

Ministry of Education and Science of Ukraine  
**ODESSA NATIONAL ACADEMY OF  
FOOD TECHNOLOGIES**

International Competition of  
Student Scientific Works

**BLACK SEA  
SCIENCE 2020**  
**PROCEEDINGS**



**ODESSA, ONAFT 2020**

Ministry of Education and Science of Ukraine  
Odessa National Academy of Food Technologies

International Competition of Student Scientific Works

# **BLACK SEA SCIENCE 2020**

**Proceedings**

Odessa, ONAFT 2020

Editorial board:

**Prof. B. Iegorov**, D.Sc., Rector of the Odessa National Academy of Food Technologies, Editor-in-chief

**Prof. M. Mardar**, D.Sc., Vice-Rector for Scientific and Pedagogical Work and International Relations, Editor-in-chief

**Dr. I. Solonytska**, Ph.D., Assoc. Professor, Director of the M.V. Lomonosov Technological Institute of Food Industry, Head of the jury of «Food Science and Technologies»

**Dr. Yu. Melnyk**, D.Sc., Assoc. Professor, Acting Director of the G.E. Weinstein Institute of Applied Economics and Management, Head of the jury of «Economics and Administration»

**Dr. S. Kotlyk**, Ph.D., Assoc. Prof., Director of the P.M. Platonov Educational-Scientific Institute of Computer Systems and Technologies “Industry 4.0”, Head of the jury of «Information Technologies, Automation and Robotics»

**Prof. B. Kosoy**, D.Sc., Director of the V.S. Martynovsky Institute of Refrigeration, Cryotechnology and Ecoenergetics, Head of the jury of «Power Engineering and Energy Efficiency»

**Prof. G. Krusir**, D.Sc., Head of the Department of Ecology and Environmental Protection Technologies, Head of the jury of «Ecology and Environmental Protection»

**Dr. V. Kozhevnikova**, Ph.D., Senior Lecturer of the Department of Hotel and Catering Business, ONAFT, Technical Editor

**Black Sea Science 2020**: Proceedings of the International Competition of Student Scientific Works / Odessa National Academy of Food Technologies; B. Yegorov, M. Mardar (editors-in-chief.) [*et al.*]. – Odessa: ONAFT, 2020. – 621 p.

Proceedings of International Competition of Student Scientific Works «Black Sea Science 2020» contain the works of winners of the competition.

The author of the work is responsible for the accuracy of the information.

Organizing committee:

**Prof. Bogdan Iegorov**, D.Sc., Rector of Odessa National Academy of Food Technologies, Head of the Committee

**Prof. Maryna Mardar**, D.Sc., Vice-Rector for Scientific and Pedagogical Work and International Relations of Odessa National Academy of Food Technologies, Deputy Head of the Committee

**Prof. Stefan Dragoev**, D.Sc., Vice-Rector for Scientific Work and Business Partnerships of University of Food Technologies (Bulgaria)

**Prof. Baurzhan Nurakhmetov**, D.Sc., First Vice-Rector of Almaty Technological University (Kazakhstan)

**Prof. Mircea Bernic**, Dr. habil., Vice-Rector for Scientific Work of Technical University of Moldova (Moldova)

**Prof. Jacek Wrobel**, Dr. habil., Rector of West Pomeranian University of Technology (Poland)

**Prof. Michael Zinigrad**, D.Sc., Rector of Ariel University (Israel)

**Dr. Mei Lehe**, Ph.D., Vice-President of Ningbo Institute of Technology, Zhejiang University (China)

**Prof. Plamen Kangalov**, Ph.D., Vice-Rector for Academic Affairs of “Angel Kanchev” University of Ruse (Bulgaria)

**Dr. Alexander Sychev**, Ph.D., Assoc. Professor of Sukhoi State Technical University of Gomel (Belarus)

**Dr. Hanna Lilishentseva**, Ph.D., Assoc. Professor, Head of the Department of Merchandise of Foodstuff of Belarus State Economic University (Belarus)

**Prof. Heinz Leuenberger**, Ph.D., Professor of the Institute of Ecopreneurship of University of Applied Sciences and Arts (Switzerland)

**Prof. Edward Pospiech**, Dr. habil., Professor of the Institute of Meat Technology of Poznan University of Life Sciences (Poland)

**Prof. Lali Elanidze**, Ph.D., Professor of the Faculty of Agrarian Sciences of Iakob Gogebashvili Telavi State University (Georgia)

**Dr. V. Kozhevnikova**, Ph.D., Senior Lecturer of the Department of Hotel and Catering Business of Odessa National Academy of Food Technologies, Secretary of the Committee

## **2. ECONOMICS AND** **ADMINISTRATION**

## FEATURES OF SUSTAINABLE DEVELOPMENT STRATEGIES FOR UKRAINIAN AGRICULTURAL BUSINESS HOLDINGS

**Author:** Anna Korikova

**Supervisor:** Lyudmila Lobotskaya

*Odessa National Academy of Food Technologies (Ukraine)*

**Abstract.** *In the work the essence and features of the application of the sustainable development strategy for Ukrainian agricultural holdings are investigated. The prerequisites for the emergence of the sustainable development concept, the main goals and directions of the sustainable development strategies for agricultural holdings are highlighted.*

*A study of the activities of ten leading Ukrainian agricultural holdings (according to the Landlord agribusiness rating) on the implementation of the sustainable development concept was carried out, as well as an analysis of the compliance of the sustainable development directions of Ukrainian agricultural holdings with the strategic goals of Ukraine until 2030. The agricultural holdings that most systematically and actively implement the sustainable development principles are identified.*

*Based on the analysis done, it was found that attention is not paid to such goals as overcoming poverty, inequality, creating a healthy lifestyle and overcoming gender inequality.*

*Therefore, taking into account the features of the agricultural holdings development, the need to implement clearly formulated and structured sustainable development strategies at the enterprises of Ukrainian agro-industrial holdings is emphasized.*

**Key words:** *development, sustainable development, agro-industrial holding, strategy, food security, agrarian sector.*

### I. Introduction

The relevance of the work's topic is that the prevention of the negative consequences of human activity and the implementation of preventive measures to create a safe existence of the population and the environment today are the most important tasks facing our society, government and relevant state bodies. Sustainable economic development over the past 2-3 decades requires serious organizational and managerial expenses for this purpose, both from the state and the enterprises themselves. And therefore, the study of the features of the sustainable development strategies implementation at the enterprises in modern conditions is relevant and important.

In general, the development of the "sustainable development" category is fairly connected with the Club of Rome, namely with reports that were presented by Donella and Dennis Meadows, J. Randers, E. Pestel, A. King and, of course, with its founder, Aurelio Peccei. In these reports the ideas of the civilization transition to the "global dynamic equilibrium" state were formulated. However, the concept of sustainable development has a long history of formation.

Starting from the scientific works of V. Vernadsky on the noosphere (the beginning of the last century); the declaration of the first UNO conference on the environment (Stockholm, 1972) which indicated the connection of economic and social development with environmental problems; scientific reports of the Club of Rome (1972, which have already been mentioned); to the report of the UNO World Commission on the Environment and Development in 1987; the UNO conference on the environment and development in Rio de Janeiro (1992); the World Summit on sustainable development in Johannesburg (2002) and up until now.

## **II. Analytical review of the literature**

The works of such national scientists as S. Podolynskyi, V. Vovk, I. Hrabynskyi, L. Melnyk, Yu. Tunytsia, V. Budkin, O. Veklych, B. Danylyshyn, B. Burkynskyi, O. Balatskyi and others, as well as of many foreign scholars, including J. Grosman and A. Krueger, G. Daly, D. Meadows, B. Copeland, C. Taylor, P. Rao, J. Frankel, K. McAsland, and R. Petig, are devoted to the study of various aspects of the correlation between the economy and the environment.

## **III. Object, subject and methods of research**

The aim of the work is to conduct research on existing sustainable development strategies for agro-industrial holdings and to identify their specific features.

The object of research is agro-industrial holdings of Ukraine, namely: “Nibulon”, “Kernel”, “Myronivskyi Khiboproduct”, “UkrLandFarming”, “Astarta”, “T.B.Fruit”, “Ukrprominvest Agro”, “Agroprosperis”, “Allseeds Group”, “ViOil”.

The subject of research is the features of the implementation and use of the sustainable development strategy at the agricultural enterprises.

The key objective of the work is to study the correspondence between the goals of sustainable development and their implementation in the development strategies of Ukrainian agricultural enterprises.

In order to achieve this aim, the methods of comparison and matching were used.

## **IV. Results of the work**

Humanity's awareness of the real danger of environmental disaster which threatens the existence of civilization has led to the beginning of the development of the sustainable development concept. Increasing consumption of natural resources has led to environmental degradation and negatively impacted on human health. The international community has admitted that balanced development “should be a priority on the agenda of international cooperation”. It is generally accepted that balanced development is a harmonious combination of economic, social and environmental components of development. Only achieving a balance between the two will provide the opportunity to move to a social development that does not deplete natural and human resources, and therefore will be able to last long enough.

An important feature of sustainable development is its manageability based on the use of a systematic approach and modern information technologies which allow modeling and forecasting the results of different options of economic system development.

Sustainable development of an enterprise in the current period should be considered as its ability to carry out economic activities at any given time under the

conditions of uncertainty of environmental influences that violate its normal functioning and development [3, p. 87].

An important scientific task is to study the features of implementing the sustainable development concept at different levels. If at the macro level the state adopted a sustainable development strategy with specific goals, then it is necessary to analyze how much the achievement of the above goals is reflected in the strategic directions of development of the country's leading agricultural enterprises.

Over the past ten years there has been a significant increase in the number of agricultural holdings in Ukraine, as well as an increase in their role. For an instance, in 2007 there were 18 agro-holdings in Ukraine that owned land with a total area of 1.7 million hectares, that is 8% of the land used by agricultural enterprises. And in 2017 there were already 93 agricultural enterprises that cultivated more than 10 thousand hectares – they possess 29% of the land used by agricultural enterprises, i.e. 6.25 million hectares of the arable land [6].

Agricultural holdings provide a significant share of the production and export of agricultural products, primarily cereals and oilseeds. They attract financial resources, introduce innovative technologies and enter new markets more effective than farms and small agricultural enterprises [5].

Some large companies in Ukraine have earlier formulated and successfully implement now their own sustainable development strategies. Of particular interest is the study of the features of sustainable development strategies of agricultural holdings in Ukraine which, on the one hand, are the main driving force for the development of the agricultural sector of Ukraine and, on the other hand, are constantly accused by society and the scientific community of violating the principles of balanced and harmonious development of the agri-food sector.

Information on the activities of ten leading agricultural holdings in Ukraine, according to the rating of Landlord Agroportal [17], for the implementation of the sustainable development concept was analyzed. As information sources, data from official websites of companies, as well as publications on this topic in scientific and specialized publications was used.

The study showed that some agro-industrial holdings have formulated and structured strategies for sustainable development, which are posted on the official websites of companies along with annual reports on their implementation: “Astarta-Kyiv”, “Kernel”, “Myronivskyi Khlіboproduct”, “UkrLandFarming”. This is due primarily to the fact that the shares of these companies are placed on EU stock exchanges, and the presence of such strategies is almost mandatory for them.

These enterprises are the example of introducing the sustainable development concept not only for Ukraine, but also for the world community.

Other agricultural holdings do not have their own sustainable development strategies. However, they are working to ensure balance within the framework of corporate social responsibility programs: “Nibulon”, “Ukrprominvest Agro”, “Allseeds Group”.

The third group of leading agricultural holdings does not even have a formulated social responsibility policy – they carry out certain social measures, however, such actions are not systematized: “Agroprosperis”, “ViOil”, “T.B.Fruit”.

On the other hand, the absence of a formalized strategy does not prevent the active implementation of the principles of balanced harmonious growth – “Nibulon” is working on the achievement of 11 of Ukraine's 17 sustainable development goals by 2030 as part of its corporate social responsibility program [10].

Table 1

Analysis of the activities of the leading Ukrainian agro-industrial holdings in the implementation of the sustainable development concept\*

| Name of agro-industrial holding | Field of activity                                   | Sustainable Development Policy          | Number of sustainable development goals [10] that the company is working on |
|---------------------------------|---|---|---|
| Nibulon                         | Crop production, grain trade                        | Corporate social responsibility program | 11  |
| Kernel                          | Oil production, cereals                             | Sustainable development strategy        | 8   |
| Myronivskiyi Khiboproduct       | Poultry and crop production, meat processing        | Sustainable development strategy        | 8   |
| UkrLand-Farming                 | Production of eggs, egg products, cereals           | Sustainable development strategy        | 7   |
| Astarta                         | Sugar, milk and grain production                    | Sustainable development strategy        | 6   |
| T.B.Fruit                       | Production of juice and juice concentrate           | No formalized strategy                  | 6   |
| Ukrprominvest Agro              | Crop production; sugar production; grain processing | Social responsibility program           | 5   |
| Agroprosperis                   | Cereal cultivation                                  | No formalized strategy                  | 4   |
| Allseeds Group                  | Oil production                                      | Corporate social responsibility program | 3   |
| ViOil                           | Oil production                                      | No formalized strategy                  | 2   |

\* Compiled by author based on open source data

What’s more, the most active in ensuring sustainable development are “Kernel”, “Myronivskiyi Khiboproduct”, “UkrLandFarming”, “Astarta” and “T.B. Fruit”. The most attention the companies, which were studied, devote to the goal of “overcoming hunger, achieving food security, improving nutrition and promoting sustainable agricultural development”. This is logical because they are leading food producers and provide food to millions of people around the world (Table 2).

Also, 8 out of 10 agro-industrial holdings are focused on “promoting full and productive employment and decent work for all” (which consists in creating decent working conditions and promoting employment) and “strengthening the means of implementation and intensifying work in the framework of the global partnership for sustainable development” (which consists in developing partnerships with local communities and financial assistance to them).

Table 2

Analysis of sustainable development areas compliance of 10 Ukrainian agricultural holdings with the strategic goals of Ukraine in 2030\*

| Sustainable Development Goals of Ukraine until 2030  | Number of agro-industrial holdings declaring this goal |
|--|--|
| 1) overcoming poverty;   | 0  |
| 2) overcoming hunger, achieving food security, improving nutrition and promoting sustainable agriculture;  | 10   |
| 3) ensuring a healthy lifestyle and promoting well-being for all at any age;   | 3  |
| 4) ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all;   | 3  |
| 5) ensuring gender equality, empowerment of all women and girls;   | 1  |
| 6) ensuring accessibility and sustainable management of water resources and sanitation;  | 1  |
| 7) ensuring access to affordable, reliable, sustainable and modern energy sources for all;   | 7  |
| 8) promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;   | 8  |
| 9) creating sustainable infrastructure, promoting inclusive and sustainable industrialization and innovation;  | 2  |
| 10) reducing inequality;   | 0  |
| 11) ensuring openness, security, resilience and environmental sustainability of cities and other settlements;  | 3  |
| 12) ensuring the transition to rational patterns of consumption and production;  | 1  |
| 13) urgent action to combat climate change and its consequences;   | 1  |
| 14) conservation and rational use of oceans, seas and marine resources for sustainable development;  | 1  |
| 15) protecting and restoring land ecosystems and promoting their rational use, rational forest management, combating desertification, terminating and reversing (reversing) the process of land degradation and stopping the process of biodiversity loss; | 6  |
| 16) the promotion of a peaceful and open society for sustainable development, access to justice for all and the creation of effective, accountable and participatory institutions at all levels;   | 5  |
| 17) strengthening the means of implementation and revitalization of the global partnership for sustainable development.  | 8  |

\* Compiled by author based on open source data

At the same time, the least attention is paid to such sustainable development goals as:

- 1) overcoming poverty – 0 out of 10;
- 2) ensuring gender equality, empowerment of all women and girls – 1 in 10 (“Kernel”)
- 3) ensuring accessibility and sustainable management of water resources and sanitation – 1 out of 10 (“Nibulon”);
- 4) reducing inequality – 0 out of 10;

5) ensuring the transition to rational patterns of consumption and production – 1 out of 10;

6) urgent action to combat climate change and its consequences – 1 out of 10 (“Myronivskyi Khliboprodukt”);

7) conservation and rational use of oceans, seas and marine resources for sustainable development – 1 out of 10 (“Nibulon”).

The lack of attention to gender equality can be explained by the fact that this problem is not acute in Ukraine as a whole and in the agricultural sector in particular, because in most companies women work in leadership positions, their rights and opportunities are expanding.

Neglect of the problems of sustainable water resources management and rational use of oceans, seas and marine resources is explained by the fact that these companies conduct their activities mainly on the land – except for “Nibulon”.

Ensuring the transition to rational patterns of consumption and production, as well as the problems of global warming are probably not very relevant for agricultural holdings, since they are global tasks that must be addressed at the state level.

At the same time, in our opinion, it seems incomprehensible why the leading agricultural companies of Ukraine do not direct their efforts to overcoming poverty and reducing inequality – at least, such goals were not declared directly from any of the agricultural holdings that were studied. These problems are extremely important for Ukraine and negatively affect the development of all areas of life. Therefore, in our opinion, strategies for sustainable development of agro-industrial companies should be supplemented with an inclusive component – measures developed to overcome poverty and inequality in the country.

## V. Conclusions

The study showed that some agro-industrial holdings have formulated and structured sustainable development strategies. They are posted on the official websites of companies along with annual reports on their implementation: “Astarta-Kiev”, “Kernel”, “Myronivskyi Khliboprodukt”, “UkrLandFarming”.

In general, the sustainable development strategies of the four leading agro-industrial holdings of Ukraine operate on nine global goals: the development of agriculture; quality education; clean water and proper sanitation; accessible and clean energy; decent work and economic growth; industry, innovation and infrastructure; sustainable development of cities and communities; responsible consumption and production; partnership for sustainable development.

Other agricultural holdings do not have their own sustainable development strategies, however, they are working to ensure balance within the framework of corporate social responsibility programs: “Nibulon”, “Allseeds Group”, “Ukrprominvest Agro”. However, this does not prevent “Nibulon” from being the most active in implementing the principles of sustainable development.

The third group of leading agricultural holdings does not even have a formulated social responsibility policy – they carry out certain social measures, however, such actions are not systematized: “Agroprosperis”, “ViOil”, “T.B. Fruit”.

Analysis of the compliance of the sustainable development areas of 10 agro-industrial holdings of Ukraine with the strategic goals of Ukraine until 2030 showed

that studied companies most of all are focused on the goals of “overcoming hunger, achieving food security, improving nutrition and promoting sustainable agricultural development”. Practically no attention is paid to such goals as overcoming poverty, inequality, creating a healthy lifestyle, overcoming gender inequality and caring for water resources.

Given the specifics of the development of agricultural holdings, we noted the need to direct their efforts to overcome poverty and reduce inequality. In our opinion, sustainable development strategies of agro-industrial companies should be complemented by an inclusive component – measures developed to overcome poverty and inequality in the country at the company level.

#### VI. List of references

1. Meadows D.H. *The Limits to Growth* / D. H. Meadows, J. Randers, and W.W. Behrens. // Universe Books, New York, NY. 1972. 161 p., p. 62-65.
2. Buryk Z. M. Formuvannya kontseptsiyi staloho rozvytku rehionu // *Teoriya ta praktyka derzhavnoho upravlinnya i mistsevoho samovryaduvannya*. 2014. № 1. URL: [http://nbuv.gov.ua/j-pdf/Ttpdu\\_2014\\_1\\_22.pdf](http://nbuv.gov.ua/j-pdf/Ttpdu_2014_1_22.pdf) (date of appeal: 30.09.2019).
3. Kvyatkovs'ka L. A. Realizatsiya pryntsyviv kontseptsiyi staloho rozvytku v diyal'nosti pidpryyemstva // *Visnyk sotsial'no-ekonomichnykh doslidzhen'*. 2013. Vyp. 1, p. 85–89.
4. Daly H. E. 1973. *Towards a Steady State Economy* // H. E. San Francisco: Freeman. Daly, H. E. 1991. *Steady-State Economics* (2nd ed.). Washington, D.C.: Island Press. 339 p.
5. Didukh S.M. Rozvytok ahrokhodyniv Ukrayiny v suchasnykh umovakh: zdobutky i vyklyky // *Ekonomichni ta sotsial'ni aspekty rozvytku Ukrayiny na pochatku XXI stolittya. Materialy VI Mizhnarodnoyi naukovo-praktychnoyi konferentsiyi 11-13 zhovtnya 2018r.* Odesa: ONAKhT. 2018. S. 109–111. Shcho take stalyy rozvytok? // *Stalyy rozvytok dlya Ukrayiny: [Veb-sayt]*. 2019. URL: <http://www.sd4ua.org/shho-take-stalij-rozvitok/> (date of appeal: 30.09.2019).
6. Top-10 ahrokhodyniv Ukrayiny. Osnovni aktsenty v infografitsi // *AgroPortal*. 2018. 25 serp. URL: <http://agroportal.ua/ua/publishing/infografika/top10-agroholdingov-ukrainy-aktsenty-2017-v-infografike/> (date of appeal: 22.02.2018).
7. OECD/DAC. *Strategies for Sustainable Development: Practical Guidance for Development Cooperation*. OECD: Paris, 2001. 73 p.
8. Danylyshyn B.M., Maslyukivs'ka O.P. Rozroblennya natsional'nykh stratehiy staloho rozvytku: korysnyy dosvid dlya Ukrayiny // *Mekhanizm rehulyuvannya ekonomiky*. 2008. №3 (2), T.1. p. 214-218.
9. Bazovi dokumenty shchodo staloho rozvytku // *Stalyy rozvytok dlya Ukrayiny: [Web-site]*. 2019. URL: <http://www.sd4ua.org/shho-take-stalij-rozvitok/> (date of appeal: 30.09.2019).
10. Pro Tsili staloho rozvytku Ukrayiny na period do 2030 roku: Ukaz Prezydenta Ukrayiny vid 30.09.2019 r. №722/2019. Uryadovyy kur'yer. 2019. 2 p.

|  |            |
|--|------------|
| YOUTH ENTREPRENEURSHIP AS A MAJOR COMPONENT OF STATE DEVELOPMENT<br>Author: Alina Shkvarko<br>Supervisor: Lyudmila Davydyuk.....   | 246        |
| TRADE NETWORK LOYALTY PROGRAMS: THEORETICAL BASIS AND METHODOLOGICAL ASPECTS OF EFFICIENCY ASSESSMENT<br>Author: Olha Pakulenko<br>Supervisor: Julia Brovkina.....   | 254        |
| MARKETING ACTIVITIES OF THE UNIVERSITIES OF POLAND AND UKRAINE: CONDITIONS, METHODS, PROSPECTS<br>Author: Hanna Holubonkova<br>Supervisor: Dorota Simpson.....   | 264        |
| FORMATION OF PERSONNEL POLICY OF THE CIVIL SERVICE SYSTEM<br>Author: Mariia Klevets<br>Supervisors: Kateryna Kozak, Kassianidis Panagiotis.....  | 280        |
| DEVELOPMENT OF PROFESSIONAL COMPETENCE IN RESTAURANT SERVICE BASED ON THE USE OF WORLDSKILLS INTERNATIONAL STANDARDS<br>Authors: Darya Yerafeyenka, Darya Shymanouskaya, Katsiaryna Repina<br>Supervisor: Tatsiana Rybakova..... | 293        |
| THE IMPORTANCE OF THE INTELLECTUAL PROPERTY IN PROMOTING THE INNOVATIVE ENTREPRENEURSHIP<br>Author: Ecaterina Brad<br>Supervisor: Crudu Rodica.....  | 299        |
| FEATURES OF SUSTAINABLE DEVELOPMENT STRATEGIES FOR UKRAINIAN AGRICULTURAL BUSINESS HOLDINGS<br>Author: Anna Korikova<br>Supervisor: Lyudmila Lobotskaya.....   | 317        |
| <b>3. INFORMATION TECHNOLOGIES, AUTOMATION AND ROBOTICS</b>  | <b>324</b> |
| RESEARCH ON THE POSSIBILITY OF THE BEE COLONY ALGORITHM FOR DETERMINING THE TOPOLOGY OF THE WIRELESS NETWORK AT THE MARSHALLING YARD<br>Author: Diana Nazarova<br>Supervisor: Victoria Pakhomova.....                            | 325        |