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## Sustainable Development: Strengthening of Food Security in EU Countries

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**Abstract.** The issue of food security is relevant for all countries, but it does not have a universal solution. In particular, this is confirmed by the countries of the European Union, which, despite a common food policy, demonstrate different levels of food security. Using their example, this study aims to develop recommendations for improving food security in the context of sustainable development. The study is based on quantitative approaches and analyses the main food security indicators of the Czech Republic, Germany, the Netherlands, and Norway, based on data from the Food and Agriculture Organisation of the United Nations. This study proves the need for more detailed development of individual development strategies in the field of food security in the context of sustainable development. The main differences between the food systems of the Czech Republic, Germany, the Netherlands, and Norway in terms of average food energy needs, GDP per capita, the number of obese adults and food security per capita were identified. There have also been changes in the food security systems of the Netherlands and Norway, which have reduced the volatility of food supply per capita in 2010-2020. EU countries need to stabilise volatility to increase food security. EU Member States' attempts to implement new food security policies must consider the local specificities of food systems. Despite the common problems of waste, nutrition of different social groups, obesity, equal access to food, sustainable production, implementation of research and development of the food security programme, the degree of these challenges varies. The practical value of the study lies in the empirical assessment of the state of food security on the example of the Czech Republic, Germany, the Netherlands, and Norway in 2000-2020, which proves the need for differentiation in the common food security policy

**Keywords:** Common Agricultural Policy (CAP), sustainable development, sustainable food system, diets, agriculture



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## INTRODUCTION

Food security enhancement is a principal issue for countries with different socio-economic development. In developed countries, the main problem is healthy food, environmental friendliness, and the organic market products development. In developing countries, the main problem is food safety, accessibility, especially for citizens with low income. In this context, sustainable development of the agricultural sector plays a strategic role in improving food safety, access, quality, environmental friendliness [1]. Food security is a global challenge even in the most developed countries. The dynamic food system globalisation is accompanied by the increasing complexity of trade links, climate change, transformational processes of production, determination of the availability of food for different countries [2].

Food security is a difficult problem to solve because it is not limited geographically or socially within a single demographic, educational, income group of people. Approximately 690 million people (381 million in Asia and 250 million in Africa), representing 8.9% of the world's population, suffer from hunger while having sufficient food. One in ten people on the planet is food insecure, and 2 billion people do not have regular access to ample, safe, and nutritious food [3]. This paradox of abundant but unequal access to food for different population segments makes food security an urgent issue. Governments must be guided towards balance through sustainable food security strategies that address growing food insecurity due to multiple wastes in some countries and ever-increasing inaccessibility, food scarcity in others. Current projections imply a 70% increase in global food production by 2050 with overexploited, limited infrastructure [4].

EU food security policy has been implemented since the late 1960s. Common Agricultural Policy (CAP), EU bioenergy policy, trade policy, development aid and assistance policy, fisheries policy, macroeconomic policy, and immigration policy are closely linked as components of EU food security [5]. Experts and international organisations have criticised the lack of coherence of these components of EU policy and the inconsistency of their impact on developing countries. For example, the EU's stabilisation of domestic agricultural markets through high tariffs and export subsidies has harmed developing countries. The increase in taxes has led to the dumping of surplus production of the agrarian sector, lower market prices, and destabilisation of global markets.

Local production in developing countries began to decline. It points to the other side of CAP policies that exploded EU development policy, the goal of which was to create local food supply chains. EU policies on renewable energy (biofuels) and trade (tariffs, restrictive import standards) have also been criticised due to incoherence with EU measures to combat nutrition and food security problems. Therewith, EU food security policies are constantly changing, responding to global challenges

regarding sustainable development. Food aid policies, for example, have transformed significantly in recent decades.

The EU provides the most poverty-stricken countries with development-oriented trade preferences (e.g., the Everything but Arms initiative), the purpose of which is to help producers in developing countries. CAP policies have also changed dramatically since the early 1990s. In addition, the "food crisis" of the late 2000s confirmed that the impact of food prices on food security is complex: the consequences are often opposite for consumers and producers in poverty-stricken countries. The new challenge for EU food security policy is the development of the non-tariff barrier to trade through the EU food standards' implementation. It restricts small farmers' access to markets in developed countries, worsening their food security.

*The purpose of this paper is to develop recommendations to improve food security under sustainable development, using EU countries as an example.*

## LITERATURE REVIEW

The first phase of the food security policy development covers the period between 1958 and 1992. Its primary goal was to ensure food safety, increase production and create "European agricultural prosperity" by protecting farmers and consumers in a market economy. Regulated prices and the elimination of domestic trade barriers were defined as the main results of the policy. Food security was viewed as food availability [6]. The regulatory regime focused on creating a single market for agricultural products, and policy measures focused on the agricultural modernisation paradigm to increase productivity. The environmental component was not considered in this policy [7].

The second phase (1992-2000) was characterised by the European agriculture identification within the free trade framework. Environmental concerns about food quality were integrated into agricultural policy. Policy measures were aimed at encouraging farmers to use environmentally friendly production methods. Meanwhile, EU policy has been an opponent of trade liberalisation for face beef and genetically modified organisms (GMOs) [8]. EU's local products were protected by a regulatory framework.

The third phase (2000-2013) emphasised on high food quality standards, safety, sustainable agriculture, and EU rural development. The 1999 CAP reform was enshrined in the European Commission's "Agenda 2000" strategy document, which outlines rural development policies, defines subsidies and policy instruments, and recognises the multiple functions of agriculture [9; 10]. The UN embodies the broad concept of sustainable development [11].

Since 1999, food security policy has been characterised by two contradictory directions: the first, aimed at solving problems of competitiveness in the market, the second – the development of rural areas of the

multifunctional role of agriculture. The latter included the involvement of regional governments and dynamic funding under the EU cohesion policy. Integration with other policies in various areas involved the implementation of the “cross-compliance” principle [12], according to which farmers are eligible for CAP financial support if they comply with social welfare, environmental, and food safety regulations of animal origin.

Subsequent phases of EU food security policy development (2013-2019) suggested CAP reforms in 2013 under the impact of the 2007-2008 food crisis when global food prices began to rise sharply. Accordingly, food price volatility as a component of food security has been actively discussed in the academic literature [13].

However, food security is mainly interpreted as a problem of food availability, maintaining high levels of production, and supporting farmers [14; 15]. The need to align food production with sustainability has given rise to the concept of sustainable intensification [16]. EU policies, therefore, include greening and the introduction of environmental measures, namely payments for clean food production methods [17].

The new phase of food security policy is characterised by political problems within Europe, Brexit, the awakening of nationalism, inequality problems, unequal access to food, social problems, and migration. In the last decade, attention has shifted evenly from sustainable agriculture to the broader food system. New food security policies are paying more attention to social issues under sustainable development context, as prescribed in the New European Consensus on development of the European Council in particular, which has given rise to new discussions on policy integration [18; 19].

These discussions cover malnutrition, waste, nutrition of different social groups, obesity, equal access to natural resources, ensuring sustainable management of production processes, implementation of food security research and development programs [1; 20; 21]. McCarthy et al. [4] identified 5 weaknesses in food system governance that affect food security: mismanaged cross-scale, geopolitical, and sectoral interdependencies, unequal food rights, power imbalances, and conflicting values. As J.J. Candel and R. Biesbroek [6] note, at the European Union (EU) level, awareness of various food security issues has led to an awareness of the need for integrated approaches to food security governance.

The political integration of food security strands, according to different concerns, has been slow and gradual, including its new dimensions (food safety, food availability). Therewith, there are differences between policies across the EU, and efforts to integrate these policies seem to have stopped in recent years [6]. J.C. Bureau and J. Swinnen [22] argue for the complex impact of EU countries' reformed policies on agriculture, food and food standards, bioenergy, and trade on global food security.

The FOOD2030 Policy Framework for Research

and Innovation suggests four priority areas for research and innovation: “nutrition for sustainable and healthy diets; climate-smart and environmentally sustainable food systems; circularity and resource efficiency of food systems; and innovation and empowerment of communities” [5]. However, significant changes in food security policy are currently lacking.

The European Commission's Common Agricultural Policy (CAP) proposal for the post-2020 period provides opportunities for greater sustainability. However, it also allows Member States to choose how to implement their security policies [23].

Thus, EU food security includes aspects of healthy diets, food safety, availability, affordability, sustainable use, and sustainability of production. These aspects of secure food systems are not only compatible in the context of outcomes and important sustainability goals for food systems but should theoretically complement each other in terms of synergy and impact on achieving high bone of population living [24].

## MATERIALS AND METHODS

This research is based on a quantitative methodology of the principal food security indicators' analysis of the Czech Republic, Germany, the Netherlands, and Norway as countries of different EU regions and different indicators of socio-economic development. The source database is the Food and Agriculture Organisation of the United Nations Database [25], which allows real-time selection of security indicators, namely:

1. Average dietary energy requirement (kcal/cap/day).
2. Gross domestic product per capita, PPP, dissemination (constant 2011 international \$).
3. Number of obese adults (18 years and older) (million).
4. Per capita food production variability (constant 2004-2006 thousand int\$ per capita).
5. Per capita food supply variability (kcal/cap/day).

They were selected based on their availability in the 2000-2020 database for all countries. The selection of indicators revealed a lack of disaggregated data on the availability, safety, and quality of food, health indicators, particularly in different age groups. It means that the sustainability state of food security cannot be assessed for all EU countries, which is a considerable limitation for this study. The lack of detailed data renders the analysis of the actual food security issues impossible.

## RESULTS AND DISCUSSION

Under the sustainable development context, the food security goals to be achieved by 2030 are defined as follows:

- 1) to provide all of the world's population with safe and sufficient food by 2030, to completely mitigate famine;
- 2) to fully eliminate all forms of malnutrition by 2030, including malnutrition in children under the age of five, to meet the needs of pregnant women, adolescents, lactating women, and the elderly;

3) to double agricultural productivity, the income of small agricultural producers (fishers, pastoralists, farmers) through equal access to land, inputs, financial services, knowledge and information, markets for surplus-value, increased employment of non-agricultural production sector;

4) to ensure the sustainability of the food production system, implementation of sustainable agricultural production methods to maintain ecosystems, strengthening adaptation, climate change, drought, extreme weather conditions, gradual improvement of soil quality;

5) to support genetic diversity in seeds, cultivated plants, farm animals, especially through well managed and diversified seed and plant banks at different levels (international, national, regional), promoting equitable access and benefit-sharing of genetic resources and associated knowledge;

6) to increase investments through enhanced international cooperation mechanisms in rural infrastructure, agricultural research and service delivery, technology development, and plant and livestock gene banks to raise levels of agricultural production in developing countries, specifically in least developed countries;

7) to introduce measures for ensuring the proper

functioning of markets for food products and derivatives, facilitating timely access to market information, including food stocks, to limit excessive food price volatility.

Food security indicator analysis demonstrates approximately average energy requirement for food in different EU countries: the Czech Republic had 2,530.5 kcal/cap/day, Germany had 2,543.0 kcal/cap/day, the Netherlands had 2,576.83 kcal/cap/day, Norway had 2,549.5 kcal/cap/day (Tables 1-4). Gross domestic product per capita at purchasing power parity (PPP) was highest in Norway at \$63,753 per capita, compared with \$54,801 per capita in the Netherlands, \$5,210 per capita in Germany, and \$384 per capita in the Czech Republic. Therewith, the Czech Republic had the highest growth rate, averaging 2.2% annually from 2000 to 2020, while Germany had 0.9% annually, the Netherlands – 0.69% annually, and Norway – 0.55% each year. It means an income sustainability issue, which is ensured in the Czech Republic due to the economic growth potential and exists to some extent in the most developed countries with a high level of prosperity (Table 1). For the Czech Republic, this trend means improving the population's quality of life and, thereby, food security.

**Table 1.** Food security indicators in the Czech Republic, 2000-2020

Indicator of food security	Average			Standard deviation
	2000-2010	2010-2015	2015-2020	2000-2020
Average dietary energy requirement (kcal/cap/day)	2,566.91	2,542.33	2,530.50	17.89
Gross domestic product per capita, PPP, dissemination (constant 2011 international \$)	30,038.26	34,231.67	38,492.82	4601.56
Number of obese adults (18 years and older) (million)	1.87	2.15	2.25	0.19
Per capita food production variability (constant 2004-2006 thousand \$ per capita)	16.58	14.62	15.17	4.67
Per capita food supply variability (kcal/cap/day)	69.09	17.00	59.40	36.29

**Source:** Food and Agriculture Organisation of United Nations Database [25]

The number of obese adults (18 years and older) is a crucial problem in Germany, where the rate was 15.2 million on average for 2015-2020, with an annual standard deviation of 1.38 million (Table 2). Overall, this rate increased substantially from 12.22 million in

2000-2010 to 15.2 million in 2015-2020. By comparison, in the Czech Republic, the rate was 2.25 million, up from 1.87 million in 2000-2010; in the Netherlands, the average obesity rate was 2.75 million in 2015-2020; in Norway, it was less – 0.9 million on average in 2015-2020.

**Table 2.** Food security indicators in Germany, 2000-2020

Indicator of food security	Average			Standard deviation
	2000-2010	2010-2015	2015-2020	2000-2020
Average dietary energy requirement (kcal/cap/day)	2,548.18	2,553.00	2,543.00	5.93
Gross domestic product per capita, PPP, dissemination (constant 2011 international \$)	44,755.02	49,691.45	52,310.85	3,759.08
Number of obese adults (18 years and older) (million)	12.22	14.15	15.20	1.38
Per capita food production variability (constant 2004-2006 thousand \$ per capita)	12.18	6.75	8.13	3.41
Per capita food supply variability (kcal/cap/day)	33.27	27.67	26.00	10.25

**Source:** Food and Agriculture Organisation of United Nations Database [25]

The change in food production per capita (constant \$2004-2006 thousand per capita) fluctuated significantly in the Czech Republic, averaging \$16.58 thousand per capita in 2000-2010, \$14 thousand per capita in 2010-2015, and \$15.17 thousand per capita in 2015-2020. In Germany, the figure was \$12.18 thousand per person, \$6.75 thousand per person, and \$8.13 thousand per person, respectively, declining significantly from 2000-2010.

In the Netherlands, the figure was \$21.42 thousand per person, \$20.23 thousand per person, and \$18.3 thousand per person, according to a significant fluctuation from 2000 to 2020 and a non-significant decrease. In Norway, the figure was \$4.41 thousand per person, \$4.87 thousand per person, \$4.37 thousand per person, in line with a slight fluctuation of \$1.57 thousand over twenty years (Table 3).

**Table 3.** Food security indicators in Netherlands, 2000-2020

Indicator of food security	Average			Standard deviation
	2000-2010	2010-2015	2015-2020	2000-2020
Average dietary energy requirement (kcal/cap/day)	2,571.73	2,574.67	2,576.83	2.62
Gross domestic product per capita, PPP, dissemination (constant 2011 international \$)	50,081.69	52,214.75	54,801.68	2,732.84
Number of obese adults (18 years and older) (million)	1.96	2.50	2.75	0.36
Per capita food production variability (constant 2004-2006 thousand \$ per capita)	21.42	20.23	18.30	5.29
Per capita food supply variability (kcal/cap/day)	39.45	8.50	7.80	18.03

**Source:** Food and Agriculture Organisation of United Nations Database [25]

Food reserve change per capita increased significantly in the Czech Republic during 2015-2020 compared to 2010-2015, ranging from 59.4 kcal/cap/day and 14.62 kcal/cap/day, respectively. In Germany, the rate averaged 26 kcal/cap/day in 2015-2020, with a fluctuation of 10.25 kcal/cap/day over the twenty years. In the

Netherlands, the value decreased considerably between 2010 and 2020, compared to 39.45 kcal/cap/day during 2000-2010. In Norway, the figure had also seriously dropped to an average of 10.4 kcal/cap/day in 2015-2020 compared to 30.18 kcal/cap/day in 2000-2010.

**Table 4.** Food security indicators in Norway, 2000-2020

Indicator of Food Security	Average			Standard deviation
	2000-2010	2010-2015	2015-2020	2000-2020
Average dietary energy requirement (kcal/cap/day)	2,533.27	2,542.00	2,549.50	7.97
Gross domestic product per capita, PPP, dissemination (constant 2011 international \$)	60,773.43	61,959.65	63,753.73	2,151.91
Number of obese adults (18 years and older) (million)	0.65	0.85	0.90	0.13
Per capita food production variability (constant 2004-2006 thousand \$ per capita)	4.41	4.87	4.37	1.57
Per capita food supply variability (kcal/cap/day)	30.18	11.17	10.40	12.54

**Source:** Food and Agriculture Organisation of United Nations Database [25]

Thus, the food security indicators analysis demonstrates differences in various EU countries regarding its level, which indicates the unification of particular sustainable development goals in the accessibility, safety, and food quality context. At an elevated level of prosperity, the EU countries are characterised by different challenges in the food security field. For the Czech Republic, the biggest challenge is fluctuations in food production. For all countries, the main challenge can be seen as providing incentives for citizens to address obesity, which has worsened over the past twenty years, especially in

Germany, the Czech Republic, and the Netherlands, where a dynamically growing trend is observed.

This study proves the need for individual sustainable development strategies in the food security field. Similar to the findings of K. Pawlak and M. Kołodziejczak [1] regarding the differences in the level of food system security between regions, this paper identifies differences in the food systems of the Czech Republic, Germany, the Netherlands, and Norway. The need for stimulating investment in the infrastructure of the agricultural sector and investing in extension services for food buyers and

consumers are highlighted by K. Pawlak and M. Kołodziejczak [1] as key measures. This study focuses on the government information campaigns development for national citizens to spread awareness of the obesity problem. The availability of food in European countries due to high-income levels, steadily increasing between 2000 and 2020 in all countries, has exacerbated the problem of adult obesity. The latter has increased in all EU countries under study, with some differences in numbers.

The study also proves changes in food security in the Netherlands and Norway, which managed to achieve a reduction in per capita food supply volatility between 2010 and 2020 (by 31.65 and 19.78, respectively). In comparison, the Czech food system was characterised by an increase in supply volatility from 2015-2020, and the German food system achieved a reduction of 7.27 per capita volatility from 2010-2020 compared to 2000-2010. Thus, EU countries should stabilise the volatility to improve food security, as Norway has achieved, where volatility in food production and supply is stable. Over the past twenty years, the Norwegian food system has been characterised by stability in key security indicators: stable energy requirements for food, fixed GDP growth per capita, no significant increase in the number of obese people, a small-scale variation in food production, reduced volatility in per capita stocks. Despite various food security issues and policies to address them, some studies argue that no single policy solution should ensure sustainability in the future [4]. This study proves that more developed countries can better influence food challenges, while less developed countries (the Czech Republic) are less sustainable.

## CONCLUSIONS

The efforts of EU Member States' governments to integrate food security policies must consider the regional characteristics of food systems. Despite the common problems related to waste, nutrition of different social groups, obesity, equal access to food, ensuring sustainable management of production processes, implementation of research and development programmes in the food security field, the scale of these challenges is different. Furthermore, in times of economic crisis, food systems are characterised by various levels of resilience and volatility. While the Czech Republic has a higher level of volatility, Norway has a prominent level of food system sustainability. The food security policy should be aimed at individual challenges, depending on the regional social, economic, and environmental country development.

Notably, the goals for the proper provision of the planet's population with food and eradication of various malnutrition forms are slightly optimistic in view of the slow pace of solving food security problems. Therefore, these goals should be adjusted proceeding from regional statistics on these issues. It is advisable to define the purpose of creating an effective food distribution chain, considering regional characteristics of supply, accessibility to the food of different segments of the population, their actual needs per the state of health.

The achievement of the most sustainable global food security will require a holistic systems approach built on a combination of policy and technology reform that leverages existing systems combined with modern technology, methods, and best practices.

## REFERENCES

- [1] Pawlak, K., & Kołodziejczak, M. (2020). The role of agriculture in ensuring food security in developing countries: Considerations in the context of the problem of sustainable food production. *Sustainability*, 12(13), 5488.
- [2] Horn, B., Ferreira, C., & Kalantari, Z. (2022). Links between food trade, climate change and food security in developed countries: A case study of Sweden. *Ambio*, 51, 943-954. doi: 10.1007/s13280-021-01623-w.
- [3] United Nations Database. (n.d.). Retrieved from <https://www.un.org/sustainabledevelopment/hunger/>.
- [4] Mc Carthy, U., Uysal, I., Badia-Melis, R., Mercier, S., O'Donnell, C., & Ktenioudaki, A. (2018). Global food security – issues, challenges and technological solutions. *Trends in Food Science & Technology*, 77, 11-20.
- [5] Official Website of the European Union. (2017). Retrieved from [https://europa.eu/newsroom/events/harnessing-research-and-innovation-food-2030-science-policy-dialogue\\_en](https://europa.eu/newsroom/events/harnessing-research-and-innovation-food-2030-science-policy-dialogue_en).
- [6] Candel, J.J., & Biesbroek, R. (2018). Policy integration in the EU governance of global food security. *Food Security*, 10, 195-209.
- [7] Ackrill, R., Kay, A., & Morgan, W. (2008). The common agricultural policy and its reform: The problem of reconciling budget and trade concerns. *Canadian Journal of Agricultural Economics*, 56(4), 393-411.
- [8] Moyer, W., & Josling, T. (2017). *Agricultural policy reform: Politics and process in the EU and US in the 1990s*. London: Routledge.
- [9] Marsden, T., Banks, J., Renting, H., & van Der Ploeg, J.D. (2001). The road towards sustainable rural development: Issues of theory, policy and research practice. *Journal of Environmental Policy & Planning*, 3(2), 75-83.
- [10] Moragues-Faus, A., & Marsden, T. (2017). The political ecology of food: Carving 'spaces of possibility' in a new research agenda. *Journal of Rural Studies*, 55, 275-288.
- [11] United Nations Report of the World Commission on Environment and Development. (1987). Retrieved from [https://sswm.info/sites/default/files/reference\\_attachments/UN%20WCED%201987%20Brundtland%20Report.pdf](https://sswm.info/sites/default/files/reference_attachments/UN%20WCED%201987%20Brundtland%20Report.pdf).
- [12] Meyer, C., Matzdorf, B., Müller, K., & Schleyer, C. (2014). Cross compliance as payment for public goods? Understanding EU and US agricultural policies. *Ecological Economics*, 107, 185-194.
- [13] Nazzaro, C., & Marotta, G. (2016). The Common Agricultural Policy 2014-2020: Scenarios for the European agricultural and rural systems. *Agricultural and Food Economics*, 4(1), article number 16.

- [14] Maye, D., & Kirwan, J. (2013). Food security: A fractured consensus. *Journal of Rural Studies*, 29, 1-6.
- [15] Strapchuk, S.I., & Mykolenko, O.P. (2021). Factors of sustainable intensification in agriculture of Ukraine: Evidence from the enterprises of the Kharkivska oblast. *Scientific Bulletin of Mukachevo State University. Series "Economics"*, 8(3), 9-17.
- [16] Godfray, H.C.J. (2015). The debate over sustainable intensification. *Food Security*, 7(2), 199-208.
- [17] Galli, F., Prosperi, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020). How can policy processes remove barriers to sustainable food systems in Europe? Contributing to a policy framework for agri-food transitions. *Food Policy*, 96, article number 101871.
- [18] Moragues-Faus, A., Sonnino, R., & Marsden, T. (2017). Exploring European food system vulnerabilities: Towards integrated food security governance. *Environmental Science & Policy*, 75, 184-215.
- [19] Rutten, M., Achterbosch, T.J., de Boer, I.M.J., Cuaresma, J.C., Geleijnse, J.M., & Havlík, P. (2018). Metrics, models and foresight for European sustainable food and nutrition security: The vision of the SUSFANS project. *Agricultural Systems*, 163, 45-57.
- [20] Zurek, M., Hebinck, A., Leip, A., Vervoort, J., Kuiper, M., & Garrone, M. (2018). Assessing sustainable food and nutrition security of the eu food system – an integrated approach. *Sustainability*, 10(11), 4271.
- [21] Pavlov, O., Didukh, S., & Barvinenko, V. (2020). Agricultural holdings as drivers of inclusive development of rural and urban agglomerations. *Social and Legal Studies*, 3(4), 135-142.
- [22] Bureau, J.C., & Swinnen, J. (2018). EU policies and global food security. *Global Food Security*, 16, 106-115.
- [23] Pe'er, G., Bonn, A., Bruelheide, H., Dieker, P., Eisenhauer, N., & Feindt, P.H. (2020). Action needed for the EU Common Agricultural Policy to address sustainability challenges. *People and Nature*, 2(2), 305-316.
- [24] Walls, H., Baker, P., Chirwa, E., & Hawkins, B. (2019). Food security, food safety & healthy nutrition: Are they compatible? *Global Food Security*, 21, 69-71.
- [25] Food and Agriculture Organisation of United Nations Database. (2021). Retrieved from <https://cutt.ly/zSWUkRO>.

## Посилення продовольчої безпеки у країнах ЄС в умовах сталого розвитку

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**Анотація.** Питання продовольчої безпеки актуальне для усіх країн, утім воно не має універсального рішення. Зокрема, це підтверджують країни Європейського Союзу, які, попри спільну політику щодо продовольства, демонструють різний рівень продовольчої безпеки. Використовуючи їхній приклад, стаття має на меті розробити рекомендації задля покращення продовольчої безпеки за умов сталого розвитку. Дослідження базується на кількісних підходах й аналізує головні індикатори продовольчої безпеки Чеської республіки, Німеччини, Нідерландів та Норвегії, базуючись на даних Продовольчої та Сільськогосподарської Організації ООН. Це дослідження доводить необхідність більш детальної розробки окремих стратегій розвитку у питанні продовольчої безпеки в умовах сталого розвитку. Були встановлені основні відмінності між продовольчими системами Чеської республіки, Німеччини, Нідерландів та Норвегії у питаннях середньої харчової потреби в енергії, ВВП на душу населення, кількості дорослих з ожирінням і забезпеченості їжею на душу населення. Також були доведені зміни у системах продовольчої безпеки Нідерландів і Норвегії, які дозволили зменшити волатильність забезпечення продовольством на душу населення у 2010–2020 рр. Країни ЄС мають стабілізувати волатильність задля підвищення рівню продовольчої безпеки. Спроби країн-членів ЄС впровадити нові політики продовольчої безпеки мають враховувати локальні особливості продовольчих систем. Незважаючи на спільні проблеми щодо відходів, харчування різних соціальних груп, ожиріння, рівного доступу до їжі, забезпечення сталого виробництва, імплементації досліджень і розвитку програму сфері харчової безпеки, ступінь цих викликів є різною. Практична цінність дослідження полягає в емпіричній оцінці стану продовольчої безпеки на прикладі Чеської республіки, Німеччини, Нідерландів та Норвегії у 2000–2020 рр., яка доводить необхідність диференціації у спільній політиці продовольчої безпеки

**Ключові слова:** Спільна сільськогосподарська політика, сталий розвиток, стала продовольча система, дієти, сільське господарство