

# OPPORTUNITIES FOR SUSTAINABLE FOOD PRODUCTION

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## ВЪЗМОЖНОСТИ ЗА УСТОЙЧИВО ПРОИЗВОДСТВО НА ХРАНИ

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### Abstract

The COVID-19 pandemic has clearly emphasized the significance of why there has to be a reliable and flexible food system which shall supply the population with sufficient amount of food products at reasonable prices. The economic crisis has made us all realize the relationships among human health, supply chains, the models of production and consumption. The developed Farm to Fork Strategy outlines the transition to a more just, healthy, and sustainable food system directed to the producers, consumers, climate, and the environment.

**Key words:** sustainable production, food system, food chain, sustainable food

**JEL:** O13, Q01, Q56

In the year 2020, the European Commission presents the Farm to Fork Strategy as part of the package of documents which shall implement the European Green Deal for achieving climate neutrality by the year 2050. The European Green Deal is a new growth strategy which aims at "transforming the EU into a just and prosperous society with modern, resource-efficient and competitive economy ensuring no net emissions of greenhouse gases by 2050, economic growth decoupled from resource use, no person and no place left behind. (European Green Deal, 2019, p. 2). Despite the transition to more sustainable systems being already a fact, feeding the fast-increasing population in the world continues to be a challenge which the existing production models face. Food production is still a leader in the pollution of air, water, and soil; it contributes to the loss of biological diversity and climate change and uses excessive amounts of natural resources, but at the same time food is wasted. Modern technologies and innovations combined with the increased social knowledge and search for new sustainable foods will benefit all stakeholders. The transition to sustainable food systems provides an enormous opportunity to farmers, fishers, producers of aquacultures, as well as the processors of food and suppliers of services in the food sector.

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The main goal of the current development is to reveal the possibilities for ensuring sustainable food production. The transition to a fair, healthy and sustainable food system is presented, outlining the main goals for sustainable food production and on this basis, successful examples from practice are considered.

Farmers who cultivate their land are of utmost importance for the preservation of biodiversity. On the one hand, they are among the first affected by the loss of biological diversity, but they are also among the first who benefit from its recovery. Biological diversity allows farmers to produce and provide safe, sustainable, nutritious, and accessible food (EU Biodiversity Strategy for 2030, p. 9). The Farm to Fork Strategy aims at changing the current food system of the EU by turning it into a sustainable model. Among the leading priorities are food security and safety; those lead to outlining the following main goals (<https://www.consilium.europa.eu/bg/policies/from-farm-to-fork/>):

- ensure sufficient, affordable, and nutritious food within planetary limits
- halve the use of pesticides and fertilisers and sales of antimicrobials
- increase the amount of land devoted to organic farming
- promote more sustainable food consumption and healthy diets
- reduce food loss and waste
- combat food fraud in the supply chain
- improve animal welfare.

*The Farm to Fork Strategy* is a new comprehensive approach referring to how Europeans value the sustainability of food (Project of the Farm to Fork Strategy, Ministry of Agriculture and Foods of the Republic of Bulgaria, 2020). People have been paying more and more attention to the environment, health care, social and environmental issues and seek value in the field of foods. A sustainable food system will be of major significance for the achievement of the climatic and environmental goals of the Green Deal; at the same time, it shall raise the income of the agricultural producers and increase the competitiveness of the EU. The EU goals are related to the decrease of the environmental and climatic impact of the food system of the EU by preserving its sustainability guaranteeing food security in case of climate changes and loss of biodiversity, which shall lead to a global transition towards the competitive sustainability of the strategy, see fig. 1.

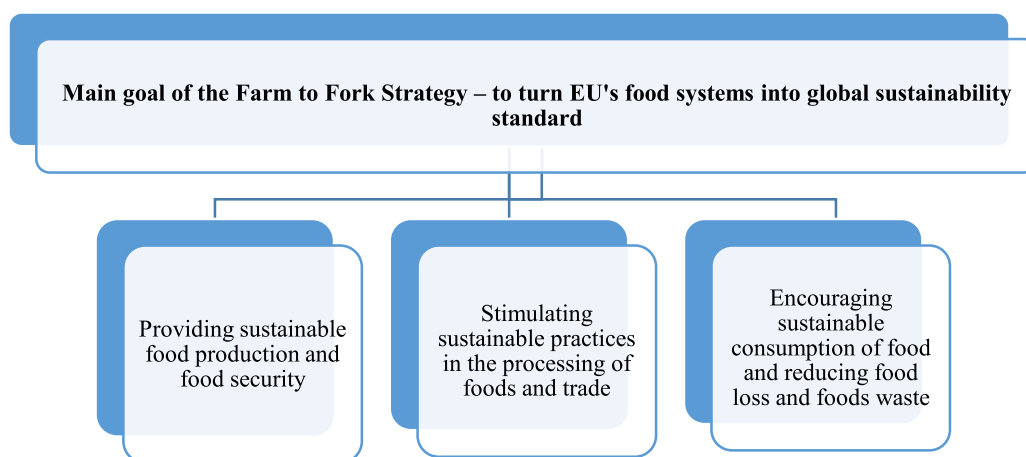


Figure 1. The Farm to Fork Strategy – major part of the European Green Deal

Source: Ministry of Agriculture and Foods of the Republic of Bulgaria, the Farm to Fork Strategy – sustainable food production, 22 June 2020.

The presented figure clearly shows that:

- ✓ the food chain which comprises the production of foods, the transportation, the distribution, the marketing, and the consumption, has a neutral impact on the environment; it facilitates the decrease of the changes in the climate and its adaptation to its impact; the preservation of the land, soil, water, air, and the preservation of biodiversity;

- ✓ the food security, feeding and social health guarantee that every citizen has access to healthy and sustainable food, which maintains high standards of safety and quality;

- ✓ the access to food is preserved, but at the same time, a more just economic return in the supply chain is generated; thus, on balance, the most sustainable food will become the most accessible, which shall encourage the competitiveness in the supply sector in the EU, creating new opportunities for the agricultural business.

Dealing with **the issue of loss and waste of foods** is of key importance for the achievement of sustainability. This is a global issue which is to become even more relevant in the society as it will have a negative impact on the three aspects – financial, environmental, and social – of the system of production and consumption of foods. The production and consumption of foods have a significant impact on the environment because they use intensively the limited natural resources (soil, water, and energy), they cause the formation of greenhouses gases, they pollute with the excessive use of plant protection products; this results in the exhaustion of nutritious properties of the soil such as nitrogen and phosphorus.

According to the evaluation of the Food and Agriculture Organization (FAO), which is an intergovernmental UN organization, annually in the world, almost one

third of the produced foods (about 1.3 billion tons) is lost or wasted on the route from the farm to the fork (National Programme for the Prevention and Reduction of Food Losses (2021–2026), pp. 2–5). In 2015, the General Assembly of the United Nations adopts the Sustainable Development Goals by 2030. One of them, Goal 12.3, states: "by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses".

At the same time, the *prevention and reduction of food loss and food waste* creates opportunities and prerequisites for:

- improvement of food security (i.e., securing food supplies);
- increasing the efficiency of the food chain;
- introducing new technologies in the production of foods;
- reducing the pressure on the environment.

This outlines the necessity of the reduction of the dependency on pesticides and antimicrobial preparations, the reduction of unnecessary fertilization, the increase of organic farming, the improvement of humane treatment of animals and the reverse loss of biological diversity. Thus, **the main goals for securing sustainable production of foods by 2030** are presented in the following fig. 2.

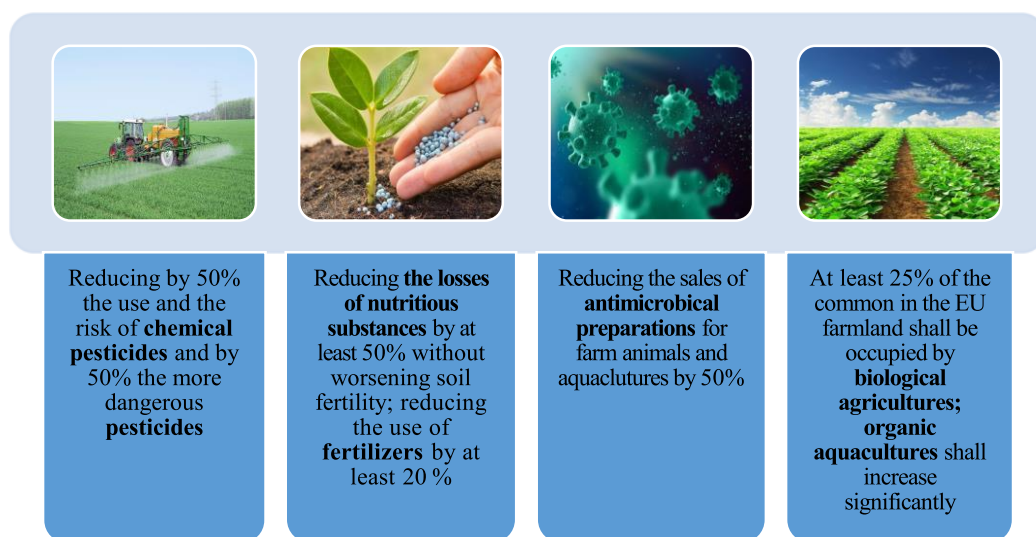


Figure 2. Main goals for the sustainable production of foods

Source: Project of the Farm to Fork Strategy published by the EC on 20 May 2020  
[https://www.mzh.government.bg/media/filer\\_public/2020/07/31/proekt\\_na\\_strategiia\\_ot\\_fermata\\_do\\_trapezata\\_publikovana\\_ot\\_evropeiskata\\_komisiia.pdf](https://www.mzh.government.bg/media/filer_public/2020/07/31/proekt_na_strategiia_ot_fermata_do_trapezata_publikovana_ot_evropeiskata_komisiia.pdf)

On balance, all participants in the food chain shall have a stand on the achievement of its sustainability. Agricultural producers, fishers and aquaculture producers

shall transform their methods of production fast and shall make the best use of natural, technological, and digital solutions in order to achieve better climatic and environmental results, which shall lead to increasing climate sustainability and optimizing the use of raw materials, e.g., pesticides, fertilizers, etc.

The use of **chemical pesticides** in agriculture contributes to the pollution of the soil, water and air, results in losses in biodiversity and can damage plants, insects, birds, mammals, and amphibians. The EC has created a harmonized risk indicator for determining the progress in reducing the risk related to pesticides, namely, a 20 % risk reduction of the use of pesticides over the last 5 years. Additional measures will be taken to reduce the whole use and the risk of **chemical pesticides by 50 per cent and the use of more dangerous pesticides by 50 per cent by the year 2030.**

**Antimicrobial resistance (AMR)**, related to the excessive and irrelevant use of antimicrobial preparations for the health of man and animals, costs approximately 33,000 human lives in the EU. Thus, the goal is to take measures which shall reduce the sales in the EU of antimicrobial preparations farm animals and at fish farms by *50 % by 2030.*

**The market of ecologically pure food** continues to mark its development, by which organic farming shall be additionally encouraged. It has a positive impact on biodiversity, creates work positions and attracts more and more young farmers. In addition to the measures under the Common Agricultural Policy, such as the eco-schemes, the investments and consultancy services, the Commission will develop an Action plan related to organic production. This will guarantee consumer trust and will encourage the demand via promotional campaigns and green procurements. This approach will facilitate the achievement of the goal that at least **25% of farmland in the EU shall be cultivated under the regulations of organic farming by 2030 and organic aquacultures shall be significantly increased.**

We can discuss a number of **good practices and successful examples** for securing sustainable production of foods. A good example of a **new green business model is the extraction of carbon** by agricultural producers and foresters. Agricultural practices which remove carbon dioxide from the atmosphere contribute to the goal of climate neutrality. In the New Circular Economy Action Plan, the Commission will develop a regulatory framework for the certification of the elimination of carbon emissions based on stable and transparent reporting of carbon in order to follow the authenticity of carbon disposal.

**Circular economy on biological basis** is still, to a large extent, an unused capacity by farmers. For instance, the improved organic refineries, which produce organic fertilizers, protein fodder, organic energy, and organic chemicals, offer opportunities for transition to climate neutral European economy and creation of new work positions.

Another good example of sustainable agriculture is the implementation of the **methods of organic production** by farmers. They search for and implement innovative techniques for sustainable production, which are more favourable to the environment, and, at the same time, encourage circularity and humane treatment of animals.

**A new measure will stimulate the digitalization of farms under the Common Agricultural Policy 2023 – 2027.** This measure will allow the support of activities such as the implementation of *precise farming*, *robotization of the production processes in agriculture and digital marketing*. The project of the measure "*Investments in the Digitalization of Farms*" provides for the encouragement of the use of digital technologies in the agricultural sector, as for instance, meteorological stations, sensors, etc., facilitating the making of decisions at farms.

On the territory of Bulgaria and Europe, several **successful innovative projects** have been developed ([https://capgreenzone.bg/wp-content/uploads/2021/10/%D0%9A%D0%BD%D0%B8%D0%B6%D0%BA%D0%B0\\_web1.pdf](https://capgreenzone.bg/wp-content/uploads/2021/10/%D0%9A%D0%BD%D0%B8%D0%B6%D0%BA%D0%B0_web1.pdf), pp. 73-77); they are carried out and financed with funds under the Rural Development Programme 2014 – 2020.

**For instance, scholars and farmers have been developing innovative biostimulants for healthy production.** The Institute for Criobiology and Food Technologies in Sofia has been a project coordinator of an operative group under sub-measure 16.1 of the Rural Development Programme 2014 – 2020; the activities on it have been carried out on the territory of the cities of Varna and Sofia. The project aims at solving several major problems, among which are the reduction of the use of chemical fertilizers, the improvement the quality of production, restricting the negative impact on the soil and increasing the yield by implementing biostimulants as a powerful biotechnological tool for increasing the growth and productivity of plants.

**The origin and quality of products are followed with the help of a new blockchain technology.** One of the projects under the Rural Development Programme 2014 – 2020 provides for the development and implementation of an integrated blockchain system of work process management allowing transparency of technological production processes and providing relevant information about the process of cultivating agricultural produce. The project gives priority to the implementation of a **blockchain technology** to ascertain how the transparency in the ecosystem of the supply chains of products/foods leads to the increase of trust among all participants.

**A modern system of making decisions about field cultures and conservation farming.** The project has been carried out on the territory of the cities of Varna and Sofia. The main priority is the development of a new organizational model of making decisions in *conservation farming*. The most important task is finding sustainable solutions for preventing the reduction of crops and decreasing the economic

results, which are among the major problems faced by farmers that implement conservation processing. The main goal is increasing the relationship between farmers and science, accelerating the transfer of knowledge and innovations in the practice, increasing the competitiveness and sustainability in the sector grain and oil crops.

In **conclusion**, we can summarize that the transition to sustainable food systems requires a *collective approach* with the participation of public authorities from all levels of management, participants from the private sector along the chain of foods value, non-governmental organizations, local, regional, national authorities, scholars, and citizens. The Rural Development Programme will continue to be a key tool for the support of farmers in their transition to sustainable food systems. The new, so-called "ecosystems", will offer a larger resource of funds for the encouragement of sustainable development practices, including precise farming, organic production, diverse agricultural practices, which achieve "capturing" carbon dioxide from the atmosphere and its application to the soil. The Farm to Fork Strategy will have a positive impact on the way we produce, buy, and consume food, which shall provide an opportunity for a new better balance among the reliable and flexible food system, the population health, and the preservation of the environment.

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