
SUSTAINABILITY FOOD SYSTEMS BASED ON ORGANIC PRODUCTION DURING UKRAINE'S RECOVERY

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Abstract. Research overview: the post-war Ukraine's recovery requires the implementation of balanced organizational and economic measures aimed at developing food systems. Such sustainable solutions can be implemented through the implementation of the European Green Deal and by increasing the efficiency of organic production, its environmental friendliness and optimal use of agricultural land. The global organic market is growing steadily, and Ukraine has significant potential to develop production and exports of such products abroad. The global marketplace is strengthening the position of organic food products, with most consumers concerned about their own health and countries concerned about the environment. During martial law, organic producers in Ukraine faced ensuring security challenges, including the destruction of agricultural land, rising prices, logistical difficulties in domestic and foreign markets, etc. The application of a balanced state policy in the field of organic production, balanced and economical use of natural resources and solving environmental problems will contribute to the development of food systems during post-war Ukraine's recovery.

The aim of the study is to implement the European Green Deal and circular economy during post-war Ukraine's recovery in the sustainability food systems based on organic production.

Methodology: statistical and economic methods; monographic method; SWOT analysis.

Discoveries and novelties for the scientific field: a circular approach to food production and distribution is proposed; mechanisms to support the sustainability of food systems based on organic production during Ukraine's recovery have been developed; solutions for sustainable food systems and organic production during Ukraine's recovery are substantiated; directions for improving institutional state support for producers of organic products and infrastructure development during Ukraine's recovery are proposed.

Keywords: European Green Deal; organic production; circular economy; food systems; sustainability.

JEL: O 13; Q 16; Q 32

Introduction

Sustainability food systems and organic production are becoming increasingly important in Ukraine. Ukraine has a rich agricultural tradition and is known for its

fertile black soil, which makes it an ideal location for sustainable agriculture.

Sustainable food systems focus on the environmental, social, and economic aspects of agriculture. It involves reducing waste, promoting biodiversity, and reducing greenhouse gas emissions. Organic production is a farming system that uses natural inputs and avoids the use of synthetic pesticides and fertilizers. Organic farmers use a range of techniques to promote soil health and biodiversity, such as crop rotation and intercropping.

In recent years, there has been a growing interest in organic production in Ukraine. The country has a large area of agricultural land, and there is great potential for the development of organic farming. Ukraine has also developed a certification system for organic products, which has helped to promote organic agriculture and increase consumer confidence in organic products.

However, there are also some challenges to the development of sustainable food systems and organic production in Ukraine. One of the major challenges is the lack of access to information and training for farmers on organic farming methods and sustainable agricultural practices. Additionally, the infrastructure for organic certification and marketing is not well developed, which limits the ability of organic farmers to access markets and receive fair prices for their products. Another challenge is the lack of government support for organic production and sustainable agriculture. There are few subsidies or programs that support farmers who want to transition to organic production or adopt sustainable agricultural practices. This limits the incentives for farmers to invest in sustainable food systems and organic production.

Despite these challenges, there are some positive developments in Ukraine's organic farming sector. The country has a growing number of organic farms and some farmers' cooperatives have been established to support the development of sustainable food systems and organic production. In Ukraine, organic production has been growing steadily in recent years, with the total area of organic farmland reaching over 300,000 hectares in 2020 (State Statistics Service of Ukraine, 2021).

Organic production is growing in popularity in Ukraine, with more and more farmers turning to organic methods of farming. Organic production involves the use of natural fertilizers and minimal use of chemical pesticides, which helps to reduce the environmental impact of farming.

In addition to organic production, sustainable food systems involve a focus on reducing food waste, promoting local and regional food systems, and ensuring that farmers receive fair prices for their products. Sustainable food systems can also involve the use of renewable energy sources, such as solar or wind power, in agricultural production.

Overall, sustainable food systems and organic production have the potential to improve environmental and health outcomes while also supporting economic development in Ukraine. Continued efforts to promote these practices and support small-scale farmers will be important for achieving these goals during Ukraine's recovery.

Literature review

As part of the scientific study of sustainability food systems based on organic production, the literature contains publications by many scientists based on the need

for organic production to ensure food security (Connor, 2018); healthy eating (Poux & Aubert 2018); in the context of implementing European Green Deal (Wrzaszcz & Prandecki 2020; Uzunov & Marinov 2021; Ziętara & Mirkowska 2021; Beltrán et al. 2022; Pilvere et al. 2022; Wrzaszcz 2023; Gündoğar 2023.); circular economy and identifying incentives for farmers to switch to organic farming (Kowalska & Bieniek 2022; using of organic agricultural production in Europe (Meredith & Willer 2014); developing of organic agriculture in Poland (Kociszewski 2022; Wrzaszcz 2022), Hungary (Székács et al. 2020) and Finland (Silvennoinen & Ruotsalainen 2022).

When conducting the study of sustainability food systems based on organic production, we were guided by the developed provisions of the European Commission (Agriculture and Rural Development), the Food and Agriculture Organization of the United Nations and other organizations conducting research on implementation of the European Green Deal, the circular economy, and the Common Agricultural Policy.

The research based on use of statistical information on organic production according to Eurostat, State Statistics Service of Ukraine, Ministry of Agrarian Policy and Food of Ukraine.

The study of organic production in Ukraine was based on the materials of Swiss-Ukrainian program “Development of Higher Value Added Trade in the Organic and Dairy Sectors of Ukraine” (QFTP), the project “German-Ukrainian Cooperation in Organic Agriculture” (COA), Organic Trade 4 Development in Eastern Europe (OT4D), Institutional and Policy Reform for Smallholder Agriculture (IPRSA), the “Agriculture and Rural Development Support Project” (USAID), etc.

Materials and methods

Organic production in Ukraine has been growing steadily in recent years, with a number of organic farmers and producers now operating across the country (Fig. 1, Fig. 2). These farmers use natural methods to grow crops and raise livestock, avoiding the use of synthetic pesticides, fertilizers, and other chemicals. Organic farms also tend to focus on biodiversity and soil health, helping to preserve the natural ecosystems in which they operate. The majority of organic farming in Ukraine is focused on grain production, but there is also some organic production of fruits and vegetables, as well as livestock.

According to Fig. 1, Fig. 2, in 2021 the total area of agricultural land under organic production was 422299 hectares (1% of the total area of agricultural land in Ukraine), including 370110 hectares of organic agricultural land. The total number of agricultural units engaged in organic production was 528, including 418 agricultural producers. In 2016-2021, the number of agricultural producers of organic products in Ukraine increased by 27.8%. It should be noted that during Covid-19 pandemic, the number of organic producers in Ukraine did not decrease, but rather increased (by 65% in 2019 and by 6.8% in 2020), due to favourable conditions for organic production in Ukraine and stable demand in the world and the EU.



Fig. 1 Organic map of Ukraine, 2021

Source: Ministry of Agrarian Policy and Food of Ukraine

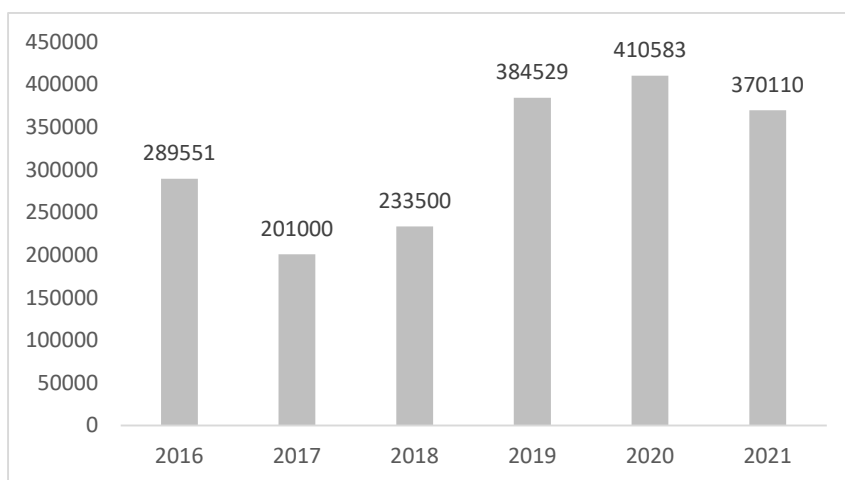


Fig. 2 Number of organic producers in Ukraine, 2016-2021

Source: Ministry of Agrarian Policy and Food of Ukraine

The dynamics of the area of agricultural land used for organic production in Ukraine reflects the trend in the number of producers (Fig. 3). The volume of agricultural land for organic production has increased over the study period. The largest volume was in 2019.

When examining sales of Ukrainian organic products, it should be noted that almost all of it is exported (Table 1). The domestic market of organic products in

Ukraine showed a positive trend in sales growth during the study period. In 2021 compared to 2018 sales of organic products in the domestic market of Ukraine increased by 46%, which indicates an increase in demand. However, exports of Ukrainian organic products to other countries decreased by 33%, indicating increased competition in foreign markets.

Total commodity structure of sales of Ukrainian organic products presented in Table 2. In 2021, dairy products accounted for the largest share in the commodity structure of sales of Ukrainian organic products (53%). In the commodity structure of organic exports from Ukraine, the largest share is occupied by cereals (other than wheat and rice) – 50.3%, including 47.3% of total imports to the EU (Table 3).

An assessment of the geographical structure of organic exports from Ukraine shows that the largest share is in Europe – 82%, 17% – in North America and 1% in Asia (Fig. 4).

The Netherlands imports the most Ukrainian organic products (76.800 tonnes, 43.4 million USD), as well as the USA, Lithuania, Germany, Austria, Poland, Switzerland, the United Kingdom, Italy, Denmark (Table 4). Other EU countries that import Ukrainian organic products include Bulgaria, Czech Republic, and France (Table 5).

In 2021, Ukraine ranked fourth (189.239 tonnes, 6.6%) among the countries supplying organic products to the European Union, behind Ecuador, Dominican Republic and China (Eurostat, 2021).

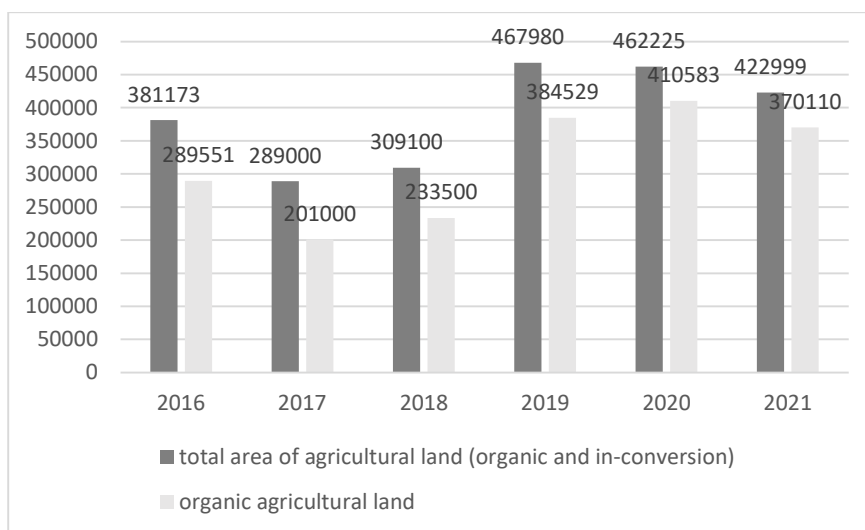


Fig. 3 Total area of agricultural land (organic and in-conversion), 2016-2021

Source: Ministry of Agrarian Policy and Food of Ukraine

Table 1 Sales of Ukrainian organic products, 2018-2021

Years	Domestic market		Export market	
	tonnes	million USD	tonnes	million USD
2018	6700	21	390.000	157
2019	7350	24	469.000	189

2020	8778	26	332.000	204
2021	9780	33	261.000	222

Source: authors' calculated based on data Ministry of Agrarian Policy and Food of Ukraine

Table 2 Total commodity structure of sales of Ukrainian organic products, 2021

Key product categories	Volume, tonnes	Volume, million USD
Dairy products	5181	20.2
Vegetables, fruits, mushrooms	2073	1.95
Cereals, groats, flour, seeds	1380	4.49
Juices, drinks, puree, canned products	578	2.24
Eggs	358	1.29
Meat products	122	1.65
Oils and assortment	42	0.33
Herbs and spices, sugar	5	0.37
Other products	41	0.55

Source: authors' calculated based on data Ministry of Agrarian Policy and Food of Ukraine

Table 3 Commodity structure of organic exports from Ukraine, 2021

Key product categories	Import volume (thousand tonnes)	Share in total imports to the EU, %
Cereals (other than wheat and rice)	89.5	47.3
Fruit (excluding citrus and tropical fruit)	20.1	10.6
Soybeans	17.2	9.1
Oilseeds (excluding soybeans)	16.7	8.8
Oilcakes	13.2	6.9
Wheat	11.2	5.9
Vegetable oils (other than palm and olive oils)	5.6	3.0
Flour and other products of the milling industry	4.5	2.4

Source: authors' calculated based on data Ministry of Agrarian Policy and Food of Ukraine

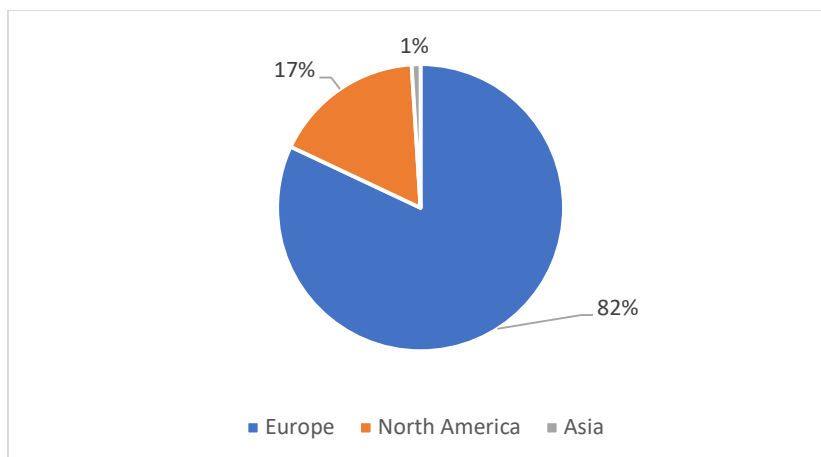


Fig. 4 Geographical structure of organic exports from Ukraine, 2021, %
Source: authors' calculated based on data Ministry of Agrarian Policy and Food of Ukraine

Table 4 Top-10 countries in the world importing organic products from Ukraine, 2021

Countries	Volume, tonnes	Volume, million USD
Netherlands	76.800	43.4
USA	42.800	44.9
Lithuania	30.100	12.7
Germany	29.100	31.1
Austria	17.100	20.6
Poland	14.500	22
Switzerland	11.000	7.3
United Kingdom	9.000	3.5
Italy	8.300	8
Denmark	3.800	1.2

Source: authors' calculated based on data Eurostat

Table 5 Top-10 EU countries importing organic products from Ukraine, 2021

Countries	Volume, tonnes	Volume, million USD
Netherlands	76.800	43.4
Lithuania	30.100	12.7
Germany	29.100	31.1
Austria	17.100	20.6
Poland	14.500	22
Italy	8.300	8
Denmark	3.800	1.2
Bulgaria	3.700	2.8

Czech Republic	3.500	7.4
France	2.500	5.3

Source: authors' calculated based on data Eurostat

Overall, the growth of organic production and sustainability food systems in Ukraine is a positive development. As more consumers become aware of the benefits of organic farming and sustainable agriculture, the demand for these products is likely to increase, which in turn will support the growth of this sector. One of the main drivers of organic production in Ukraine is the growing demand for organic food both domestically and abroad. The European Union is the largest export market for Ukrainian organic products, with Netherlands, Lithuania, and Germany being the main buyers. In addition to export markets, there is also a growing market for organic food within Ukraine, driven by an increasing awareness of the health and environmental benefits of organic food, as well as a growing middle class with more disposable income. Organic production in Ukraine has been growing steadily in recent years, with an increasing number of farmers and producers adopting organic farming practices. This is partly due to growing consumer demand for healthier, more environmentally friendly food products. Ukraine has a relatively low level of pesticide use compared to other countries, which makes it easier for farmers to transition to organic farming practices.

SWOT analysis of organic production in Ukraine

SWOT analysis is a useful tool for assessing the strengths, weaknesses, opportunities, and threats of organic production in Ukraine (Table 6).

Table 6 SWOT analysis of organic production in Ukraine

Strengths:	Weaknesses:
<p>Increasing demand for organic products in domestic and export markets;</p> <p>Abundant farmland and favorable climate for organic farming;</p> <p>Growing awareness of the benefits of organic production among consumers and farmers;</p> <p>Availability of government support and subsidies for organic farmers;</p> <p>The demand for organic products is increasing both domestically and internationally, providing opportunities for Ukrainian farmers;</p> <p>Ukraine has a favorable climate for organic farming, with rich soil, ample sunshine, and favorable weather conditions;</p> <p>Ukraine has a large and diverse agricultural sector, providing a strong</p>	<p>Lack of infrastructure for organic certification and quality control;</p> <p>Limited access to financing for small-scale organic farmers;</p> <p>Insufficient training and technical assistance for farmers transitioning to organic production;</p> <p>Limited availability of organic seeds and inputs;</p> <p>There is still a lack of awareness among consumers about the benefits of organic products, which can limit demand.</p> <p>There is a lack of infrastructure to support the production, storage, and distribution of organic products, which can increase costs.</p> <p>Limited access to markets: Organic farmers may have limited access to domestic and international markets,</p>

<p>foundation for organic farming; The Ukrainian government provides financial support and incentives for farmers to switch to organic farming; Organic farming can be less expensive than conventional farming due to the reduced need for synthetic inputs.</p>	<p>limiting their ability to sell their products. Organic certification can be expensive, which may deter farmers from transitioning to organic production. Organic farming can be less productive than conventional farming, leading to lower yields and potentially lower profits.</p>
<p>Opportunities:</p> <p>Growing global demand for organic products presents export opportunities for Ukrainian producers; Potential for increased profitability for farmers through premium prices for organic products; Growing consumer interest in locally-sourced and sustainable food systems; Potential to attract investment and innovation in the organic production sector; The domestic market for organic products is growing, providing opportunities for farmers to sell their products locally; There is an opportunity for farmers to develop new and innovative organic farming techniques and products; Collaboration with international organizations and foreign investors can help Ukrainian farmers to improve their production practices and increase market access; Continued government support can help to overcome some of the weaknesses and promote organic farming in Ukraine.</p>	<p>Threats:</p> <p>Competition from other countries with established organic production industries; Potential for fraud and mislabeling of organic products in domestic and export markets; Dependence on foreign markets for organic product sales; Climate change and other environmental factors that may affect crop yields and quality; Economic instability: Economic instability and political uncertainty can impact the demand for organic products and the ability of farmers to access funding. Some consumers may be skeptical about the value and benefits of organic products, which can limit demand. Further destruction of agricultural land for organic production, destruction of crop and livestock complexes in the temporarily occupied territories of Ukraine; Complication of logistics of organic products to the EU countries; Blocking of Ukrainian organic products in certain EU countries.</p>

Overall, the SWOT analysis suggests that there are several strengths and opportunities for organic production in Ukraine, but also several weaknesses and threats that must be addressed in order to support the continued growth of this sector.

The European Green Deal and circular economy

The European Green Deal is an ambitious plan proposed by the European Commission aimed at making the European Union a climate-neutral continent by

2050. The plan includes several initiatives, policies, and actions to tackle climate change, reduce greenhouse gas emissions, and promote sustainability. One of the key aspects of the European Green Deal is the transition to a circular economy (European Commission 2021).

A circular economy is an economic model that aims to minimize waste, promote resource efficiency, and extend the lifespan of products and materials. It involves keeping products, materials, and resources in use for as long as possible, reducing waste and pollution, and promoting the regeneration of natural systems. A key part of this plan is transitioning to a circular economy, which aims to reduce waste and maximize the value of resources by keeping materials and products in use for as long as possible. The circular economy model is based on three principles: designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. The goal is to shift from a linear "take-make-dispose" economy to a closed-loop system that minimizes waste and maximizes resource efficiency. The circular economy is also seen as a key driver of innovation and job creation, as it requires new business models and technologies to be developed (European Commission 2022).

The European Green Deal outlines several actions to transition to a circular economy, including:

- Implementing a Circular Economy Action Plan, which sets out measures to reduce waste, increase resource efficiency, and promote circular business models.
- Introducing a Sustainable Products Policy, which aims to make products more sustainable, durable, and repairable, and to promote the use of recycled materials.
- Promoting a sustainable food system, including reducing food waste and supporting more sustainable production practices.
- Encouraging circularity in construction and the built environment, including promoting the use of recycled materials, improving the durability and energy efficiency of buildings, and promoting circular business models in the construction sector.
- Supporting research and innovation to drive the development of new circular technologies and business models.
- The transition to a circular economy is seen as critical to achieving the EU's climate and sustainability goals, as it can reduce greenhouse gas emissions, improve resource efficiency, and create new economic opportunities.

To support the transition, the European Union has established a number of funding programs, including the Circular Economy and Green Action Plan, which provides funding to support circular economy projects across the EU. Additionally, the EU has implemented a number of regulations and standards to promote circularity, including the EU Ecolabel and the Single Use Plastics Directive.

Overall, the European Green Deal and circular economy are closely intertwined, as the circular economy is seen as a key means of achieving the goals of the Green Deal. By promoting a circular economy, the EU aims to reduce its environmental footprint, create new economic opportunities, and promote sustainable and equitable growth.

Circular economy in relation to sustainability of food systems based on organic production during Ukraine's recovery

The circular economy has great potential to promote the sustainability of food systems based on organic production during Ukraine's recovery. By minimizing waste and maximizing resource efficiency, the circular economy can help to reduce the environmental impact of agricultural production and make food systems more sustainable and resilient.

One of the key components of a circular economy in agriculture is the use of regenerative farming practices, such as crop rotation, cover cropping, and reduced tillage. These practices can improve soil health and reduce the need for synthetic inputs, such as fertilizers and pesticides. This, in turn, can help to reduce greenhouse gas emissions, conserve water resources, and promote biodiversity.

In the context of organic food production, the circular economy can help to address some of the key challenges faced by the sector in Ukraine, such as the lack of infrastructure and distribution networks for organic products, limited access to financing and technical assistance, and inconsistent enforcement of organic farming standards.

For example, a circular approach to food production and distribution could involve:

- Reducing waste by designing products and packaging for reuse, recycling, or composting.
- Encouraging the use of renewable energy sources and minimizing greenhouse gas emissions in production and distribution.
- Developing local food systems to reduce transportation and storage costs and promote regional economic development.
- Promoting agroecological practices that build soil health, conserve water resources, and reduce the need for synthetic inputs.
- Encouraging the use of renewable and biodegradable materials in packaging and other inputs.

By adopting a circular approach to food systems based on organic production, Ukraine can not only increase the sustainability of the sector, but also create new economic opportunities and support the country's post-war recovery.

To achieve this, it will be important to involve all stakeholders in the food system, including farmers, processors, distributors, retailers, and consumers. Additionally, policies and incentives will be needed to encourage the adoption of circular practices and support the development of new business models that are more sustainable and resilient.

The circular economy can play a significant role in promoting the sustainability of food systems based on organic production in Ukraine's post-recovery period. By maximizing resource efficiency and minimizing waste, a circular economy can help reduce the environmental impact of food production, while also improving economic outcomes and promoting social equity. Here are some potential ways that the circular economy can support the sustainability of food systems based on organic production in Ukraine's recovery:

- Reducing food waste: Ukraine has a significant problem with food waste, with

an estimated 14 million tonnes of food waste generated each year. A circular economy can help reduce this waste by promoting better food storage and preservation practices, as well as creating new value-added products from food waste such as compost or animal feed.

- **Improving soil health:** Organic farming relies on healthy soil, and a circular economy can support this by promoting nutrient cycling and reducing the use of synthetic fertilizers. By composting organic waste and returning nutrients to the soil, a circular economy can help improve soil health, which can in turn lead to increased crop yields and improved environmental outcomes.

- **Promoting sustainable packaging:** Packaging waste is a significant issue in Ukraine, and a circular economy can help address this by promoting sustainable packaging solutions such as reusable containers or biodegradable materials. This can help reduce the environmental impact of food production and distribution, while also reducing costs for farmers and food producers.

- **Supporting local supply chains:** A circular economy can also promote more localized supply chains, which can help reduce the environmental impact of food transportation and distribution, while also supporting local economies and promoting social equity.

Circular practices can help to reduce waste, increase resource efficiency, and promote the use of renewable energy sources, all of which are critical to building a more sustainable food system. Some examples of circular practices that can be applied to organic production in Ukraine include:

- **Waste reduction and management:** Organic production can help to reduce waste by using natural methods for pest control, crop rotation, and composting. Additionally, waste from organic production can be recycled into compost, which can be used to fertilize crops and improve soil health.

- **Resource efficiency:** Circular practices can help to increase resource efficiency by minimizing the use of synthetic fertilizers and pesticides, and by promoting the use of renewable energy sources, such as solar and wind power, in agriculture.

- **Food waste reduction:** Circular practices can help to reduce food waste by promoting sustainable food production and distribution systems, improving storage and packaging practices, and encouraging consumers to reduce food waste through education and awareness campaigns.

- **Closed-loop systems:** Closed-loop systems, where waste from one process is used as a resource in another process, can be particularly effective in promoting circularity in organic production. For example, animal waste can be used as fertilizer for crops, and crop residues can be used as animal feed.

To promote circularity in organic production in Ukraine, it will be important to establish supportive policies and regulations, provide access to financing and technical assistance, and promote education and awareness among farmers and consumers. Additionally, partnerships between government, NGOs, and private sector stakeholders can help to drive innovation and collaboration in promoting circular practices in the food system.

Overall, the circular economy has the potential to help Ukraine's organic agriculture sector recover in a more sustainable and resilient way. By promoting

regenerative farming practices, reducing food waste, and improving the sustainability of packaging, the circular economy can help to reduce the environmental impact of food production and promote a more sustainable and resilient food system.

Solutions for sustainable food systems and organic production during Ukraine's recovery

Sustainability food systems based on organic production can play a significant role in Ukraine's recovery, both in terms of economic development and environmental protection. Here are some ways in which organic production can contribute to sustainable food systems in Ukraine:

- Promoting local production and reducing dependence on imports: Organic production can encourage local food production, which helps to reduce dependence on imports and improve food security. This is particularly important in the current global economic climate, where supply chains are vulnerable to disruption.
- Protecting the environment: Organic production is based on principles of sustainable farming that aim to protect the environment, such as minimizing the use of synthetic pesticides and fertilizers, and promoting biodiversity. This helps to reduce the negative impact of agricultural practices on the environment, which is particularly important in a country like Ukraine where agricultural land makes up a significant portion of the total land area.
- Improving public health: Organic production can contribute to improving public health by reducing exposure to harmful chemicals in food. This is particularly important in a country like Ukraine where the use of pesticides and fertilizers in conventional agriculture is often unregulated and poses health risks.
- Supporting small-scale farmers: Organic production can provide an opportunity for small-scale farmers to diversify their income and improve their livelihoods. This is particularly important in Ukraine, where small-scale farmers often face economic challenges and struggle to compete with larger producers.

The Food and Agriculture Organization has partnered with the government of Ukraine to implement a project aimed at strengthening sustainable food systems in the country. This project focuses on improving agricultural practices, promoting biodiversity, and reducing food waste, among other objectives.

In addition to these initiatives, there are also a growing number of local and regional food movements in Ukraine that are focused on promoting sustainable agriculture and organic production. These movements aim to connect consumers with local farmers and producers, and to promote sustainable and healthy food choices.

Conclusions and recommendations

Sustainability food systems and organic production are important issues in Ukraine. The country has a rich agricultural tradition, with fertile soil and a favorable climate for growing a wide range of crops. However, like many other countries, Ukraine faces challenges related to food security, environmental sustainability, and economic development.

Ukraine has vast potential for organic agriculture, as the country has favorable natural conditions for growing crops and rearing livestock. Organic farming can help

mitigate the negative impacts of conventional agriculture, such as soil degradation, water pollution, and greenhouse gas emissions. Organic farming practices can help to maintain and enhance soil quality, increase biodiversity, and reduce the need for synthetic pesticides and fertilizers, which can be costly and harmful to the environment.

There are challenges to promoting sustainable food systems and organic production in Ukraine. One major challenge is the dominance of conventional agriculture, which is often heavily subsidized and supported by the government. There is also a lack of awareness and understanding of organic and sustainable farming practices among many farmers and consumers.

During Ukraine's recovery, promoting organic production could help to increase the country's agricultural productivity, as well as boost its economy by creating new jobs and markets for organic products. Organic farming could also help to improve food security, as it can provide a more diverse and resilient food system that is less vulnerable to climate change, pests, and diseases.

Organic production offers many benefits for Ukraine's recovery, including:

- Improved soil health: Organic farming practices can help improve soil health and fertility, which can lead to increased crop yields and improved food quality.
- Reduced use of synthetic inputs: Organic production reduces the use of synthetic inputs, such as pesticides and fertilizers, which can be expensive and harmful to human health and the environment.
- Increased biodiversity: Organic production encourages the use of diverse crop rotations, which can help support biodiversity and improve ecosystem services.
- Higher quality food: Organic foods are generally considered to be of higher quality and more nutritious than conventionally produced foods.
- Higher market value: Organic products often command higher market prices, which can provide economic benefits to farmers and the rural economy.

To promote the adoption of sustainable food systems based on organic production, Ukraine's recovery efforts could focus on:

- Education and training: Education and training programs can help farmers learn about organic production techniques and the benefits of sustainable agriculture.
- Financial incentives: Financial incentives, such as subsidies and tax breaks, can encourage farmers to transition to organic production and support the development of organic markets.
- Certification and regulation: Certification and regulation can help ensure that organic products meet certain standards and promote consumer confidence in the organic label.
- Infrastructure development: Investment in infrastructure, such as storage and processing facilities, can help support the development of organic supply chains and improve market access for organic products.

Overall, sustainable food systems based on organic production can play a critical role in Ukraine's recovery by promoting environmental sustainability, improving food quality and nutrition, and providing economic benefits to farmers and rural communities.

In conclusion, promoting sustainability food systems based on organic production

could be a vital component of Ukraine's recovery, as it can provide numerous environmental, economic and social benefits. Ukraine has vast potential for organic agriculture, and with the right policies and incentives, the country could develop its organic agriculture sector and contribute to the achievement of the Sustainable Development Goals.

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