

SOME SUSTAINABILITY CHALLENGES OF THE HUNGARIAN AGRICULTURE

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<https://doi.org/10.47833/2022.2.AGR.003>

Keywords:

sustainability
digitization
greening
agricultural development
Hungary

Article history:

Received 10 October 2022
Revised 20 November 2022
Accepted 25 November 2022

Abstract

Today, the world's agriculture faces many environmental, economic and social challenges. Answers to problems often induce development directions that are partly opposed to each other, such as in the case of digitization and ecologization.

In our research, we identified the most important sustainability challenges affecting agriculture, the food industry and consumption through descriptive statistical analysis of Eurostat's agri-environment management indicators and HCSO data.

Our results revealed that the Hungarian agricultural economy is struggling with a number of sustainability challenges that do not receive adequate attention from political decision-makers. On the basis of the current documents (Digital Agricultural Strategy, Digital Food Industry Strategy), we basically identified five problem areas.

In the future, further CAP and national policy reforms are needed to make the EU's agricultural economy more sustainable. This would primarily require a more balanced appearance of digitization and an ecological approach and a fairer distribution of support resources at the national level.

1 Introduction

Agricultural intensification is a major threat to biodiversity worldwide. Despite the fact that since the 1990s, diverse nature conservation tools have been incorporated into the Common Agricultural Policy (CAP), European agriculture becomes more and more intensive.

Agriculture is a driver of biodiversity loss and a major contributor to land-use changes that accelerate climate change and its effects. In recent years, several assessments have been published regarding the development of the Common Agricultural Policy, which shed light on the formation of concepts related to food [1]. The CAP has undergone several reforms since 1992. Agricultural analyzes have long warned that EU CAP funds are spent inefficiently, that there is a sharp discrepancy between the CAP's set goals and budget, and that the largest budget is spent on the least effective measures [2].

European agriculture and the Common Agricultural Policy will continue to face significant difficulties in the future. For this reason, there are more criticisms of the CAP, as sustainable food and agricultural production is at the top of the EU's objectives, to achieve which reform efforts are ongoing, without spectacular results. The Green Deal and Farm to Fork Strategies are central elements of the European Commission's sustainable development goals [3]. However, many questions remain unanswered regarding how the objectives formulated in the strategies can be incorporated into the CAP reform process. The success of the Farm to Fork Strategy depends on

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how willing the European Parliament and the Council are to support the high-level ambitions of the European Commission, as well as how compatible the interests of individual member states and political groups will be [4]. However, this Strategy can really change the existing situation if it will result in a number of well-defined measures.

However, the implementation depends on many factors, among which today's political environment is not a negligible aspect. Let's think here e.g. to the Russian-Ukrainian war, which, among other things, points to the vulnerability of the EU in the food sector, and may even call into question the objectives that were formulated for the sake of climate and environmental protection on the threshold of the new CAP.

2 Material and methods

We used data from the Hungarian Central Statistical Office (HCSO) and Eurostat. We primarily used the long time-series agricultural data and the Hungarian Agricultural Census of 2020 by the HCSO and Eurostat's Agri-environmental Indicators (AEIs) database. Concerning the indicator selection, we primarily chose those that also played a role in the CAP monitoring process, but we also considered those that were Hungarian-specific.

The collected data were analyzed using descriptive statistical methods and Microsoft Excel software to create graphs. During the document analysis, we identified the essential parts and highlighted data relevant to the research. During the content and thematic analysis, we focused on easily identifiable (obvious) and latent, non-primary information about development goals and specific interventions. After reviewing the content summary of the agricultural policy documents, we used the most critical keywords (sustainability, landscape management, climate change, small producers) to search for policy gaps.

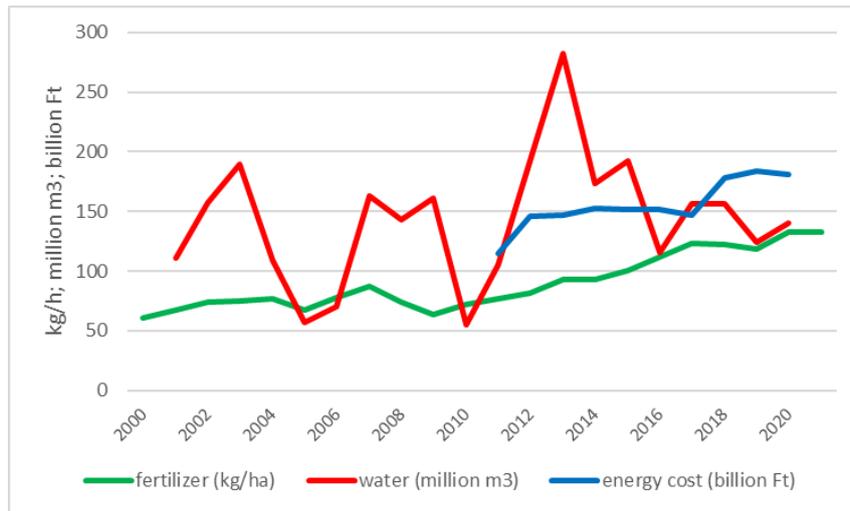
3 Results

On the base of data from Eurostat and HCSO, changes in the intensity, energy and water demand of Hungarian agriculture, land use, and changes in food consumption habits can be monitored.

A worldwide trend is the intensification of agricultural production, which is accompanied by an increase in the input side (use of water, pesticides, fertilizers, etc.). In Hungary, after the regime change, the use of fertilizers and other materials decreased significantly with the economic collapse, but in the past three decades, and especially after 2000, the consumption started to rise again. Between 2000 and 2021, the amount of fertilizer per hectare doubled (2000: 61; 2021: 133 kg/ha) (ksh.hu). In addition, the amount of water used for irrigation has also increased in the last twenty years (from 110.7 to 140.56 million m³), in accordance with the presence or absence of precipitation (ksh.hu).

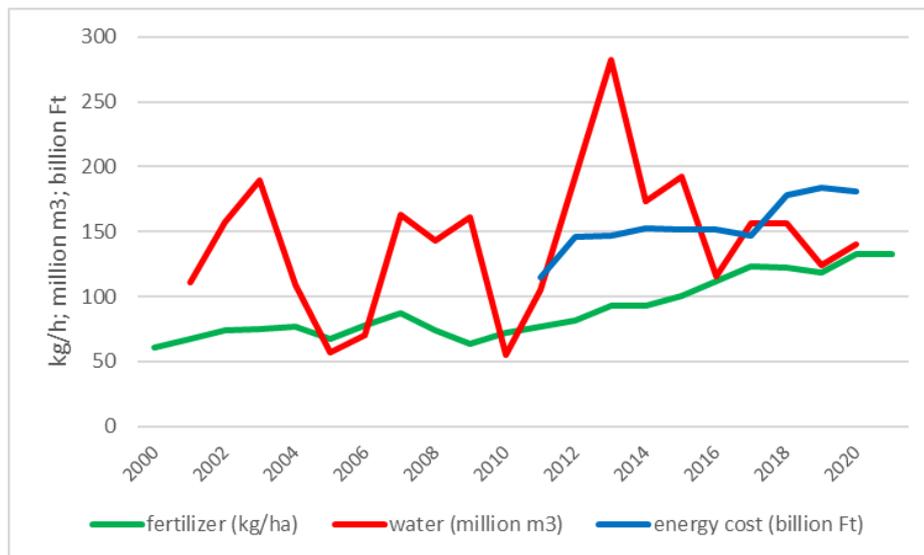
Eurostat data indicate that in the 2010s, the previous favorable process, which meant a reduction in energy consumption, was reversed, and energy consumption increased by 32% between 2010-2016. Between 2011 and 2020, energy costs increased by 37% (from 114,713 to 180,657 million HUF). Figure 1 shows the evolution of these expenditures.

Sustainability is also threatened by the increase in energy consumption, which is also important due to the emission of greenhouse gases. In the last ten years, there has been a significant change in the cost of energy in agriculture, which testifies not only to the rise in prices, but also to the increase in the amount of energy used. In addition, the GHG emissions of agriculture in Hungary have increased on a larger scale in the last decade than the European average, as a result of which the emissions currently exceed the EU average (Fig. 2).



Source: KSH

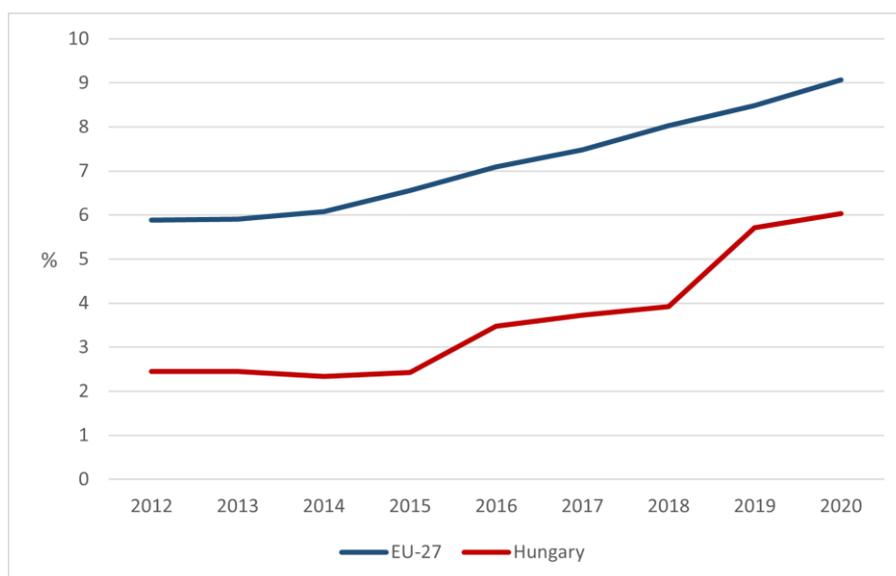
Figure 1: Trends in fertilizer irrigation water use and energy cost of agriculture between 2000 and 2021 in Hungary



Source: Eurostat

Figure 2: Greenhouse gas emission of agriculture in Hungary and within the EU between 2008 and 2019.

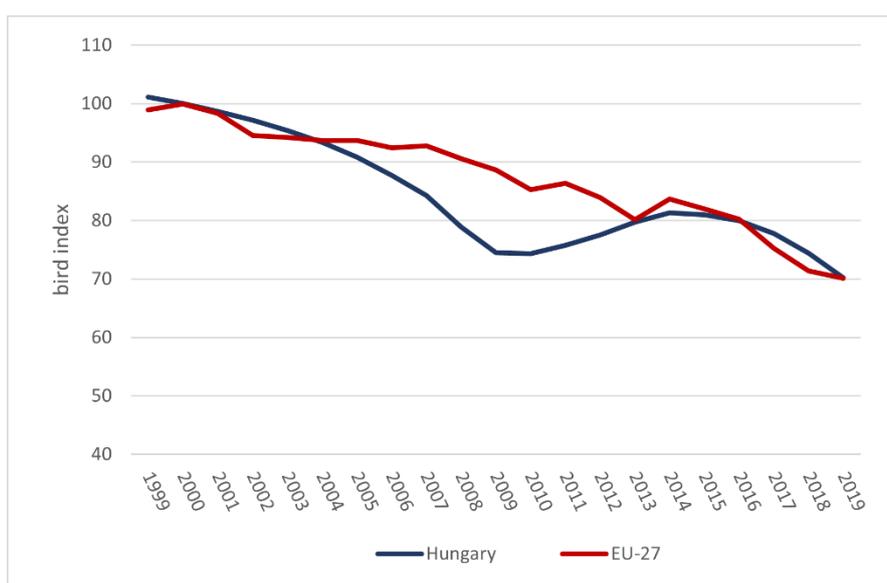
In Hungary, the rise of organic farming took place in a particular way. The appearance of cultivated land areas affected by organic farming and agri-environmental management measures can be dated to the beginning of the 2000s. In the case of organic farming, until the 2010s – in contrast to the EU – we could not observe a significant area increase, which stagnated around 2% for a long time. After that, however, a similar increase in proportions can be seen in the areas practicing organic farming as in the EU, which means an increase of 3-3.5% between 2012-2020 (Fig. 3).



Source: Eurostat

Figure 3: Area under organic farming

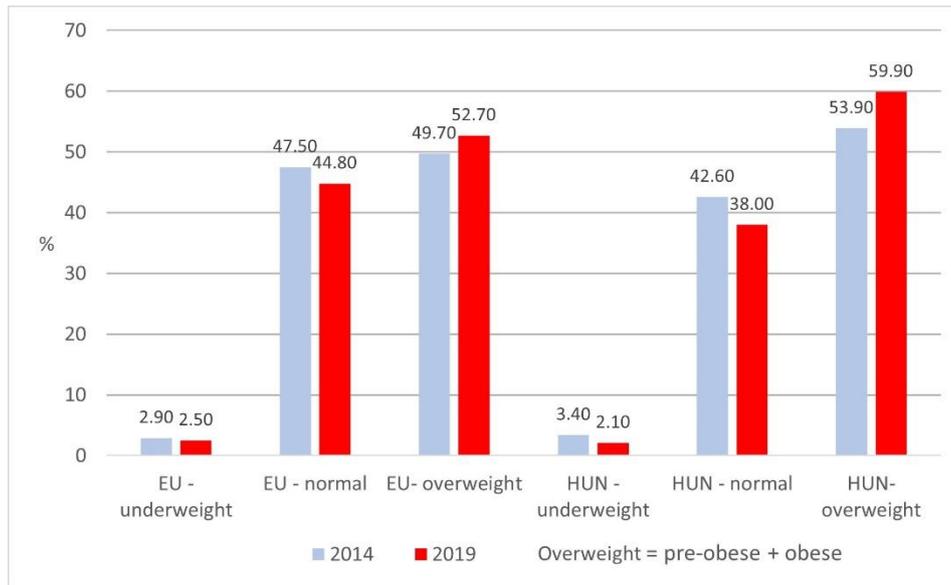
The farmland bird index is widely used to measure the environmental effects of agriculture. This index has changed unfavorably in the last decade. Eurostat’s agri-environmental management database registered a 30-point index drop between 1999-2019 (Fig. 4).



Source: Eurostat

Figure 4: Changes in the common farmland bird index, 1999-2019, (2000=100%)

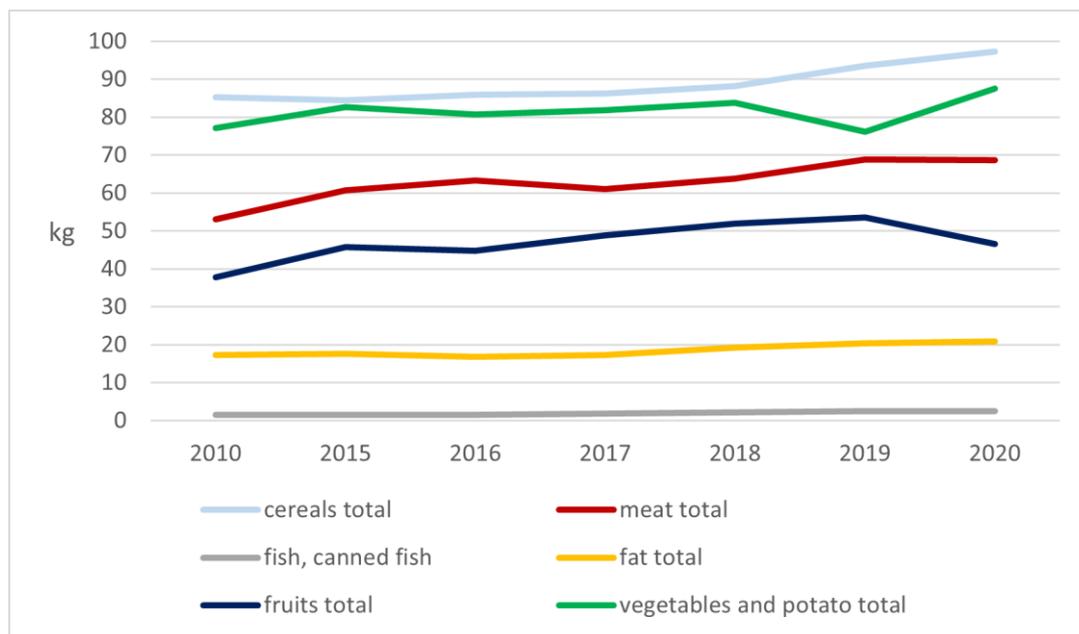
Among the many functions of agriculture, the production of food occupies a prominent place. Food safety is a question of quantity and quality, which has a strong impact on the financing and sustainability of agriculture at the European level. Malnutrition is not unique to third world countries; the phenomenon is also present in Europe, but a much smaller extent. Between 2014 and 2019, the proportion of the malnourished population decreased in the EU average and in Hungary as well, in the latter case to a greater extent, as a result of which the Hungarian value is currently lower than the EU average. However, this positive trend cannot be said for the development of the proportion of the normal and obese population. While the proportion of people with a normal body mass index decreased, the proportion of obese people increased, to a greater extent in Hungary than in the European Union (Fig. 5).



Source: Eurostat

Figure 5: Body Mass Index in Hungary and the EU (2014; 2019)

The unfavorable development of the body mass index draws attention to the change in eating habits and the quantity and quality problems related to food. In the background of overnutrition, in addition to the financial conditions, the abundance of available food should also be mentioned. The issue can be linked to the performance of agriculture, including organic farming. Several researchers have come to the conclusion [5] [6], that the expansion of organic farming prevents the population's food needs from being met due to poorer crop results. If we add the overnutrition data to this statement, the picture becomes more nuanced. Overproduction and overconsumption are often a problem for European agriculture, which calls into question the critical comments regarding the proportion of areas to be converted to organic farming. The transformation of food consumption habits in Hungary can be clearly traced on the consumption data of individual food categories (Fig. 6).



Source: Eurostat

Figure 6: Food consumption in Hungary 2010-2020

4 Conclusions

The agri-food sector is facing serious challenges, and its ongoing transformation is digitization and ecologization. These are also the main directions of the Green Deal and the new CAP for the period after 2023.

From a sustainability point of view, we identified five policy gaps in Hungarian strategies: (1) lack of an ecological approach, (2) climate change does not receive enough attention, (3) complex landscape management does not appear in the documents, (4) measures that increase inequalities between farmers, (5) the Digital Food Industry Strategy does not deal with healthy food consumption and issues of food waste.

At the national level, the Hungarian agricultural sector and decision-makers should outline a more balanced development approach, comprehensively focusing on environmental protection issues. The advantages of digitization and ecologization complement each other while strengthening the inclusivity of development policy. Furthermore, coordination between policies and cooperation with nature conservation, tourism and other rural economic sectors should be improved. With regard to the food industry, the support of healthy food production must be indicated as a goal in the Digital Food Industry Strategy. Agricultural companies should be encouraged to shape consumer attitudes in order to promote healthy food consumption and reduce food waste.

Acknowledgment

This paper was supported by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences (BO/00353/21/10).

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