreement in order to optimize the activity of business entities in the field of aquaculture in a part of the rent amount and reduction of production costs.

Keywords: European Union, agricultural market Common agricultural policy, competitiveness, subsidies, agroindustrial complex.

JEL codes: F36, F37, Q12, Q18

17.1. Introduction

The following scientists were engaged in the study of the agro-industrial complex and the common agricultural policy and the common fisheries policy of the EU: Sokol L., Duhiyenko N., Vinichenko I., Kvasha S., Omeliyanenko T., Bazylevych V, Kovalchuk S. and others, however, not all aspects are sufficiently studied and reflected, which makes further research necessary and relevant.

The goal of the study is to analyse the common agricultural policy and the common fisheries policy of the EU, to systematize its main stages and principles, and to formulate effective mechanisms that will contribute to the development of Ukrainian agricultural market and production.

17.2. The development of the EU Common Agricultural Policy and Common Fisheries Policy and its impact on the competitiveness of the fisheries sector

For the first time, the Common Agricultural Policy (CAP) is aimed at agriculture supporting that provides food security and contributes to the balanced development of the whole Europe at rural areas, including those where the conditions of production are difficult. The five European structural and investment funds supporting the Europe economic recovery for period up to 2020 ("ESI Funds"), administrated by the European Commission and EU countries as researches show. Within the framework of the Common Agricultural Policy (CAP) reform, the European Commission proposed that the European Maritime and Fisheries Fund (EMFF) was also included to the new common strategic concept, accompanied by the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), the European Agricultural Fund for Rural Development (EAFRD) [http://ec.europa.eu/fisheries/cfp/emff/index_en.htm].

The EU rural areas development policy is funded through the European Agricultural Fund for Rural Development (EAFRD), which is going to function in 2014-2020. Its covers 100 billion euro at the reporting period. The funds are distributed from the Fund for 7 years for each EU country. These funds also involve government funding of 61 billion euro. During this period, there are 118 different rural development programs in 28 Member States, from which 20 are common national programs, while 8 Member States have chosen a decision with two or more (regional) programs. Member countries and regions are developing the rural development programs based on the needs of their area and focus on at least four from the six EU's common priorities: promote knowledge and innovation in agriculture and forestry industries, rural areas; increase the profitability and competitiveness of all types of agriculture and promote an innovative agrarian technology and sustainable forest management; promote food chain organization, animal welfare and risk management in agriculture and fisheries industries; restore, preserve and enhance the ecosystems associated with agriculture and forestry industries; promote the efficient usage of resources and support the crossing to a low carbon economy prepared for climate change in agricultural industries; promote social integration, poverty eradication and economic development of the rural areas.

Priorities for rural development are divided into priority areas. Particularly, priorities of resource conservation include "reducing greenhouse gas and ammonia emissions in agriculture" and "promoting carbon conservation and inclusion in agriculture and forestry industries." Member countries and regions set quantitative targets in these priority areas in its rural development programs.

Then they outline in which ways these goals would be achieved and how much it would be directed at each action. At least 30% of funding for each rural development program has to be directed towards actions which connected with environment and climate changes.

Agriculture is important for natural environment of the EU. Agriculture and natural environment are affecting to each other: a) for centuries agriculture has contributed to creation and maintenance of unique rural areas. Land management in agriculture has become a positive force for the development of rich diverse landscapes and habitats, including mosaics of forests, wetlands and large massifs of open rural areas; b) ecological integrity and original value of the landscapes make the rural areas attractive for the creation of business, places for living, as well as for tourism and recreation business. The connection between the richness of the natural environment and practices of agriculture is complicated. Many valuable habitats in Europe are supported by a large farming, and they rely on a wide range of wildlife species. But an unacceptable agricultural practices and land management can also have a negative impact on natural resources, such as soil, water and air pollution, fragmentation of habitats, loss of wildlife. The CAP ensures that the rules are compliant with environmental requirements and that the CAP measures contribute to development of agricultural practices, preservation of the environment and protection of the rural areas. Farmers are encouraged to continue playing a positive role in supporting rural areas and environment.

The primary tasks of the central authority that ensure implementation of the policy in the fishery field are: ensuring the sustainable fish catching from the environment; harmonious development of the fish industry of Ukraine; ensuring the protection of water biological resources and struggle against illegal, unreported and unregulated fishing, other illegal economic activities for fish catching and fish sale as interfere the implementation of sustainable development principles, rational usage of the existing natural resources base, restoration of the fishing fleet. The indicated directions fully correspond to the basic theoretical-methodological principles and provisions of the Common Fisheries Policy of the European Union, Regulation (EU) of 11.12.2013 No. 1380/2013 [On amendments to the Council of the EU regulations, 2015; On the Common Fisheries Policy, 2013; Zalizko and Martynenkov, 2016; http://ec.europa.eu/fisheries/cfp/emff/index_en.htm]. The Common Fisheries Policy of the EU (CFP) – the fisheries policy of the European Union which was introduced in 1957. The CFP as known as "Blue Europe" has become a full--fledged community policy only since 1983. The CFP has legal grounds (Articles 32-38 of the Treaty establishing the European Community) and similar objectives with agrarian policy such as: stabilization of markets; fish productivity increasing;

guarantee of security and delivery products to the consumer at a proportional price. The CFP is a sphere of common responsibility of the European Union and its Member States as the Common Agricultural Policy of the EU.

The CFP represents a certain set of rules for managing European fishing fleets and preserving of fish stock. It is designed to manage common resources and provides equal access to EU waters and fishing ground for all European fishing fleets and allows fishermen for actively compete. The initial objectives of the CFP during several reforms were supplemented and cover the following issues: rational usage of resources, environmental protection, ensuring a high level of health protection, as well as economic and social cohesion. A new updated CFP came into force on January 1, 2014, aimed at ecological, economic and social sustainable usage of common resources, including the competitive production of aquaculture products. At the same time, Eurostat based on EU legislation collects and processes data on fishery, fish production and production of fish commodities, aquaculture products and fishing fleets.

Taking into account the above and analysing the market environment surrounding fishery producers, we have investigated the specific features of the CFP, including the fact that fishery activities and aquaculture have been environmentally, economically and socially sustainable, and have supplied food for population. Its purpose is to encourage the dynamic development of the fisheries sector and to ensure fair standards of living for fishing communities. Despite the fact that it is important to maximize a catch, some of aspects should be limited. Humanity has to make sure that the fishing activities do not harm fish populations to reproduction. The current CFP provides for necessity to establish between 2015 and 2020 years fixed catch limits that are sustainable and support fish stocks in the long period.

It is evident that, until now, an impact of fishery activities on the marine environment is not entirely understandable. It is for this reason, the CFP had adopted a precautionary approach that recognizes an impact of human activities on all components of the ecosystem. It focuses on making the fishing fleet to be selective for catching and stopping the practice of throwing unwanted fish.

The research underlines the issue that the problem of diversification national economies is actual nowadays. Obviously, these aspects are directed to the sustainable development of coastal regions, areas with activities in the field of aquaculture, fishery in inland waters [Shepeliev, 2016; Shepeliev, 2015; http://ec.europa.eu/fisheries/cfp/emff/index_en.htm; Zalizko, 2017]. Thus, it has been established that fishery be able to increase the catches only in case of the suspension of overfishing and the opportunities of restoration fisheries stocks.

17.3. Components of the Common Fisheries Policy of the EU in the context of the conservation system and sustainable usage of fisheries resources

The research highlights that the Common Fisheries Policy covers the relevant components (Figure 1). Today, the EU is committed to pursuing an effective policy, covering fisheries, environmental protection and maritime fishery. The CFP sphere of influence includes the saving of marine biological resources and management of the process determination these species in fisheries.

Figure 1. The components of the Common Fisheries Policy of the EU in the context of action of the system for saving and sustainable usage of fishery resources

Source: [Vdovenko, 2016; Vdovenko, 2015; United Nations Convention..., 1998; Zalizko and Martynenkov, 2016; http://ec.europa.eu/fisheries/cfp/emff/index_en.htm; Zalizko, 2017].

In addition, in view of market and financial measures, the CFP includes the freshwater bioresources protection, activities in the field of aquaculture, as well as the processing, fish and fish production marketing [Zalizko and Martynenkov, 2016; Vdovenko and Chuklin, pp. 79-84]. The Common Fisheries Policy is able to ensure fisheries activities which contribute to long-term environmental, economic and social sustainability, including rules direct to ensuring the origin, traceability, safety and quality of products.

In addition, for example, aquaculture may contributes to preserve the sustainable food production potential throughout the EU, in order to ensure long--term food security, as well as food supplying, the development and employment of citizens. It should makes a contribution to meeting the growing global

demand of food from water bioresources. The Commission's Strategy for the Sustainable Development of European Aquaculture, approved by the Council in 2009 and endorsed by the European Parliament, emphasizes the need to create and promote a level-playing field as the basis for the sustainable development of aquaculture. Activities in the field of aquaculture in the EU are under the influence of various conditions within national boundaries, including those which relate to permits for operators.

Thus, the Community strategic guidelines for national strategic plans should be designed in order to enhance the competitiveness of the fisheries sector, support its development, as well as to encourage economic activity, diversification and quality of life in the coastal and inland areas. In addition, mechanisms should be imposed to exchange information and best practices among Member countries through an open method of coordination of national measures relating to business security, access to water and space of the EU, as well as simplification of permitting procedures [Sharilo Yu. and Vdovenko, 2015, pp. 9-13]. At the same time, through such policies it is possible to pursue the promotion of productivity, fair standards of living in the fisheries sector, including small-scale fisheries and the markets stability. The CFP encourages to ensure an availability of fish commodities at an affordable price. It is necessary to take into account the fact that, when such activities carried out in the territory of the Member countries, in EU waters, particularly, fishing vessels under the flag of third countries or registered in third countries, union fishing vessels, as well as citizens of the Member countries, without prejudice to the basic obligations of the flag State and comply with article 117 of The United Nations Convention on the Law of the Sea of 10.12.1982, while the CFP had been agreed with the Strategy Europe-2020 in order to achieve rational, sustainable and full growth [Zalizko and Martynenkov, 2016; Kvasha and Vdovenko, 2011, pp. 7-11].

17.4. Fundamental principles of CFP reforms

The results of researches show the basic principles of the reform in the PSA, highlighting its characteristics, since it gives the EU-countries more control over the national and regional levels. The analysis of economic literature allowed to distinguish four directions of the PSA: a) fisheries management; b) international politics; c) market and trade policy; d) financing policy (The European fisheries fund, EFF (2007-2013) and The European Maritime and Fisheries Fund, EMFF (2014-2020)). It can be noted that the European Maritime and Fisheries Fund (EMFF) is one of the five European structural and investment funds which supports recovery of the economy in Europe up to 2020 and has specifically dedicated to addressing European seas and coasts. It is one of the five

EU-funds that complement each other and aimed to improve the economic growth, fishing industry competitiveness and employment in Europe. From the above-mentioned conditions for the approval of the provisions of the European Fund for Maritime and Fisheries, which replaced the existing European Fisheries Fund had created [http://ec.europa.eu/fisheries/cfp/emff/index_en.htm]. The European Fisheries Fund provided financial support to enterprises in 2007-2013 to adapt for changes in the fisheries sector, achieve sustainable development and be economically vital. The EFF budget had amounted to 4.3 billion euros.

Financial assistance covered all areas of the fisheries sector. The projects were funded based on the strategic and operational plans which were prepared by the national authorities. The EFF covered 5 priorities: a) adaptation of the EU fleet and assistance in decommissioning fishing vessels; b) aquaculture, fishing in internal waters, processing and marketing, assistance in application of environmentally friendly methods of production; c) measures to improve the traceability of production and labelling of commodities; d) sustainable development of the fisheries zones; e) technical assistance (funds' management assistance). The functioning of the European Maritime and Fisheries Fund contributes to the application of new rules of the EU's CFP and the maintenance of initiatives which improve the economic, environmental and social performance of the sector [Zalizko and Martynenkov, 2016; Vdovenko, 2016, p. 27].

The total budget of the European Maritime and Fisheries Fund is 8.6 billion euro (EU + national budgets). The EU contribution amounts to 6.4 billion euro and is aimed not only at reinforcing the renewed CFP, bringing fishing activities and aquaculture to profitable business [Vdovenko, 2016]. There is 5.7 billion euro from these funds using in general management. The EMFF operates on the basis of six main priorities. There are main blocks: 1. Sustainable fishing (26,9%). Forecast of balance between fishing capacities and available natural resources, fish extraction in a selective way, cessation of fish catch caught as by--catch, which is not a target fishery [Vdovenko, 2016]. 2. Sustainable aquaculture (21%). Directed to make the sector profitable and competitive with a focus on improving the quality of products, human health, and the production of ecologically safe aquaculture products. It is also intended to provide consumers with high-quality, nutritious and trustworthy fish products [Vdovenko, 2016; http://ec.europa.eu/fisheries/cfp/emff/index_en.htm]. 3. Introduction of the provisions of the updated Common Fisheries Policy of the European Union (19.1%). Improvement of the procedure for collecting information, scientific knowledge, and fisheries legislation in terms of control and application of legal acts [Vdovenko, 2016]. 4. Marketing and processing (17.6%). Improvement of market organization, market infrastructure, coverage of market information and informing

consumers about the state of the world's largest fish and seafood market [Vdovenko, 2016]. Population employment and strengthening the unity of territories (9%). Assistance is provided to coastal fishing communities and engaged in fishing in inland water bodies. Providing communities with aquaculture activities. Growth of income from activities in fisheries and aquaculture. Diversification of national economies into other areas of maritime business, including the provision of recreational services [Vdovenko, 2015]. Integrated maritime policy (1.2%). Improve knowledge in the field of marine science. Obviously, planning of marine activities is important, promoting cooperation in marine monitoring and management of sea basins in accordance to their basins' needs in current conditions. The remaining 5.1% relates to technical assistance.

Therefore, we have an opportunity to make conclusion that, beyond these priorities, the European Maritime and Fisheries Fund does not determine how funds should be used and appoints an appropriate share of the budget to each country. It should be noted that the management of the EMFF remains the question of choosing business projects and decisions to improve the functioning of the economy for each local organization and any national competent authorities. The costs of the European Maritime and Fisheries Fund are used to finance projects, in addition to national funding. Each country receives a share of the fund's total budget in proportion to its fishing sector and prepares an operational program indicating how the funds would be spent. The national authorities decide on which projects to fund after approved by the Commission. The national authorities are responsible for implementing the program. However, as highlighted by the study, the statement confirms that in order to access the funding from the European Maritime and Fisheries Fund, it is necessary: a) to verify that the project is eligible for funding; b) consult with the national authority; c) comply with the relevant application procedure so that the managing authority can control the eligibility of the project and see if it meets the selection criteria and investment priorities. At present, the European Union has adopted an investment program for maritime sectors, fishery and aquaculture for different EU Member States.

As studies have shown EMFF, in this regard, would seek to maximize cooperation and synergies from usage of different funds and would create optimal conditions for economic recovery, so that local businesses and communities be able to work together in order to create a bright, blue and sustainable future of European seas and coast.

Functioning of the EMFF evidently promotes:

- European fish industry receives support to facilitate the implementation of reforms and overcome informational gaps;

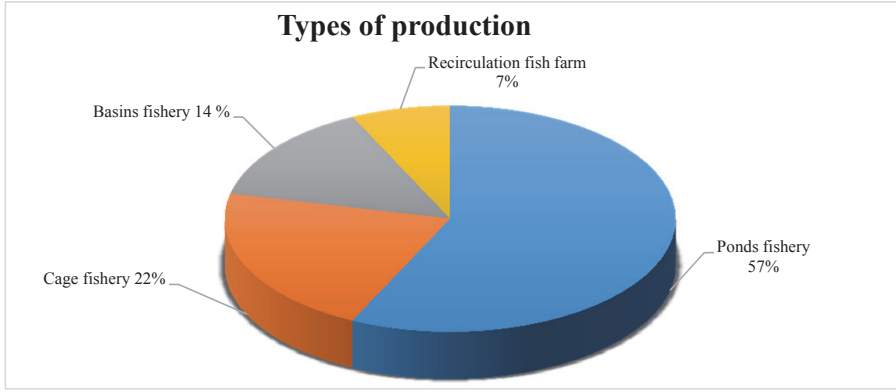
- European farmers, farmers who produce fish products and farmers who process fish receive funding for introduction of new technologies, modern equipment, raise standards of health and environmental attitudes or diversify their activities towards the usage of new aquaculture facilities and new open-air markets;
- Public authorities receive support in strengthening and improving the system for collecting information and compliance with their obligations to control fishing activities;
- Producers' organizations, professional organizations receive support temporary until 2019, to ensure the storage of their products in cases where market demand is too limited. Manufacturers have an opportunity to receive financing for their production and marketing plans for the long term in the conditions of transformation processes. As a result of the introduction of such plans, the processing industry is going to be benefit from the stable supply of products from wild and raised fish. The consumer has an opportunity to gain access to healthy, nutritious and sustainable crops or fish and fish products grown under constant conditions. As seen from the analysis, the practical introduction of these measures are going to improve the level of informing the consumer about grown, caught fish and products produced from it. Selective financing of selective fishing is effective in the process of local growth and development. Scientists and researchers are going to receive funding for exploration in the areas of fisheries management, ocean management, impacts of climate changes, coastal protection, marine economies etc. Private companies which are close to the shore or are away from it are going to receive support in way of introduction green technologies.

A key element of the EU's CFP is the gradual by-catches reduction of non-target species of fish – an economically ineffective practice that makes a significant contribution to reducing stocks. Therefore, to unload all caught fish without exception are required from fishermen and assistance will promote landing, processing and marketing of such products. At the same time, fishermen will be able to receive the funding for attempts to use fishing gear which minimize an environmental impact and provides what fishers exactly want to catch (desirable, target species). The Council were adopted Regulation (EU) No. 1303/2013 in December 2013, for better usage of European Structural Funds and investment funds, which includes financial instruments for implementation policy of cohesion, rural and fisheries development.

Thus, in the European Union common provisions were adopted in order to optimize the impact of structural funds and European investments, which include financial instruments for implementation rural development and fisheries policies.

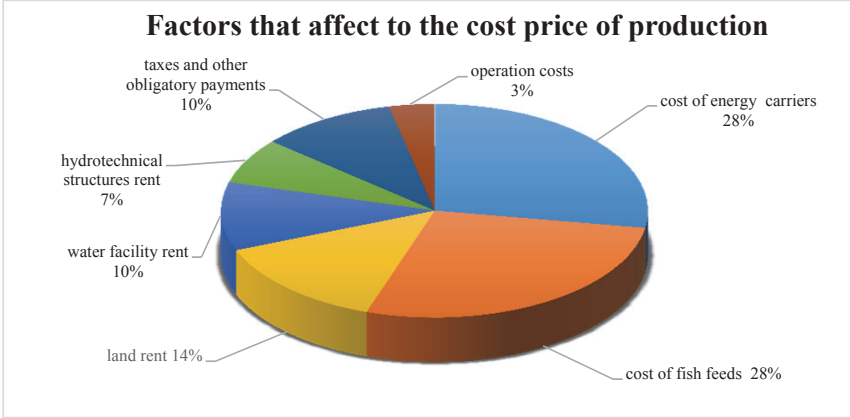
17.5. Results of aquaculture producers activities on the possibilities of provisions' implementation of the Common Agricultural and Fisheries Policy of the EU in fisheries during AGRO-2018

There was a survey of aquaculture actors that were engaged into pond, crop, basin fish cultivation and production in recirculational fish farms during the annual AGRO-2018 exhibition in Ukraine. This survey was conducted in order to identify opportunities for reducing the cost of aquaculture production, simplifying business at aquaculture field and improving the investment environment for fish farms in the context of implementing the provisions of the Common Agricultural and Fisheries Policy of the EU in Ukraine.

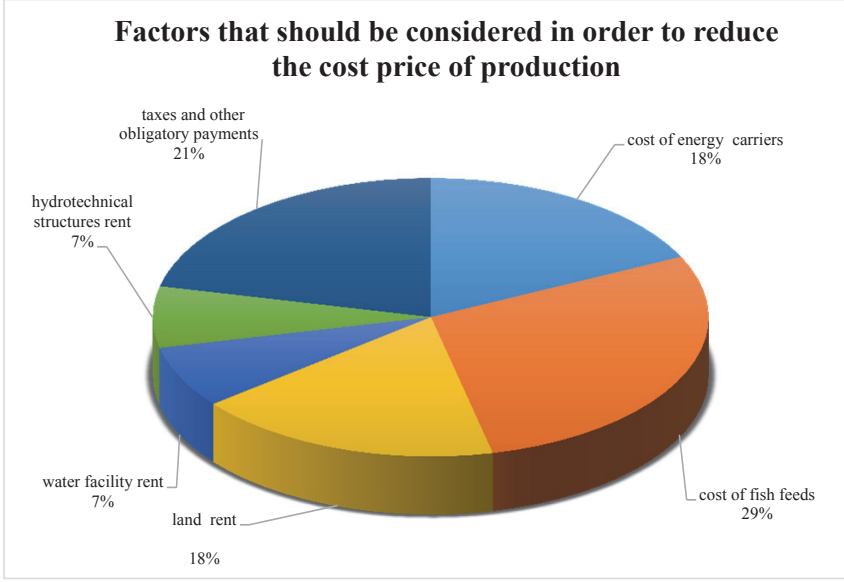


The factors which affect to the cost price of commodities in aquaculture include: cost of energy carriers; fish feeds; fish-plant material; land rent, water facility rent, hydrotechnical structures rent, operating costs, taxes and other obligatory payments and other costs.

As established the following costs are most affected by the cost of production: cost of energy resources (28%), fish feed (28%) and land rent. The rent for hydraulic engineering (7%) and operating costs (3%) have the smallest impact. According to results of research it was found that in order to reduce the cost of fish products in fish farms, the following factors should be reduced firstly: feed costs (29%), taxes (21%), land rent (18%) and energy resources (18%).

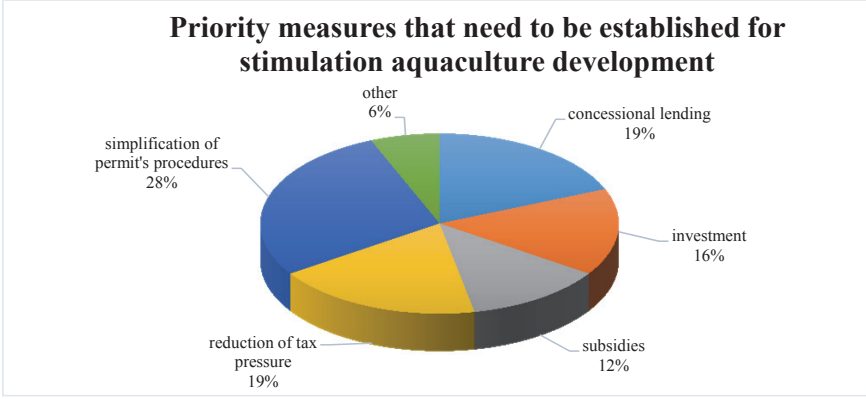


Producers (41%) have responded that firstly it is necessary to build the state fodders plants to production of high-grade feed for different types of fish in the context of determining the possibilities of reducing share of feed costs. At the same time, 41% of producers believe that it is necessary to provide fishery subsidies on the development of own fodder production, and 18% of producers indicate that it is necessary to reduce taxation. For example, the subsidy affects to reduction of the cost price in the EU-countries. The part of the cost of feeds which has been spent on production is reimbursed by the state in this case.

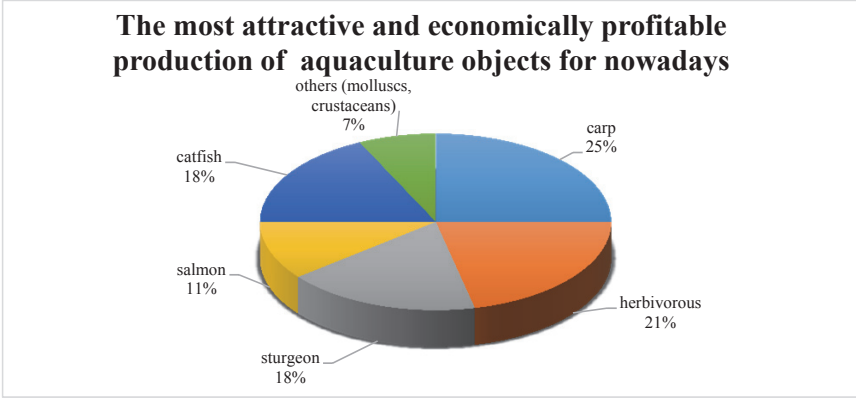


According to 62% of respondents in order to reduce energy resources expenses energy-saving technologies need to be established at aquaculture enterprises. At the same time, 38% of respondents believe that the share of expenses can be reduced by lowering the tariffs. In the course of the analysis was established that it is possible to reduce operating costs during the mechanization and automation of production processes in process of production of aquaculture products (67%).

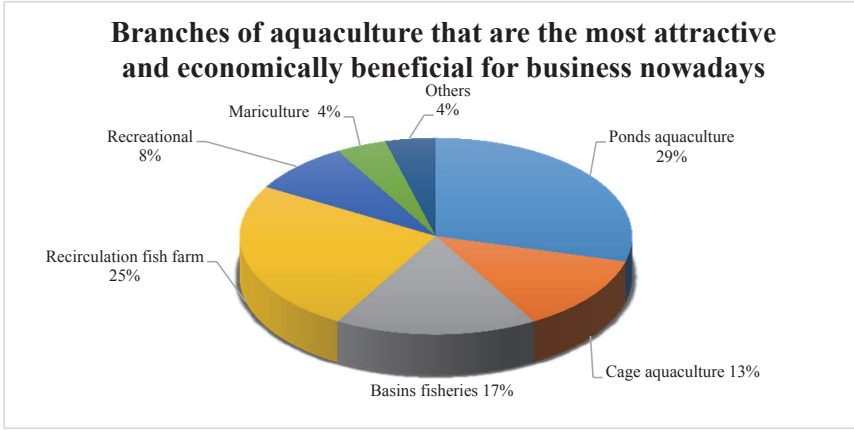
More than 80% of respondents believe that the current legislation needs to be clarified for aquaculture sphere in order to reduce the cost of production. There were identified next changes and additions for current legislation: a) simplification of obtaining documents' package for fishing activities; b) legislative acts to promotion the development of own feed production; c) improvement of customs policy in relation to fish feeds, fish-plant material and equipment; d) reduction of administrative procedures when issuing permits. In order to stimulate the development of aquaculture from the proposed solutions simplification of permit's procedures were placed by the respondents (28%) at the first place; the second place were divided between concessional lending and tax reduction (19%), investment took the third place (16%) and fisheries subsidies (12%) at the fourth place.



According to producers' opinions, the most attractive and economically advantageous objects among aquaculture are: carp species (carp – 25%, herbivorous – 21%). The next place is going to sturgeon and catfish (18%), and salmon has approximately 11%.



It was established that the most attractive and economically profitable for aquaculture business remains pond aquaculture (29%), the next one is production in aquaculture recirculating systems (25%), the basins fisheries (17%) and the last one is the cage aquaculture (13%).



Producers consider that the main reasons that hamper the development of Ukrainian aquaculture are corruption, tax pressure, weak banking system, customs policy, lack of state support, high expenses of fish feeds, equipment and fish-planting materials etc. The study and assessment of global subsidies in the fisheries sector indicate that the domestic industry is only at the beginning of its development in the context of assessing the content and implications of usage fisheries subsidies as a tool for competitive advantages and direct government support. Europe has the highest level of subsidization among all major fisheries actors as well as the integrated fisheries and aquaculture (26%), followed by Japan (21%) and China (20.7%).

Considering the specifics of this particular research, it is worth differentiating the methodological approaches to estimation of results of aquaculture producers activities on the possibilities of provisions' implementation Common Agricultural and Fisheries Policy on the micro- and macrolevels.

Thus, on its microlevel the proposed here methodology includes the construction of integral subindices which would later help estimating the aquaculture producers activities on the possibilities of provisions' for national enterprises of the agrarian and industrial sectors as well as for those working in the social sector. The mentioned here indices would be calculated on the basis of the Kharazishvili-Zalizko algorithm (more – in the author's previous work on this algorithm [Zalizko, Martynenkov, 2016; Zalizko, 2017]. This universal algorithm includes the following steps:

1. To form an open dynamic system of indicators which, for the convenience purposes, can be written down by means of the matrix method, for example:

$$\Psi_k = \begin{pmatrix} \varphi_{11} & \varphi_{12} & \dots & \varphi_{1j} \\ \varphi_{21} & \varphi_{21} & \dots & \varphi_{2j} \\ \dots & \dots & \dots & \dots \\ \varphi_{k1} & \varphi_{k2} & \dots & \varphi_{kj} \end{pmatrix}, \quad k, j \in N. \tag{1}$$

Quantity of elements in such a system can be different and depends on the availability of statistics data and specifics of each stage in evaluation.

2. Using the method of comparison with the reference value, all statistical values are normalized to be further used in the dynamic series of integral indices, applying formula (2).

$$z_i = \begin{cases} \dfrac{x_i}{x_{i,\max}}, & \text{if } x_i \text{is the stimulator}, i \in N, x_{i,\max} \neq 0; \\ \dfrac{x_{i,\min}}{x_i}, & \text{if } x_i \text{ is the destimulator}, i \in N, x_i \neq 0; \end{cases} \tag{2}$$

where z_i – the normalized statistical values of the indicators x_i; $x_{i,\min}$ and $x_{i,\max}$ – the smallest and the biggest values, accordingly. In the case if some of the indicators in the dynamic statistical series are equal to zero or are negative, we suggest shifting the statistical axis by several scale units, so that the inequality $x_i > 0$ is satisfied. As a result of normalizing we get the values within the interval (0; 1) keeping the accuracy of estimations.

3. Then we can find the vector matrix of dispersions D_i and the matrices of the absolute values of the factor load A_i, using the axis rotation and quartimax normalization, so that to set simple correlations between the related variables and

factors, separately for each group of indicators (depending on the level of a particular research).

For this matrices A_i and D_i are to be determined by means of the following formulae:

$$A_i = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{1j} \\ a_{21} & a_{21} & \dots & a_{2j} \\ \dots & \dots & \dots & \dots \\ a_{j1} & a_{j2} & \dots & a_{jj} \end{pmatrix}, \quad D_i = \begin{pmatrix} d_1 \\ d_2 \\ \dots \\ d_j \end{pmatrix} \; i, \; j \in N,$$

where a_{jj} – the absolute values of elements in the matrix after the axis rotation and quartimax normalization; d_j – the values of dispersion (i, j – quantity of groups and indicators, respectively).

4. Then we find the weight of influence for each factor for further estimation of results of aquaculture producers activities on the possibilities of provisions' implementation Common Agricultural and Fisheries Policy on the microlevels. For this, we form the following matrix Ω_i :

$$\Omega_i = A_i \times D_i = \begin{pmatrix} d_1 a_{11} + d_2 a_{12} + \dots + d_j a_{1j} \\ d_1 a_{21} + d_2 a_{22} + \dots + d_j a_{2j} \\ \dots \dots \dots \dots \dots \dots \dots \dots \\ d_1 a_{j1} + d_2 a_{j2} + \dots + d_j a_{jj} \end{pmatrix}.$$

Then we can form the matrix of weights for each of the factors:

$$\mathrm{Y}_i^{(1)} := k\mathrm{Y}_i, \; k = \left(\sum_j \alpha_j \right)^{-1}.$$

This enables the final estimation of scalar values of the estimated integral index and the related subindices in the multiplicative form (3):

$$I = \prod_{j=1}^{n} z_j^{\alpha_j}, \quad \sum_j \alpha_j = 1, \; \alpha_j > 0, \; n \in N. \tag{3}$$

5. After that we carry out the integral convolution in two stages: first – for separate groups of indicators, second – on the level of integral indices of groups. This process involves using the principal components method for determining the weight coefficients, and also T criterion – for grounding the margin values and some other features as well as the multiplicative form of the integral index and its key components which enables presentation of the final values in the dynamic series as tables.

Moreover, this algorithm allows you to evaluate rural development programmes based on the needs of their areas and focus on at least 5 EU's common priorities:

- promote knowledge and innovation in agriculture and forestry industries, rural areas;
- increase the profitability and competitiveness of all types of agriculture and promote an innovative agrarian technology;
- promote food chain organization, animal welfare and risk management in agriculture and fisheries industries;
- restore, preserve and enhance the ecosystems associated with agriculture and forestry industries;
- promote the efficient usage of resources and support the transfer to a low carbon economy prepared for climate change in agricultural industries.

17.6. Summary and conclusions

Consequently, we have reasons to make the following conclusions: a) priority tasks for searching the ways to raise the level of competitiveness of the fish industry are to establish effective interaction between producers, consumers, financial and credit system in order to make decisions that would maximally satisfy the economic interests of all entities in relation with sphere of aquaculture; b) for promotion an aquaculture development it is important to improve the customs policy on fish feeds for usage by fisheries actors in the field of aquaculture and establish a concessional lending in that field under conditions of implementation the basic principles of the Common Fisheries Policy; c) for optimization activity of fisheries actors its expedient to establish fixed minimum rent amount for land plots which are used for fish production in the context of the EU-Ukraine Association Agreement; d) to improve the effectiveness of estimation of results of aquaculture producers activities on the possibilities of provisions' implementation CAP and CFP it is necessary to more widely apply the economics and mathematical apparatus, in particular, the algorithm that is presented in the study.

References

1. On amendments to the Council of the EU regulations (2015). EU Regulation dated 20.05.2015 No. 2015/812 (as amended by Council Regulation (EC) No. 850/98, 2187/2005, 1967/2006, 254/2002, 2347/2002, 1224/2009

and Regulations (EC) No. 1379/2013 and EU No. 1380/2013 of the European Parliament and of the Council, Council Regulation (EC) No. 1434/98.
2. On the Common Fisheries Policy (2013). Regulation of the European Union of 11.12.2013 No. 1380/2013 of the European Parliament and of the Council with amendments to EU Regulations No. 1954/2003 and EC No. 1224/2009 and the repeal of Council Regulations 2371/2002 and (EC) No. 639/2004 and Council Decision 2004/585/EC.
3. Shepeliev S.S. (2016). Increasing the level of competitiveness of fisheries through the prism of the impact of the growing global market. Scientific Bulletin Polesie. No. 3 (7). pp. 76-83.
4. Shepeliev S.S. (2015). Rational Use of Water Bioresources within the framework of the Common Fisheries Policy of the EU. Scientific Herald of the International Humanitarian University. Series: Economics and Management. No. 11. pp. 89-92.
5. Vdovenko N.M. (2016). Fishery economy of Ukraine in the conditions of globalization of economy: [monograph]. K .: Komprint, 476 pp.
6. Vdovenko N.M. (2015). Methodology of sectoral public administration on the way of adaptation of economy to the conditions and requirements of the European Union. ScienceRise. No. 5/3 (10). pp. 39-44.
7. United Nations Convention on the Law of the Sea and the Agreement on the Implementation of Part XI of this Convention (OJ L 179, 23.6.1998, p. 3).
8. Zalizko, V.D., Martynenkov, V.I. (2016). Metodyka ocinjuvannja ekonomichnoji bezpeky silskykh terytorij. Ekonomika Ukrajiny, No. 1(650), pp. 19-34.
9. Vdovenko, N.M., Chuklin, A.V. (2014). Regulatory Policy of the State and Mechanisms for its Implementation in the Agrarian Sector of Economy. International Scientific Conference "Ukraine-Bulgaria-European Union", September 11-17. Varna, 2014. T. 1, pp. 79-84.
10. Sharilo, Yu.E., Vdovenko N.M. (2015). Modern experience in applying the methods of direct influence on the regulation of the activities of actors in the agrarian sector in the conditions of globalization. Socio-economic development of regions in the context of international integration. No. 16(5), pp. 9-13.
11. Kvasha, S.M., Vdovenko, N.M. (2011). Aquaculture production: from scientific experiments to industrial scale. Investment practice and experience. No. 20, pp. 7-11.
12. Eiropas strukturālie un nvestīcijui fondi: [Electronic resource]. https://ec.europa.eu/info/funding-tenders-0/european-structural-and-investment-funds_lv.
13. European Fund for Marine and Fisheries: [Electronic resource]. http://ec.europa.eu/fisheries/cfp/emff/index_en.htm.

14. Zalizko, V.D., Fedun, I.L., Martynenkov, V. I. (2017). Representative Model of Economic Development for an Agricultural Enterprise in the Context of Socioeconomic Rural Space Formation", Montenegrin Journal of Economics Vol. 13, No. 3, pp. 53-62.
15. Zalizko, V.D. (2017). Methodology for integral estimation of Ukrainian agriculture efficiency. Risk in the food economy – theory and practice: monograph has been prepared under the Multi-Annual Programme 2015-2019 "The Polish and the EU agricultures 2020. IAFE-NRI, Warszawa, pp. 183-195.