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Article

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UPGRADING THE NOTION OF SUSTAINABLE FOODS IN THE EUROPEAN UNION: CONCEPT AND CHALLENGES

The article emphasizes that Ukraine, as an active exporter of agri-food products and agricultural raw materials to the European market, needs to take into account the new EU approach to categorization of products based on their sustainability indicators. The European Commission will formulate a legislative proposal on the framework of a sustainable food system, and general requirements for sustainable foods, and their certification and labeling according to sustainability indicators by the end of 2023. Based on the presently available EU documents (first of all, the Farm to Fork Strategy) the author generalizes the main principles and requirements for sustainable foods CO_2 that will become standard for all foods placed on the EU market in accordance with public interests.

It is substantiated that the quite new for Ukraine concept of "sustainable agri-food product" has a broader content than the concept of "eco-friendly product" or "organic product", as environmental friendliness is just one of the characteristics of sustainability, along with the climatic and social ones. The main differences between sustainable and eco-friendly/organic products are systematized. A prominent place in the article is given to the climate criterion of sustainability, in particular, the reduction of greenhouse gas emissions in the production and supply of agricultural food (carbon footprint), which meets the target of decarbonization and achieving climate neutrality in Europe.

In the context of creating a harmonized EU methodology for food sustainability, the author considers the content and components of the ecological footprint (land area used for production and utilization, water resources, carbon dioxide emissions, and food miles). The article provides global experience of voluntary certification of food sustainability, and national programs for certification of food sustainability, in particular soybeans in the USA and Canada, which testifies to the growing differentiation of the food market and a tendency towards official certification and labeling of sustainable foods.

The author highlights the challenges for Ukrainian exports to the EU under the increasing requirements for the sustainability of agri-food products. In particular, high levels of greenhouse gas emissions from crops (corn and oilseeds) may lead to restrictions on their exports as raw materials for biofuel

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production. Tracking of chemical pesticide and antimicrobial residues in exported products is expected to be tightened, as the use of these hazardous substances in the EU should be reduced by 50% by 2030.

The revealed asymmetry of the spread of the concept of "sustainable foods" between foreign (quite common) and domestic (almost absent) scientific and journalistic sources may indicate that domestic farmers might not be prepared for a timely reorientation to production and export to the EU of sustainable agri-food products. It is obvious that the better off countries will be those who manage to modernize their national agri-food systems in advance in the context of ensuring product sustainability.

Keywords: *sustainable foods, eco-friendly products, Farm to Fork Strategy, European Green Deal, decarbonization, certification of food sustainability*

The current green transformation, initiated by the EU in 2019 with the adoption of the European Green Deal (EGD), is defined as a new economy, whose main idea is to force economic actors to pay more for the damage to the population and the environment and thus encourage environmental protection and social responsibility. The new economy means the creation of new values and prices of products. The price of products, including agri-food ones, should reflect the real cost of their supply, taking into account the use of finite natural resources, environmental pollution, and social and climatic aspects, which together characterize the food sustainability.

For example, taking into account all the costs associated with meat production (to cover environmental damage, health care, and subsidies) - the total cost of "Big Mac" is $12. US (while its current average price in the USA is $5.6). If the consumer is offered to pay this price, the level of demand for burgers can be halved [1].

Based on the categorization of agri-food products into sustainable and non-sustainable by a set of sustainability indicators, their appropriate certification and labeling, there is already a partial differentiation of foods in the European and international markets, which will further strengthen. According to the European Green Deal, sustainable products will become a standard not only for EU member states, but also for partner countries and globally.

The above determine the objectives of the study and the *purpose of this article*, which is to reveal European guidelines and approaches to identifying sustainable agri-food products, justify their main characteristics and differences, and market promotion measures and outline some challenges for Ukrainian exports under the conditions of tightened agri-food sustainability requirements within the EU.

Methodological aspects. The author's hypothesis in this study is that a separate category of "sustainable foods" (as opposed to "unsustainable" ones) is crystallized, a set of requirements (criteria) for such products is formulated, and over time they will become a priority in the European market. To confirm this hypothesis, it was necessary to summarize the main approaches, requirements, and expectations for sustainable foods, stated in the EU Strategy "From Farm to Fork" and other documents within the EGD. Ensuring the sustainability of agri-food fits into the context of the targets of the EGD, which are decarburization and climate neutrality.

Generalization of the differences between sustainable and environmentally friendly products was aimed at revealing a broader content of sustainable foods, which in addition to environmental friendliness must also meet social and climatic requirements (sustainable foods are environmental foods +). It is advisable to consider the content and components of the environmental footprint, in particular the carbon footprint, as the EU is currently elaborating a harmonized methodology for comparative calculation of environmental footprints from products and companies in the context of assessing their sustainability.

Finally, taking into account the targets of European Green Deal, it is important to outline the challenges for Ukraine's agricultural exports to the EU in terms of their climatic (greenhouse gas emissions) and environmental (chemical pesticides) indicators, as the EGD declares the reduction of those indicators to be important.

Review of scientific papers and Internet resources shows that the term "sustainable foods" in the sense of "sustainable food products" is widely used in foreign publications and is almost absent in domestic sources. In this case, stable foods are often referred to in the context of sustainable diets [2]. Businesses use this term to advertise sustainability as an advantage to promote their foods on the market. In addition, sustainable foods are often presented as innovative, such as plant-based meat substitutes, non-dairy cheeses, insect-based products etc.

It is noted that there is no official definition of "sustainable foods", the aspects of restoration/regeneration, realization of environmental, social and economic societal values are emphasized [3]. A team identifies sustainable food as such that meet basic needs and improve the quality of life, while minimizing the use of natural resources, toxic materials and disposal of waste and pollutants throughout the life cycle, in so doing protecting the needs of future generations (Oslo Roundtable on Sustainable Production and Consumption, 1994) [4]. A sustainable food is essentially close to a healthy food - "good for humans, good for the planet."

It is noted that sustainable food is an environmentally friendly product, whose production minimizes greenhouse gas emissions, and provides a rational use of resources; attention is paid to the rights of farmers and their wages, and the methods of breeding and slaughter of animals [5]. However, sustainable foods are necessarily environmentally friendly, as the basic interpretation of environmentally friendly foods does not include requirements for greenhouse gas emissions, farmers' rights, etc. It follows that sustainable foods are "environmentally friendly +", plus their additional characteristics. In addition to the above, another parameter of a sustainable food is considered, which is the minimization of the number of food miles, so the main products should be those produced in a particular country [6]. And these are seasonal products. The recommendations on the consumption of sustainable products emphasize the importance of abandoning deep-processed foods, and the need to verify the availability of sustainability certificates (Fair Trade and MSC) [7].

The reviewed sources make it increasingly clear that the meaning of the concept of sustainable foods is deeper than the concept of foods dedicated purely for sustainable diets. The UN, declaring the year 2021 the International Year of Fruits and Vegetables, emphasized not only the fact that they tend to have less impact on the

environment (than, in particular, cereals), their cultivation does not require expansion of arable land through deforestation, but also their higher effectiveness in terms of availability and food security per unit of land, water and nutrients [8]. The broader multifaceted significance of vegetables and fruits for society is stressed as well.

In Ukrainian-language sources, the phrases "sustainable agri-food products", "sustainable food products", and "sustainable foods" are extremely rare. In Russian-language Internet resources, the phrases "sustainable food products", "sustainable foods" are often translations of works by international organizations and foreign authors. It is noted that sustainable foods (sustainable rations) are not only those whose production provides a caring attitude to the environment, but also those adapted to the economic and socio-cultural aspects of each place [9]. Among the winners of the Sustainable Food Awards (founded by the United Kingdom, the award was first awarded in 2018) is a company producing of organic cereals, which also invests in social responsibility, climate neutrality and waste-free production [10].

The EU sets requirements for food sustainability

The European Green Deal (EU Green Deal) of 2019 - as a policy to change the European economy and consumption pattern, is also a foreign policy line with profound consequences for neighboring and partner countries. The food system should make a significant contribution to reducing greenhouse gas emissions and especially those of carbon dioxide (decarbonization) by 2030 by 55% compared to 1990 and transforming Europe into the first climate-neutral (with no net greenhouse gas emissions) continent by 2050 p.

The aim of the Farm to Fork Strategy (F2F) 2020 is to transform the EU food system into a global standard of sustainable development as part of the European Green Deal. And European food, which is already a global standard of safety, nutrition and high quality, should become also a global standard of sustainable development [11].

In order to make European foods a standard of sustainable development, it is planned to reduce the dependence of their production on chemical pesticides and antimicrobials (reducing their use by 50% by 2030), fertilizers (by 20%), and increasing organic farming (to 25% of agricultural land), improve the welfare of farm animals, and stop the loss of biodiversity. The objectives include the reduction of the ecological and climatic footprint of the European food system, ensuring a neutral or positive impact on the environment at all stages of the food chain (via the protection of soil, water, air, plant and animal health and welfare), and the mitigation of climate change.

By the end of 2023, the European Commission (EC) should formulate a legislative proposal on the framework of a sustainable food system, as well as general principles and requirements for sustainable food, combined with certification and labeling for sustainability indicators (food, climate, environmental and social ones). as stated in the F2F Strategy. This will become the norm for all foods placed on the EU market, and sustainable development standards will gradually increase.

Sustainable foods must be the most accessible to consumers, including through the promotion of fair trade. The trade policy of EU as the world's largest food importer will focus countries on participating in the green transition, and on strengthening

cooperation in the supply of agri-food products that meet high standards of security and sustainable development. Defining sustainability as a priority goal of its trade and other foreign policies, the EU will refer to this in trade agreements, requiring the observance of sustainable practices by trading partners. Imported animal products must meet strict requirements for the use of antibiotics. The EU will work with trading partners on the transition to the sustainable use of pesticide and promotion of safer plant protection products.

The EU's position on food sustainability can be summarized in the existing documents of the EGD package. Undoubtedly, it is problematic to reduce the approaches to food sustainability to a standard methodology. However, such a possibility is evidenced by the recently adopted EU Taxonomy (a regulatory framework for promoting sustainable investment), which sets standards for the sustainability of economic activities. At the same time, agriculture is identified among the activity sectors (branches of economic activities) of the Taxonomy, as a sector especially important for the development of a sustainable economy [12].

It is obvious that the agreed methodology for determining sustainable foods will be based on a set of food (nutritional value marked, for example, on a five-point Nutri-Score scale), climatic (greenhouse gas emissions, etc.), environmental (use of chemical pesticides, prevention of land degradation, loss of biodiversity, etc.) and social (respect for the rights of workers and especially women workers, non-use of child labor, etc.) aspects.

"Sustainable foods" is a broader concept than organic products

The European Strategy "From Farm to Fork" uses the concepts of "sustainable foods" as "sustainable food products" and "sustainability performance of food products" as "indicators of the sustainability of food products", thus clearly defining that it is about the sustainability of food, for which certification and labeling marking are provided.

"Sustainable foods" are sometimes translated as environmentally sustainable and environmentally friendly foods, which is not correct. Previously, the concept of "environmentally friendly/organic product" was associated with a sustainable product, but over time it acquired its essential content. The EC Communication "On the Action Plan for the Development of Organic Production" of 25.03.2021 aptly states that organic farmers are the pioneers of sustainable agriculture of the future. In addition, it is not correct to use the phrase "environmentally sustainable product", because there is a tautology: "sustainable" already means economically-socially-ecologically balanced so there is no need to re-emphasize the environmental friendliness of the product.

Sustainability of agri-food products, in addition to their environmental friendliness, is characterized by a large set of parameters, namely social and climatic ones (Table 1).

Table 1

Main characteristics of sustainable and environmentally friendly foods

Sustainable foods *	Environmentally friendly/organic foods
Sustainable foods are subject to socio-economic and ecological-climatic requirements. Slightly lighter environmental requirements compared to environmentally friendly/organic foods, in particular, regarding the use of chemical pesticides, fertilizers, and antimicrobials. Must have a low impact on the environment during the life cycle (minimum emissions of pollutants into the atmosphere, water, soil, and economical and rational use of energy, water and other resources).	There are no social requirements for organic foods. Although these foods play a triple social role: they fill a specific market according to consumer needs; ensure the public good by helping to protect the environment; and create jobs.
In order to decarbonize the food chain, CO_2 and other greenhouse gas emissions from agri-food production are taken into account. Livestock production methods are carbon efficient, ensure animal welfare (proper health, comfortable housing conditions, good fatness and safety). Are locally produced, seasonal, less processed, not too packaged, come to the consumer in short supply chains. The requirements for GMOs are still unknown. Production of sustainable foods must be socially responsible, the key social categories include - health and safety for people; corporate responsibility to society; labor and human rights; non-discrimination; the needs of local communities and indigenous peoples.	Basic requirements for organic production include: refusal to use GMOs, chemically synthesized substances, preservatives, hormones, antibiotics, growth stimulants; exclusion of hydroponic production; providing plants mainly through the soil ecosystem Rules for the production of organic foods in the context of environmental friendliness include: prevention of pollution or its minimization for the environment; minimizing the use of non-renewable resources; preventing soil degradation, ensuring preservation and reproduction of soil fertility.

* The author's characteristics of sustainable products are summarized according to the results of the analysis of documents on the European Green Deal.

Source: developed by the author.

As already mentioned, greenhouse gas emissions over the life cycle of each product are taken into account in the context of decarburization as a target for the European Green Deal. Social parameters concern, in particular, the dismissal of workers and the observance of their rights. The amendments to the EU's Common Agricultural Policy, approved in June 2021, stipulate that from 2023 EU member states may make it more conditional for farmers to receive direct support payments depending on their respect of the workers' rights, and from 2025 this regulation will become mandatory within the EU.

The definition of sustainable food is being improved, reflecting an ever-widening range of characteristics in line with the basic concept of UN sustainability (which does not jeopardize the ability of future generations to meet their needs). Common definition: sustainable foods are those that provide environmental, social and economic benefits, while protecting the health of the population and the environment throughout their life cycle - from raw material extraction to final disposal. A

sustainable agri-food product means, in particular, that it is produced, sold, and distributed in accordance with the guidelines of sustainability and has the appropriate certification. The concept of "triple effect" - "people - profit - planet" became the tool to encourage sustainable development of business, orienting to consider, besides profit, also social (for example, interests of workers and local communities) and environmental and climatic (use of energy and water, greenhouse gas emissions) aspects.

Thus, sustainability is characterized by a long-term focus and economic, social and environmental benefits for society, namely - climate neutrality, circular economy (closed cycle economy based on renewable resources, concern about environmental destruction, so as not to have to compensate for the damage), social responsibility of producers, and food safety.

An environmentally friendly/organic product meets strict in-depth environmental requirements, but not all of the requirements for sustainable food (apart from environmental ones - also social and climatic ones). The product may be environmentally friendly, but if much energy is spent during its life cycle (from production to consumption), large amounts of greenhouse gases are released into the environment, including carbon CO_2 (climate aspect), child labor is used, local women are released (social aspect), then such a product is not sustainable. For example, beef produced in compliance with all established requirements is recognized as an environmentally friendly product, but this product is not sustainable because it does not meet environmental and climatic requirements (involves energy-consuming and carbon-polluting production).

A sustainable product may meet slightly lighter environmental requirements than an environmentally friendly product, in particular as to the use of fertilizers (Box 1). While the production of environmentally friendly products is subject to a strict requirement - the refusal to use GMOs (as well as chemically synthesized substances, hormones, and antibiotics), for sustainable products, this criterion has not yet been formulated. The Farm to Fork Strategy only states that the EC will explore the potential of new genomic methods to increase sustainability in the food supply chain to better protect plants from pests and diseases.

Box 1

Example of the inconsistency of certification of sustainable and organic foods

The management of Ritter Sport company decided to abandon organic business in favor of sustainable business. 3.5 thousand farmers from Nicaragua (who supplied cocoa to the company for chocolate production since 1990) were required to obtain UTZ or Fair Trade certificates (globally known certificates for sustainable agriculture). Only in the presence of such certificates the company will pay a 10% surcharge to the purchase price of cocoa beans, although farmers already had an organic certificate (biocertificate) and by 2017 received a 10% organic premium. The management justified this policy of the company by emphasizing the importance of sustainability and social guarantees and the abandonment of organic production (sales of organic chocolate significantly decreased) [13]. By the way, these UTZs or Fair Trade certificates allow the use of chemical fertilizers.

One can mention the following sustainable and non-sustainable foods. Examples of non-sustainable products include, in particular, red meat (the Strategy "From Farm to Fork" notes the need to reduce its consumption), which includes beef, pork, lamb,

goat, horse, and some parts of chicken, such as thighs. and shins. At the same time, red meat is classified as a non-sustainable product largely due to negative environmental aspects (and not only in terms of human health) - high consumption of energy, water and significant emissions of greenhouse gases, including methane, in the cultivation of relevant agricultural animals. Instead, it is advisable to increase the consumption of fruits, vegetables, cereals, legumes, nuts as more sustainable products (specified in the F2F Strategy, in the Code of Conduct for responsible business in the field of food and marketing practices).

The European Union promotes rigorous and sound systems for certification and labeling of food sustainability; in the Strategy "From Farm to Fork", paragraph 2.4 "Promotion of sustainable consumption" provides for the harmonization of voluntary green claims and the creation of a framework for sustainable labeling. In order to increase the standards of sustainable development, the methods of calculating the ecological footprint are being improved (paragraph 4. "Promoting the global transition"). This indicator contributes to the assessment of the sustainability of agri-food and food systems. Over time, EU legislation can be expected to establish appropriate rules that will establish general rules governing the sustainability of food.

Experience in voluntary certification of sustainable products

The sustainability of food products is increasingly taken into account by consumers in their choice, and therefore manufacturers and retailer chains are increasingly basing their marketing on sustainability (Fig. 1). Still, markets with Voluntary Sustainability Standards remain niche markets. And over time, according to EU statements, sustainable products should become the mainstream.

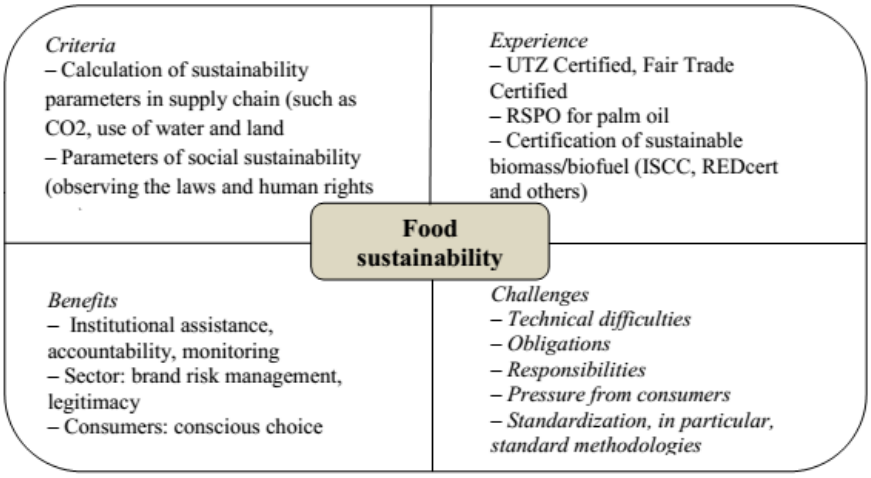

Figure 1. Food sustainability certification: criteria, challenges and benefits

Source: compiled by the author.

There are a few voluntary certifications of fair trade, and because such trade policy promotes environmentally sound production methods and ethical working conditions for farmers and workers, they are classified as food sustainability certifications. For example, UTZ Certified is the program and mark for sustainable agriculture in the

world, and the relevant certification authentificates that the production and trade of coffee, tea, cocoa, hazelnuts meet the standards of the workers' welfare (comply with national labor laws and the International Labor Organization convention, do not use child labor, employees have a clear work schedule, housing, access to clean water, and medical care) and environmental protection (less water is consumed, no trees are cut down, and, if possible, environmental energy sources are used). In addition, the processes are transparent and traceable (in particular, on the relevant sites by entering the date of manufacture one can find out from which country and on which plantation the coffee beans were grown). Fair Trade certification focuses on the protection of farmers and agricultural workers, especially in the developing countries.

The Round Table on Sustainable Palm Oil Production (RSPO) seeks to control the production and use of this common but controversial food ingredient, requiring full disclosure of supply chains to monitor the progress in attaining the sustainability of palm oil sources.

National food sustainability certification programs are being actively disseminated. For example, the experience of the United States and Canada on the certification of soybean sustainability is given is presented (Box 2).

Box 2

Countries implement soybean sustainability certification programs, including for placement in the EU market

In January 2021, the American Joint Soybean Council announced a pilot program "Sustainable Soybean Growing in the United States." On the label of soy products (beverages, bars, protein powders) an appropriate sign will be placed to certify compliance with the following requirements:

- grown in the USA;
- meets environmental standards;
- strongly eroded soils and wetlands are protected during cultivation;
- grown on family farms with responsible work practices.

The current "Soybean Sustainability Protocol in the United States" includes certification and audit of the farms, which is required to sell soybeans for biofuels on the European market.

Canada is implementing a program to certify the sustainability of soybean production for sale as a feed material to the EU. In general, Canada's grain sector is developing a voluntary Code of Conduct "Responsible Grain" that will apply to the farm as a whole (not just to the product).

It is important for Ukrainian farmers who export soybeans to the EU as raw materials for biofuels and for feed purposes to keep in mind that European requirements for sustainable production are becoming stricter. The Farm to Fork Strategy outlines the EU's desire to reduce the dependence on critical feed materials, in particular, soybeans grown on degraded land. As to the use of crops for biofuels, the EU has a legal provision to control the actual GHG emissions during their life cycle (growing, harvesting, drying, storage, shipment) and to produce the established reporting. The certification of the sustainability of biofuels is regulated by Directive 2009/28/EU on the promotion of the use of energy from renewable sources (established criteria for the sustainability of biofuels, control over their observance, and calculation of greenhouse gas emissions). The new EU Directive 2018/2001 entered into force in 2021, and presently the emission limits are being tightened.

Environmental footprint of agri-food products

Within the preparation of projects to establish a standard evaluation methodology, the EC has placed for public discussion (in July-August 2020) an initiative on the ecological footprint of agri-food products. This initiative complies with the context of creating a harmonized basis for the sustainability of goods, services and business models to reduce the environmental footprint and contribute to the EU's climate neutrality [14]. Methods are being developed to support companies that already comply with the environmental requirements for their products; such companies must have guarantees for fair competition in the EU green market. This also applies to companies from other countries that export their products to the EU.

The EU is creating a harmonized methodology for life cycle based comparative calculation of the ecological footprint (in particular, of the product (Product Environmental Footprint Category Rules, PEFCR) and the sector/industry (Organization Environmental Footprint Sector Rules, OEFSR)) and the relevant legal framework. Coordination will save costs for governments and the private sector (because businesses that have already made their green claims actually had to use two or more methods). However, if the introduction of the officially recognized eco-label (ISO 14024 type 1) becomes mandatory, additional costs will be possible for those countries that do not yet apply such schemes.

The initiative states that the agricultural sector should take into account the lessons learned from the sustainability instruments developed by the EU's together with other countries (Cocoa Sustainability Standards, Voluntary Partnership Agreements under Forest Law, and Management and Trade Action Plan).

The environmental footprint characterizes the impact of food consumed (by a group of people, one person, country, or the world's population), expressed in the area of productive land and the amount of water resources needed for the production of their food and disposal of the resulting waste [15] (Box 3). Also gained weight the calculation of the carbon footprint (Box 4) and consideration of food miles (the distance covered by the food product on the way to consumer) as components of the ecological footprint.

***Box** 3*

Regarding the essence and trends of the agri-food environmental footprint

The environmental footprint of food is primarily considered as the negative effects of deforestation for the use of vacated land for agriculture, changes in land use, feed production, use of agrochemicals, and emissions of greenhouse gases and other pollutants in the course of food production.

The coefficient of land footprint is expressed in hectares of used land, water footprint - in cubic meters of water used, carbon footprint – in emissions in tons of carbon equivalent, with food miles taken into account. Calculating environmental footprint indicators throughout the supply chain can be technically difficult, in particular, for bulk materials and processed foods.

Trends in environmental footprint indicators over a period of time demonstrate how the transition to a sustainable food system is implemented (whether improvement or degradation takes place). Increased efficiency and restoration work on land resources will, over time, reduce the environmental footprint, while land degradation will lead to the need to use new land.

These are a few figures reflecting the environmental footprint of food on a global scale. According to FAO, agriculture occupies 40% of the world's land, uses 70% of global water use,

generates more than 25% of global greenhouse gas emissions, primarily through deforestation to release land for agricultural use, for fertilizer use, and for livestock development. Experts argue that in the period 2010-2050, as a result of expected changes in population number and income growth, the impact of the food system on the environment may increase by 50-90% and in the absence of technological change, this impact may reach levels beyond the safe existence of humanity [16]. Thus, the possibility of ensuring food sustainability is primarily associated with the modernization of agricultural production.

It is obvious that the price for food products will be indexed taking into account the environmental footprint (the higher it is, the higher the price) and general unsustainability of products. For example, taking into account the environmental footprint, the price for meat and dairy and other highly processed foods, according to researchers, will increase 2-3 times. However, the purchasing power of the population will not decrease due to lower prices for sustainable food, and private and public funds will be saved due to the health benefits and improved environment.

Box 4

Carbon footprint marking

In 2009, 34 carbon footprint (Carbon footprint) labeling schemes were used in the world [17]. In particular, the Publicly Available Specifications (PAS 2050) for the method of measuring greenhouse gas emissions, developed by the British Standards Institution (BSI - an ISO member from the UK), are more relevant to food products, as significant amounts of gases (including carbon dioxide CO_2) are emitted during their production.

Most carbon footprint markings are voluntary private standards. Over time, initiatives as to this labelling began to be developed by the governments of Great Britain, Japan, and France. In 2010, France drafted a law, the so-called Grenelle 2 Law, on new labeling, and in 2011 a pilot draft of new standards for building materials was initiated. Countries (Korea, Argentina) expressed concern about the potential negative impact of this law on international trade, as taking into account carbon emission will increase exporters' costs.

Some challenges for Ukrainian EU bound exports with strengthening requirements for the sustainability for agri-food products

The requirement of EGD to attain climate neutrality in Europe as one of the sustainability criteria *may lead to reduced exports of maize and oilseeds for biofuel production* due to high levels of greenhouse gas emissions during their life cycle (Box 5). According to experts, disregarding the urgent task of reducing GHG emissions can "stop almost all rapeseed exports and over a half of corn exports to the EU premium market" [18]. In Ukraine, only in January 2021, the introduction began of a system of monitoring, accounting and verification of greenhouse gas emissions, which will cover the activities of all economic entities, including agricultural enterprises [19]. It is necessary to develop a strategy to reduce GHG emissions from growing crops; to prepare reports on emissions during their life cycle; and to receive recognition by the European Commission of these indicators as indicative for Ukrainian raw materials used for the production of biofuels. Competing countries are already working proactively, in particular, rapeseed exporters from Canada and Australia two years ago provided GHG emissions estimates, which are now approved by the European Commission.

Box 5

High levels of greenhouse gas emissions from rapeseed and corn production in Ukraine

Pilot calculations based on data from Ukrainian farms in 2017 showed that GHG emissions from rapeseed production are very high to meet the targets set for their reduction. And in the production of corn, achieving the goals of reducing GHG emissions by 35% and 50% (was the EU target in 2017), although possible, but at 60% (was the target in 2018) is problematic [20]. Without actively working on reducing high levels of GHG emissions in crop production, compliance with certain levels in the context of climate neutrality will not be attained. At the same time, the largest sources of GHG emissions in the cultivation of these crops are machinery (diesel fuel), the use of fertilizers (mainly nitrogen-containing ones) and pesticides.

Although the list of EU imported products subject to the border carbon adjustment mechanism (CBAM; also called the transboundary carbon tax/duty initiated and implemented by the EU in the context of decarburization of economy) does not yet include agri-food, it is possible to expect it will be subject to this mechanism, since agriculture belongs to the top ten sectors, which account for about 80% of global GHG emissions.

Another challenge for Ukraine's EU bound agri-food products may be the requirement *to comply with strict EU regulations on maximum residue levels of pesticides and antimicrobials*, given the reduction by half by 2030 in the use of agricultural pesticides and antimicrobials in agriculture declared in the Farm to Fork Strategy. Good agricultural practice (clear managerial principles for obtaining safe food products taking into account economic, social and environmental aspects), which is the basis of EU regulation on these contaminants in products, has not developed much in Ukraine. It should not be cause for any complacency that "the average level of use of chemical plant protection products in Ukrainian fields is several times lower than in the EU" [21], because it does not actually reflect the local contamination of plant products with these means. Although by the use of pesticides (according to statistics, 1.3 kg/ha, which is half the EU level) Ukraine corresponds to the EU level planned to be reached by 2030, their volumes have so far increased; about a third of used pesticide preparations contained particularly dangerous pesticides (2019), while 20% of the market was illegal imports [22].

According to experts, Ukraine so far lacks a proper control of livestock products, although the risk of products exported by Ukrainian companies to the EU is slightly lower, because the exporting producers are controlled not only by Ukrainian experts but also by EU auditors [23]. A technical difficulty consists in carrying out analyzes on compliance with a number of EU requirements for maximum permitted levels of veterinary medicinal products. Compliance with the strengthened European requirements for the welfare of farm animals (animal housing in accordance with their physiological and behavioral needs, standards of slaughter and transportation) will require Ukrainian farmers to carry out appropriate re-equipment and modernization. The EU will revise the legislation (the current minimum standards; by the way, similar requirements in Ukraine are stated in the Order "On approval of requirements for the welfare of farm animals during their keeping" of 08.02.2021 No 224) and provides for the labeling of "animal welfare" to improve the products' quality.

Challenges for exports as to food sustainability are the visible part of the "iceberg", but the importance of sustainable products for domestic consumption should be emphasized too. After all, the above mentioned components of food sustainability (food, climate, environmental and social ones) primarily have a local impact - on the health and living environment of Ukrainians and social harmony.

Conclusions

The changes stipulated in the framework of the European Green Deal are largely perceived as a shock to agricultural policy and practice. They will apply to a much wider range of countries than just the EU member states, and through the EU agri-food supply chains - to all countries, including Ukraine. Thus, the European Union seeks to internalize the EGD by promoting the integration of its legal provisions into the national policies and economic activities of its countries.

The European Farm to Fork Strategy, in the context of the green course, positions product sustainability as the latest guideline for scientists, legislators and practitioners. The goal is for the food system and European food to become global standards of sustainable development, and for the EC to establish a legislative framework by the end of 2023. Sustainable food defined by a range of food, climate, environmental and social aspects, is thus broader in content than environmental/organic food, because in addition to environmental, it includes social (in particular, respect for workers' rights will be a mandatory regulation in the EU from 2025 in accordance with the updated Common Agricultural Policy) and climate characteristics (reduction of greenhouse gas emissions, which complies with the target of decarburization and climate neutrality of the EGD).

The market of agri-food products is increasingly differentiated based on the indicators of sustainability in their production and supply, appropriate certification and labeling. Producers use this as a market advantage, and governments use it to attain the goals of sustainable development policy. The updating of sustainability indicators by the European Union (and other countries) causes concern among third countries due to the need for additional costs, but the "rules of the game" as to food sustainability are becoming clearer.

The EU will monitor more closely whether incoming imports are produced legally and sustainably (for example, as to decarburization, preventing land degradation and deforestation, and loss of biodiversity, and respect for workers' rights) and with the same level of compliance with sustainability requirements as the level observed by the EU producers.

The declared EGD requirements create challenges for Ukrainian exports, in particular, as to reducing the export of crops for biofuels (corn and rapeseed) due to high levels of greenhouse gas emissions in their production, which does not "fit" into the priority goal of the EGD, which is the decarburization and climate neutrality of Europe. The requirements for monitoring the maximum permissible levels of pesticide residues in crop products are being tightened, and so are the requirements for animal products as to antimicrobial drug residues and animal welfare during keeping, slaughter and transportation, given the planned halving of the use of above mentioned drugs in EU by 2030.

In order for the EU initiative on a sustainable food system and sustainable food products not to become a trade barrier for Ukrainian exports, this country's agriculture should reorient to sustainable agri-food production, which would ensure proper sustainability of products. With the availability of sustainability standards agreed with the EU, and the proper functioning of the jointly developed tools, Ukraine has an opportunity to become a licensed supplier of sustainable food to the European market.

Thus, sustainable foods acquire contents and definition as an economic category (in terms of value, inclusion in the tax system, etc.), so the research on this category of products initiated by the author should be continued to provide scientific support to make them the most widespread in the market.

References

1. Batini, N. (2019, December). What go around come around. The rational change in our approaches in agriculture and nutrition can have a huge impact on our planet. *Finansy i razvitie – Finance and development*. Retrieved from https://www.imf.org/external/russian/pubs/ft/fandd/2019/12/pdf/farming-food-and-climate-change-batini.pdf [in Russian].

2. High Level Expert Group (2017). Nutrition and Food Systems. Report of the Group of High Level Committee on World Food Security. Rome. Retrieved from http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-12_RU.pdf [in Russian].

3. Syed, Z. (2020, February 7). What is Sustainable Food? Retrieved from https://www.thedailymeal.com/healthy-eating/what-sustainable-food-and-why-and-how-should-you-cook-it-slideshow

4. Vermeir, I. et al. Environmentally Sustainable Food Consumption: A Review and Research Agenda From a Goal-Directed Perspective. Retrieved from https://www.frontiersin.org/articles/520238

5. Meredith, J. (2020, December 22). Most Sustainable Foods and How to Eat Sustainably. Retrieved from https://tofubud.com/blogs/tips/most-sustainable-foods

6. Finney, C. (2021, June 29). Eat this to save the world! The most sustainable foods - from seaweed to venison. Retrieved from https://www.theguardian.com/lifeandstyle/2021/jun/29/eat-this-to-save-the-world-the-most-sustainable-foods-from-seaweed-to-venison

7. What is Sustainable Food? A Guide to Eating More Sustainably (2019, April 3). Retrieved from https://nctce.com.au/what-is-sustainable-food-a-guide-to-eating-more-sustainably/

8. FAO (2021). Vegetables and fruits - the basis of your diet. International Year of Vegetables and Fruits. Reference Document. Rome. Retrieved from http://www.fao.org/3/cb2395ru/CB2395RU.pdf [in Russian].

9. Portil'o, H. Sustainable nutrition. Retrieved from https://www.renovablesverdes.com/ru/alimentacion-sostenible/ [in Russian].

10. Paramonova, N. Insect hamburgers and tea became the most sustainable 2018 products. Retrieved from http://look.bio/post/show/625 [in Russian].

11. Communication from the Commission (2020, May 20). A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system. COM(2020) 381 final. Brussels. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0381
12. European Green Course: Steel Investing (2021, April 21). European Commission has adopted an ambitious and comprehensive package of measures to improve sustainable investment in EU countries.Retrieved from https://ua-energy.org/uk/posts/yezk-stale-investuvannia [in Ukrainian].
13. "Ritter Sport": stability more important than organic? Retrieved from http://look.bio/post/show/516 [in Russian].
14. Inception impact assessment - Ares (2020). Retrieved from https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12511-Environmental-performance-of-products-&-businesses-substantiating-claims_en
15. High Level Expert Group (2019). Agroecological and other innovative approaches in support of sustainable agriculture and sustainable food systems that increase the level of food security and nutrition quality. Heavy report. Summary and recommendations. Retrieved from http://www.fao.org/3/ca5499ru/CA5499RU.pdf [in Russian].
16. Springmann, M., Clark, M. et al. (2018).Options for keeping the food system within environmental limits. *Nature*, 562(7728), 519-525. Retrieved from https://www.leap.ox.ac.uk/article/options-for-keeping-the-food-system-within-environmental-limits
17. Baddely, Sh., Wolfe, R. Private standards as NTBs: the case of carbon labels. Retrieved from https://www.wto.org/english/res_e/publications_e/wtr12_forum_e/article_e.htm?art=2
18. Ukraine can lose rape and corn market in the EU - expert. Retrieved from https://agravery.com/uk/posts/show/ukraina-moze-vtratiti-rinok-ripaku-ta-kukurudzi-v-es-ekspert [in Ukrainian].
19. Law of Ukraine "On the Principles of Monitoring, Reporting and Verification of Greenhouse Gas Emissions" from 2019 No. 377. Retrieved from https://zakon.rada.gov.ua/laws/show/377-20#Text [in Ukrainian].
20. GIZ Project. GHG emissions from biofuel raw materials in Ukraine. Retrieved from http://www.ier.com.ua/files/Projects/2011/1_Biomass/GHG_emissions_from rapeseed_and_corn_ua.pdf [in Ukrainian].
21. Taras Kachka about Green Deal. Ukraine must talk to the EU on competitive advantages (2020, October 8). Retrieved from http://agroportal.ua/ua/publishing/lichnyi-vzglyad/taras-kachka-o-green-deal-ukraina-dolzhna-govorit-s-es-o-konkurentnykh-preimushchestvakh/ [in Ukrainian].
22. Introduction of European control over pesticides in Ukraine (2016, December 13). Retrieved from https://propozitsiya.com/vvedenie-evropeyskogo-kontrolya-za-pesticidami-v-ukraine [in Russian].
23. Abuse of antibiotics in livestock: a mortal threat to a person (2019, December11). Retrieved from https://www.dw.com/uk/ [in Ukrainian].

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АКТУАЛІЗАЦІЯ СТАЛИХ АГРОПРОДОВОЛЬЧИХ ПРОДУКТІВ У ЄВРОСОЮЗІ: КОНЦЕПТ І ВИКЛИКИ

Акцентовано на тому, що Україні як активному експортеру агропродовольчих продуктів і сільськогосподарської сировини на європейський ринок потрібно врахувати новий підхід ЄС до категоризації продуктів на основі показників їх сталості. Європейська Комісія сформує законодавчу пропозицію щодо рамки сталої продовольчої системи, загальні вимоги до сталих продуктів харчування, їх сертифікації та маркування за показниками сталості до кінця 2023 р. З наявних нині документів ЄС і насамперед Стратегії "Від ферми до виделки" у рамках Європейського зеленого курсу узагальнено основні принципи і вимоги до sustainable foods – сталих продуктів харчування, які стануть нормою для всіх розміщених на ринку ЄС продуктів харчування відповідно до суспільних інтересів.

Обґрунтовано, що доволі нове на вітчизняних теренах поняття "сталий агропродовольчий продукт" за змістом ширше, ніж поняття "екологічний продукт", "органічний продукт", оскільки екологічність є однією з характеристик сталості, поряд із кліматичною та соціальною. Систематизовано основні відмінності сталих та екологічних/органічних продуктів. Чільне місце у статті приділено кліматичному критерію сталості, зокрема, скороченню обсягів викидів парникових газів при виробництві та постачанні агропродовольства (розкриттю вуглецевого сліду), що відповідає цільовій установці декарбонізації та досягнення кліматичної нейтральності Європи.

У контексті створення узгодженої методології ЄС щодо сталості продуктів розглянуто зміст і складові (використана площа земель для виробництва та утилізації, обсяг водних ресурсів, обсяг викидів вуглекислого газу CO_2, харчові милі) екологічного сліду. Наведено досвід добровільної сертифікації сталості продуктів харчування у світі, національні програми сертифікації сталості харчових продуктів, зокрема сої у США та Канаді, що засвідчує дедалі більшу диференціацію ринку продуктів і просування до офіційної сертифікації та маркування сталих харчових продуктів.

Обґрунтовано виклики для українського експорту в ЄС за посилення вимог до сталості агропродовольчих продуктів, зокрема, високі рівні викидів парникових газів при вирощуванні сільськогосподарських культур (кукурудзи та олійних) можуть стати причиною обмеження їх експорту як сировини для виробництва біопалива. Очікується жорсткіше посилення відстеження залишків хімічних пестицидів і антимікробних препаратів у експортованій продукції, оскільки

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використання цих небезпечних препаратів у ЄС до 2030 року має скоротитися на 50%.

Виявлена асиметричність поширення поняття "сталі продукти харчування" у зарубіжних (доволі поширене) та вітчизняних (майже відсутнє) наукових і публіцистичних джерелах може свідчити і про непідготовленість вітчизняних сільськогосподарських суб'єктів до вчасної переорієнтації на виробництво та експорт у ЄС сталих агропродовольчих продуктів. Очевидно, що виграють країни, які на випередження модернізують національну агропродовольчу систему в контексті забезпечення сталості продуктів.

Ключові слова: *сталі агропродовольчі продукти, екологічні продукти, Стратегія "Від ферми до виделки", Європейський зелений курс, декарбонізація, сертифікація сталості продуктів харчування*