

Moving Towards Green Farming: The Challenges of Implementing the Green Deal in Agriculture

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Abstract. *In recent years, there has been much discussion in the European Union about the Green Deal. As this plan is in full swing, it is worth looking at how it is implemented and how it is evolving with the goal of achieving its objectives. This article will examine just one of the objectives of the Green Deal, which is to increase the amount of agricultural land dedicated to organic farming. This article inspects the progress made between 2017 and 2021 in terms of the agricultural area dedicated to this objective, which is influenced by the demand for organic products, in other words the consumption of such products. The analysis of data on agricultural land in each EU Member State and organic food consumption shows that the Green Deal target of 25% of agricultural land dedicated to organic farming faces major challenges. Explanatory diagrams are used to highlight the differences between Member States and the main obstacles to achieving the target. Finally, the article points out that the differences between EU Member States in the implementation of sustainable and organic farming practices and the appetite for consumption of organic products means that disparities between them in the implementation of the Green Deal are large. These results could be a starting point for raising awareness of the importance and extent of organic farming practices and for getting more people to choose organic products.*

Keywords: organic farming, organic food, Green Deal, sustainability, consumption.

Introduction

The negative effects of the environmental and ecological changes have been a highly debated topic in recent decades. They manifest not only through extreme weather phenomena but also in our daily lives, starting from food, water, sanitation, and waste collection to the use of renewable energy, and continuing with the threats facing biodiversity.

Considering all these negative effects, the European Commission aimed to address the situation through the Green Deal, which was first introduced in December 2019. It envisaged the economy becoming climate-neutral by reducing carbon emissions by at least 50% by 2030 (and towards 55%) and achieving carbon neutrality by 2050 (Sikora, 2021). To achieve this goal, various actions are planned across multiple branches of industry, including economic, ecological, and social actions. An important action is related to farming. The Green Deal envisages transforming conventional farming into organic farming, with a focus on expanding the land used for this kind of farming (European Commission, 2020).

The aim of this paper is to investigate and present the extent to which European Union member states converge or diverge in achieving the Green Deal target for organic farming, through the evaluation of the evolution of agricultural areas covered by organic farming and the consumption of organic food. By tracking and comparing data regarding the surface area covered by organic agriculture and the volume of consumption of organic food across different countries, the study aims to identify patterns, trends, and discrepancies among member states. Therefore, this study is based on the following research questions:

1. Is there convergence regarding organic farming surface among EU member states, to achieve the Green Deal objective of having 25% of total agricultural land used for organic farming by 2030?

2. Since organic farming depends on the consumption of organic products, how does the level of this consumption influence the achievement of the Green Deal objective regarding organic farming surface?

The answers found to the two questions and the data presented in this paper will be useful for those interested in understanding how organic farming has evolved within the European Union from 2017 to 2021. Thus, concrete conclusions can be drawn, which could serve as a starting point for further actions and projects aimed at achieving the Green Deal objective regarding agriculture.

Literature review

The Green Deal is currently a priority for the European Commission, aiming to transform the European Union into a climate-neutral entity by 2050. This Green Deal encompasses several strategies to achieve its main objective, but in this paper, the focus will be on the “Farm to Fork” strategy. Through this strategy, sustainable food production is sought to be ensured, the consumption of organic foods is promoted, and the transition to healthy diets based on organic foods is encouraged. Various sustainable food processing practices, sales, serving, or other related services are also intended to be stimulated (Wessler, 2022).

However, it remains to be seen how the implementation of this strategy will evolve, as studies indicate that transitioning to organic agriculture entails higher costs. Implementing the strategy requires reallocating resources at the farm level and within the food supply chain, considering the goal of transforming the current food system. This underscores the need for deeper changes, as past technological advancements cannot offset the additional costs. Additionally, the transformation processes involve specific administrative and communication expenses that need to be considered (Wessler, 2022).

Organic farming

The industrial agriculture practiced in recent decades has produced severe negative effects on both biodiversity and soils, so it's no wonder that food consumed is also affected by these effects. It is estimated that in 2017, one in five deaths recorded in the EU was attributed to unhealthy diets, totaling over 950,000 deaths caused by this factor (*European Climate Pact - European Union*, 2024).

Therefore, this issue has also been addressed by the European Commission, and the “From Farm to Fork” Strategy has been implemented. Through this strategy, the aim is to create a healthy food environment that encourages most consumers to choose a healthy diet and adopt such behavior in the long term. A healthy food environment involves sustainable labeling of food products. Specifically, it is expected that the label of any product will include the nutritional, climate, environmental, and social aspects that the respective product presents. Thus, the main objectives for products to have a “clean” label are as follows (European Commission, 2020):

- Reducing the use and risks associated with hazardous chemical pesticides by up to 50% by 2030.
- Reducing nutrient losses by up to 50% and reducing fertilizer use by up to 20% by 2030.
- Reducing the sale of antibiotics for livestock and aquaculture animals by up to 50% by 2030.

- Promoting the development of organic farming in the European Union, with the target for 2030 being that 25% of total agricultural land is used for organic farming.

Over time, organic farming has received several definitions, but the easiest to understand is the one that defines this type of agriculture as “an alternative that largely avoids or excludes the use of synthetic fertilizers, pesticides, additives for animal feed, growth hormones, and, more recently, genetically modified organisms” (Lairon 2010; Goh 2011 in (Saffeullah et al., 2021)).

In other approaches, organic farming provides for various ‘naturalistic paradigms’ such as agroecology, the slow food movement, animal welfare, all of which have in common that they are in opposition to the ‘industrial paradigm’. In other words, these paradigms emphasise ‘purity’ and avoid the use of modern biotechnology as far as possible (Zilberman et al., 2023).

Another concept worth mentioning is Agriculture+. This vision argues that agriculture has the primary role of providing food, with limited involvement in biofuel production. It also emphasises that modern agricultural biotechnology is mainly used for animal feed, but not so much for food (Zilberman et al., 2023).

What is really wanted from organic farming is to be able to feed the world’s large population and at the same time have a positive impact on combating climate change. Looking at what organic farming and agriculture + are, it could be seen that the former would not be fully capable of feeding the growing population, while the latter would be capable of feeding the whole world, but would not focus on climate change (Zilberman et al., 2023).

Thus, the concept of “bioeconomy” was presented, which means using renewable biological resources from land and sea, such as agricultural crops, forests, fish, animals and micro-organisms, to produce food, materials and energy. European Commission (European Commission, 2024). In other words, the bioeconomy aims to harness the potential of biology and modern science to address problems associated with food security, biodiversity loss and climate change.

Based on all these definitions and concepts, the following characteristics of organic farming have been outlined: it enhances biological diversity, it stimulates natural activity in the soil, ensuring soil health, it also ensures the health of human communities, it focuses on management practices aimed at conserving, restoring, maintaining or improving the ecological balance, it contributes to achieving ecological, economic and social sustainability objectives (Saffeullah et al., 2021).

Organic food consumption

In recent years, people who wanted to make a change for the better with their lifestyle have chosen to eat organic food. As a result, there has been a rapid increase in demand and sales of organic food. What has led people to consume more organic food has been their perception of organic products. People generally tend to believe that food promotes environmental sustainability and biodiversity and is also of higher quality than generic food. So, consumers choose these foods with their health in mind and try to avoid other foods containing various chemicals (Saffeullah et al., 2021).

But what is the main factor driving consumers to choose organic food? Studies show that nutrition labelling plays an important role. It seems that food manufacturers are making efforts to change ingredients in the manufacture of processed foods to achieve a more favourable nutritional score. Dietary changes could also support nutrition labelling by reducing the demand for meat, bringing health benefits and thus a reduction in greenhouse gas emissions through lower consumption of animal products (Wesseler, 2022). So, in order to make the labelling of products as “clean” as possible, farming has started to transform and become organic.

Organic farming is known for its health benefits, but also for its benefits to nature. This type of farming is free of chemicals that could pollute food, air and water. In this way, food security is supported and improved and resistance to pests and diseases is also increased. For this reason, in recent years, people who want to make a change for the better in their lifestyle have chosen to eat “organic” food (Hansmann et al., 2020).

Another reason in favor of organic farming is that it helps to fight poverty. For one thing, farmers will no longer be burdened with burdensome debts from contracts to buy expensive chemicals. Moreover, by training farmers in organic farming, they will be able to save on production costs and learn how to manage the production process based on local skills and resources. In this way, as well as growing healthy and nutritious food, farmers will also create new jobs, thereby combating hunger in their communities (Kushwah et al., 2019).

Methodology

This paper relies on secondary data analysis to assess whether the member states of the European Union are converging towards achieving the Green Deal objective, which plans for 25% of the EU’s agricultural area to be dedicated to organic farming. To accomplish this, data on the evolution of organic land area and also data on organic food consumption in each EU Member State have been collected for the period 2017-2021.

A good example for a similar analysis of secondary data is the article “Organic food consumers: what do we really know about them?” (Dimitri & Dettmann, 2012), which based on secondary data presented the behavior of several households regarding organic food consumption.

The data utilized for this study were obtained from The Research Institute of Organic Agriculture FiBL, and following their collection, a comparison was made between these data and the Green Deal objective of reaching 25% organic agricultural area in the EU by 2030. Afterwards, an evaluation of recent trends was conducted to determine whether the increase in organic agricultural surface is on the rise, stable, or declining in each member state. These trends were illustrated through explanatory graphics.

A crucial aspect of exploratory data analysis is comparison with what is expected to be found. This comparison can be done by analyzing the graphs and results obtained and then comparing them with theoretical models or our initial hypotheses (Hullman & Gelman, 2021).

Results

Agriculture is one of the sectors that can affect human health in several ways: through the greenhouse gases that are emitted by the sector, through the risk from the use of chemical pesticides, and through the side effects of antibiotics used in livestock and aquaculture.

Therefore, it would be necessary to analyze the evolution of the agricultural area used for organic farming to see if the transition from conventional to organic farming has begun. Thus, Figure 1 shows how the share of the area used for organic farming in the total agricultural area in the EU Member States evolved in the period 2017-2021.

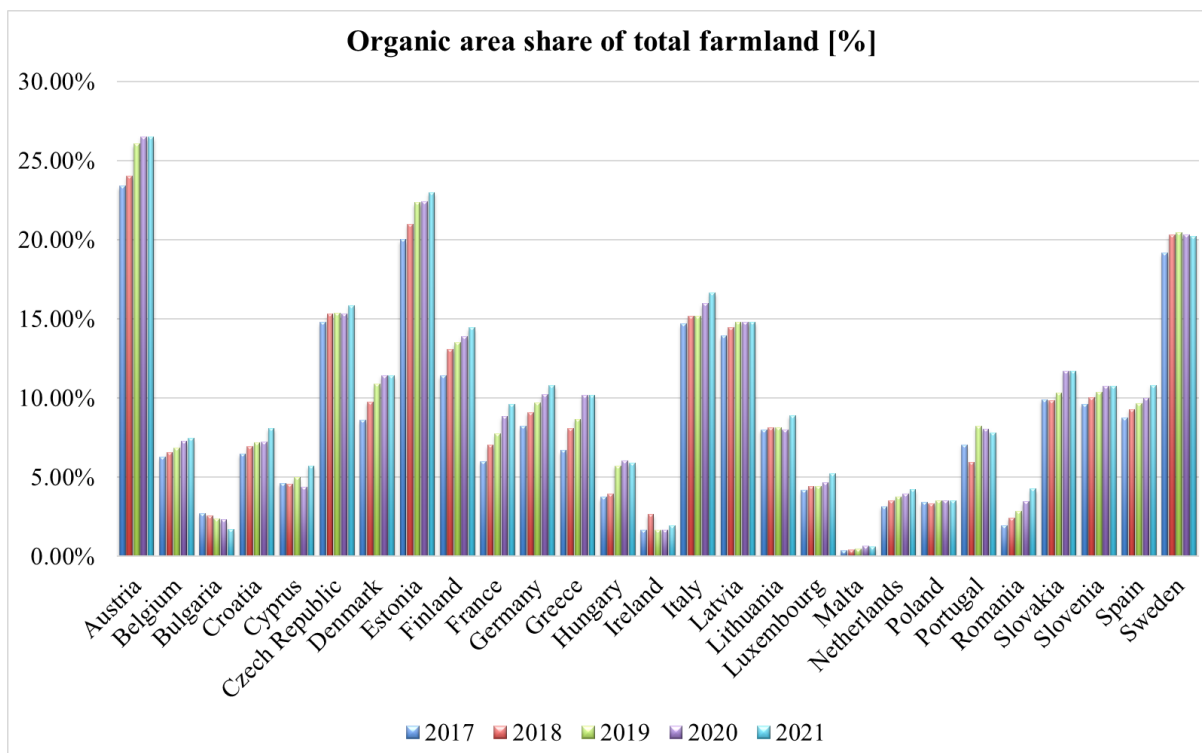


Figure 1. Organic area shares of total farmland (%), in UE Member States, from 2017 to 2021

Source: Graph by author based on secondary data (FiBL, 2023a).

It should be noted that although the share of organic area may be higher or lower in one country or another, it is the total area expressed in hectares that counts towards the Green Deal target of 25% of the area used for agricultural activities being taken up by organic farming. Thus, even though Austria had the highest percentage of organic area in the EU-27 during the period under review, it can be seen from Figure 2 that other EU countries are contributing most to the Green Deal target. These include France, which in 2017 recorded a percentage of 5.99% organic area, equivalent to 1,744,420 ha organic farming, with this type of farming increasing, respectively 7.72% in 2019 and 9.61% in 2021, i.e. equivalent to 2,240,797 ha in 2019 and 2,776,553.93 ha in 2021. The same applies to Spain and Italy. Even if the percentage of organic area in the total agricultural area of these countries is lower compared to the percentages recorded by other countries, the area expressed in hectares is much higher, thus, these countries are those that contribute the most to achieving the Green Deal target.

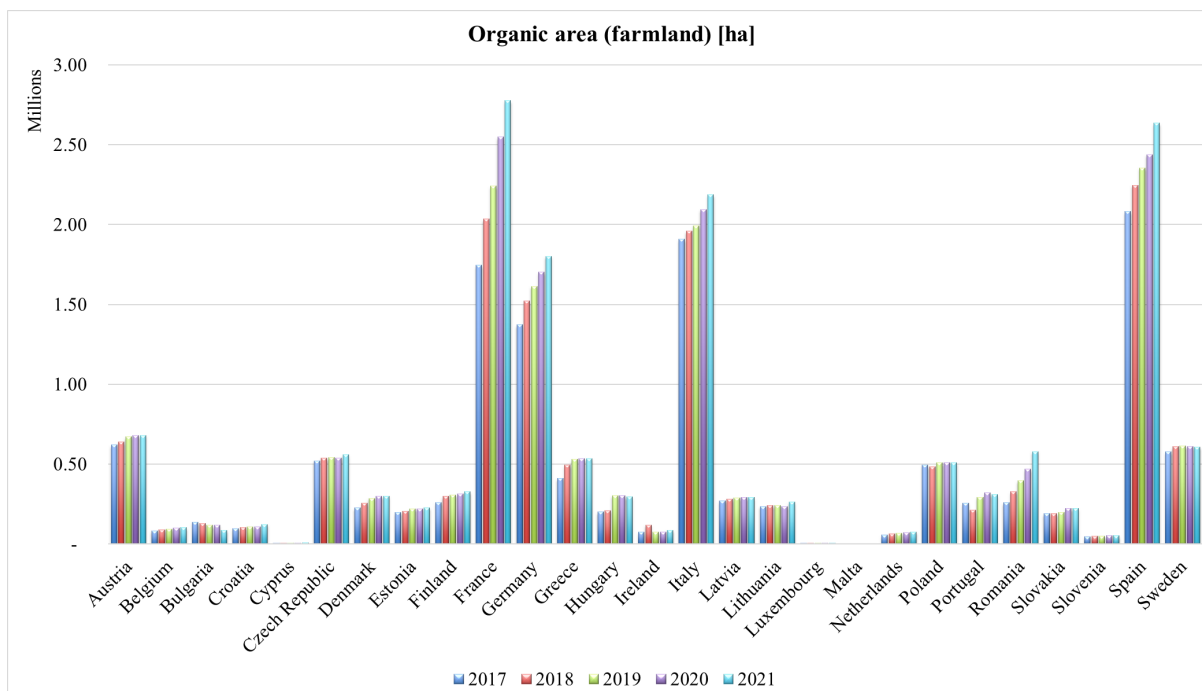


Figure 2. Organic agricultural area (total farmland), hectares, in UE Member States, 2017 - 2021

Source: Graph by author based on secondary data (FiBL, 2023a).

It is important to mention that organic farming is closely linked to the demand for organic food. Thus, a simple but important measure would be to promote the consumption of organic food in various ways.

From Figure 3 it can be seen that over the period under review, most EU Member States have seen an increase in the share of organic food in total food sales. Of course, the demand for organic food differs across the EU, with Austria, Denmark, Luxembourg and Sweden consuming the most organic food. At the opposite end of the scale are the countries in the east of the EU, but the country with the lowest consumption of organic products is Romania.

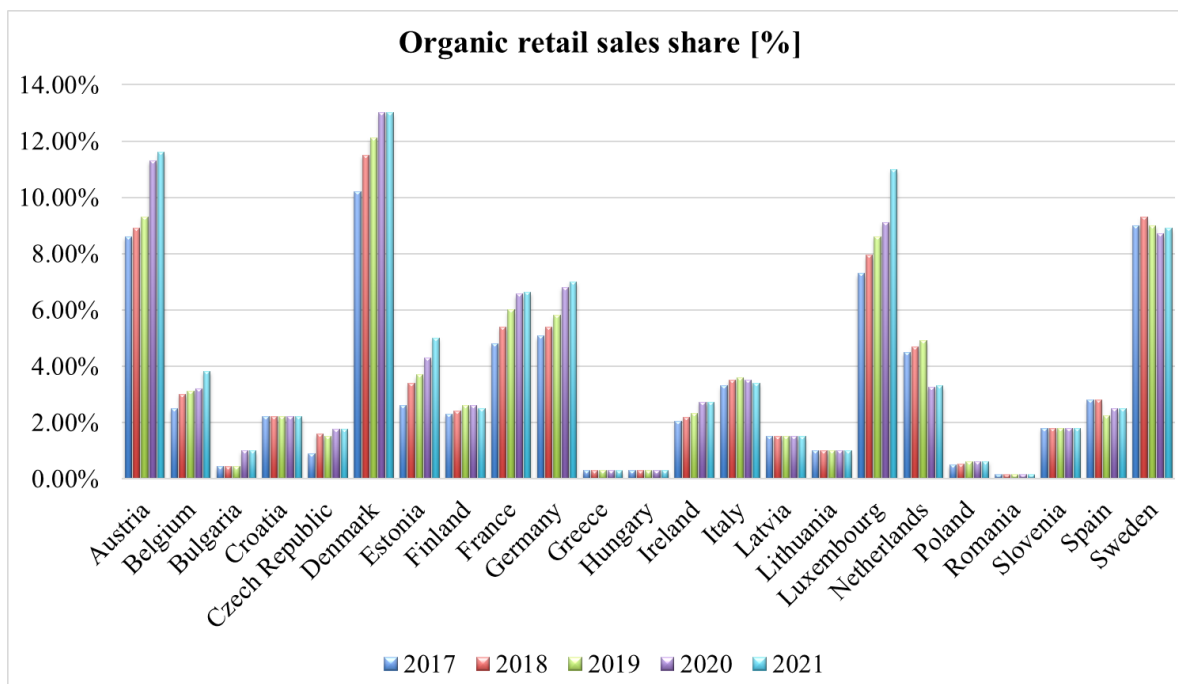


Figure 3. The share of organic sales in total retail sales, 2017-2021

Source: Graph by author based on data identified (FiBL, 2023b).

The share of organic sales in total retail sales may not be a very suggestive indicator when it comes to organic food consumption. But looking at organic sales in Euro terms will give us a much better understanding of how much these products are valued by EU Member States and where it can be expected the share of organic farmland to reach the levels needed to achieve the Green Deal target.

Figure 4 shows very clearly how big the differences are between EU countries in terms of sales of organic products. The countries with significant sales of organic products are Germany and France.

One of the main reasons for this difference is the price level of organic products. It has been found that the implementation of the farm to table strategy will lead to a reduction in the average quantities produced per crop across the EU, which will lead to higher prices for products such as wine, olives and hops. As a result, significant changes will take place in international trade (Bremmer et al., 2021).

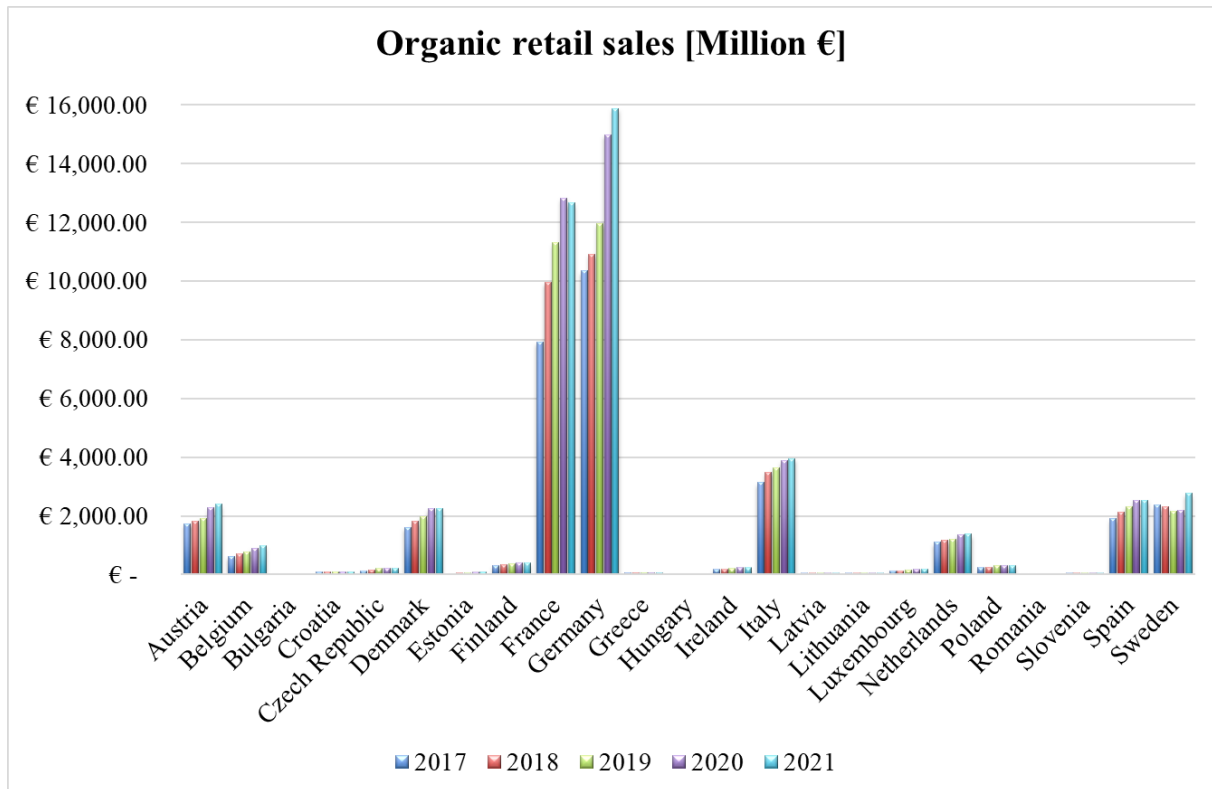


Figure 4. Sales of organic products (retail, million Euro), 2017-2021

Source: Graph by author based on data identified (FiBL, 2023b).

However, there is a significant difference in the consumption of organic food between EU countries. The level of expenditure on purchasing organic products is significantly higher in developed countries than in developing countries. Thus, per capita consumption of organic products expressed in monetary terms is much higher in countries such as Germany, France, Denmark, Luxembourg, where the average level of consumption would be several hundred Euros per person. At the other end of the scale are less developed countries such as Romania, Bulgaria, Cyprus, which do not exceed 10 Euro per capita. Figure 5 is a good overview of consumption expressed in monetary value in each EU country in the period 2017-2021.

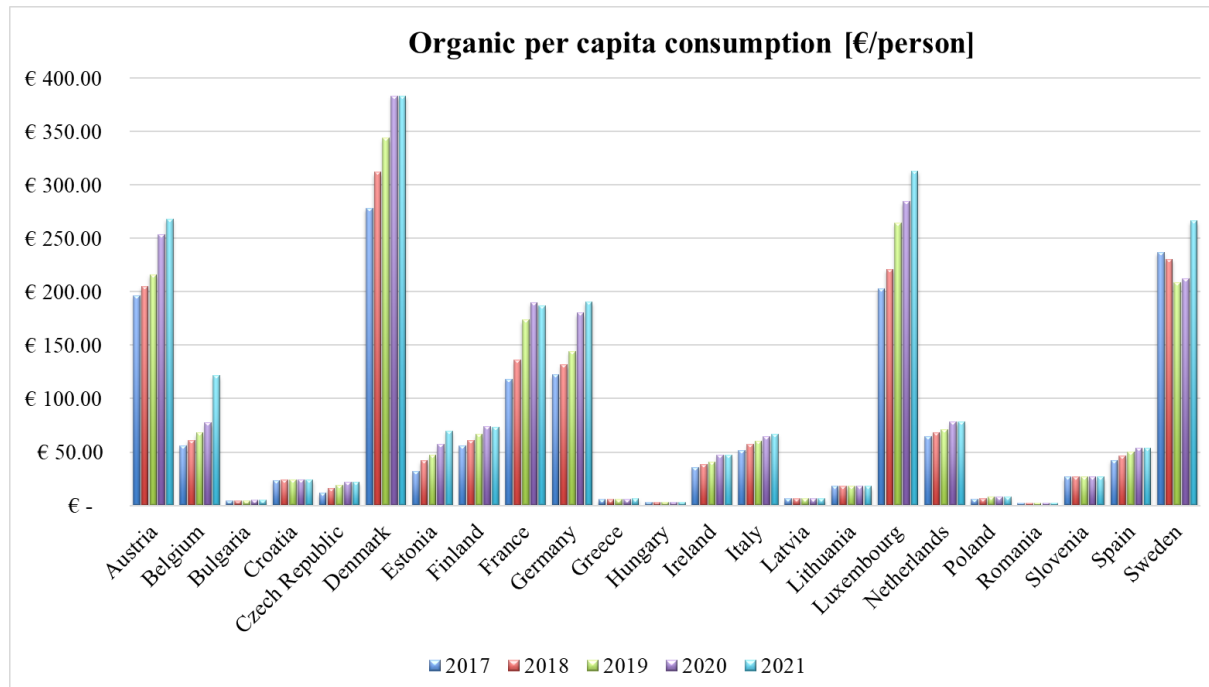


Figure 5. Per capita consumption of organic products expressed in monetary value (Euro/person), 2017-2021

Source: Graph by author based on data identified (FiBL, 2023b).

The level of value paid by a person to consume organic food can be influenced by several factors. One of the most important factors is the level of a person's salary. However, it must also be considered the level of education and lifestyle of people, their age, the level of awareness of people about the benefits of organic products and last but not least how well they are promoted.

Analyzing all the above data, there can be identified below the factors that make organic farming different from one country to another within the European Union. Thus, a determining factor for the share of organic farming in the total agricultural sector is the consumption of organic food. Why would a farmer convert the normal farming he practices into organic farming if there was no demand for organic products? Consumption of organic food fluctuated widely across the European Union between 2017 and 2021, with sales of organic products ranging from €1 million to almost €16,000 million.

Another important factor influencing the consumption of organic food has been the prices of this type of product, which are expected to be higher than normal food prices. The objectives of the 'Farm to Fork' strategy have been shown to have a greater impact on permanent crops such as grapes, apples, olives and citrus fruits compared to annual crops such as oilseeds, rapeseed, wheat, maize and sugar beet. Thus, lower yields negatively affect production and lead to reduced supply on the EU internal market, which in turn leads to higher commodity prices. Effects of Farm to Fork and Biodiversity Strategy 2030 at farm, national and EU level (Bremmer et al., 2021)

Finally, when analyzing data on organic farming, it should be taken into account factors such as the population of EU countries, their topography, their surface area, all of which have a strong impact on organic arable land and the consumption of organic products.

Discussions

Analyzing the results obtained in the previous part of the paper, it can be seen that within the European Union there are big differences between Member States when it comes to organic farming. If at the beginning of the analysis period, the first three countries with the largest area used for organic farming recorded values in the order of millions of hectares - France: 1,744,420.00 ha; Italy: 1,908,653.00 ha; Spain: 2,082,172.79 ha - the last 3 countries with the smallest area of organic farming barely reached values close to 5000 ha, or even lower, around 50 ha - Cyprus: 5,615.80 ha; Luxembourg: 5,444.11 ha; Malta: 43.36 ha.

The same huge differences were observed in the last year of analysis, 2021. What do these results mean? Such differences only answer the first research question in the negative. It seems that EU countries are not converging towards meeting the Green Deal target on organic farming. In order to reach 25% of agricultural land to be covered by organic farming, there should be a certain balance between the areas devoted to this type of agriculture in the Member States. So, this lack of convergence within the EU will delay the Green Deal target, which cannot be met by 2030.

Even if an increase in the agricultural area devoted to organic farming can be noted in almost all EU Member States in the period 2017-2021, it seems that the Green Deal target is far from being reached. Experts at the Thünen Institute (Pe'er et al., 2021) in Germany have produced a report estimating the share of organic areas within each EU Member State in 2030 and have also made an estimate that the target for organic areas should be 25% in 2030. In carrying out this study, the experts took into account official targets in national action plans or strategic plans of the Common Agricultural Policy and data on the organic sector provided by members of the International Federation of Organic Agriculture Movements. The estimate of the share of organic land increase needed to reach the 25% target at EU level in 2030 is based on proportional increases in feasible growth values. Figure 6 shows the results arrived at by experts from the Thünen Institute.

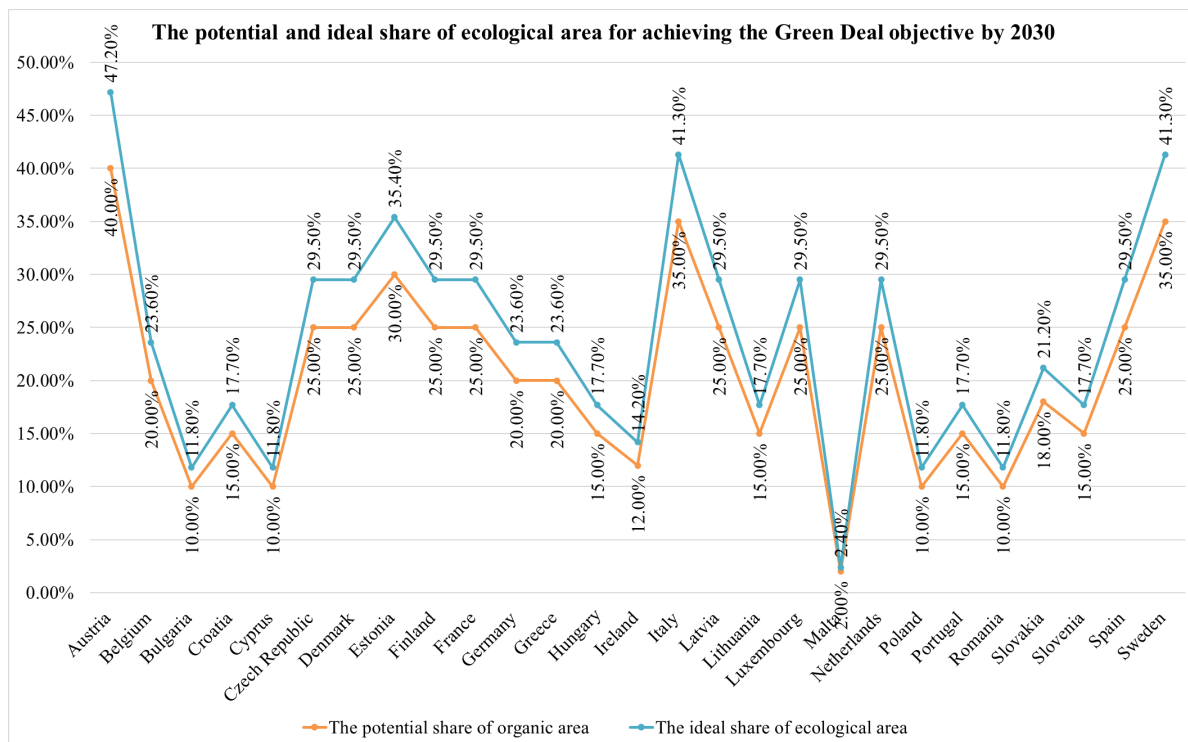


Figure 6. Potential and ideal share of green area to reach the Green Deal target in 2030 (%)

Source: Graph by author based on data identified (Pe'er et al., 2021).

It can be seen from Figure 6 that the discrepancies between the share of green area expected to be achieved by each country in 2030 are as large as in the period 2017-2021. Moreover, if only national and Common Agricultural Policy measures are used, the Green Deal target could not be reached.

Regarding the second research question, it would be expected that the countries with the largest area devoted to organic farming would also be the countries with the highest consumption of such products. Thus, while Spain is in first place in terms of organic agricultural area, the country with the highest consumption of organic food is Denmark. This country maintained its number 1 position throughout the period under review and was ranked alongside Luxembourg and Sweden. The same is true at the other end of the scale, with Romania, Hungary and Bulgaria being the least consuming countries. These results provide a less favorable answer to the second research question, which states that the consumption of organic food does not directly influence the organic agricultural area and thus the achievement of the Green Deal target.

However, analyzing the differences between the consumption of organic food and the area covered by organic agriculture, countries with the largest organic agricultural area but which do not consume as much organic food are likely to be among the most important exporters of organic products within the EU.

The limits of research and future research directions

One of the most significant limits of the study stems from the fact that, for some countries included in the analysis, the data provided by FiBL were either non-existent or incomplete. This could potentially lead to underreporting and underestimation of practices related to organic agriculture and the consumption of organic products in certain countries.

Another restriction of the current research could arise from the adopted methodology. Errors in data collection methods and in the interpretation of results might occur. Hence, these errors should be considered, and for result accuracy, they should be validated by previous studies. In the case of the present study, the research findings were validated by referring to studies conducted by researchers from the Thünen Institute (Pe'er et al., 2021).

For greater relevance in future studies, it is important for the monitoring of the evolution of areas covered by organic agriculture and the consumption of organic products within the EU to occur continuously, and for the comparison of practices and performance related to this type of agriculture and consumption to be conducted across various regions of the EU. This could yield deeper insights into the factors influencing the success of these practices within specific regions or countries of the European Union.

Furthermore, future studies should delve deeper into the policies supporting the development of organic agriculture, so that improvements can be made to these policies and effective programs can be developed in this field, based on collaborations among researchers, governments, non-governmental organizations, the private sector, and other stakeholders.

Conclusion

The conclusion of this paper highlights the existence of significant differences between EU Member States in achieving the targets set by the Green Deal, as regards the area covered by organic farming. The analysis carried out revealed that although there is a general trend of increasing organic farming at EU level, progress is not equally distributed between Member States,

suggesting that there are country specific barriers and challenges to the transition to sustainable agriculture.

One of the most surprising results of the research indicates that the consumption of organic products is not the main factor influencing the expansion of organic farming areas in Member States. It was observed that the highest consumption of organic food is not recorded by the countries with the largest area devoted to organic farming. This may have implications for intra-EU trade in organic products. Therefore, a possible future analysis may show more concretely how trade in organic products in the EU has evolved in recent times.

Based on the findings of this paper, a more coordinated and strengthened approach is recommended at the European level to promote organic farming and organic food consumption in a way that truly supports the Green Deal objectives on organic farming. By adopting comprehensive measures and focusing on the key drivers that stimulate the adoption of organic farming, EU Member States can move together towards a greener and more sustainable future.

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