SUSTAINABLE ECONOMIC GOALS – HUNGARY'S PERFORMANCE IN THE EUROPEAN UNION

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INTRODUCTION

Sustainability is a concept used more and more often in today's economic literature, but also in everyday news. It entered the public consciousness with the Brundtland report, according to which sustainability is defined as meeting the needs of today without endangering the future (Brundtland, 1987). The concept itself is not new, as it is as old as humanity. For example, two- and three-pressure farming served the sustainable productivity of the soil. Another historical example of reuse and the

circular economy is the return of organic manure to the soil (Wellmann, 1979). The itinerant grazing lifestyle of nomadic livestock breeders was also driven by the need for sustainability (Fodor, 2019).

The situation changed with the industrial revolution. The gradually emerging mass production and the increasing use of fossil energy carriers had three consequences that are relevant for this study:

- the rate of depletion of fossil energy carriers formed over millions of years was accelerating
- the level of atmospheric pollution has been increasing
- the growth rate of the earth's population became higher and higher

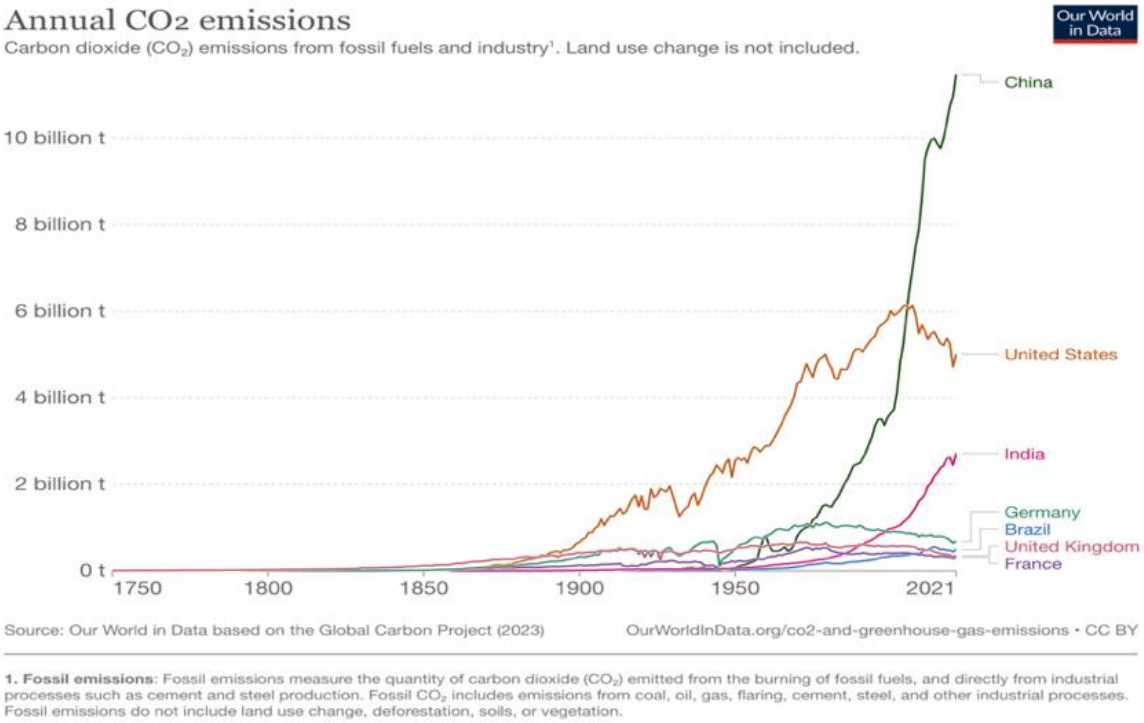
The problems caused by the interaction of these three processes are characterized by the fact that they have now reached what science calls a tipping point. This means that beyond a certain point the system goes from one stable state to another stable state; i.e. the process of environmental degradation becomes irreversible. There are several tipping points in climate change, and some of them have already been crossed (Lenton et al., 2019). The polar ice caps (and the natural fresh water stored in them) are disappearing, the permafrost is melting, extreme weather phenomena and natural disasters are becoming more frequent. All of this also clearly shows that we do not have to solve individual problems, since everything is connected to everything else. Complex thinking and a systemic approach are therefore necessary. Primarily at the management and decision-making levels, it is advisable to incorporate this way of thinking and attitude into the education system as early as possible (Al Danaf and Berke, 2020, 2021). This also means cooperation, since today our world has become so specialized that one person is no longer able to see through all areas of expertise in sufficient depth.

Since we can currently live in only one place in the universe, the planet Earth, we must acknowledge that its materials are only available in finite quantities. Therefore, we can already be certain that the sustainability of economic growth cannot be solved in the long term. In other words, we have to arrange for a much more economical and more efficient use of resources. With this, we can at least extend the time available to find a solution.

THEORETICAL BACKGROUND

The three main sources of economic growth are population, savings and productivity. Thanks to these, the economically developed countries produced spectacular economic growth from the 1950s. However, this pace has slowed down significantly nowadays. The reason for this is the reversal of previously favorable demographic trends, climate change caused by environmentally damaging technologies, and the accumulation of debt due to the operation of the financial system. Nowadays, climate change is perhaps the biggest problem due to the gradual crossing of tipping points. The focus of research in this area is on issues related to the emission of greenhouse gases (mainly carbon dioxide) (Nordhaus, 1993; Pindyck, 2013). The importance of this question is well illustrated in Figure 1.

Figure 1. World CO2 emission data



Source: Our World in Data

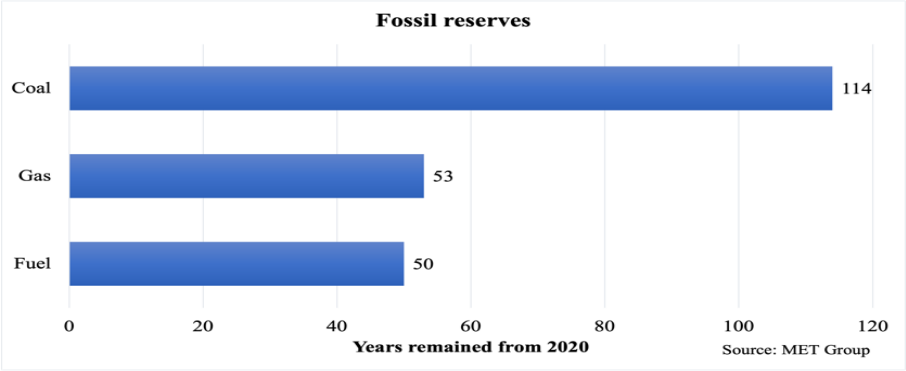
The financial system and climate change have a complex relationship. Let's look at inflation as an example of these! Resource scarcity may be one of the main inflationary factors in the near future. Isabel Schnabel (2022) lists three types of inflationary problems related to the green transition:

1) climate inflation - the natural disasters associated with climate change, droughts, floods, heat waves, crop losses, damage events, declining tourism, etc. and they trigger price increases that occur as a result. They will play an increasingly important role in making investment decisions (Baranyai and Banai, 2022),
2) fossil inflation - inflation due to the decreasing amount of fossil energy carriers, their more expensive extraction and the increasing environmental burden,
3) green inflation – generated by a significant increase in the need for rare and irreplaceable materials essential in the green transition.

The financial system can amplify problems, for example by significantly increasing the exposure of the companies involved. On the other hand, however, an appropriate financial system is an important condition for the implementation of the green transition (Carney, 2019). The financial system plays an intermediary role in the classical economic approach: it transfers the savings of savers (typically the population) to users (these are typically companies). However, the 2008 crisis showed that this concept is highly simplistic. Based on empirical evidence, sustainable growth can only be realized with low indebtedness, and external indebtedness can only play such a role if it finances productive and high-efficiency investments.

Given the finite amount of Earth's materials, which was already analyzed by Hubbert (1956) in the case of fossil energy carriers, economical and efficient use taking into account environmental aspects is especially important (Figure 2), because our supplies are still finite (MET Group, 2021).

Figure 2. Fossil reserves



Source: (MET Group, 2021)

The importance of the issue of sustainability is indicated by the fact that the UN has developed the framework of sustainability goals (sustainable development goals - SDGs) shown in Figure 3 for the countries of the world (UN Department of Economic and Social Affairs, 2015).

Figure 3. UN Sustainable Economic Goals

Source: United Nations

METHODS

Even before the UN SDG 17, since 2007, the Central Statistical Office (KSH) has been publishing its report on sustainability indicators in Hungary every two years. The Hungarian interpretation of sustainability predates the UN goals, so it could not even adapt to them when it was created. According to the Hungarian interpretation, the essential element of sustainability is the responsible management of available resources (Bartus G., 2013). The present study is based on this interpretation. The indices were also selected based on the KSH index selection methodology (G. Bartus, 2013). The authors modelled the growth with the evolution of the gross domestic product (GDP), and among the demographic indicators, they examined the employment data. Although GDP is a commonly used indicator for characterizing growth, two comments should be added to this methodological choice. One is that GDP as a welfare indicator has already been criticized (Stiglitz, Sen and Fitoussi, 2009). The most common misunderstanding is that many people interpret GDP as a development indicator, even though it is only a quantitative indicator of economic

growth. However, economic growth in developed economies is already of a qualitative nature, as it is mainly based on human capital (Schultz, 1961; Fogel, 1994) and innovation (Schumpeter, 1980). Quantitative growth is typically produced by less developed economies. The indicator of investment resources is most closely related to finance, analyzing the area of research and development (R&D) separately. The authors illustrated the relationship between the environment and the economy with domestic material consumption (DMC) and resource productivity. For the purpose of the European comparison, the data were selected from the Eurostat databases using databases according to a uniform methodology. On the one hand, the comparison was made in relation to the EU average, and Hungary's performance was also compared with the two largest economies of the EU, Germany and France.

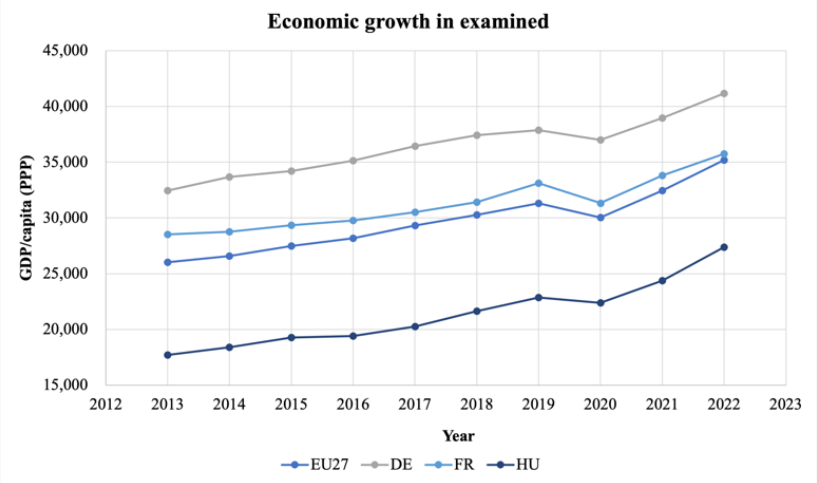
RESULTS

Economic Growth

The authors modelled the evolution of economic growth with the value of GDP per capita measured at purchasing power parity (PPP). The per capita value enables the comparison of countries with different populations and GDPs, and PPP also takes into account the standard of living in the evolution of the indicator.

Figure 4 clearly shows that the average growth trends of the examined countries and the EU27 are similar, only the value of GDP per capita differs between the individual countries. The similar growth trend can be explained by belonging to the common economic zone.

Figure 4. Economic growth trends

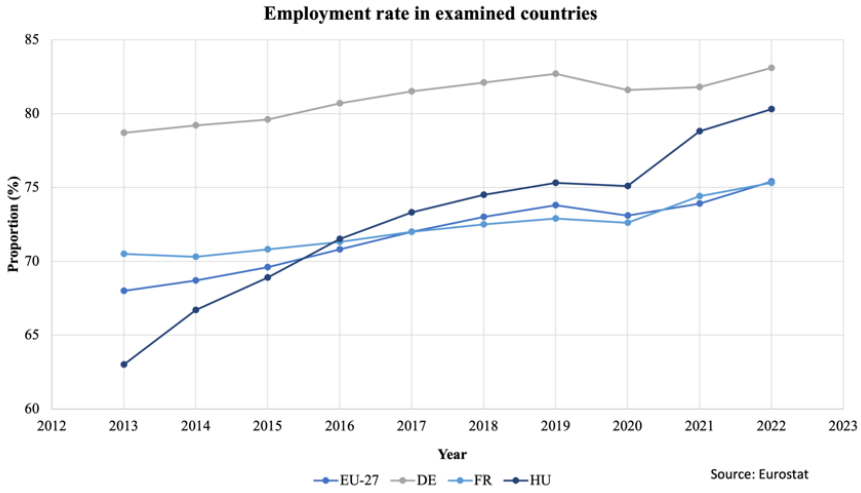


Source: author's own based on Eurostat

Employment

The employment rate is a measure of labor utilization. The image is less uniform in its development (Figure 5). During the entire period, Germany maintained its leading position with an employment rate that exceeded the EU-27 average by almost 10 percentage points. The largest increase (17 percentage points) was produced by Hungary. At the beginning of the period, the Hungarian data were the most unfavorable, but by 2022 it was in second place among the countries examined. Growth was particularly fast during the recovery period after COVID-19, the increase was 3 percentage points in one year. A significant role in this can be attributed to the good timing of job-saving state subsidies and the restart of the economy (Kőmüves, Poór and Szabó 2022).

Figure 5. Trends of employment rate



Source: authors' own based on Eurostat

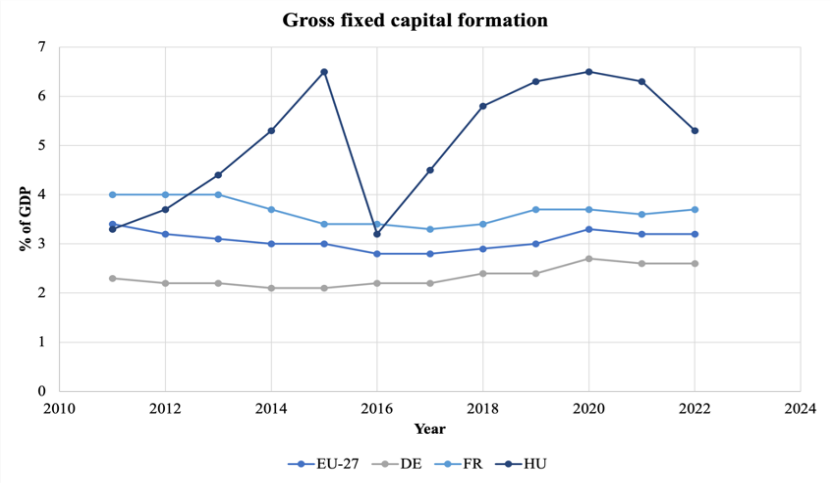
It shows the proportion of the working-age population aged 15-64 who are actively working (earning at least one hour a week), or who have a job but are currently absent at the time of the survey. The description of the relationship between employment (or unemployment) and the development of GDP is attributed to Okun (1963). According to this, a 1% drop in employment is usually accompanied by a drop in GDP of around 2%. Similarly, a 1% increase in employment leads to a 2% increase in GDP. The study of the European Commission (European Commission, 2022) also dealt with the issue, according to which, if the unemployment rate increases by 1 percentage point, then the GDP decreases by 0.42 percentage points.

Another aspect is the perspective of human capital (Schultz, 1961). According to this, in order to operate efficiently, companies must invest not only in their tools, equipment, and buildings, but also in human capital - in the latter, for example, in the form of training. A trained workforce with appropriate skills is also a factor in economic growth. Another positive effect of increasing employment is that productivity is also associated with paid incomes, unlike, for example, a system based on assistance to the unemployed (Malatyinszki, 2007a, 2007b, 2009a). In addition, this latter approach also makes it difficult for those who have lost their jobs to reintegrate into the labor market. Human capital is also the basis of knowledge capital. By developing human capital, the amount of economic capital can be significantly improved and the potential of natural resources can be optimally exploited (Malatyinszki, 2008, 2009b, 2020).

Investments

In addition to population, two other bases of economic growth are investments and productivity. Among the population-related indicators, we previously dealt with employment. The sources of investments are savings. However, the realization of investments also depends on other factors, some of which are outside the realm of the economy (for example, political aspects). The authors measured the development of investments as a percentage of GDP (gross fixed capital formation - GFCF) (Figure 6). Based on the figure, it can be said that the EU average, as well as the examined German and French economies, spend roughly the same proportion of GDP on investments each year. The investment index of the Hungarian economy develops differently from this picture.

Figure 6. Investments



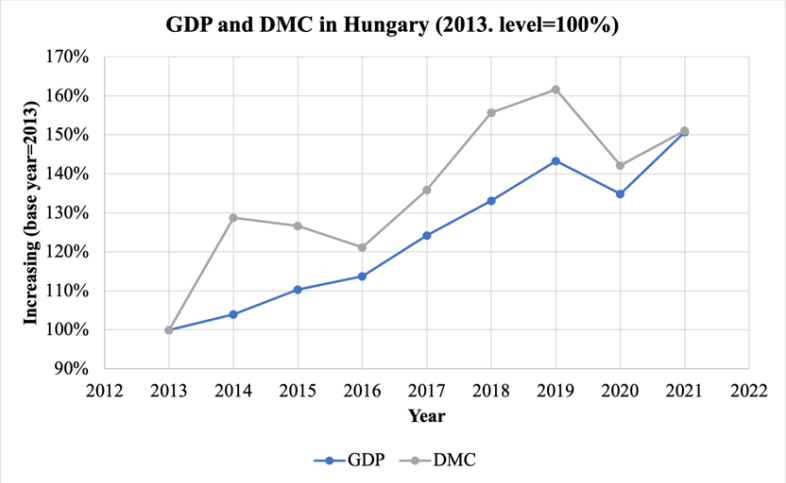
Source: authors' own based on Eurostat

The reason for the decline in 2016 was primarily the stagnation of funds coming from the European Union, then from 2017 the developments related to the new EU budget cycle started, and the situation of real estate investments also developed favorably. A transformation also took place in the structure of fixed asset accumulation. In 2016, due to the depletion of EU funds, the government was forced to withdraw from the sources of investments. By 2018, the situation had changed so that the companies' share was 60%, and the government's share was 30%. The pandemic and then the Russian-Ukrainian conflict followed each other almost directly. The fundamental question of recovery from crises is the extent to which the government relies on private investments and the implementation of large public projects to stimulate demand. It is desirable for the role of the corporate sector (non-financial companies) to remain close to 60%, thus helping to reduce foreign exposure and increasing the role of internal investment sources within investments.

Resource productivity

Resource productivity is the ratio of domestic material consumption (DMC) to GDP. It shows how much a unit of material consumption contributes to GDP. This indicator is the narrowest cross-section, showing the relationship between the economy and the environment from the point of view of materials. We can say that the indicator shows the extent to which economic growth burdens and uses the environment. Figure 7 and Table 1 illustrate the evolution of Hungary's GDP and DMC.

Figure 7. Hungarian GDP and DMC time series (2013-2021)



Source: authors' own based on Eurostat

Hungary's GDP increased one and a half times during the period under review. At the end of the period, the use of 1 ton of material contributed €1,037 to the gross domestic product, which is practically the same as the value of €1,039 in the beginning year. So the resource productivity did not change, i.e. the one and a half times GDP increase was based on the use of one and a half times as many materials. If we look at the intervening years, the situation is even more unfavorable, since in these years we were also unable to produce even €1,000 GDP using 1 ton of material.

Resource productivity not only plays a role in economic growth, but also has a significant impact on financial sustainability. Simply put: the price of materials increases as the available materials are used up. This is especially true for those rarely occurring materials (for example, lithium, cobalt, copper, silver, phosphorus), of which a significant amount is required for the production of green transition technologies. In addition, these materials are mostly only found in one or a few countries in extractable quantities (possibility of monopoly pricing). The scarcity of resources can therefore become one of the main inflation-stimulating factors.

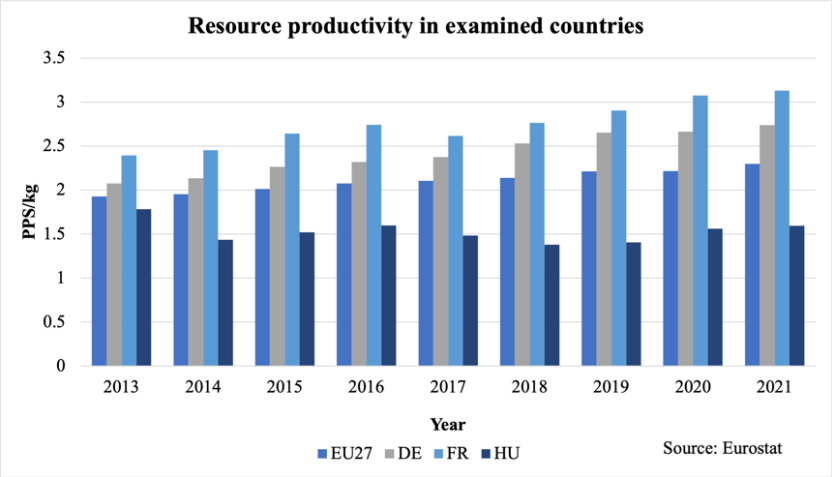
Table 1. Resource productivity in Hungary (2013-2021)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
GDP (million €)	102,239.70	106,263.80	112,791.00	116,255.70	127,024.70	136,055.40	146,554.50	137,866.00	154,120.10
DMC ('000 tons)	98,396.87	126,721.83	124,617.93	119,229.39	133,749.78	153,180.05	159,074.69	139,894.03	148,674.07
Resource prod. (€/ton)	1,039.05	838.56	905.09	975.06	949.72	888.21	921.29	985.50	1,036.63

Source: authors' own based on Eurostat

For the comparison of individual countries, the value expressed in € – as in the case of national income – does not reflect the difference between the living standards of individual countries. Therefore, for this purpose, the authors used the indicator calculated with purchasing power parity (Figure 8). This clearly indicates that Hungary is lagging not only behind the EU's leading economies in the area of resource productivity, but also in comparison to the EU average. It can also be stated that the Hungarian performance - unlike the other examined countries and the EU average - is fluctuating. This fluctuation shows a shift of a few years compared to the investments, which corresponds to the period between the realization of the investments and the appearance of the result they created.

Figure 8. Resource productivity in examined countries (2013-2021)



Source: authors' own based on Eurostat

Modern economies are highly material and resource intensive. Since resources are only available in finite quantities, the current economic model certainly cannot be sustainable. However, the need for resources can be significantly reduced by implementing a circular economic transition. This is also beneficial from an environmental point of view. Of course, the transition also requires significant investments, the condition for their implementation is also the financial background provided by the stable financial system.

SUMMARY

In today's economy and everyday life, the consequences that can be linked to the negative effects of creating prosperity based on economic growth are appearing more and more often: atmospheric pollution, extreme weather phenomena, floods or even drought. The depletion of our Earth's raw material supply is also within sight. All these problems cannot be solved with the knowledge and technology we currently have. That is why it has become important to take the time to find a solution and to do so in a frugal and responsible manner with the assets entrusted to us, thinking of future generations as well. The role of knowledge and efficiency, as well as the stable financial system providing the background, became important in this task. This study dealt with their measurability and the results of the measurements.

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