

NATIONAL FRAMEWORK STRATEGY ON SUSTAINABLE DEVELOPMENT – 4TH MONITORING REPORT (2019- 2020)

Approved by the National Council for Sustainable Development
at its meeting on December 9 2021, in Budapest

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I. SUMMARY SECTION

1. Message to the Readers from the members of the National Council for Sustainable Development

As this report is approved in December 2021, we will have been fighting the SARS-CoV-2 coronavirus and the global pandemic caused by this virus for nearly two years. We are mourning our fellow countrymen who died from the complications of this disease, we are paying tribute to healthcare workers who are fighting a heroic battle, we express our appreciation to researchers who quickly developed the vaccines to control the pandemic, we are trying to help the people who are affected by the restrictions introduced involuntarily in order to contain the pandemic and support those who suffered financial losses and we are trying to keep track of the macroeconomic impacts of the pandemic, the disruption of supply chains, the shortages of supplies in some product categories, the increased public deficit and debt and rising inflation.

This pandemic is linked in many ways to what we collectively define as sustainability or sustainable development. One of the underlying reasons of this pandemic is the unsustainable change in land use, the process of the modification of the natural environment into built environment to be used by people, the rate of which was steadily rising in the second half of the 20th century. The fewer and fewer specimens of the fewer and fewer remaining species are confined to fast shrinking natural areas that, for the time being, are still untouched by humans. The more densely inhabited an area is, the more connections between the built and natural environment are likely, including higher probability of virus jumps and the resulting zoonotic outbreaks. The COVID-19 pandemic represents a typical new form of crisis of the 21st century when the unsustainable use and depletion of the natural capital cause reactions restricting the normal functioning of human societies, human suffering and economic recession.

The Council regularly stresses that the transition to a sustainable functioning within the society is not for its own sake; a sustainable society has numerous benefits. These include ecological and social resilience as well as more effective protection against external shocks. This pandemic is also a reflection of the sustainability status and performance of the Hungarian society. As the labour market was strengthened in the last decade and the employment rate grew, the pandemic in general affected job opportunities to the smallest extent. The steadily lowering level of public debt provided the government with sufficient elbowroom to cover the budgetary expenses to mitigate the impacts of the crisis. Meanwhile, the responses to control the pandemic reflected unsustainable processes as well. Our previous monitoring report concluded that there is an imbalance in the field of the national resources with priority given to the development of physical economic capital while our human and social resources are neglected. The pandemic clearly indicated this imbalance by the fact that the real barrier to the effective treatment of coronavirus patient was not the quantity of beds or ventilators but the number of doctors, nurses and especially intensive care health professionals. One of the reasons why Hungary's COVID-19 related deaths relative to the population were higher than the EU average is that the indicators of a healthy lifestyle are worse for the Hungarian people with high prevalence of conditions, such as excess weight, cardiovascular disease, that reduced the chance of patients for survival. The ongoing degradation of our natural resources was demonstrated in this special situation by the insufficient size of urban green areas where people could have relaxed and found emotional and mental regeneration to some extent during the lockdown.

Consequently, it is not only the changes in the value of the indicators reviewed and the qualitative analysis of the sustainability processes but also the experiences gained during the pandemic that underline the final conclusion of our report: one of the necessary criteria of the balanced growth of the Hungarian society is a sustainability shift the key components of which are the protection of the natural capital, the reduction of the continuous degradation of the natural resources and the reallocation of future oriented social investments to favour the development of the human resources.

In harmony with our national objectives, the 17 sustainable development goals included in the UN's *2030 Agenda*, the global sustainable development strategy, are fundamentally based on and determined by health and well-being. It encompasses a holistic approach to health, the principle of health in all policies and the need for cooperation between the various sectors and levels of government.

While the problems most starkly highlighted by the COVID-19 concern the development of human resources within the health care sector, there are similarly huge challenges to address in the field of education and the increase of knowledge capital.

It is impossible to predict because in a complex world, which is out of equilibrium, it is difficult to model that when and what type of crisis – whether the climate change, the loss of the ecosystem services, the resulting more massive migration, the accumulation of debt or the vulnerability of the overcomplicated and complex production chains – will make us face the consequences of our unsustainable lifestyle but there is more and more evidence showing that societies that manage their resources in a sustainable way will be able to more efficiently mitigate or avoid the impacts of even unexpectedly developing crises.

Hungary is not one those countries that can look ahead to such challenges with no or minimal concern. While our sustainability performance notably improved in many areas, such as public debt management, increase of employment and family welfare up until the COVID-19 outbreak, the necessary level of future oriented investments is not provided for in the field of human and social capital as well as natural resources.

The key to all of this is the protection and promotion of values that fundamentally affect most aspects of sustainability including the quality of knowledge capital, health and well-being as well as the degree of social responsibility and the level of trust. In order for countries to be able to consider the long term consequences of their decisions in a responsible manner, they need to apply the increasingly large volumes of available information, data and knowledge in the light of culture, ideologies and moral principles.

Our options watched through the new lens created by the COVID-19 pandemic are very clear: we can keep delaying resolving the resource issues and be hopeful that the next crisis will only minimally affect us and we can escape the consequences of unsustainable social development or we can make more conscious, more prudent decisions on our future oriented investments, increase the level of sustainability, which will offer higher security for all of us concerning our ability to successfully address the challenges, risks and uncertainties of the future.

Budapest, December 9 2021

Members of the National Council
for Sustainable Development

2. Recommendations to strengthen the sustainability transition

The 4th Monitoring Report reviews years 2019 and 2020 and is intended to thoroughly examine the four pillars of sustainability and identify the progress made towards the achievement of the objectives by analysing the special characteristics of Hungary and its possibilities.

Similarly to our previous reports, our findings this year also show that while there was progress made in some areas, it is, on the one hand, not sufficient; and, on the other hand, the COVID-19 pandemic that has been affecting us for over one and a half years caused a decline in several areas. The sustainability status of some of our national resources remains poor. The processes of sustainable development in Hungary continue to reflect a high degree of imbalance and selectivity as discussed in our previous reports: oftentimes, the resources whose relative condition is the best are further improved while the areas that are the principal barriers compromising our future well-being remain neglected. All of this points to the conclusion that **the majority of the objectives of the National Framework Strategy on Sustainable Development will not be achieved by 2024 and Hungary will progress at a slower pace than required to complete the transition to sustainability.**

Sustainability is a worthy cause! The internal impacts of the COVID-19 pandemic confirmed that by increasing the level of sustainability, external shocks cause less trauma internally: thanks to the high employment rate and the relatively low level of public debt, Hungary's economic performance was not hit as hard and is able to recover faster than during and after the global financial crisis of 2008 and 2009.

Meanwhile, the COVID-19 pandemic also clearly indicated that some sustainability problems that we have been struggling with for long decades and have failed to effectively address, led to significant losses. The periods of pandemic restrictions undoubtedly showed the lack of natural environment in and near cities, towns and villages. Lifestyle problems (physical inactivity, unhealthy diets, excess weight) the majority of people are affected by contributed to a mortality rate above the EU average and distance learning continued to raise the gap between students based on their socio-economic background.

The monitoring report shows that visible progress was achieved in the following areas after the adoption of the Framework Strategy (2013):

- The number of children born per family (total fertility rate) rose markedly.
- The sentiment of national unity became stronger, more versatile connections were built between the motherland and foreign-born Hungarians.
- The severe material deprivation rate notably decreased after 2013.
- The employment rate grew considerably in Hungary. Hungary's employment rate is now higher than the EU average and the economic slowdown caused by the COVID-19 pandemic led only to a temporary reduction in the employment rate.
- Prior to the COVID-19 pandemic, the public debt to GDP ratio was steadily and continuously shrinking.

However, a number of areas the well-being of future generations depend on are still strongly falling behind.

- In international comparison, the increase of knowledge capital is severely underdeveloped both in terms of quality and quantity: young people in Hungary spend less time in formal education and their competence level is not competitive relative to even our regional competitors. As the conditions for high quality teacher training have been unprovided for decades, we are unable to adopt the most advanced methods of teaching. In the meantime, the Hungarian education system remains to be extremely selective and is unable to offer the appropriate mobility, which means that the potential of many talented young people fails to be harnessed.
- Adult learning and education is not able to reduce the shortcomings of formal education either. The total number of participants in adult learning and education and both its organisation and efficiency are significantly lagging behind the European system; this highly fragmented system fails to effectively contribute to the promotion of an advanced and creative knowledge society and a community-centred and ecological mindset capable of helping to combat the challenges of our time. And within these unfavourable circumstances, the non labour market specific education, i.e. the development of competencies necessary in the 21st century for fully evolved insightfulness is neglected.
- The health of the Hungarian people is not good, which is the result of the extremely low level of health awareness, the high prevalence of behaviours adversely affecting health (alcohol and drug use, smoking, physical inactivity, unhealthy diets), high environmental and social background related risks and the low efficiency of the health care system.
- Hungary is also falling behind in the field of social capital: the level of civil society participation is low, trust in the institutional system is also low while the level of the perception of corruption is high.
- The level of natural resource productivity is very low in Hungary: our natural resources are gradually depleted for the sake of economic growth.
- While there was progress made in the containment of the climate change, i.e. the reduction in greenhouse gas emissions in the last 30 years, there was a slight rise between 2013 and 2018 and Hungary's emissions rate has been stagnating since then.

While Hungary spends a particularly large proportion of its national income on investments to ensure the well-being of future generations, the distribution of these future related investments is distorted: investments into physical capital are disproportionately high as opposed to investments into human and social capital, which are disproportionately low and the protection of our natural resources and ecosystem services is severely neglected. This pattern of future related investments is in the long term counterproductive for Hungary's competitiveness, the ability to avoid the middle-income trap or the ability to be able to respond to risks such as water scarcity, the depletion of soil or the climate change.

This explains why our strong recommendation included in the previous report that Hungary **needs a sustainability shift** that **focuses on the protection of our natural resources** and **approaches education and health care as a top priority in the field of human resources** remains valid.

3. Executive summary

3.1 PURPOSE OF THE NATIONAL FRAMEWORK STRATEGY ON SUSTAINABLE DEVELOPMENT

Pursuant to resolution 18/2013 (III.28.) of the Parliament, the National Strategy on Sustainable Development (NFFS) is intended to

- contribute to developing a common agreement on the definition of sustainability;
- promote the determination of the first steps of the transition to sustainability; and
- provide long term strategy for public policy development and decision making.

The NFFS is intended to define a system of political and policy goals and means that helps maintain (the quality and quantity of) our national resources on a level

- ensuring Hungary's solid and sustained ability to successfully compete with other nations;
- facilitating the preservation of our natural and cultural heritage for future generations; and
- ensuring appropriate enhancement of resources that may be increased.

The Framework Strategy sets forth responsibilities for the period between 2012 and 2024. The NFFS defines 34 strategic objectives and 77 tasks (instruments) for the four – human, social, natural and economic – resources.

3.2 PURPOSE OF THE MONITORING REPORT

This biennial regular Monitoring Report (hereinafter “EHJ”) has been designed to

- monitor our national resources through indicators and qualitative analysis;
- review social responses and actions initiated and implemented in the last two years (the Government's complete report on government actions in 2019-2020 to promote the implementation of the Framework Strategy is included in *Annex 1*);
- update the public on the results achieved in sustainability transition, which areas have improved substantially and which areas require more intense efforts.

In deviation from the previous ones, the fourth monitoring report is somewhat specific. The COVID-19 pandemic that was first detected in Europe in early 2020 impacted every aspect of our lives. As a result, we decided to dedicate a whole chapter to discuss the impacts of the pandemic although information about its potential effects is not available in every area.

This report reviews the period from 1 January 2019 until 31 December 2020.

3.3. ASSESSMENT OF NATIONAL RESOURCES AS REFLECTED BY 16 KEY INDICATORS

The current state of the indicators (their absolute value or value relative to the EU and the V3 average) is evaluated on a scale of five: poor – below average – average – above average – good. The trends are primarily evaluated in the period under review (2019-2020) and secondly based on the changes since the first year of the Framework Strategy (2012). V3 countries: the Czech Republic, Poland, Slovakia.

Indicator	2012	2014	2016	2018	2020	Current state	Trend	EU average	V3 average
Total fertility rate	1.34	1.41	1.49	1.49	1.56	average		1.53	1.54
Expenditure on education as % of GDP	4.7	5.2	5.2	5.0	4.7 ¹	average		4.7	4.9
Early school leavers (%)	11.8	11.4	12.4	12.5	12.1	poor		9.9	7
Healthy life expectancy at birth (years), male/female	58.9/60.2	59.2/60.9	59.6/60.2	60.5/61.9	61.7/63.6	below average		64.2/65.1 ²	59.7/61.6
Severe material deprivation rate (%)	26.3	24	16.2	10.1	8 %	poor		5.5	3
Generalised trust scale (ESS, scale of 0 to 10)	4.8	4.2	4.5	4.9	5.1	average		N/A	N/A
Corruption index (Transparency Int., on a scale of 0 to 100)	55	54	48	46	44	poor		65	62
Number of non-governmental organizations (thousand)	65.3	63.9	62.1	N/A	60.9 ³	(declining)		N/R	N/R

¹2019 data

²2019 data, source: Eurostat

³2019 data

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Indicator	2012	2014	2016	2018	2020	Current state	Trend	EU average	V3 average
Biologically inactive areas (as % of total area)	68	67	67	67.5	67.5	poor	↔	N/R	N/R
Natural resource productivity (GDP/DMC, €/kg)	1.15	0.83	0.95	0.88	0.96	poor	↔	2.22	1.47
Public exposure to particulate matter pollution [PM(10)] (µg/m3)	28.8	28.2	25.3	27.6	24.4 ⁴	below average	↗	20.5 ⁵	18.9
Employment rate for population aged 20-64 (%)	61.6	66.7	71.5	74.4	75.7	good	↗	72.5	74.3
Investments: gross fixed capital formation (GFCF/GDP)	19.1	22.0	19.5	24.7	26.8	good	↗	21.9	22.6
R&D spending (as % of GDP)	1.25	1.34	1.18	1.51	1.61	below average	↗	2.2	2.15
Public debt (gross) as % of GDP	78.1	76.5	74.8	69.1	80.1	average	↘	90.7	59.8
Old age dependency ratio	24.6	25.8	27.2	28.5	30.3	average	↘	32	29

⁴ Estimate for 2020⁵ 2019 data

3.4 ASSESSMENT OF THE CURRENT STATE OF THE SUSTAINABILITY TRANSITION

The changes that have taken place in the eight years since the adoption of the Framework Strategy may already be measured in many instances; the fourth Monitoring Report, in harmony with the previous approach applied, uses the data available to describe the processes based on the criteria of the Framework Strategy⁶. The following general findings are made about the sustainability transition with particular focus on the impacts of the COVID-19 pandemic that started in the spring of 2020.

- While the review of the key indicators reflects a number of positive changes relative to the previous monitoring report, the pandemic adversely affected the degree of the improvement for many indicators and even reduced the value of the indicator in some cases. Of the 16 indicators, 9 were classified as below average or poor, which suggests that Hungary's sustainability status remains unfavourable in the long term.
- In international comparison, our economic indicators are the most competitive and on top of that, the economic slowdown caused by the COVID-19 pandemic was followed by a relatively quick bounce back in Hungary. As regards employment data and gross fixed capital formation, Hungary performs better than the regional and the EU average.
- The state of human resources presents a twofold picture: on the one hand, the productivity rate slightly grew relative to the previous monitoring report and the number of children born in wedlock dynamically rose due to the outstanding number of weddings; on the other hand, there is room for improvement in the field of education and health indicators. The rate of public spending on education further fell relative to the previous EHI.
- Human and natural resources have been slightly and strongly declining respectively in the last two years and ever since the adoption of the NFFS.
- The government's employment and social policy in the last decade led to the gradual decrease of the severe material deprivation rate and is approaching the EU average.
- While it is apparent that the important indicators have improved since the adoption of the NFFS, there are indicators where negative tendencies are found: early school leaving remains a serious issue in Hungary clearly confirmed by the annual country reports and country specific recommendations of the European Commission that highlight this problem every year. The COVID-19 pandemic also affected the problem of early school leaving and inequalities in the access to education. Due to the lack of the necessary devices, tools and internet connection, a large number of students, particularly in disadvantaged regions, had no access to digital education introduced in response to the pandemic, which further increased the already high selectivity of the education system. The reason why this is crucial is that knowledge is the resource whose high quality helps improve other resources: it supports a rise in the number of people living a healthy life and it also promotes environmental awareness, labour productivity and innovation. This explains why it is a particular concern that the quality of education has been gradually declining in the last decade

⁶ It is important to note that as indicators are influenced by a variety of factors, their changes do not reflect cause and effect relationships every time and the changes do not always yield direct conclusions.

and knowledge obtained in schools cannot be applied in practice. Overall, education appears to have system-wide problems, further challenged by the state of human resources of the sector as the notable wage adjustment of teachers has failed to be completed since the adoption of the NFFS.

- In the field of natural resources, there was a slight improvement in resource productivity (the strongly negative trends of the period between 2013 and 2018 slowed down), however, it is still significantly lower than the V3 (the Czech Republic, Poland, Slovakia) or the EU average. The rate of biologically inactive areas has remained unchanged in the last two years while there was no significant positive change in the emission rate of greenhouse gases either; this means that the economic growth of the last decade, whose adverse impact both on the quantity and quality of natural resources is markedly above the EU average, is not sustainable.
- The institutional system of sustainability remains imbalanced: while many provisions of the Fundamental Law, the advocate of future generations, various advisory bodies (NFFT, the National Council for Environmental Protection, the National Competitiveness Council), the sustainability directorate of the President's Office, the green financing and competitiveness programmes of the Hungarian National Bank collectively establish a uniquely rich institutional system for sustainability in global terms, sustainability fails to be a strategic aspect in the executive branch. Effective horizontal government coordination is lacking and the related parliamentary recommendation has only been formally but not efficiently implemented. Laws enacted at times in a speedy manner frequently fail to consider and incorporate the opinions and feedback offered by the above institutions.
- In the period under review, sustainability appeared to become increasingly important for the people and businesses as well. The obvious impacts of the climate change benefited environmental protection and awareness while growing demand for labour and rising wages in the economy put a stronger focus on human factors such as lifelong learning, better working conditions and health consciousness.

In the field of **human resources**, demographic processes continue to pose significant challenges despite the strong improvements achieved. In 2020, there was a record breaking number of weddings, for which one reason is that the majority of family allowances and support funds are only available to married people. While fertility and childbirth rates have slightly grown, they are still substantially below the value required for population reproduction. The increase of the capacity of day care facilities and the provision of opportunities of atypical work arrangements for parents with young children remains a pressing issue. In this sense, the COVID-19 pandemic was positive: lockdown measures allowed many workers to work from home, for which the social demand is expected to remain high in post-pandemic times as well. The ageing of Hungary's society is in line with the European trends, which will present the challenge for the sustainability of the pension system in the long term although this problem is beyond the timeframe of the Framework Strategy. The rate of migration from Hungary has decreased to some degree since the previous EHJ, however, this is partly the result of the travel restrictions imposed in response to the COVID-19 pandemic. Meanwhile, the rate of immigration that continued to steadily grow until 2019 also stalled in 2020.

A key indicator of the health of people, life expectancy at birth was gradually rising albeit at an extremely slow rate prior to the COVID-19 outbreak, however, the pandemic led to a decrease of over half a year in the life expectancy at birth both for men and women. Serious risks remain to be posed by a variety of behaviours adversely affecting health including in

particular physical inactivity, smoking, alcohol and drug consumption. Hypertension is an extremely prevalent condition affecting over two-thirds of the 75 + population in Hungary. In line with the trends of the previous years, the government still fails to take the necessary actions to prevent health problems associated with the state of the environment as well as the population financial and social background. An additional key problem is the lack of a comprehensive National Public Health Strategy that would directly address these challenges. As a step forward in the health care system, the wage adjustment of doctors was completed, however, the new employment arrangements starkly divide the public health care system from the private health care system, which, based on estimates, led to the departure of roughly 5500 health care workers from the public health care system. There was no effective improvement made in the public financing of the health care system: it is still extremely below the EU average.

As the performance of Hungary's education system has further declined in the last few years, the gap between Hungary's indicators and the EU average both in terms of quantity and quality continues to widen. The selectivity of the education system failed to be improved and, to make matters worse, a high number of students including in particular disadvantaged children had no access to digital education implemented in response to the COVID-19 outbreak. While the early school leaving rate has improved to some degree since the previous monitoring report, it is still very far from the EU average of 9% and the average of the other three Visegrad country of 7%.

In the field of **social resources**, improvements in the area of social inequalities and poverty that began in the period of the previous monitoring report continued: the rate of people at risk of social exclusion went down to 18.9% by 2019, which means that the EU2020 strategy target was achieved. Due to the government's actions (creation of a work-based society) and the pre-COVID-19 pandemic economic growth, the rate of people living in households of low work intensity was only 5% in 2019. While the rate of people affected by severe material deprivation has been steadily declining since the adoption of the Framework Strategy, its current value of 8% is almost the triple of the V3 average.

While many of the indicators reviewed demonstrate that there have been improvements in the state of the Hungarian society since the adoption of the Framework Strategy (the employment rate increased, real wages rose, the unemployment rate and the severe material deprivation rate decreased), Hungary remains a strongly deprived country within Europe. The lack of trust remains high, the level of dissatisfaction and legitimation deficit is above average in European comparison, especially with regard to the rules and regulations of the market economy and democracy.

Similarly to the previous period, the civil sector has continued to shrink while the total revenues of civil organisations have risen. There were negative tendencies identified in the perception of corruption: Hungary's position has declined both in the European Union and the region of Central and Eastern Europe.

Reflecting a step forward in the field of **natural resources**, sustainability became a central topic of public discussion and people are more and more responsive to various environmental initiatives and actions. However, the quality and the quantity of natural resources have failed to improve since the adoption of the Framework Strategy. While article P) of the Fundamental Law stated that natural resources form the common heritage of the nation and must be protected, maintained and preserved for future generations, their documentation is insufficient and changes in natural resources are still not reported yearly.

In Hungary, the shrinkage of habitats, the decline in the state of the remaining habitats and land degradation appear to be a sustained and severe trend. The loss of biodiversity leads to a sustained decline in the quality of ecosystem services.

The rate of biologically inactive areas has been stationary for years. Problems include an increase in the use of fertilisers and the high rate of intensive agricultural production, which cause a decline in the quality of our surface and underground waters. One of the objectives of the next seven-year EU budget is to significantly reduce the use of fertilisers within the European Union.

While natural resource productivity has improved since the previous EHJ, the quantity of natural resources required to achieve a specific economic result is still higher than the EU average, which is primarily explained by the boom in the construction industry and large government investments. In harmony with EU objectives, the issue of the circular economy is now addressed by public policy making in Hungary as well, which is likely to lead to serious progress made in the next budgetary period.

In the area of air quality, the pollution by particulate matter in ambient air is the most severe problem in Hungary, which mostly comes from residential heating using solid fuels. Contrary to the former trend, measurement data from recent years show that transport as the primary source of PM₁₀ was replaced by emissions from the general public.

As a result of climate change, extreme weather events are becoming more frequent in Hungary. The prevalence of days with excessively high temperatures and heavy downpours is constantly rising, which is being partly addressed by the current development of Hungary's third river basin management plan, which is going to be used as the strategic basis for the protection and improvement of our water environment.

Between 2013 and 2017, energy consumption began rising and the former positive tendency for energy intensity was replaced by stagnation. During this period, primary energy demand was growing at an annual rate of roughly 3.5% causing the rise in energy demand to approach GDP growth and thus decoupling (which is an important indicator of sustainability) was, temporarily, interrupted. Since 2017, primary energy consumption has been stagnant giving hope that the decoupling will be stable. The use of renewable energy sources reflects a complex situation in Hungary. Based on available data, the share of their use has been lowering since 2013; not reaching 12.6% of the final energy consumption in 2019.

In the area of greenhouse gas emissions per capita, Hungary was at the top in the EU in 2019. Between 2013 and 2018, the rate of greenhouse gas emissions was growing but it has been stagnant since 2018 while there was strong economic growth achieved.

The **Hungarian economy** has been steadily growing in the last decade reflected primarily by GDP growth and the improvement of employment rates. In the first three quarters of 2020, the COVID-19 pandemic caused a significant plunge in both of these indicators, explained by the lockdown measures and a decrease in global trade. Actions taken to manage the pandemic and to boost the economy put an enormous strain on the central budget, which led to a sharp increase in public debt to GDP ratio by the end of 2020.

In our previous monitoring reports, we noted that economic growth went hand in hand with the dynamic increase in investments. The COVID-19 pandemic, however, led to the disruption of the dynamic growth of investments, similarly to consumption. Prior to the COVID-19 outbreak, Hungary's rate of investments was the second highest across the EU.

The rise in corporate investments was the result of, on the one hand, low interest rates and, on the other, labour shortages.

As the Public Finance Report October 2020 of the Hungarian National Bank indicates that the measures adopted in response to the pandemic had devastating consequences on the performance of most of our export market partners, the recovery of the export market will likely be slower than expected. The COVID-19 pandemic caused a disruption in the dynamic growth of exports and imports as well.

From 2016, the rate of R&D spending was rising both relative to the GDP and in real terms and simultaneously, the number of people employed as researchers increased significantly (20% since 2012).

One of the key indicators of the Framework Strategy is the employment rate for people aged 20 to 64, which has been steadily rising in the last decade reaching the EU average by 2020. The value of 77.5% measured at the end of 2020 is higher than the target defined in the Europe 2020 Strategy. One of the main drivers of the increase of the employment in the last decade was the public employment programme, which facilitated the entry of groups of people in the labour market who had been unable to do so earlier. However, the importance of the public employment programme has notably decreased since the previous monitoring report: while the number of people employed under the programme was 113 000 in December 2018, it was only 87 900 in January 2021.

It is promising that sustainability has become an important part of the public discussion in the last few years. In addition, as the COVID-19 pandemic showed how vulnerable the socio-economic systems of some countries are to external impacts, resilience is now in the focus of the European policy making process (e.g. Recovery and Resilience Facility). This promotes both the internal and external demand for the dedicated and specific improvement of the sustainability aspects of strategies designed to support social and economic development.

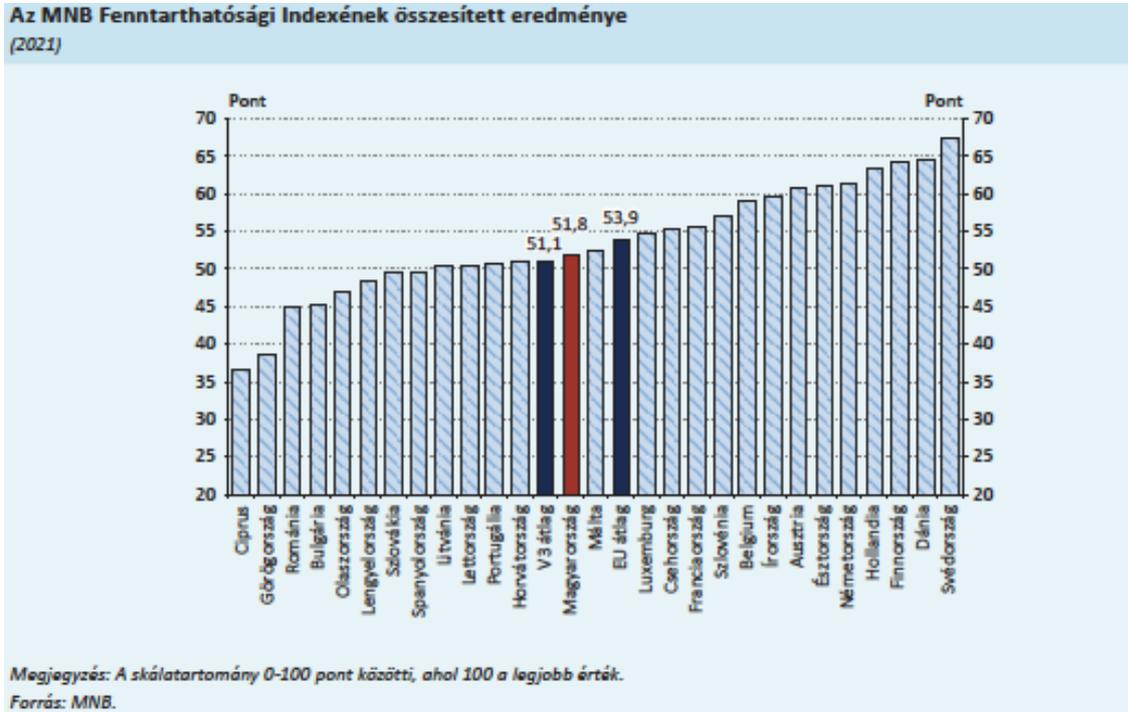
Matrix of the state of sustainable development (qualitative overview)

The state of the components of sustainability based on the status recorded in 2019-2020 and the changes taking place since the adoption of the Framework Strategy in 2013

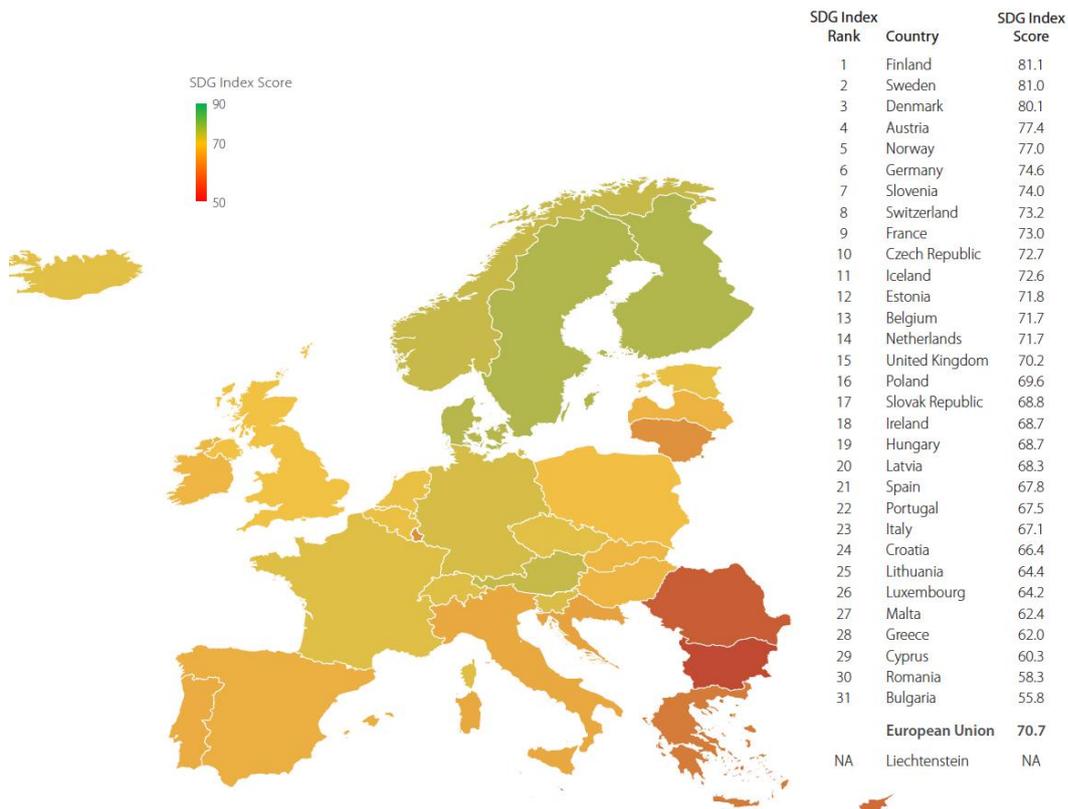
	Positive trend or stable state (since 2013)	Negative trend or stagnation (since 2013)
Good status (2019-2020)	Employment Public debt (until the COVID-19 outbreak) Investments in physical capital National digital infrastructure National unity, connections with foreign-born Hungarians Reduction of tax evasion	Public debt (affected by the COVID-19 pandemic) Greenhouse gas emissions (relative state within the EU) Old age dependency ratio, the sustainability of the pension system
Poor status (2019-2020)	Demographics: fertility Life expectancy at birth Emigration Social exclusion, poverty Trust in institutions Research and development, innovation Use of digital technology in the economy	Low social mobility, strong selectivity of the education system Reproduction of knowledge capital Quality labour supply Average time spent in education, early school leaving, lifelong learning Financial compensation of teachers Health consciousness Quality of the health care institutional system Natural resource productivity Biodiversity Rise in man-made land cover Air pollution from residential heating Civil participation Corruption perception

Hungary's sustainable development performance based on other institutional evaluations and methodologies

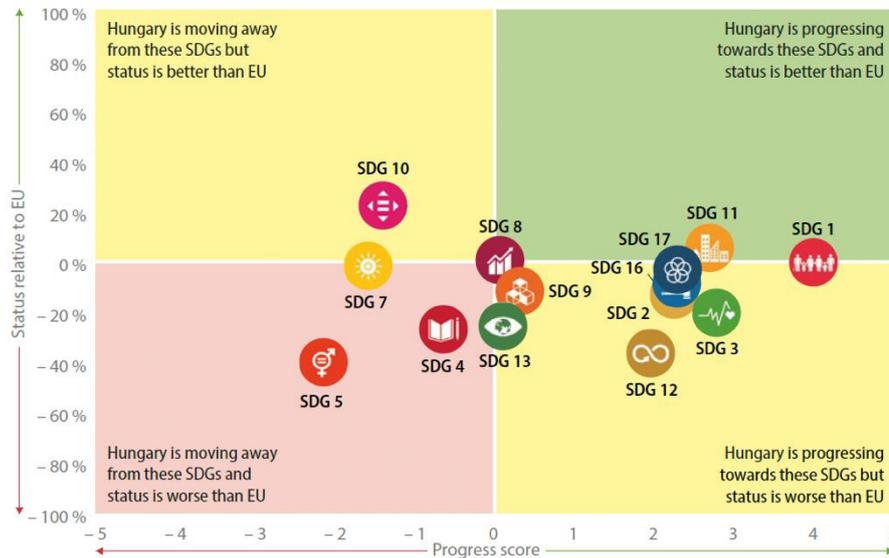
Hungary's sustainability performance based on the Sustainability Report of the Hungarian National Bank:



Hungary's sustainable development performance (based on the UN SDGs) across the member states of the European Union:



Hungary's sustainable development performance based on the achievement of the UN's Sustainable Development Goals as reflected by the Eurostat's indicators:



Source: Eurostat

The present monitoring report reviews Hungary's sustainability performance using the approach of the National Framework Strategy on Sustainable Development where sustainability is assessed based on the qualitative and quantitative analysis of the pillars of the nation's long term prosperity (national resources). This approach in many ways overlaps but is not entirely identical with the UN's sustainable development goals; for example, the UN 2030 Agenda does not define targets in the field of demographics while it is a top priority for sustainability in the Hungarian national strategy. As the sustainable development analysis of the Hungarian National Bank relies on objective indicators, it excludes the assessment of the social capital, which is difficult to describe using such indicators.

The other important difference between the NFFT's monitoring report and other assessments is that we mainly want to study the changes in our own performance over time (longitudinal evaluation) while the SDG based assessments in particular focus on comparing and ranking the countries.

Despite these differences in methodology and approach, a number of other sustainable development assessments underline the conclusions of our report: Hungary's sustainable development performance is moderate with remarkably positive improvements in certain areas but with many fields that are in a critical state where in many cases, further decline or stagnation is detected instead of progress.

In comparison with the EU, the various other assessments rank Hungary's performance consistently below the EU average at place 15 to 17 across the 27 EU countries.

Key social, government actions to promote sustainability in 2019 and 2020

Maintenance of permanently available, predictable family welfare system. Expansion of the system, introduction of new forms of support. Expansion of the grant options of the Housing Scheme.

Increase of the capacity of day care facilities.

Action against relationship violence, measures to support victims, increase of the capacity of shelters. Development of child protection warning system.

Development of the system of vocational education and training.

A multi-component programme to address the risks of school leaving without qualification was put into place (student-centred, inclusive teaching and learning environment with personalised progress schedule).

Wage adjustment of doctors by adopting the new legislation on the medical service relationship, ban on gratitude money.

Development of the public health screening system.

Development of electronic medical services.

Development of methodology and toolset to support the assessment and the mapping of the ecosystem services.

Adoption of soil protection action plan.

Development of gene conservation institutions.

Funding of forestation and tree planting.

Codification of the target date of 2050 for the achievement of climate neutrality.

Implementation of water retaining landscape and ecosystem rehabilitation model projects.

Reduction of taxes imposed on labour.

Specific support and reduction of contributions to promote higher employment rate of the elderly, people with limited capability for work and people with disabilities.

Availability of multi-component wide range funding options for research and development.

Active, effective engagement in international sustainable development cooperation. Adoption of development cooperation strategy.

The government actions are presented in detail in Annex 1 of the monitoring report.

3.5 POLICY RECOMMENDATIONS

In order to promote the transition towards sustainability, the following policy and horizontal recommendations are made in addition to our general proposals included in Chapter 2.

1) Improvement of high level political/policy commitment towards sustainability

- It is necessary to improve horizontal integration and to coordinate policy strategies and actions with view to sustainability, and especially to fulfil the obligations regarding the protection of the natural capital and biodiversity set forth in the Fundamental Law in economic policy decisions.
- In order to improve the long term impacts of public policy decisions, the institution of preliminary sustainability impact studies should be introduced for which a professional concept has been elaborated by the NFFT.

2) Demographic policy – national policy

- Measures to promote childbirth must be maintained and expanded in a way to allow as many families to benefit from them as possible (only roughly 10% of families with children use some form of the family housing allowance scheme (CSOK)). We recommend increasing the number of social homes across the country and it would also be extremely important to develop a comprehensive social housing programme for young families to support their independent life.
- There must be further action taken to increase the capacity of day care facilities and to extend the options for atypical forms of work for parents with young children.
- There has been a great amount of progress achieved in the field of national policy since the previous EHJ; it is important to ensure that existing programmes and forms of support remain accessible to Hungarian communities living beyond the borders of Hungary in the years to come; this will create and consolidate a trustful bond that will contribute to the preservation and nourishment of our cultural heritage.

3) Healthier Hungary

- We recommend that healthy lifestyles be endorsed in a more pronounced way, health screening programmes be extended, the existing programmes be more strongly promoted among the general public and information on healthy diets be disseminated to a larger audience. In order to encourage more physically active lifestyles, sports investments should be focused on increasing possibilities for amateur sporting activities.
- It would be extremely important to draft a public health strategy (“health plan”), which is not centred around the health care system but rather the social determinants of health and facilitates the development of programmes that are multi-level and focus on the various components of health in whole or in part (e.g. prevention of drug abuse, alcoholism).
- The financing of the public health care services must be adjusted to the real costs of labour and other resources. The wage adjustment for doctors must be followed by

the same for health care professionals as this profession is also affected by migration.

4) Quality education

- In order to improve the competitiveness of knowledge obtained in public education, it is crucial to encourage highly talented young people to choose teaching for their career. We recommend that teachers' wages be substantially increased.
- The institutional system and the methodology of teacher training should be revised; we recommend that teacher training be given special focus.
- It is necessary to reduce the selectivity of public education and to restore its ability to promote social mobility and equal opportunities.
- In addition to teachers in public education, wage adjustment for university teaching and research staff would also be extremely important as this, together with higher R&D spending, may contribute to the improvement of the quality of government funded science and thus to the increase of Hungary's innovation capacity.
- The revision of Hungary's adult learning and education and of its complete system and the strong promotion of labour market training, continuous development and trainings to improve scientific literacy, cultural standards and environmentally conscious mentality is an indispensable prerequisite of advanced and harmonious societies of the 21st century.

5) Economic stability

- The pension system will remain sustainable in the timeframe of the Framework Strategy, its deficit is predicted to start rising after 2030. This explains why it is important to maintain a high employment rate in the long run while also improving the education and the health care system.
- As the COVID-19 pandemic questioned the sustainability of production relying on global supply chains, an economic recovery plan must be designed to allow the economy to have better resilience to withstand external impacts similar to pandemics.
- When the COVID-19 pandemic ends, it is necessary to restore fiscal discipline and to return to a trajectory of decreasing public debt.

6) Natural resource productivity, circular economy

- Since the previous EHJ, resource productivity has been improving but it is still markedly below the EU and the regional average. The data studied suggest that the economic growth of recent years stimulated higher material consumption, which causes environmental and natural sustainability problems. We recommend that investments in economic development be gradually shifted from investments with physical capital dominance to investments based on knowledge and innovation. The circular economy is particularly worth developing.
- We recommend the creation of a regulatory environment that is able to promote a higher increase in the rate of the use of renewable energy sources in order to reach the target of 20% by 2030. It is also necessary to diversify the structure of power generation from renewable sources, which is currently dominantly based on firewood, for example, by supporting the instalment of small household size power plants or vertical axis wind turbines in households.

- We recommend that regional waste water management facilities be encouraged to develop plans and schedules for the use of waste water sludge for power generation adjusted to special local characteristics. In order to promote the transition to the circular economy, pilot projects must be financed to study how compost can be made by adding organic waste to waste water sludge.
- The programmes aimed at the improvement of the energy efficiency of buildings already in place should be extended and their criteria should be made more appealing and easier to meet. Due to the magnitude of the building stock to be refurbished, this measure provides sustained demand in the construction industry; it shifts building capacity to areas with smaller carbon footprint (building refurbishment does not involve the occupation of greenfield land and uses smaller amounts of building materials helping reduce the extremely high natural resource consumption that is generally typical in the construction industry). Furthermore, we recommend the adoption of stricter criteria for the energy efficiency certification system and its integration in the family welfare system.
- In harmony with the European Green Deal, we recommend that support for organic farming be a top priority in the next few years, which promotes the renewal and improved competitiveness of the agricultural sector allowing it to meet potentially growing consumer demand for locally produced and healthier food.

7) Mitigation of the impacts of climate change

- We urge the effective real accomplishment of the objectives of climate change adaptation included in the Second National Climate Change Strategy and the establishment of an optimal balance between mitigation and adaptation within climate change policies. One reason for this is that Hungary is classified as extremely vulnerable to climate across the EU countries as one-fourth of the population live in areas affected by very high or high risk of heat waves; vulnerability significantly varies from region to region and affects Hungary's disadvantaged areas to a larger extent.

8) Biodiversity

- In order to protect biodiversity and eco-system services, we recommend a significant reduction in greenfield investments (replaced by brownfield investments) and a substantial increase in government spending on landscape and habitat restoration.
- The horizontal integration of the objectives of the National Programme of Environmental Protection (and the National Core Plan of Nature Conservation as its part) and National Biodiversity Strategy, which is being currently developed, is indispensable; they must be achieved in particular by adjusting the regulation of the economy.

9) Water management

- The issues with public water supply entities and the infrastructure managed by these providers still need to be addressed as they have not been resolved since the previous monitoring report. Changing household consumption patterns, the economic impacts of the utility cost reduction action by the government and the modernisation requirements of the out-of-date infrastructure present real sustainability challenges.

- While Hungary has one of the highest per-capita freshwater resources in Europe, their source is primarily the large rivers flowing through the country. The ecological and chemical condition of surface and underground water is declining. We recommend that stronger focus be put on the protection of Hungary's freshwater resources and the development of, preferably natural, storage facilities to retain water collected when it is available in large quantities.

II. IN-DEPTH ANALYSIS

4. Introduction to the in-depth analysis

The Fundamental Law of Hungary adopted by the Parliament addresses the issues of sustainable development, the protection of the opportunities of future generations and the promotion of the long term responsible management of our national resources. To this end, it adopted the National Framework Strategy on Sustainable Development for Hungary for the period of 2012–2024. Pursuant to resolution 18/2013 (III.28.) of the Parliament, the Framework Strategy (NFFS) is intended to

- contribute to developing a common agreement on the definition of sustainability;
- promote the determination of the first steps of the transition to sustainability; and
- provide long term strategy for public policy development and decision making.

The Framework Strategy defined four national resources: human, social, natural and economic resources that are necessary to be preserved and increased in terms of quantity and quality in order to promote wealth and mental well-being of all generations. However, it is important that the promotion of the sustainability of the four resources is not merely a policy and government issue; it is also the responsibility of the society as a whole.

The Framework Strategy defines the following three methods to carry out the monitoring of the NFFS:

- the indicator report;
- the biennial parliamentary report (i.e. the monitoring report); and
- the review of the Framework Strategy every four years.

Pursuant to sections 3d. and 4a. of resolution 18/2013 of the Parliament, the Monitoring Report is designed to inform about government actions promoting the implementation of the Framework Strategy every two years; as well as to monitor the implementation of the Framework Strategy and support the assessment of the results achieved. However, this Monitoring Report has an additional purpose as the worldwide COVID-19 pandemic, which hit Europe including Hungary in spring 2020, needs to be importantly addressed. It is easy to see that the pandemic in combination with the measures taken to manage it had a significant impact on all four resources therefore every chapter will make an attempt, subject to the available statistical data, to present how each resource was affected by the COVID-19 pandemic Hungary has been struggling with over one and a half years.

Since the adoption of the Framework Strategy, there have already been three monitoring reports issued, each of which covers a cycle of two years. The present monitoring report has been written using the methodology and structure as in the previous ones. Summary analysis for each resource is composed as follows:

- Each resource analysis includes a general overview based on the most recent statistical data.
- This is followed by the presentation of relevant key indicator values and the assessment of tendencies. The set of key indicators selected for this monitoring report is in line with that of the previous ones, ensuring their comparability.
- The objectives of the NFFS were assessed in relation with the resources, followed by the evaluation of social and economic trends affecting sustainable development for each of these objectives.
- The resources were assessed together with the presentation of relevant key government programmes and strategies.

- The impact of the COVID-19 pandemic and of the measures adopted to contain it was examined for each resource.
- Each chapter is concluded by the presentation of the most essential positive trends and key risks.

This monitoring report is based on the guidelines in the Monitoring Handbook written by HÉTFA Research Institute (2013). Following its guidance, changes in each resource have been defined based on the following professional resource materials:

- Csapó B. (2021): Szakterületi értékelés a Nemzeti Fenntartható Fejlődési Keretstratégia negyedik előrehaladási jelentéséhez Emberi erőforrások: Oktatás – tudástőke
- Gödri I. – Horváth V. – Kapitány B. – Kovács K. – Makay Zs. (2021): Szakterületi értékelések a Nemzeti Fenntartható Fejlődési Keretstratégia negyedik előrehaladási jelentéséhez: Emberi erőforrások – Demográfia; KSH Népeségtudományi Intézet, 88 o.
- H-Soft Kft. (2021): Szakterületi értékelések a Nemzeti Fenntartható Fejlődési Keretstratégia negyedik előrehaladási jelentéséhez: Gazdasági erőforrások – Növekedés, K+F, tőkeállományok, makrogazdasági egyensúly, eladósodottság
- Integra Consulting (2021): A Nemzeti Fenntartható Fejlődési Keretstratégia végrehajtásának állása az Emberi erőforrások – Egészség területén
- KSH Népeségtudományi Kutatóintézet (2021): Szakterületi értékelések a Nemzeti Fenntartható Fejlődési Keretstratégia negyedik előrehaladási jelentéséhez: Emberi erőforrások – Demográfia
- Pálvölgyi et al (2021): Szakterületi értékelések a Nemzeti Fenntartható Fejlődési Keretstratégia negyedik előrehaladási jelentéséhez: Természeti erőforrások
- Tárki (2021): Társadalmi kirekesztés, szegénység és társadalmi kohézió
- Tárki (2021): Társadalmi újraelosztás, korosztályi számlák, gyermeknevelés finanszírozása, nyugdíjrendszer

The compilation of the Monitoring Report was supported by HÉTFA Research Institute.

5. Progress made in the achievement of the objectives under the National Framework Strategy on Sustainable Development

5.1 HUMAN RESOURCES

5.1.1 GENERAL OVERVIEW

The objectives defined for human resources in the National Framework Strategy on Sustainable Development focus on four key areas: demographic processes, the performance of the education system, health, social inequalities and cohesion.

Hungary's population has been declining ever since the adoption of the NFFS in 2013. In recent times, the number of births was stagnant and then began rising while the number of women of childbearing age was very rapidly dropping. This trend, albeit at a slower pace, is expected to continue in the next few years. The total fertility rate, which reflects people's readiness to have children, was growing between 2011 and 2016, stagnated in 2019 and rose again in 2020, which growth, however, seems to be interrupted by the coronavirus pandemic. Meanwhile, the rate reported in 2020 (1.56) is still significantly lower than the target required to terminate Hungary's population decline in the mid-term (2.05) but it is likely to achieve, or even exceed in 2020, the EU average of 1.5. One of the key reasons for the low fertility indicator of the last decade is that women tend to postpone the birth of their first child to an older age, which means the period in which they can have their second child becomes shorter.

After a long period of decline, the number of marriages rose very substantially between 2010 and 2016. This was followed by a short time of stagnation and then the number of people entering into wedlock started to increase significantly from 2019 again. In 2019, there were over 65 000 marriages while in 2020, more than 67 000 marriages took place despite the coronavirus pandemic. One of the major drivers of this growth is likely the family allowances exclusively available to married people, which may partly have a positive impact on childbirth.

In Hungary, life expectancy at birth for men was 73 years and for women 79.7 years in 2019. These numbers indicate only an insignificant amount of rise between 2014 and 2017 with life expectancy practically stagnating for both sexes. The study of preventable mortality linked dominantly to lifestyle aspects shows that smoking causes the most deaths in Hungary in the European Union while in the field of alcohol consumption, Hungary is only preceded by Romania as the Hungarian rates are also very high in this area. In 2018, the rate of amenable (treatable) mortality was roughly 70% higher than the EU average in Hungary and was more than twice as high as the rate in countries with the lowest level of amenable mortality (Holland, Spain, Italy).

While we are still unable to quantify the impacts of the COVID-19 pandemic as a whole, we have the data available for 2020 including the impacts of the first and second wave. The life expectancy at birth in Hungary of 76.5 years reported in 2019 decreased by 0.8 year in 2020 as a result of COVID-19. The rate of life expectancy loss of 0.8 year in 2020 is expected to rise in 2021, estimated at 1.0-1.5 years based on available preliminary figures. Consequently, the life expectancy at birth of 75.7 years of 2020 is likely to decrease to between 74.2 and 74.7 years by 2021. If the growth of life expectancy resumes to the rate of life years gained per year of 0.1 year achieved in the period directly prior to 2019, it will take 18 to 23 years before it reaches the pre-COVID-19 rate of 2019.

The immigration rate in Hungary, based both on the number of immigrants and their ratio per 1000 residents, remains below the EU average. While the raw immigration rate based on the number of foreign nationals was only 6 thousandths in 2019 (6.6 thousandths including also Hungarian nationals from neighbouring countries), this indicator in many traditional West European immigration countries was around 8 and 15 thousandths.

5.1.2 CHANGES IN KEY INDICATORS

Indicator	Latest value	Most recent value known at monitoring report for 2017-2018	Assessment of the changes in NFFS's key indicators
Total fertility rate	1.56 (2020)	1.49 (2018)	Following a stagnation in the late 2010s, the total fertility rate rose by 2020 and is likely to be higher than the EU average, however, it is still below the value of 2.02 required to prevent population decline.
Expenditure on education as % of GDP	4.7% (2019)	5.0% (2018)	The rate of education spending relative to the GDP slightly decreased after 2018.
Early school leaving rate (%)	12.1% (2020)	12.5% (2018)	Early school leaving is the greatest challenge in education policy both in Hungary and the EU. The rate has slightly fallen since the previous report but it is still far from the target of 10%.
Healthy life expectancy at birth (years; male/female)	Women: 63.6 (2020) Men: 61.7 (2020)	Women: 59.6 (2017) Men: 60.9 (2017)	Healthy life expectancy at birth has been steadily improving in recent years but it is below the EU27 average.

Severe material deprivation rate (%)	8% (2020)	10.1% (2018)	Relative to 2018, the severe material deprivation rate went down 2% to 8%.
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5.1.3 OBJECTIVES AND CHALLENGES DEFINED IN THE NFFS

The Framework Strategy defines the following objectives for human resources:

Population, demographics

- 1. Promotion of values related to partnership and family (education, institutions)
- 2. Promotion of competitive wages in professions affected by critically high rate of migration
- 3. Reduction of the rate of population decline
- 4. Development of immigration policy
- 5. Promotion of possibilities for the elderly population for social participation

Knowledge – education

- 6. Quality education;
- 7. Increase of period of formal learning;
- 8. Reduction of selectivity within the education system
- 9. More efficient use of knowledge within the society and in the economy
- 10. Incorporation of sustainability (values and practice) into lifelong learning as a whole

Health

- 11. Establishment of health conscious behavioural patterns
- 12. Reduction of the number of chronic non-communicable diseases
- 13. Alignment with Central European average in the reduction of mortality

Poverty, exclusion – social cohesion

- 8. Reduction of selectivity within the education system
- 14. Social solidarity
- 15. Rearrangement of social structure
- 16. Increase of employment

5.1.4 SOCIAL AND ECONOMIC DEVELOPMENTS AFFECTING THE OBJECTIVES

5.1.4.1 Population and demographics⁷

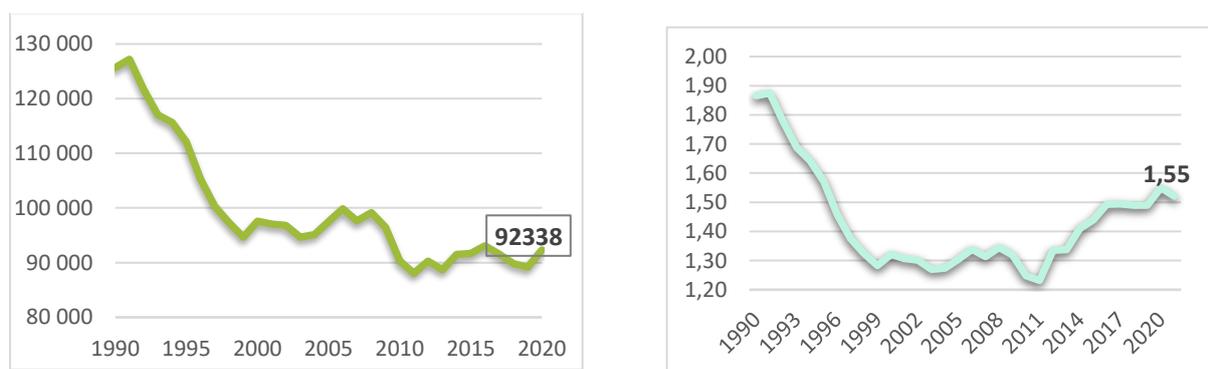
⁷ The chapter on demographic processes was prepared based on a study by the Demographic Research Institute of KSH (2021).

The key factors affecting demographic processes are childbirth and fertility, ageing and mortality, migration trends and processes. Since the previous Monitoring Report was issued, fertility has minimally risen due to the variety of family allowances but it is still significantly below the value of 2.05 required for population reproduction. The steady ageing of the population and the lower number of women of childbearing age also prevent a demographic shift.

Childbirth

In 2020, a total of 92 338 babies were born in Hungary, which is the highest number since 2016. While the number of childbirths was basically rising between 2011 and 2016, there was a shift in the trend after that and the number of new babies began to decrease. After the especially low number of childbirths in 2018 and 2019, there was a marked increase in 2020 when the rate of growth expected to be higher initially was only reduced by the lower number of new births in the last months of the year (caused by the coronavirus pandemic).

Figure 1: Changes in live births, 1990–2020



Source: KSH

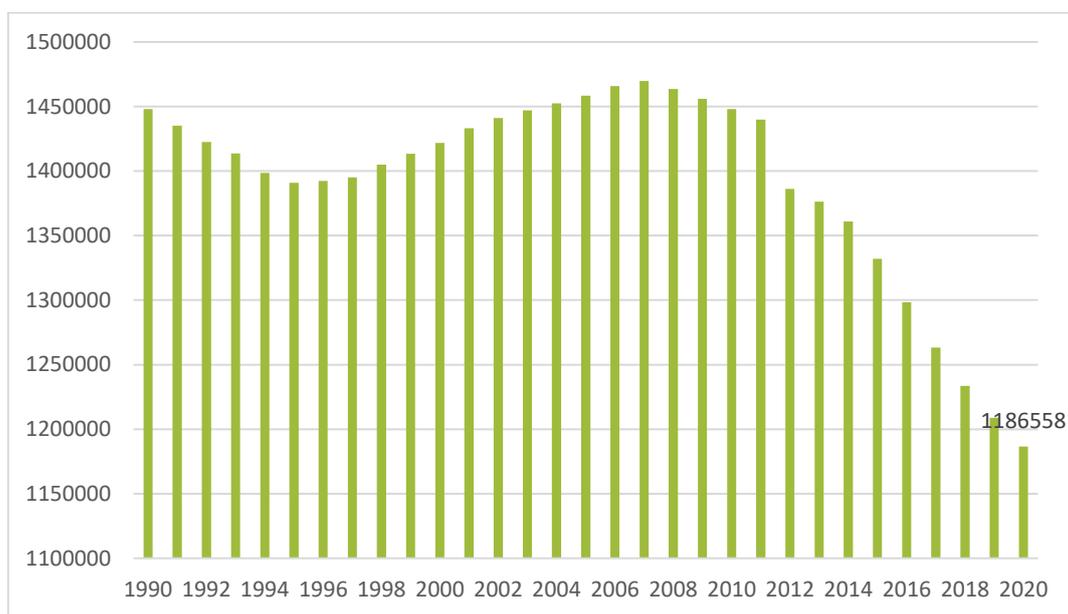
In 2020, the total fertility rate (TFR) was 1.56, which is a minimal increase relative to the previous years. TTA shows the number of children born to a woman over her lifetime if she were subject to the fertility rates of the specific year. If the indicator is higher than 2.0, the country is able to sustain population levels. The comparison of the TFR and the number of births shows that the rise of the TFR (i.e. people's readiness to have children) between 2011 and 2020 could set off the lower number of women of childbearing age, that is the number of births did not decrease despite the latter trend. However, as soon as fertility becomes stagnant, the number of births begins to decrease as well. If fertility is steadily reduced in the next few years, a dramatic fall in the number of births may be expected.

The degree of the growth of the TFR recorded in Hungary is not unique in regional comparison as there was similar or even higher growth in most countries from the former Socialist bloc. It is important to note regarding the limit of any further fertility growth in Hungary that there has not been a country, as far we know, where the TFR that had steadily gone below 1.5 would have risen to above 2.1⁸.

⁸ Kapitány B. – Spéder Zs. (2021): Gyermekvállalás. in.: Monostori – Óri – Spéder (szerk.): Demográfia Portré 2021. Jelentés a magyar népesség helyzetéről.

In recent years, the stagnation of the number of births has been going hand in hand with the decline in the number of women of childbearing age. The rate of the reduction has been roughly 20 000 per year in the last few years, which means that this is the number the group of women aged 15 to 49 is reduced by from one year to the other. This is primarily due to the large number of people born around 1975 (the so-called Ratko grandchildren) exiting the childbearing age. The change in the number of women aged 20 to 39, accounting for nearly 89% of births, is also notable: this female age group shrank by about 261 000 between 2010 and 2020. This trend, albeit at a somewhat slower pace, is expected to continue in the next few years. As a result, the sustainability challenge of the next period is still the problem that in order to maintain the current level of childbirths, a shrinking age group should have more children than they do now.

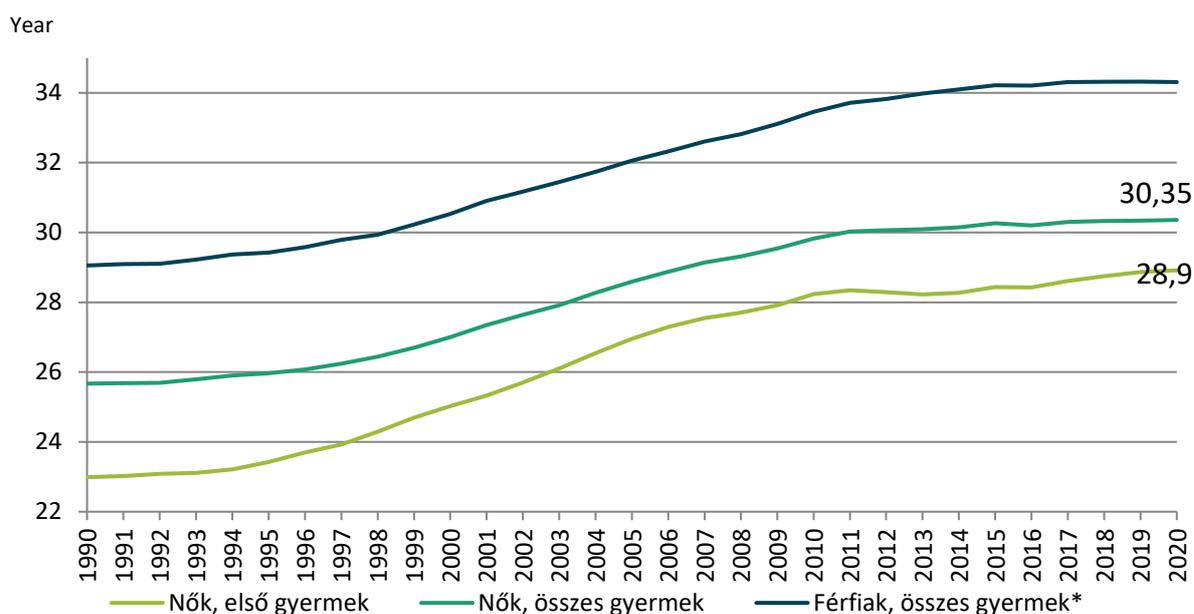
Figure 2: Change in female population aged 20 to 39 between 1990 and 2020



Source: KSH

The key problem for fertility rates in Hungary continues to be the tendency that many people do not have any children or have their first child much later than before. At the time of the regime change, women on average had their first child approximately at the age of 23, in contrast to 2020 when women in general were nearly 29 when their first child was born.

Figure 3: Average age of women and men at the birth of their child between 1990 and 2020



Source: KSH Demographic Yearbooks

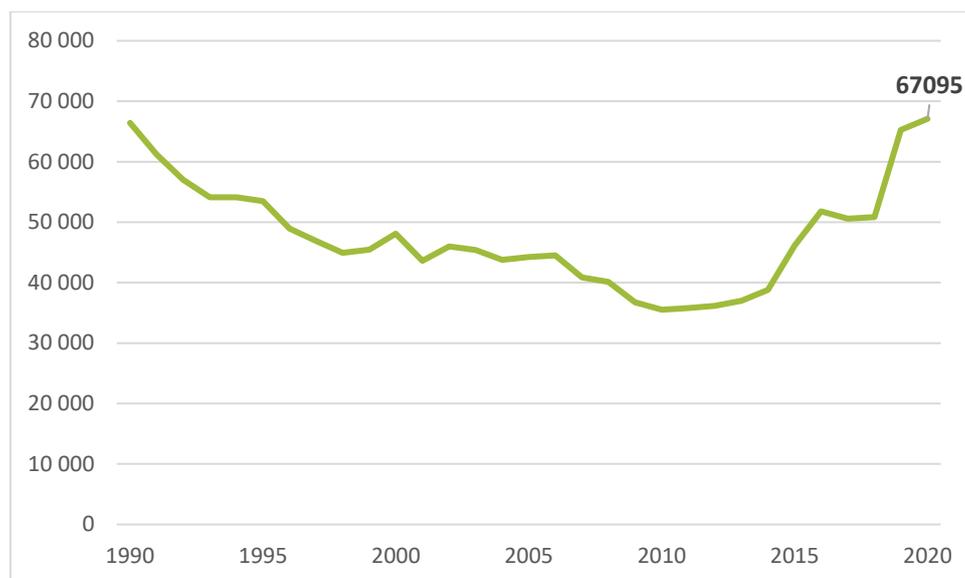
In the context of the average age of childbirth, it is interesting to look at how childbirth is distributed for women between the age of 15 and 45 and in what ages the changes of recent years led to the rise of the likelihood of childbirth.

At the time of the regime change, childbirth was strongly concentrated between the age of 22 and 25 for women. In the following decades, women did not only have their children at an older age but the age range of mothers also expanded: the main years of childbirth are now between the age of 25 and 35 while the number of children being born to women over 35 is also significant. The comparison of 2010, a year with a low number of new births and 2020 shows that the fertility rate grew in nearly every age in the last decade but the rate of growth is somewhat higher in women between the age of 18 and 20 and over 30. Fertility curves with such a strange “bimodal” shape are rare but it is not an unknown demographic phenomenon in the international literature, which may be the sign of the strong polarisation of fertility behaviours⁹.

Relationships and marriages

Changes in the number of marriages have always affected childbirth trends. Consequently, it is crucial that after a long period of decline, the number of couples tying the knot went up radically between 2010 and 2016: from 36 000 to nearly 52 000. This was followed by a short time of stagnation and then the number of people entering into wedlock started to increase significantly from 2019 again. In 2019, there were over 65 000 marriages while in 2020, more than 67 000 marriages took place despite the coronavirus pandemic. The last time this high number of people got married was in the late 1980s.

⁹ Kapitány Balázs (2019): Bimodális (kétsúcú) termékenységi görbe Magyarországon - leíró eredmények és lehetséges okok. *Demográfia*, 61(2-3), 121-146.

Figure 4: Changes in the number of marriages between 1990 and 2020

Source: KSH

While the number of marriages began rising from already 2010 in Hungary, this growth started to be reflected in the distribution of childbirths based on marital status only after 2015. Despite the growing number of marriages, the rate of children born to married parents was decreasing while the proportion of out-of-wedlock births was rising at the beginning of the decade. While 40.8% of the children were born outside of marriage in 2010, in 2015, every second child (47.8%) was born to unmarried parents. However, after 2015 when there was a temporary slowdown in the growth of the number of marriages, a shift in childbirth took place: the decade-long decline in the rate of children born in wedlock discontinued and the proportion of out-of-wedlock births started to decrease year by year falling to only 30.5% by 2020.

Family benefits

The family benefits system has been in the public policy decision making focus of Hungary's government since 2010 and as a result the Hungarian family benefits system is apparently generous relative to Europe, however, this is not always reflected in international comparison as often only cash benefits are considered, for example by Eurostat.

According to the classification of the Hungarian government, housing benefits and a number of other benefits available to families directly or indirectly are also included in the group of family benefits. Based on such classification, the report of the State Audit Office shows that approximately 4.8% of the GDP is spent on financing family benefits.

When this Monitoring Report was written, the family benefits system of Hungary included the following components:

- The child care allowance is a universal benefit to parents who are not entitled to receive infant care fee (CSED) or child care fee (GYED). It is HUF 28 500 gross per month.
- The same amount is provided to parents in families with at least three children where the youngest child is between 3 and 8. This is the child raising support (gyet), which provides extra income to families with three or more children after they stop receiving the child care benefit.

- Laws on the provision of GYED and CSED were amended in July 2021. For years, CSED amounted to 70% of the daily average gross earnings without an upper limit. This changed from July 2021 and now 100% of the previous earnings is paid every month, from which only an advance payment on the personal income tax is deducted, which means that the net amount paid equals the net salary previously received.
- When CSED is no longer payable, GYED is available until the child is 2, whose maximum amount is HUF 234 000 gross, from which only the advance payment on the personal income tax and the pension contribution are deducted.
- The Family Protection Action Plan, introduced in 2019, added seven new components to the benefits. They are partly connected to housing and are available in the form of interest subsidized loans: the pre-natal benefit was introduced; the amount and scope of interest subsidized loans linked to the family housing allowance was expanded (it is now available for used properties); the mortgage amount is reduced for families when they have children; mothers with four or more children are not required to pay personal income tax; the network of day care facilities for children under 3 is expanded; GYED is now available to grandparents; and a grant for families with 3 or more children to purchase a car is now also available.
- When CSOK (family housing allowance scheme) was first introduced, it was available to families with at least 3 children but the eligibility criteria were changed in 2018 to include also families with 2 children. In 2018, the amount of family tax benefit available to families with 2 children was raised and families with 2 children have been eligible to receive the interest subsidized loan of HUF 10 million under CSOK since 2018.
- In 2021, a home improvement grant of HUF 3 million was introduced for families with children while the Hungarian National Bank has been offering a so-called “green loan” since October 2021 where the criteria have not yet been published in detail but it helps families to have access to energy efficient homes.

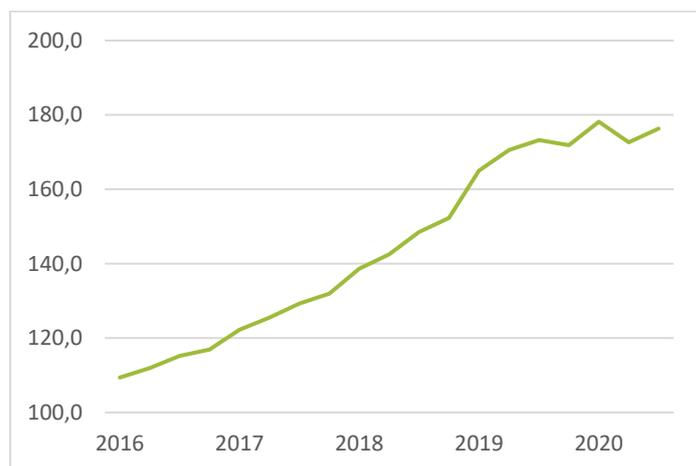
There are still concerns about the fertility impacts of CSOK including whether it is genuinely able to remove the barrier of families deciding not to have children due to financial/housing constraints. The flash report of March 2021 of the Mária Kopp Institute for Demography and Families notes that the COVID-19 pandemic affected the family benefits system as well:

- the amount of CSOK applied for new homes steadily decreased from the second quarter of 2020;
- the pandemic did not cause a notable reduction in the number of contracts for the countryside CSOK;
- the highest number of CSOK contracts was signed between the first and second wave of the coronavirus pandemic, in September 2020;
- in the case of CSOK type benefits, both the number of contracts and the amount of contracts rose by roughly 25% from 2019 to 2020;
- in 2020, for CSOK, the average number of children of the applicant families was 1.33 and they committed to having 1.44 additional children under their contracts, which means that the average number of children for families receiving CSOK will be higher by one in general than the national average.

The various housing benefits for families naturally have a boosting effect on the market and the performance of the construction industry overall. Based on the report of the State Audit Office for 2019, growth in the housing market was accompanied by negative and unexpected processes. On the one hand, there was excess demand on the new construction

market, which led to substantial price rise. On the other hand, prices were also sharply rising for used property, primarily in Budapest and Pest county. Overall, the housing market experienced a price growth of roughly 76% from 2015 to 2020 (Figure 6) meaning that the rate of the financial grant is constantly lowering relative to the price of the property planned to be bought and this trend has been intensifying since 2019.

Figure 5: Changes in the aggregate housing market price index relative to 2015

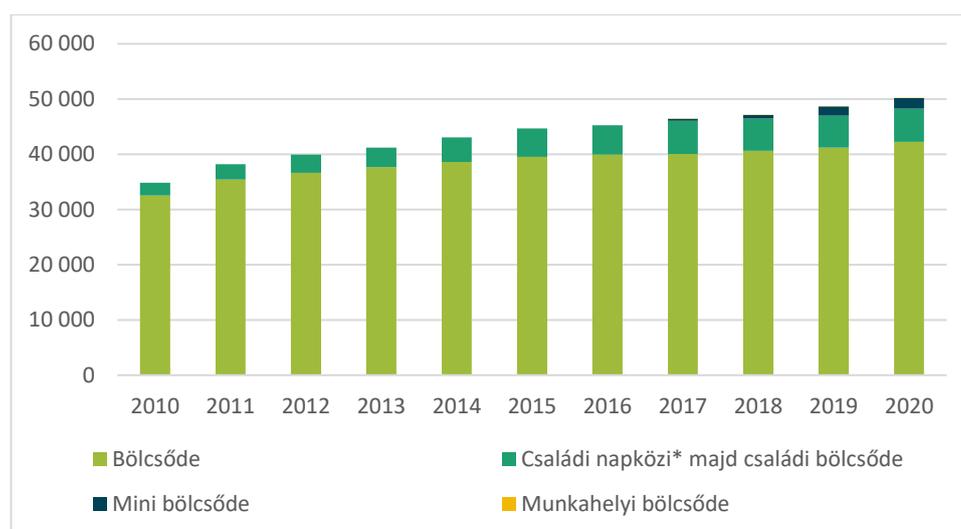


Source: KSH STADAT – 2.3.8.

Another key component of the family benefits system is the higher availability of preschools and day care facilities, which is a top government priority. Under the Family Protection Action Plan, the government committed to raising the capacity of day care facilities to 70 000 children by 2022, which is a fairly ambitious goal considering that it was lower than 48 000 in 2018. At the same time, the development of the capacity started to move forward at a slightly faster pace after that date exceeding 50 000 in 2020. The higher capacity is explained not only by the rise in the number of traditional day care facilities but also by the wider availability of other care options. For example, the capacity of mini day care facilities grew from 354 in 2017 to 1889 in 2020. These were mostly created in communities where a small number of children under 3 need such services.

The greatest problem of the day care facilities system is the strong territorial disparity in the distribution of the capacity of day care facilities. The best example for this is the Central Hungarian Region. While over 40% of the total capacity of day care facilities is located in this region, only 32% of children under 4 live here and this region has the highest female employment rate.

Figure 6: Changes in the capacity of day care facilities between 2010 and 2020



Source: KSH - Note to the methodology: The capacity of family day care centres and family day care facilities is not comparable to the extent that the former represents approved capacity while the latter represents existing capacity.

The previously mentioned government goal, i.e. capacity of 70 000 in day care facilities, means that day care facilities will be available to 20 to 22% of the children under 3 in Hungary by 2022. This is crucial as the compatibility of family and work plays an important role in the number of children people plan and actually have. Careers which are more compatible with child rearing and the availability of flexible work arrangements could help improve fertility rates. Before the COVID-19 pandemic, flexible work arrangements were not sufficiently widespread in Hungary, however, many employers and employees switched to home office due to the pandemic. Eurostat data show that the rate of people in atypical forms of work was 4.8% in Hungary in 2020, which is significantly lower than the EU average of 16.7%.

In summary, the Hungarian family benefits system has been constantly expanding since the adoption of the NFFS both in terms of the forms and the amount of support. The family benefits system is equally designed to promote higher fertility rates, the labour market reintegration of parents of young children and to improve the financial and housing situation of families. However, it is important to note that the higher spending on family benefits failed to lead to the expected growth in fertility rates and caused a sharp price rise in the housing market.

Table 1: Employment rate of women aged 25 to 49 (%)

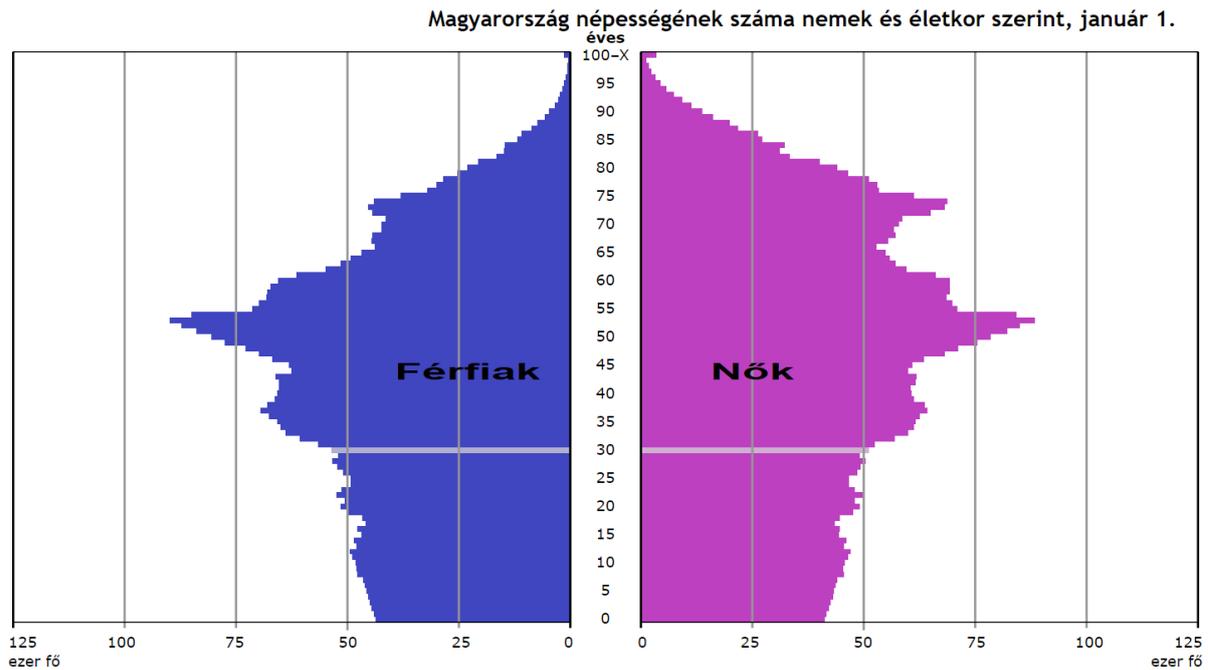
Category	2016	2017	2018	2019	2020
Employment rate of women aged 25 to 49	82.5	83.5	84.0	84.6	82.2
Based on the number of children in the household					
1	84.7	84.5	84.7	86.0	82.1
2	81.7	84.6	83.8	84.8	82.8
3 or more	61.5	60.4	66.1	65.0	64.8
Based on the age of the youngest child in the household					
0–2	69.6	71.0	73.2	73.2	73.6
3–5	73.4	74.8	75.9	76.1	69.6
6–16	84.4	85.2	85.2	86.9	84.6
17–24	88.3	88.6	89.3	90.0	86.5
No children in the household	86.3	87.3	87.8	87.8	85.9

Source: KSH STADAT– 20.1.1.35.

Population ageing

Throughout Europe, rising life expectancies and lower fertility rates combined lead to higher proportions of older people, i.e. to population ageing. The number of senior citizens has continued to rise in the past few years in Hungary as the population of the age group 65 years and older grew by nearly 87 000 between 2019 and 2021.

Figure 7: The population pyramid of Hungary as at January 1 2021



Source: KSH

This trend of demographic ageing and the relative decrease in younger age groups leads to a faster growth in the old age dependency ratio.

Table 2: Demographic structure by main age groups, dependency ratios, ageing index

Year, January 1	Age structure, % -14	Age structure, % 15-64	Age structure, % 65-X	Youth dependency ratio	Old age dependency ratio	Dependency ratio	Ageing index
2017	14.5	66.8	18.7	21.7	27.9	49.7	128.5
2018	14.5	66.5	18.9	21.9	28.5	50.3	130.2
2019	14.5	66.1	19.3	22.0	29.3	51.3	132.9
2020	14.5	65.6	19.9	22.2	30.3	52.5	136.6
2021	14.6	65.1	20.3	22.4	31.2	53.6	139.5

Source: KSH STADAT 22.1.1.4.

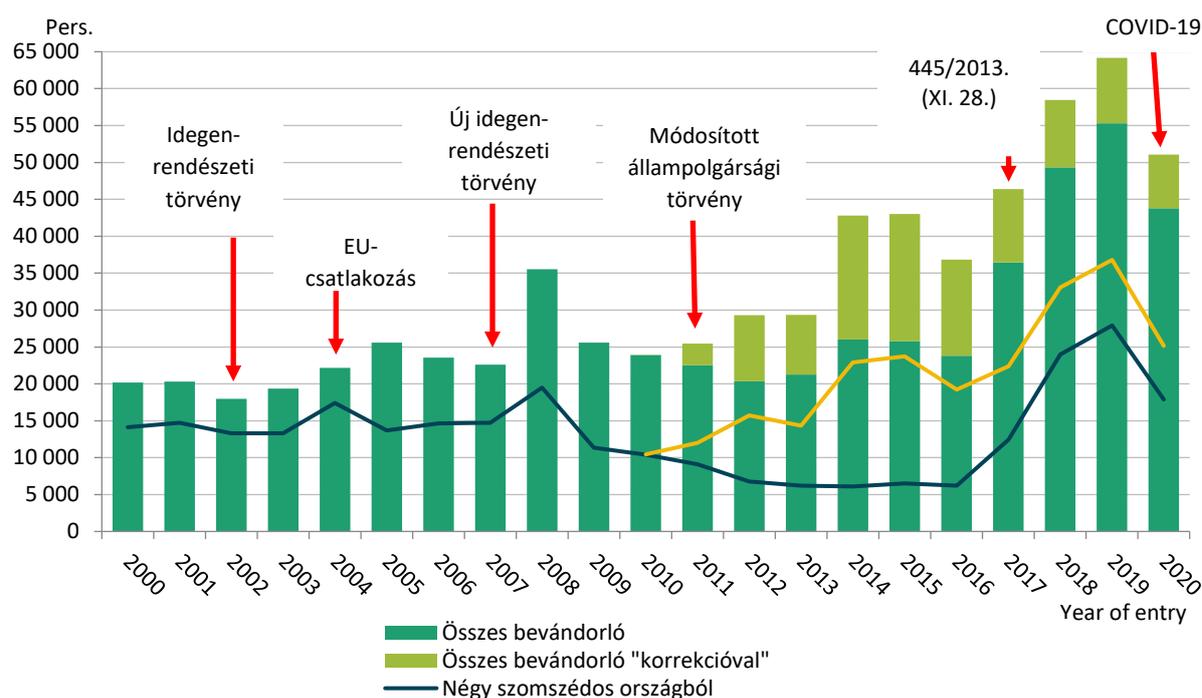
Another key indicator of the ageing process is the ageing index, which shows the relative size of the population aged 65 and over compared to the youngest population aged 0-14. As the table shows, the ageing index has continued to grow since the previous monitoring report was written.

International migration

Immigration trends must be examined by making a distribution between two large groups of immigrants: immigrant foreign citizens (who arrived in Hungary in a specific year and obtained a residency permit pursuant to effective laws and regulations) and immigrant Hungarian citizens. This latter group must be further divided into foreign-born Hungarian citizens and native-born Hungarian nationals, i.e. people returning to Hungary after living in a foreign country. In addition to immigrants, foreigners arriving in Hungary also include asylum seekers, that is foreign citizens or stateless persons who request international protection from Hungary. Monitoring the trends in the number of various migrant groups and their composition by the country of origin shows significant changes both in the volume and the structure of immigration in recent years.

The number of immigrant foreign citizens arriving in Hungary notably increased between 2016 and 2019, exceeding 55 000 in 2019. This growth trend was interrupted by the coronavirus pandemic; the rate of immigration substantially declined in 2020, which is primarily explained by the lowering number of Ukrainian nationals moving to Hungary. In 2020, 43 785 immigrant foreign citizens were registered.

Figure 8: The number of immigrant foreign citizens

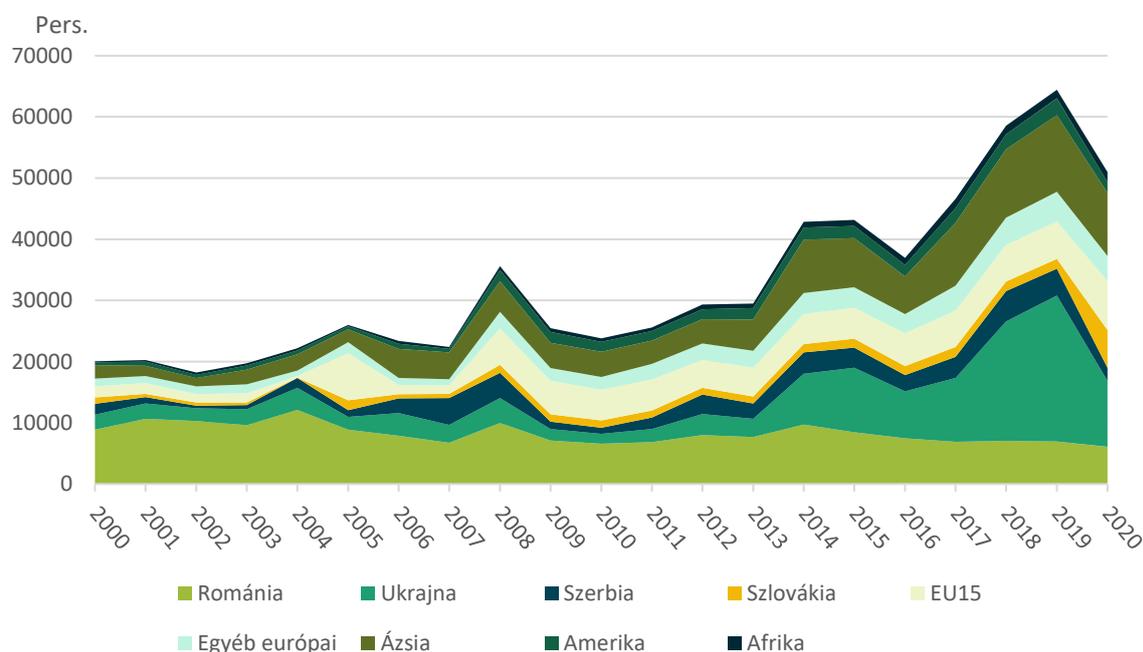


Source: KSH, Demographic Yearbooks – Adjusted for the number of Hungarian nationals arriving from four neighbouring countries (Romania, Ukraine, Serbia and Slovakia) following the introduction of the simplified naturalisation procedure.

A former tendency in immigration, that is the dominance of the number and composition of foreign nationals arriving from neighbouring countries (Romania, Ukraine, current Serbia and Slovakia) started to gradually disappear from 2008. However, 34% of the immigrant foreign citizens arrived from these four countries in 2017 while the same rate was 49% in 2018. This growth peaked in 2019 (50.5%) then as immigration was slowing,

the rate of foreigners arriving from these four neighbouring countries again declined (40.8%) in 2020.

Figure 9: Immigrant foreign citizens by year of immigration and country of nationality



Source: KSH Demographic Yearbooks

While the immigration of a country's own citizens for most countries means the return/immigration of people leaving their home country earlier or of their descendants, the situation is different in Hungary. For this reason, the number and the country of origin of immigrant foreign-born Hungarian citizens is also important to study in addition to the immigrant foreign nationals. After 2011, as an unexpected consequence of the new citizenship law effective from January 1 2011, the number of people arriving from neighbouring countries as immigrants of Hungarian nationality began rising. The number of all immigrant foreign-born Hungarian nationals rose from 2000 per year to in excess of 8000 per year by 2012 and 2013 and went up to 17 000/18 000 by 2014 and 2015. However, it started to decline from 2016, showed a downward tendency over 10 000 between 2017 and 2019 (lowering from 10 711 to 10 112) and went down to 8600 in 2020. Between 2011 and 2016, the rate of immigrant foreign-born Hungarian citizens coming from the abovementioned four neighbouring countries was already 97%. While their share slightly lowered from 2017, it remained dominant: declining from 93% in 2017 to 88% by 2019 and to 85% by 2020.

Due to the barrier erected on the border between Hungary and Serbia and Hungary and Croatia, the number of asylum seekers registered in Hungary radically fell after September 2015, following a former steep rise. While asylum seekers continued to be able to submit their asylum application in the so-called transit zones set up near the southern border, there was a steady decline until the end of 2020 (Figure 3): while there were a total of 177 135 asylum seekers registered in Hungary in 2015, their number was 29 432 in 2016, 3397 in 2017, 671 in 2018, 500 in 2019 and 117 in 2020.

Table 3: The number of asylum seekers arriving in Hungary between 2017 and 2020 by nationality

<i>Nationality</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>
Afghan	1432	274	197	25
Iraqi	812	239	171	16
Syrian	577	48	20	9
Pakistani	163	30	27	24
Iranian	109	29	23	–
Algerian	62	–	–	–
Turkish	29	1	–	–
Moroccan	24	2	–	–
Cuban	21	–	–	–
unknown	18	–	–	16
other	150	48	62	27
<i>Total</i>	<i>3397</i>	<i>671</i>	<i>500</i>	<i>117</i>

Source: National Directorate-General for Aliens Policing

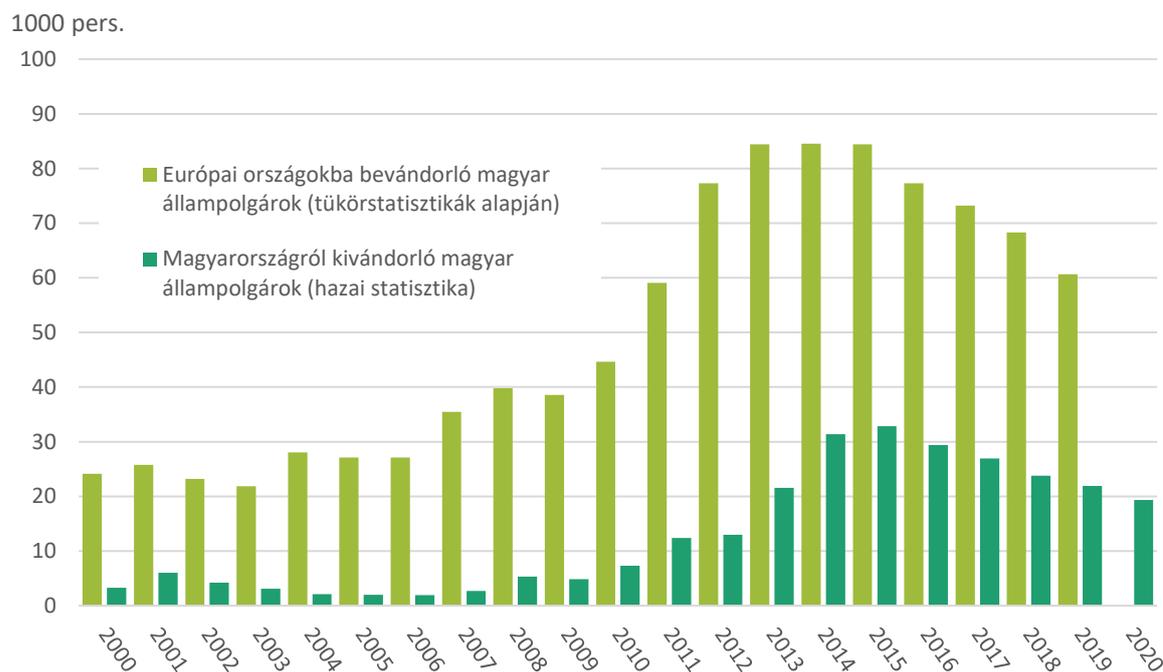
Migration has been a serious challenge for Hungary in recent times as the number of Hungarian citizens living abroad is growing year by year¹⁰. However, the rate of migration has been lowering in the past few years. The measurement of the trend, the exact determination of the number of people moving abroad for shorter or longer periods, is difficult as the countries of origin mostly underestimate the amount of migrants. For this reason, to be able to monitor this trend, mirror data (figures from Eurostat, immigration and labour data of countries of destination) should be studied in addition to domestic administrative records and public surveys. While mirror data more precisely register people arriving than countries of origin recording those leaving, there are a number of mobility forms within the EU that remain “invisible” even for the statistics of the countries of destination.

Both mirror data and domestic labour force surveys show that the rate of people leaving Hungary and finding employment in a foreign country started to markedly rise only in the late 2000s. However, after 2010, the pace of the growth rose and approached the rate reported in Poland, a country with a high proportion of emigration, in a short time¹¹. While the number of Hungarian nationals leaving their home country reported in official national statistics is below the figures in mirror statistics, it clearly reflects the rising outward emigration trend since 2011.

¹⁰ The reason why many young people leave the country is not their disapproval of the circumstances prevailing in Hungary but their desire to explore the world and to study, which means they may return to Hungary when their ambitions have been fulfilled.

¹¹ Gödri Irén (2018): Nemzetközi vándorlás. In Monostori Judit – Óri Péter – Spéder Zsolt (szerk.): Demográfiai portré 2018. Jelentés a magyar népesség helyzetéről, Népeségtudományi Kutatóintézet, Budapest, 237–270.

Figure 10: Changes in the number of Hungarian citizens leaving Hungary between 2000 and 2020



Source: KSH

Based on mirror statistics from countries of destination in Europe, the growth rate of emigration decreased in 2013 then stopped in 2014 and 2015 while the number of people leaving Hungary, i.e. registered in the countries of destination as Hungarian immigrants, lowered in 2016 and 2017. This decrease continued in 2018 and quickened in 2019. Although mirror data comparisons are not available for 2020, official figures show a continued lowering trend in emigration, which is obviously partly affected by the coronavirus pandemic.

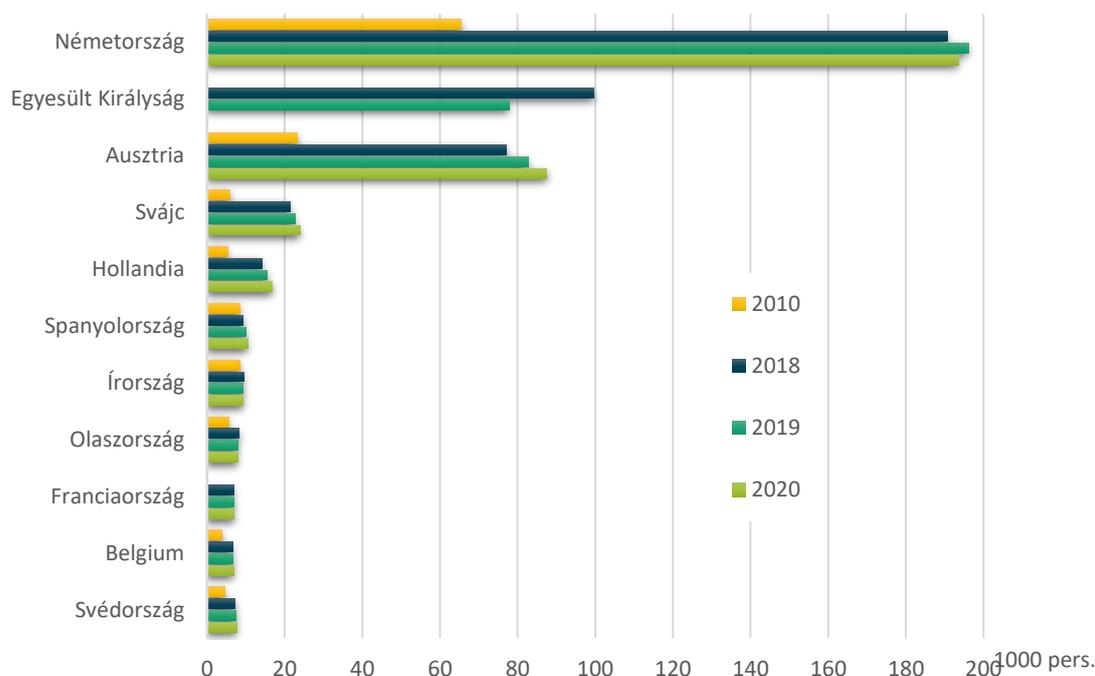
However, current migration within the EU mostly involves temporary, circular or commuting, primarily for the purpose of work, movements. These are only registered if they are related to legal employment when they are recorded on labour statistics.

In the case of the two traditional countries of destination of Hungarian emigration, Austria and Germany, the former experiences temporary and commuting movements dominantly for the purpose of work with a less significant degree of immigration while Germany registered a high number of Hungarian immigrants even before the labour market opening in 2011. After the opening, their numbers grew at a pace never seen before totalling close to 60 000 per year between 2013 and 2015 being followed by a steep decline from 2016 and not even reaching 40 000 in 2019.

Due to remigration, the number of Hungarian citizens living in the main countries of destination in Europe stopped rising lately. At the beginning of 2020, the number of Hungarian citizens living in the countries of the European Economic Area was close to 420 000, which is an increase of 81 000 relative to 2014 and of 318 000 relative to the millennium (January 2001). In 2020, nearly 75% of this population lived in one of the three main countries of destination: Germany (39%), Austria (18%) and the United Kingdom (16%). While, however, the number of Hungarian citizens living in European countries rose

by 36 000 and 26 000 per year in the past few years, this growth was slashed between 2018 and 2020.

Figure 11: Number of Hungarian nationals living in the main countries of destination in Europe between 2010 and 2020 (January 1)



Source: Eurostat

5.1.4.2 Knowledge and education

There are two directions of development with which the development of Hungary's education system can contribute to sustainable development. Firstly, education for sustainability must be a top priority in schools to teach the next generations of children the approach of sustainability and secondly, a knowledge-based society may be promoted by developing the education system and improving the quality of education, which may contribute to better economic performance and general social capital.

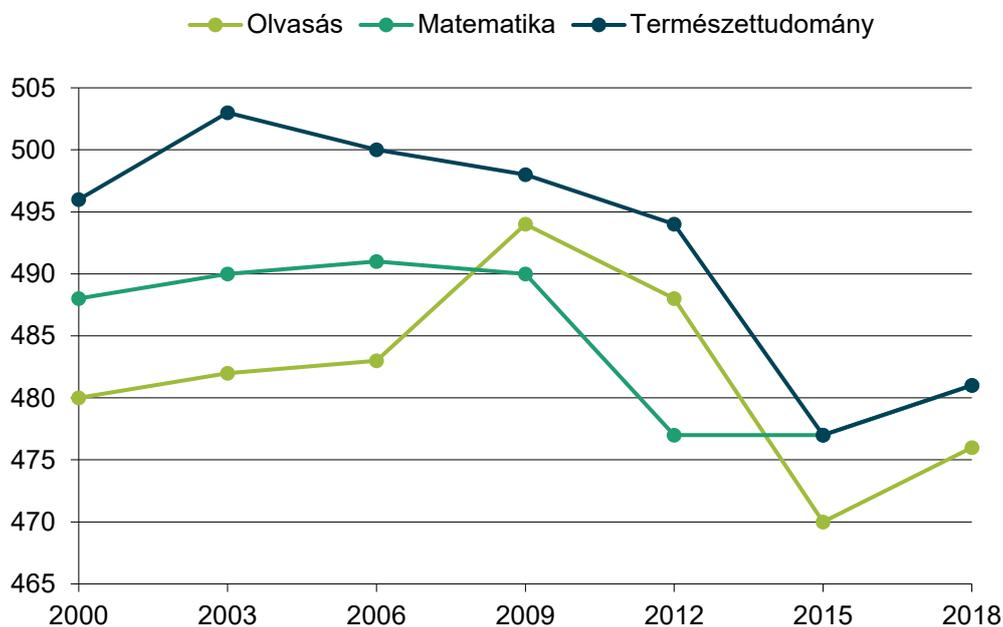
Changes in student school performance

While the changes in student school performance may be an accurate indicator of the quality of a country's education system, the extraordinary situation caused by the COVID-19 pandemic that also deeply affected the field of education must definitely be taken into account. This extraordinary state covering nearly one and a half school years and an interruption of in-person teaching of such degree is unprecedented in developed countries and is expected to impact the development the school-age population in the long run as well. Long term effects are still being studied but the exact determination of their degree will require a longer time. This even historically important process will have a strong impact on sustainable development, more precisely on the reproduction of the national knowledge capital, an area studied in this analysis to a depth reflecting its significance.

The quality of education is assessed by two large international organisations using slightly different methodologies. As Hungary participates in both assessments, the results of the tests based on different principle offer a more subtle reflection of the changes in student school performance over time. The most widely cited international test is the PISA test conducted in the OECD countries, which assesses student performance in three main areas: mathematics, reading and science. In 2018, it was already the seventh PISA cycle with the major focus on reading literacy.

The results for mathematics and science were already identical in 2015 and there was no change in this aspect in the latest assessment either: the two curves run together. The analysis of trends in the entire 18-year period shows that the performance of our students, with some variations, strongly declined in this period. The results were worse in 2018 than in 2000 in all three domains with the highest decline where they were the best at the beginning. The teaching of reading has always been one of the most problematic areas in the history of Hungarian public education. A variety of programmes led to some improvements after 2000, in particular between 2006 and 2009 followed by the largest decline in the history of PISA assessments. As the poor level of reading comprehension affects other areas of learning as well, its improvement together with the supply of conditions needed to more efficiently develop it in public education must be very urgently addressed. As the results of the PISA test were studied in detail in the previous Monitoring Report and new data are not yet available, the results from 2018 are not discussed in depth in this document.

Figure 12: Changes in PISA results between 2000 and 2018

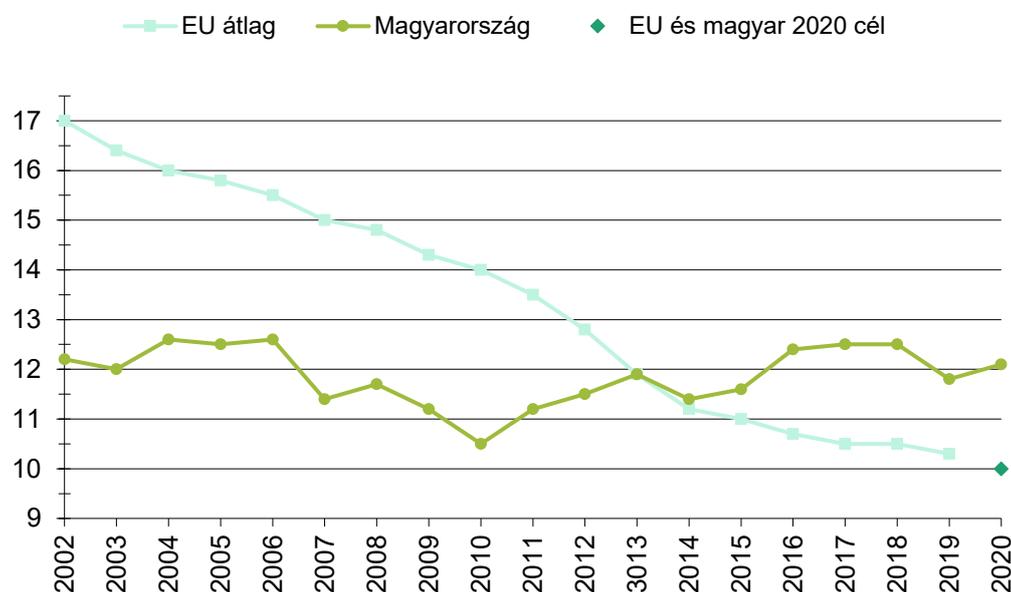


Source: OECD

Early school leaving is one of the biggest education problems across the European Union, which is clearly illustrated by the fact that one of the most important education policy goals set in 2020 was the reduction of the early school leaving rate. Early school leavers are defined as people whose highest level of education or training is ISCED 0, 1 or 2 (in Hungary, it is the upper classes of the elementary school) and who did not receive any

education or training in the 4 weeks before the survey. The indicator shows the rate of such early school leavers in the population aged 18 to 24.

Figure 13: Changes in the early school leaving rate in Hungary and the average rate of EU countries between 2002 and 2020



Source: Eurostat

What demonstrates the severity of the problem is that the reduction of early school leaving continues to be a top priority in the country reports and the related country specific recommendations published yearly by the Commission. Accordingly, a part of the cohesive funds was allocated to reducing early school leaving under the HRDOP. Project HRDOP-3.1.5-16-2016-00001 (Support to institutions affected by student dropouts) spent HUF 11.8 billion between January 2 2017 and July 31 2021 to achieve the planned objectives. The activities financed included the complex development of institutions involved in the programme (preschools, elementary and secondary schools), direct support to students at risk of early school leaving and promotion of the networks of public education institutions. While the available data do not yet allow for the identification of the long term effects of the project, the results shown in the figure are not very promising in this respect.

By reviewing the project's content and implementation framework, it becomes clear that there weren't any solutions applied or programme components incorporated that were designed to address the root causes of the problems. These include the sizeable differences between schools, the particularly high rate of small, poorly equipped schools in disadvantaged regions lacking the required number of properly qualified teachers as well as the insufficient availability of professionals trained to provide support pedagogical activities (family support workers, social workers, special needs teachers, school psychologists).

The failed efforts made to date to reduce dropout rates (and to solve other problems of the education system) undoubtedly suggest that the knowledge presently available in the system disallows any further progress. Without improvements in human resources (primarily by increasing the number of staff trained to perform special tasks) the deepening

problems cannot be tackled. This is another area where science derived and evidence based interventions should be adopted.

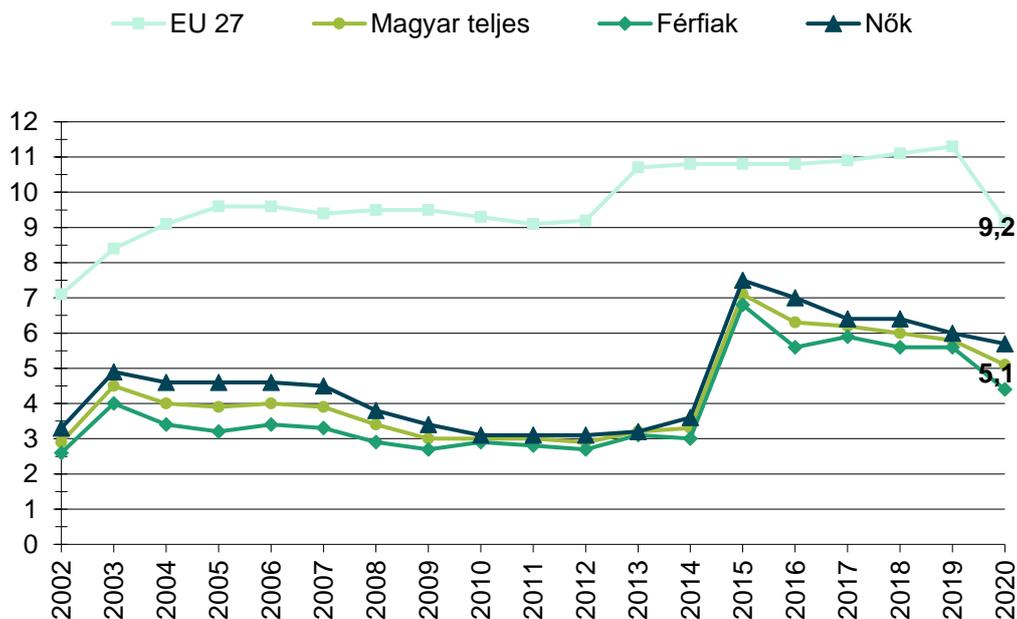
The quality and efficiency of education is at least partly affected by the amount of government spending. Time series data demonstrate that education spending relative to GDP rose between 2012 and 2018. In 2019, more than HUF 2.236 billion was spent on education, which is over 10% of the government spending.

Lifelong learning

Nowadays, knowledge-based society is not a blank term but a truly measurable practice; the knowledge and skills acquired in schools are not always enough to tackle every new challenge and the potential of adult learning is becoming a priority.

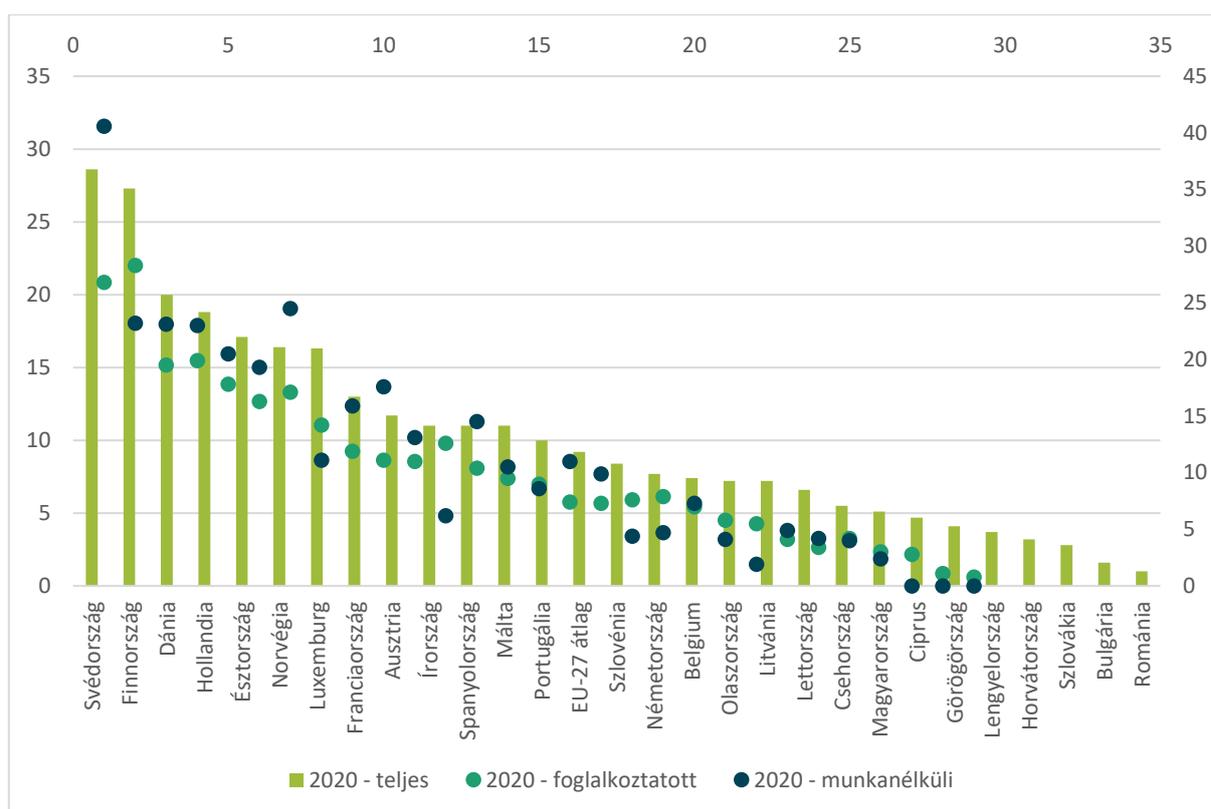
The COVID-19 pandemic adversely affected the number of people in adult education across Europe. The rate of people in adult education peaked in 2014 in Hungary and has been declining ever since, totalling 5.1% in 2020, which is notably lower than the EU average of 9.2%. In general, women tend to participate in adult education in higher numbers.

Figure 14: Changes in the rate of people in education aged 24 to 64 between 2002 and 2020



Source: Eurostat

Figure 15: Rate of population aged 25–64 in adult education by employment in the EU in 2020



Source: Eurostat

Available data demonstrate that unemployed people participate in adult education in lower rates than employed people in Hungary although it could effectively promote their labour market reintegration.

Lifelong learning is defined by the European Commission as “all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competencies within a personal, civic, social and employment-related perspective”.ⁱ Unfortunately, the opportunities to improve personal, civic and social competencies and skills are very scarce or almost negligible within Hungary’s adult education. Due to the extremely fast paced economic, technology, information, cultural, political and legal advancement as well as the excessive dominance of the electronic entertainment industry, mostly offering shallow content, qualifications once obtained in school are no longer sufficient in any area of life.

While professional education, training and further development is indispensable, the improvement of general knowledge and collective thinking in the proper form is also essential to establish a dedicated and optimal framework for people to be able to successfully live and work together. Today’s ecological challenges, climate change, pandemics and pollution would particularly require thorough and fact based familiarity with the present situation and the identification of adequate actions.

The European Reference Framework identifies the following key competences:

- communication in the mother tongue,
- communication in foreign languages,
- mathematical competence and basic competences in science and technology,
- digital competence,

- learning to learn,
- social and civic competences,
- sense of initiative and entrepreneurship,
- cultural awareness and expression.

Adult education should also become a particularly important tool in terms of people's ecological mindset and attitude change.

However, the rate of such education possibilities is very low.

In 2020, a total of 70 000 people attended 4370 trainings provided by 5841 institutions. The report includes data not only from community cultural centres but from all institutions providing services in the field of public education and culture. The pandemic caused a reduction in this area too as a total of 113 000 people participated in 5587 trainings in 2019. However, one institution did not run a single training even in that year. The average number of participants was 16 in 2020 and 20 in 2019.ⁱⁱ However, the combination of these courses focusing on language learning, hobbies, related to leisure time or farming activities and trainings designed to improve the above mentioned competencies would be insufficient even if it did not include professional further development and regular trainings a specific institution only agreed to organise.

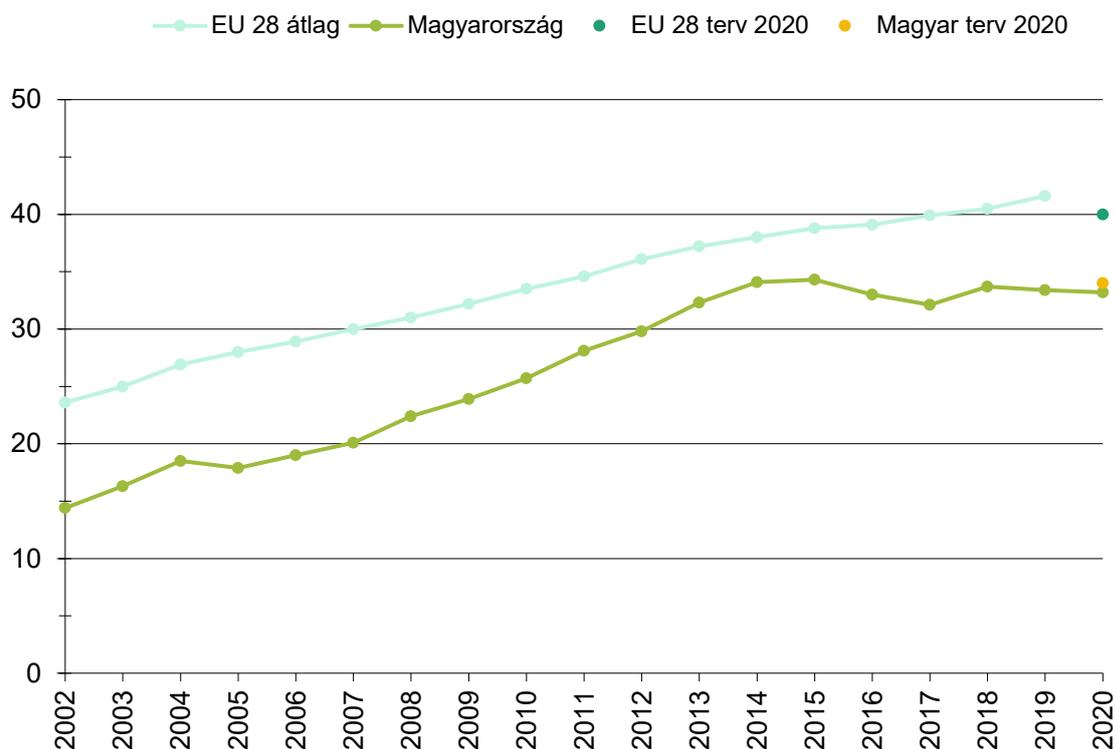
In conclusion, it is important to stress that Hungary's adult education should be strongly improved as a whole including a drastic rise in trainings designed to provide contemporary general knowledge and teach competencies responding to current needs.

Changes in higher education, the potential impacts of restructuring

One of the most important recent changes in Hungary's higher education is the restructuring process of universities called "model shift". This means that some of the public higher education institutions will undergo a transition to a foundation-based model, i.e. will be financed by foundations. At the beginning of 2021/2022 academic year, there were a total of 21 foundation higher education institutions, six remain funded by the government and there are 24 church-run and 12 private institutions. How this process will affect the quality of education and research, the education capacity and the number of graduates is impossible to define at this point. This means that the present state can be the baseline to which any further changes may be compared.

However, as we are familiar with the development processes of the past decades, we can examine the current situation based on that time perspective. One of the EU's goals set in the field of education for 2020 (the other was the reduction of early school leaving discussed above) was to raise the rate of people with tertiary educational attainment. The changes in the rate of people with tertiary educational attainment between 2002 and 2020 are shown in the figure below. The figure includes the EU28 average in addition to the Hungarian data.

Figure 16: Changes in the rate of population aged 30-34 with tertiary educational attainment between 2002 and 2020 in Hungary and for the EU28 average



Source: Eurostat

In the last two decades, there has been rapid and steady progress made in tertiary educational attainment in EU countries on average. Hungary also experienced a phase of rapid and steady progress: between 2005 and 2014, the pace of progress was faster than that of the EU and if the tendency had remained unchanged, we would have reached the EU level by now despite the notable initial differences. However, while the EU target is 40%, Hungary only set out to achieve 30.3%. This target was almost reached but then the “Change of Pace in Higher Education” programme caused a substantial decline in the number of people admitted to higher education. This reversed the trend after 2015 and the rate of people with tertiary level education fell. The target was subsequently slightly raised to 34% but we failed to reach that by 2020 closing this development cycle at 33.2% (while we achieved 34.3% in 2015). The EU average target of 40% was accomplished by already 2017 and it has continued to steadily improve ever since.

The quality assurance system needs to be adjusted in all forms and at all levels of education and training (public education, higher education, vocational education, dual vocational education, adult education, lifelong learning) as well as with regard to the approach to and the practice of education and training.

The level of culture, beliefs and morals have a fundamental impact on most aspects of sustainability including the quality of education, the state of health care as well as attitudes towards social responsibility, narcotics use, childbirth, school violence, stress at work, food waste, the level of trust, the state of corruption and the effect of the fight against false media information distorting people’s attitudes.

However, it must be emphasized that culture, beliefs and morals are also being seriously undermined by global destructive movements (postmodern, immorality, anti-religion,

dissemination of fake news etc.) therefore culture, beliefs, the Hungarian language and morals should not only be promoted but also protected for the sake of sustainability.

5.1.4.3 Health

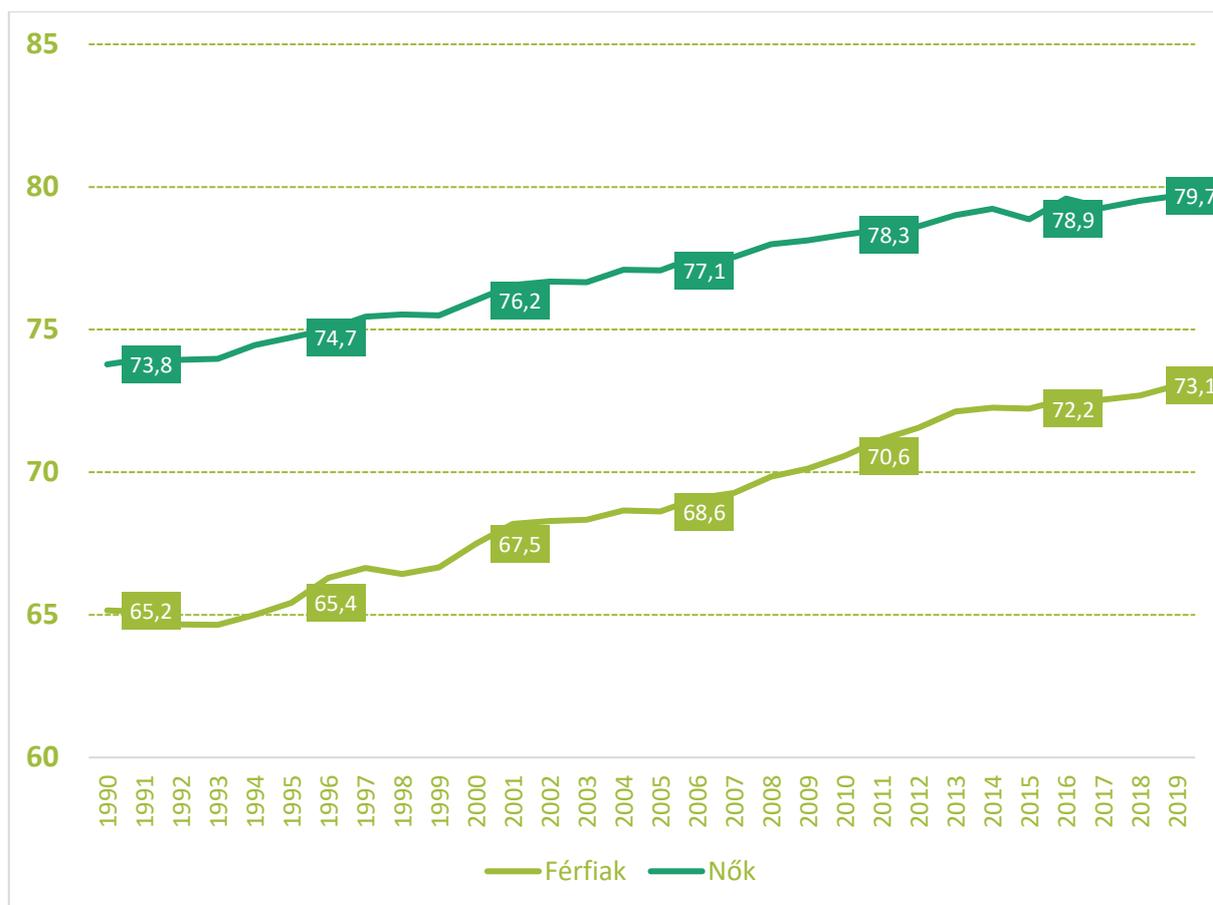
In addition to individual prosperity and well-being, people's health has an impact on the demographics, employment policy status as well budgetary planning and sustainability of a country. Health and healthy life expectancy at birth are influenced by environmental impacts and individual lifestyle decisions. All in all, changes in health will affect all other socio-economic processes (and vice versa).

Life expectancy at birth

Life expectancy is an essential indicator reflecting a country's socio-economic development and the health of the population. Life expectancy also demonstrates a population's mortality rates; higher life expectancy goes hand in hand with better health and lower mortality. As the population's health is a vital aspect of the available human resources, its improvement is key to sustainable development. Based on the framework strategy, the health of the Hungarian people is worse than what could be expected at our level of economic development and also worse than the health of the people in neighbouring countries. As regards the reduction of mortality, the goal is to achieve the Central European average together with lowering the number chronic, non-communicable diseases closely associated with lifestyle and representing a major part of the burden of disease as well as decreasing the rate of behaviour patterns adversely affecting health and environmental risk factors.

Between 2000 and 2019, the life expectancy at birth rose 5.6 years for men and 3.5 years for women. In Hungary's history, this indicator had never been as high as in 2019: 73.1 years for men and 79.7 years for women. Due to the higher rise of the life prospects of men between 2000 and 2019, the gender gap fell from 8.7 years to 6.6 years, which is still high relative to the rest of Europe. One of the reasons for this narrower gap may be the reduction of the differences between the attitudes of the two sexes to health conscious behaviours. The general growth tendency of life expectancy may be the result of better living conditions, the advancements in medicine and the spread of health conscious behaviours.

Figure 17: Changes in life expectancy at birth by gender



Source: Eurostat

Health status

Female life expectancy is higher all over the world, which is explained by genetic, hormonal and lifestyle reasons. In Hungary, healthy life expectancy was 59.6 years for men and 60.9 years for women in 2017. While the indicator for Hungary is lower than the EU average (63.5 for men and 64.2 for women in 2016), the healthy life expectancy in 2017 was the highest value ever measured in Hungary both for women and men. The comparison of the healthy life years shows that women can expect a longer time lived in good health. However, the rate of healthy life years within a person's entire lifetime is higher for men: they live 82% of their life in good health while women only 77%. This means that women spend a longer time both in good and poor health than men do. In 2016, healthy life years at age 65 was lower for both men and women than the EU28 average (9.8 for men and 10.1 for women). Life expectancy at age 65, similarly to life expectancy at birth, also rose although only slightly between 2000 and 2017: in the period under review, life prospects grew by 1.8 years for both sexes. In 2017, men and women on average could expect to live 14.2 and 18.0 years more respectively. As a result, the gender gap in essence remained the same between 2000 and 2017 totalling around 3.7 years throughout this period.

Between 2000 and 2017, healthy life expectancy at birth rose in every region across Hungary. The biggest gain for men was reported in the Pest region where life expectancy at birth grew by 6.3 years as opposed to only by 4.3 years in Northern Hungary. For women,

the highest rise took place in Budapest where life expectancy at birth increased by 4.1 years as opposed to 2.8 years in Northern Hungary. In 2015, one of the years with significant excess deaths, the biggest drop for men occurred in Central Transdanubia where life expectancy at birth fell by 0.5 year while a reduction of 0.9 year was recorded for women in the Pest region relative to 2014. Between 2000 and 2017, life expectancy at age 65 also rose in every region. The highest gain for men took place in Budapest (2.2 years) and for women in Southern Transdanubia (2.3 years). In 2015, the highest decline for men (0.2 year) occurred in Northern Hungary and for women (0.7 year) in the Pest region.

In 2018, the majority of the adult population (88%) considered themselves to be in good health or at least perceived it was normal. 61% responded to be in good or very good health. Men tend to rate their health more positively despite mortality rates and the results of health behaviour surveys that show that women are more concerned about their health and make more efforts to avoid risks (the prevalence of regular smoking, alcohol consumption, excess weight or obesity is significantly higher among men). In 2018, the proportion of men and women who perceived their health status as very good or good was 64% and 58% respectively.

People in the highest income group are much more likely to perceive their health status as excellent than the population with lower income. Only 5.8% of the people in the high income group rate their health as bad or very bad as opposed to 19.4% in the low income group. The disparities between the two extremes of the income categories have failed to effectively improve since 2010.

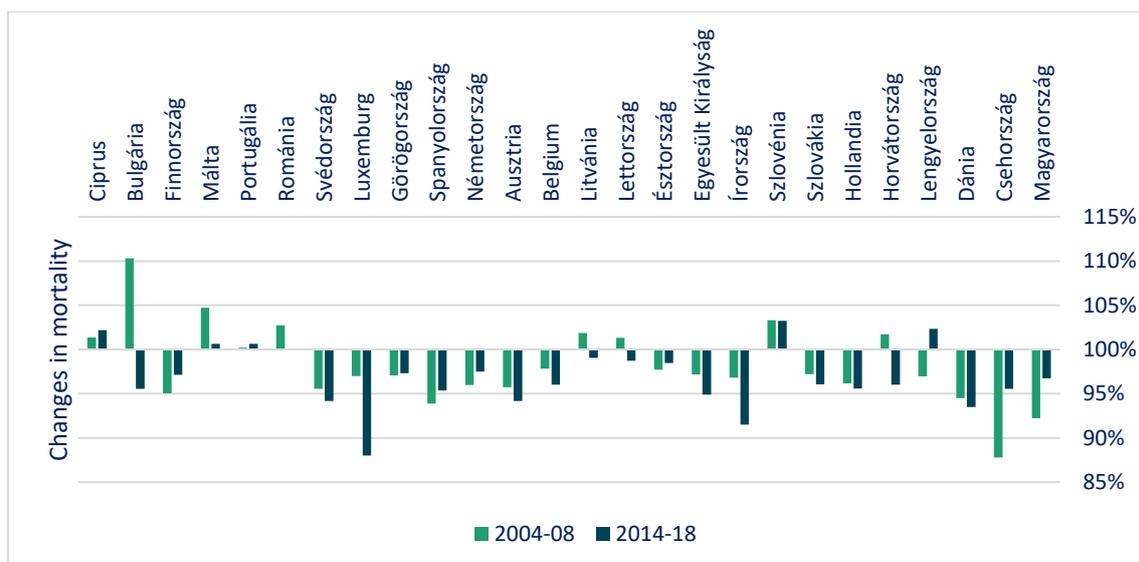
Morbidity, leading causes of death

In Hungary, the main cause of morbidity continues to be associated with hypertension (in the population aged 19 and over, 3960 cases of hypertension are diagnosed per 10 000 people) but the prevalence of ischaemic heart disease and asthma also substantially increased until 2017.

The prevalence of diabetes mellitus more than doubled in the adult population in one and a half decades (the prevalence per 10 000 people was 585 in 2001 and 1321 in 2017). This growth affects both sexes. The age-adjusted indicator per 10 000 people is 1310 for men and 1332 for women. The analysis based on age shows that the morbidity rates for older people are higher with the biggest discrepancy of 2.5 times recorded between people aged 35-44 and 45-54.

Mortality data reflect that the majority of deaths, especially in Hungary, in Central and Eastern European and Baltic countries, are caused by the diseases of the circulatory system, also known as cardiovascular mortality. In Hungary, 49% of the deaths were caused by this disease in 2019. In the best performing countries, this cause was so successfully tackled already in the early 2000s that it now accounts only for one-fourth of the deaths. Cancer is also a leading cause of death in Hungary: the cancer mortality rate of 400/100 000 represents roughly one-fourth of the total mortality. Hungary's very unfavourable status even relative to Europe is explained by the extremely high incidence of lung and colorectal cancer mortality, the first of which is a preventable and the second is a treatable disease. The moderate successes achieved in the treatment of various cancers must definitely be supported by strengthening the prevention and screening system.

Figure 18: Changes in cancer mortality relative to Europe



Source: Eurostat

Cardiovascular mortality markedly improved in most countries in Europe between 2004 and 2008. Deaths associated with cardiac and vascular causes fell by over 10% in most countries and in specific cases by nearly 20%. There are only four countries where the decline was below 10%. Between 2014 and 2018, the pace of reduction slowed down: there were only eight countries where the pace of reduction remained constant.

What is striking about the dynamics of cardiovascular mortality is that Hungary's solid 12% decrease between 2004 and 2008 was followed by a moderate 3% fall between 2014 and 2018. Taking into account the extremely high share of cardiovascular diseases in all-cause mortality, the abrupt halt in the improvement of cardiovascular mortality may be the main reason why life expectancy became nearly stagnant.

Accidents, homicide and suicide are called external causes of death. In 2019, deaths associated with such causes accounted for 4.2% of all-cause mortality in Hungary. In 2000s, the share of external causes of death was relatively high in Hungary, explained mainly by the high number of suicides. The proportion of external causes of death went sharply down between 2004 and 2008 due not only to the improvements in the number of suicides but also in the number of deaths caused by accidents. The share of suicide was already very low between 2014 and 2018. Further improvements are primarily prevented by the stagnation of deaths caused by accidents.

As regards preventable mortality, as it was already discussed in the previous monitoring report, Hungary belongs to the worst 25% in the EU. In Hungary, there was sizeable reduction between 2011 and 2013. Between 2013 and 2018, the rate of preventable mortality was essentially constant in Hungary. Mortality rates are similar in Romania (slightly higher) and in Poland (slightly lower).

A major proportion of preventable deaths is attributable to unhealthy lifestyles, nutritional habits and obesity. In Hungary, over 50% of the population older than 16 years are overweight or obese and nearly half of the population are not involved in any physical activity.

To improve the rate of physical activity, daily physical education classes were introduced in the education system in 2012. In addition, the government introduced changes in public

catering services in order to encourage students to eat more healthily as excess weight is caused by the lack of physical activity and poor nutritional habits in equal measure.

A report by Drog Fókuszpont (Drug Focus Point) from 2020 shows that every thirteenth adult (7.9%) has used some type of illicit drug in their lives. The same indicator is already 14% for the population aged 18-34 years and the prevalence of illicit drug use is higher for men in all age groups. Compared with the previous Monitoring Report, trends show that marijuana and cannabis remain the most common drugs in Hungary but synthetic cannabinoids have replaced ecstasy and amphetamine in the second place. In international comparison, the prevalence of intravenous drug use representing more severe risks to health is lower in Hungary. A challenge for the assessment is the suspicious ingredients and unknown effects of new psychoactive substances (designer drugs).

In summary, the rate of treatable mortality was roughly 70% higher than the EU average in Hungary in 2018 and was more than twice as high as the rate in countries with the lowest of treatable mortality (Holland, Spain, Italy).

The development of a public health strategy that does not focus on the health care system would be of paramount importance. It could be called health plan or health promotion plan. This could help prevent the misunderstanding that all expressions starting with or including the word “health” (public health) are automatically associated with the department of health, which impedes any type of broad cooperation. It is important that it address the social determinants of health in the first place by defining specific priorities based on the results of underlying research, government intentions, goals and resources available for the period. In order to successfully tackle these problems, we also recommend that a strategic document for the National Anti-Drug Strategy for the period after 2013-2020 is drawn up and a strategy to fight excessive alcohol consumption is developed.

In order to address the issues discussed in this monitoring report, health awareness, the promotion of positive health behaviours and the improvement of health education, a national health communication strategy and programme targeting the general public is required. An adequately planned and scheduled communication strategy based on the risk factors associated with the main causes of mortality is also lacking.

Preparation of a National Health Development Plan

The methodology for a city health development plan was elaborated by member cities of the WHO European Healthy Cities Network in collaboration with WHO's experts over long years. The methodology was adapted by the Healthy Cities Association in the Carpathian Basin to reflect Hungarian circumstances and may be used not only for cities but other scenes and institutions as well (e.g. workplaces, schools).

A city health development plan is a strategic planning document that determines the pathways of action in the field of health promotion and development for a specific period. The health development plan is based on a health profile of the city and its population, which also includes studies using various methods.

Sustainable Development Impact Assessment

An essential tool of the WHO European Healthy Cities Network is the use of the health impact assessment in the work of local governments. The health impact assessment focuses on the review of strategic documents (mid and long term concepts, programmes, strategies etc.) to be discussed by local decision-making bodies based on pre-defined criteria and principles. It is intended to have health aspects incorporated in strategic documents used as the basis for future decisions and draw the attention of decision makers to the impacts of their decisions on health.

This method may be adapted to allow the review of sustainable development aspects and we offer to develop a detailed methodology for that if there is such need, intention on behalf of the government.

Health care workers

The number of health care workers was growing until 2019 and then drastically fell by 2020. While the number of active physicians was 41282 in 2019, it went down to 37188 in 2020, which is partly the consequence of the expiry of the registration of a high number of professionals in the licence registry due to the five-year cycles and this steep decline is also likely to be connected to the COVID-19 pandemic hitting Hungary as well as to Act C of 2020 on the employment status of health workers, which changed several aspects of the employment of health care workers. The new legislation raised the salaries and benefits of those subject to the new employment status but prohibits their engagement in the private sector. According to estimates, the introduction of the new employment status may also contribute to a further reduction in the number of employees in the public health care system.

5.1.4.4 Poverty, exclusion – social cohesion

Member States have agreed to reduce the number of people living in severe material deprivation and social exclusion by 20 million throughout the European Union by 2020. Hungary has accordingly agreed to reduce the number of the affected population by 450 000 to 1.93 million relative to data from 2008.

The EU 2020 strategy uses three indicators to assess the efficiency of the fight against poverty or social exclusion:

- Rate of people affected by relative income poverty
- Severe material deprivation rate
- People living in households with very low work intensity

In Hungary, after its EU accession, similarly to the other new member states, the severe material deprivation rate was the highest of these three groups (19.4% in 2015). This trend changed by 2018 and, in line with the tendencies in Western countries, the relative income poverty rate dropped to 10.1%. In 2019, both indicators decreased, however, the severe material deprivation rate improves more rapidly (standing at only 8.7% in 2019). The size of the other two groups was roughly the same in 2008 and then the rate of people living in households with low work intensity constantly lowered from 2013. The rate of people affected by relative income poverty was 12.4% in 2008, 15% in 2013, 14.5% in 2016 and 12.3% in 2019. In contrast, the proportion of people living in households with very low work intensity was 9.6% in 2008, peaked in 2013 (10.3%) and then went down year by year standing only at 7.1% in 2015 (significantly affected not only by the processes in the primary

labour market but also the growth in employment in foreign countries and the extension of public employment programmes) and reaching 3.7% in 2019, which is mainly the result of growth in the real economy in recent years.

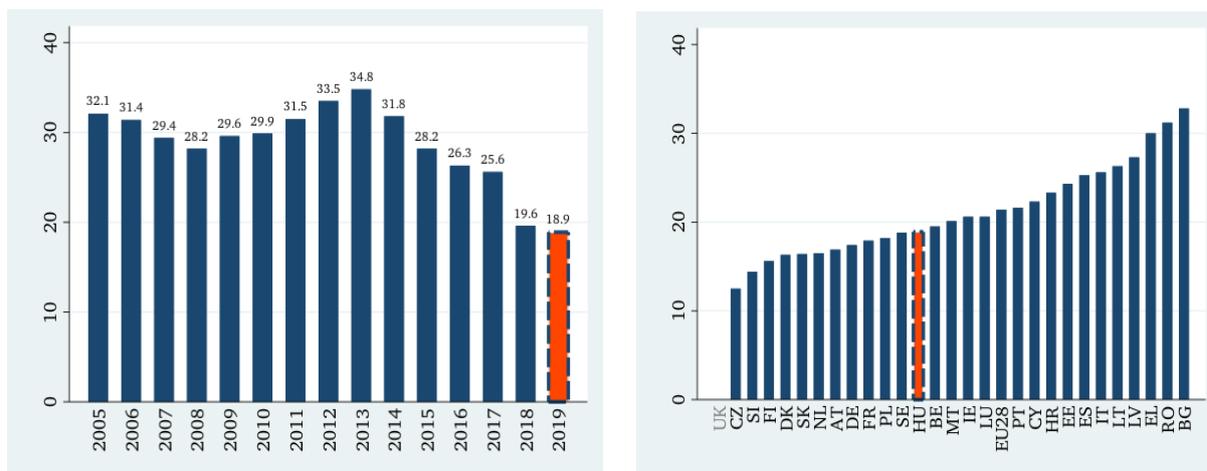
In Hungary, the rate of the population affected by poverty or social exclusion was 28.2% in 2008 and constantly rose until 2013 to 34.8%. This was followed by a decline and the rate was only 26.3% in 2016, then falling 6 percentage points in a single year to only 19.6% in 2018 with the positive tendency continuing in 2019 (18.9%).

Material deprivation

Material deprivation is used as a statistical indicator in addition to severe material deprivation and represents the population that are unable to afford at least three of the nine essential items. Material deprivation is a broader category than severe material deprivation. In 2019, the rate of people belonging to the latter category was 8.7% and 18.5% were affected by material deprivation (it was 45.4% in 2013). Despite the solid improvement, Hungary is still rated as a severely deprived country within the European Union, however, data from 2019 show that Romania (27.8%), Greece (30.4%), Bulgaria (32.6%), Croatia (19.6%), Latvia (20.9%) and Cyprus (23.1%) has a higher material deprivation rate than Hungary.

The severe material deprivation rate is the best indicator to reflect disparities between countries. Despite its rating as an extremely deprived country within the EU, Hungary was ranked as the third worst country in 2013 and only the sixth worst in 2019 in this respect. It is explained by the steady decline in the rate of the population affected by severe deprivation following its peak in 2013 (27.8%): to 24% by 2014 and to 16.2% by 2016, which is lower than the rate in 2008 (17.9%). Based on data published by the Central Statistical Office, initially there was a sharp decrease in the share of those who could not afford a one-week annual holiday away from home, to eat meat every second day and to keep their home adequately warm. Between 2014 and 2015, all material deprivation indicators improved and by 2016, the proportion of those who were unable to face unexpected expenses went down radically. By 2019, all indicators improved except the ability to face unexpected expenses, which was constant and the possibility to afford to eat a meal with meat regularly, which went up. Finally, by 2020, the rate of those who had arrears on payments, were unable to meet unexpected financial expenses, could not afford a telephone and washing machine rose, the proportion of those who could not afford a television was constant while the other indicators improved.

Figure 19: Poverty or social exclusion rate in Hungary (2005-2019) and in EU member states (2019) (% of total population)



Source: Eurostat

5.1.5 GOVERNMENT MEASURES

The government's extensive family benefits system was discussed in detail in the in-depth analysis. As a result, this section focuses on key government measures and strategic documents intended to promote the sustainability of human resources.

- As a new component of the extensive system of family policy measures and as a sign of the social recognition of child rearing, a benefit for mothers with four or more children was introduced from January 1 2020 exempting them from paying personal income tax on any earned income.
- Action against relationship violence, measures to support victims and the prevention of violence are tasks closely related to the protection of families. To address these issues, the government nearly tripled the capacity of shelters for the victims of relationship violence during the reporting period.
- To provide for the day care of small children, day care facilities are developed to achieve a capacity in response to needs. Between 2010 and 2020, the capacity of day care facilities for children under 3 grew by over one and a half times, from 32 000 to 52 000. While only 12% of the children under 3 had access to day care in 2010, this rate was close to 19% in 2020.
- A top priority for the government was to gradually reduce labour taxes. To this end, the rate of the social contribution tax was further lowered in 2019 and 2020 on the Standing Consultation Forum of the Private Sector and the Government. The tax rate went down from 19.5% to 17.5% from July 1 2019 and to 15.5% from July 1 2020.
- In autumn 2020, the government announced its most extensive family housing programme to date in order to allow every Hungarian family to have a roof over their heads and as many people as possible to expect and raise their child in their own homes. The family housing programmes includes the following components:
 - VAT of 5% in case of purchase of newly built homes
 - VAT free CSOK homes
 - VAT refund up to HUF 5 million for self-financed homes

- Home improvement subsidy
 - Home improvement loan
 - Exemption from taxes and charges
- The reduction of early school leaving plays a central role in the reduction of selectivity within the education system and the education, integration of disadvantaged, excluded and segregated groups. As a result of Act LXXX of 2019 on vocational education and training (hereinafter “VET Act”) effective from January 1 2020 and government decree 12/2020 (II. 7.) implementing the VET Act, a multi-component programme addressing the risks of school leaving without qualification was launched. This new system designed to promote social integration provides students with personalised, student-centred inclusive teaching and learning environment with individual progress schedule in order to allow them to catch up with their peers.
- The objective of the top priority GINOP-6.2.8-VEKOP-20 project “The development of digital syllabus for selected professions, information technology trainings promoting transition” launched in August 2020, is to provide for the most important resource of digital transition in Hungary, i.e. information technology professionals and workforce with the required digital competencies. This project also aims to support people losing their jobs because of the COVID crisis or deciding to find a new job to start a new career through the transitional information technology adult education programme. This programme offers a number of information technology qualifications for which there is high demand in the labour market (Java programmer, Web developer, tester, operator) as well as competence and skills ensuring good employment prospects for the participants. After the successful final exam at the end of the basic training, 1000 participants started their transitional information technology training in September 2020.
- In the reporting period, efforts to improve the primary care, to implement development, programmes supporting the achievement of the goals of national public health programmes continued, multiple infrastructure investments took place, interventions were made to modernise and stabilise the operation of the health care system and a variety of initiatives promoting change in approach were launched (e.g. family friendly services). As the appropriate availability of human resources in health care is a fundamental requirement for the quality and stability of health services, there were several programmes implemented to promote the motivation and training of health care workers.

5.1.6 SUMMARY CONCLUSIONS

Positive trends	Risk factors
<p>The number of marriages grew significantly relative to the previous monitoring report. This led to a higher number of children born in wedlock.</p> <p>Both the places available at and the number of day care facilities for children under 3 increased.</p> <p>The labour market participation of women and mothers rose.</p> <p>The scope and amount of family benefits were further increased in the period under review.</p> <p>The volume of emigration lowered although this is partly the result of the COVID-19 pandemic.</p> <p>The number of participants in adult education grew until the time of the pandemic, which, however, negatively affected this trend.</p> <p>The number of healthy life years together with life expectancy at birth rose. However, it is important to note that the pandemic led to a reduction in life expectancy.</p> <p>The wage adjustment of health care workers was completed.</p> <p>The rate and risk of social exclusion lowered.</p>	<p>The total fertility rate only slightly rose.</p> <p>The labour market reintegration of mothers with young children continues to be hampered by the limited access to day care facilities for young children and the restricted availability of atypical forms of work.</p> <p>The early school leaving rate failed to decline to the necessary extent. In addition, the proportion of students lacking access to digital education introduced in response to the pandemic is estimated around 10%.</p> <p>The selectivity of the education system failed to lower in the period under review.</p> <p>The wage adjustment of workers in public education failed to be completed in the period under review.</p> <p>The number of people participating, studying and enrolling in higher education decreased.</p> <p>The shortage of health professionals remains a pressing issue. There is a high rate of vacant GP practices. Roughly one-third of physicians are 60 or older.</p> <p>Hungary continues to be a highly deprived country.</p>

5.2 SOCIAL RESOURCES

5.2.1 GENERAL OVERVIEW

A nation's social resources include the combination of moral standards and values; relations between individuals and trust; organisations, networks established by individuals, institutions; cultural activities and cultural heritage.

Compared to the publication of the monitoring report of 2015-2016, many of the indicators reviewed demonstrate an improvement in the state of the Hungarian society (the employment rate increased, real wages rose, the unemployment rate and the severe material deprivation rate decreased), however, Hungary remains a strongly deprived country within Europe. The lack of trust remains high, the level of dissatisfaction and legitimisation deficit is above average in European comparison, especially with regard to the rules and regulations of the market economy and democracy.

Similarly to the previous period, the civil sector has continued to shrink while the total revenues of civil organisations have risen. There were negative tendencies identified in the perception of corruption: Hungary's position has declined both in the European Union and the region of Central and Eastern Europe.

5.2.2 CHANGES IN KEY INDICATORS

Indicator	Latest value	Most recent value known at monitoring report for 2017- 2018	Assessment of the changes in NFFS's key indicators
Generalised trust scale (ESS, scale of 0 to 10)	4.9 (2018)	4.5 (2014)	There has been a 0.4 point rise compared to ESS 2016.
Corruption index(Transparency Int., on a scale of 0 to 100)	44 (2020)	46 (2018)	This indicator has been steadily lowering since 2011 (with a slight improvement in 2017); overall, the state of corruption is worsening.
Number of non-governmental organisations (thousand)	60.9 (2019)	61.2 (2017)	The negative trend that started in the number of NGOs in 2012 continued.

5.2.3 OBJECTIVES AND CHALLENGES DEFINED IN NSSD

The National Framework Strategy on Sustainable Development defines the following objectives for social resources.

(1. Rearrangement of social structure)**Sustainable lifestyles and life strategies**

- 2. Demonstration of good examples for the general public
- 3. Support to (civil, professional, religious) organisations representing favourable behavioural patterns for sustainability

4. Promotion of the infrastructure of trust**5. Increase of satisfaction with working conditions, enjoyment****6. Nourishment of our heritage, strengthening of identity****5.2.4 SOCIAL AND ECONOMIC DEVELOPMENTS AFFECTING THE OBJECTIVES****5.2.4.1 Demonstration of sustainable lifestyles and life strategies to the general public**

Since the previous monitoring report, the issue of sustainability has clearly become an important part of public discourse in Hungary. On the other hand, sustainability remains almost exclusively associated with nature and the environment while the sustainability of other resources such as social or economic resources are addressed to a much lesser extent.

This topic has been embraced both by the government and the civil sector in recent years. The public education division of the Ministry of Human Capacities (EMMI) has addressed three areas to raise the awareness of students: financial awareness, digital competence and environmental awareness. This goal is supported by the Money7 (from school year 2014/2015), the Digital Thematic Week (from school year 2015/2016) and the Sustainability Thematic Week (from school year (2015/2016) initiatives. In school year 2017/2018, a total of 320 000 students from 1522 schools participated in the sustainability thematic week and 430 teachers attended the related teacher training programme. The representatives of the Ministry for Innovation and Technology regularly deliver presentations and attend round table discussions in universities and secondary schools, on the international and Hungarian climate policy, environmentally conscious behaviours and climate friendly lifestyles. In school year 2017/2018, over 1000 students participated in these events.

Of the civil organisations, the Business Council for Sustainable Development in Hungary (BCSDH) has been working tirelessly to promote social, economic and ecological sustainability in Hungary since its establishment in 2007. The organisation, which includes 90 companies, created a number of initiatives such as the remarkable Action 2020¹², which focuses on the development and dissemination of business solutions related to sustainable living. It seeks to identify ways to enhance the positive impact of the business sector in the field of sustainable living.

Based on a survey of the BCSDH, there has been a sharp growth in the number of conscious consumers in Hungary in recent years who are interested in buying more sustainable products and services: there is increasing demand for healthier, more eco-friendly and

¹² The Action 2020 Hungary programme is an initiative of the Business Council for Sustainable Development in Hungary (BCSDH), which calls the business sector to urgent action. The programme identified 20 specific macro level goals in five areas (food supply, sustainable living, employment, climate change and water) with the involvement of over 130 scientists and civil experts, corporate leaders and business professionals.

more sustainable products or new solutions such as the sharing economy¹³. Sustainable companies and brands perform above the average. Studies show that lifestyles based on excessive consumption are no longer attractive to Generation Y. More is gradually being replaced by better. 70% of the Hungarian consumers would be ready to spend more on a product in eco-friendly, biodegradable packaging. (BCSDH, 2018)

In light of the above, businesses play an especially important role in changing consumer habits and attitudes and in ensuring that sustainable solutions become available and affordable to more and more people. To that end, the companies that joined the BCSDH's initiatives devised and introduced many business solutions to promote sustainable living. A few of the key projects introduced in the period under review are described below. One example is the community car sharing service intended mainly for those who would like to enjoy the benefits of mobility without the constant expenses of vehicle ownership. Based on information available to date, each shared vehicle replaces 5 to 10% of privately owned cars, which could contribute to less traffic, smaller space needed for parking and the reduction of noise and air pollution.

Currently, there is no mass alternative for PET bottles but the packaging industry already found ways to reuse the raw material. A mineral water company and the Hungarian Mineral Water, Fruit Juice and Soft Drink Association together launched an online awareness raising campaign focusing on disseminating the information that PET bottles can become an important raw material and be limitlessly reused if collected separately.

There are several community campaigns in the field of waste collection as well every year such as the Pick It Up Yourself, the PET Cup or the European Week for Waste Reduction, which attract more and more participants from year to year.

There are also many different initiatives and movements related to conscious living and consumer habits in the social media. These include the Plastic Free July or other zerowaste movements. These, however, usually do not reach beyond the scope of the social media and the press; initiatives or regulatory decisions with a truly broad impact are still lacking.

5.2.4.2 Role of civil society organisations

The influence of the civil society is reflected by the number, the degree of organization and activities of NGOs. As a result, changes in the size, the social and economic power of the non-profit sector are shown by the number of non-profit organisations, the real value of revenues and the number of employees.

Data from KSH¹⁴ show that there were a total of 60 890 civil society organisations in Hungary in 2019, which means that the reduction of the size of the Hungarian civil sector indicated in the latest monitoring report continued: their number went down by 261 compared to the data from 2017 included in the latest report. Nearly one-third of the organisations (19 874) operated as foundations and two-thirds (41 016) as non-profit partnerships. The activities of these foundations were associated with education (33%), social care (16%) and culture (15%).¹⁵ (KSH, 2019)

¹³ Sharing economy means users share their unused capacity, resources in on-demand manner, based on trust and promoting sustainability.

¹⁴ The most recent data available on the civil sector are from 2017.

¹⁵ <https://www.ksh.hu/docs/hun/xftp/stattukor/nonprofit/2019/index.html>

As a consequence of the amendment of the law concerning the civil sector in 2011, which completely revised the definition of public benefit, only a little over 20% of the registered organisations were eligible for the public benefit organisation title at the end of 2015 while their ratio was 55% in 2013. This rate did not change significantly after 2015: the share of public benefit organisations was 21% in 2019. (KSH, 2019.)

The total revenues of NGOs continued to increase in 2019 as well: the total receipts of non-profit organisations were in excess of HUF 2.4 thousand billion, which is 12% higher at current prices and 8.1% higher in real terms compared to the previous year. The proportion of organisations with revenues below HUF 500 000 was 35%; this is the most common trend among traditional civil organisations.

There is a high level of revenue concentration within the sector: an enormous part of the available funds is at the disposal of a very small portion of the sector. The median of the revenues accounts only for 3.1% of the average, which means that less than 5000 organisations in the sector including roughly 61 000 NGOs had receipts above the average.

In 2019, the share of funds from government grants grew by 2 percentage points relative to 2018. The proportion of central or local government funds in the total revenues of the sector was 45%, which represents a surplus of approximately HUF 171 billion. As the rate of self-generated revenues rose (from 41 to 42%), the sector's financial grant indicator (central and local government funds as % of total revenues) lowered by 1 percentage point to 57%. In 2019, 16 000 NGOs received funds via applications from a dedicated budget of HUF 269 billion, which was substantially reduced by HUF 39 billion compared to 2018.

The sector's aggregate performance in 2019 corresponds to 126 000 full-time equivalent. The non-profit sector employed a total of 155 000 staff including 105 000 full-time and 50 000 part-time workers, i.e. part-time employment accounts for one-third of the total headcount. This atypical form of work is more common with civil society organisations and the reason for this is that a high number of people work in this sector as pensioners, as a supplementary activity, as disadvantaged, disabled or special employees. The rate of participants in public employment programmes was around 13 to 17% in the past few years.

In 2019, the estimated number of volunteers in the sector was 366 000 working a total of 46 million working hours. This corresponds to the working time of 22.3 000 full-time equivalent and the estimated value of their contribution is HUF 73 billion.

In 2019, traditional civil society organisations totalling 87% of the non-profit organisations received 38% of the income and grants remained the source of two-thirds of their revenues: HUF 354 billion from the public sector and HUF 191 billion from the private sector (while public funding went down by HUF 16 billion, private funding rose by HUF 9 billion compared to 2018).

5.2.4.3 Promotion of the infrastructure of trust

Trust in justice¹⁶

Generalised trust, i.e. our general view of the trustworthiness of other people and human relationships, is one of the key components of social capital. The relevant literature says

¹⁶ The latest available data are from 2018; the previous monitoring report analysed data from 2016.

that a high level of generalised trust significantly contributes to the stratification of the civil society and the improvement of social tolerance (Stolle, 2002).

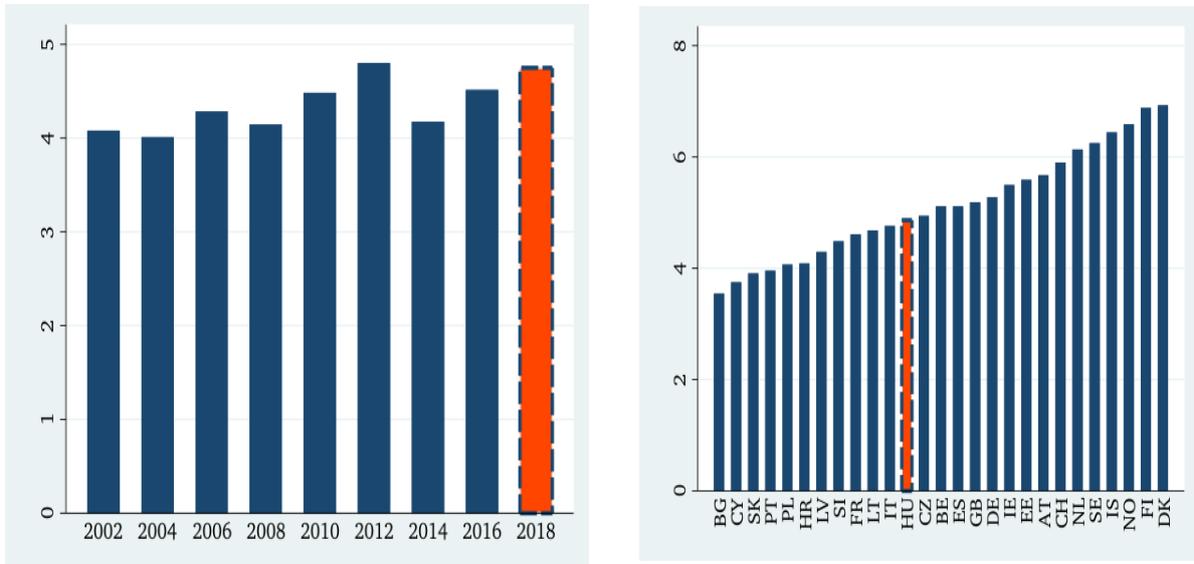
Previous studies on Hungary's value structure found that there was a slight improvement in the traditionally low level of trust between 2009 and 2013, which was the result of the very strong political polarisation. They note that trust in institutions is highly politicised in Hungary and the institutions themselves are exposed to the changes in political cycles. This poses a risk with regard to the police, courts and the press as well. While trust in institutions (justice, courts, the police) was constant or declined across Europe in the years following the financial crisis, data from recent years indicate that most countries in Europe recovered from the crisis and trust in institutions rose in most countries in the past few years. (Tárki, 2021)

As regards generalised trust, Hungary traditionally ranks in the lower middle range in Europe. Trust measured on a scale from 0 to 10 had the lowest value (4.2) in 2014 and the indicator started to improve again in 2016. In 2018, the level of Hungary's generalised trust was 4.9, which is an improvement both in absolute terms and in ranking: this value positions Hungary the twelfth from the end of list of ESS countries. Scandinavian countries continue to have the highest levels of trust while Balkan, Eastern European and Mediterranean countries report lower levels of trust.

Trust in justice is also the highest in Scandinavian countries (over 7 in Denmark and Norway) while it was 5.4 in 2016 and 5.6 in 2018 in Hungary. The level of the Hungarian population's trust in justice fell from the mean value of 5.1 to 3.7 between 2002 and 2008 and then went up to 4.6 after 2010 and remained constant for years. There was a positive turn in 2016 (5.4), which continued into 2018 (5.6) while a variety of measures were taken that, arguably, were in conflict with the rule of law (the termination of the private pension system, the discontinuation of early retirement, the limitation of severance pay and the introduction of various concessions).

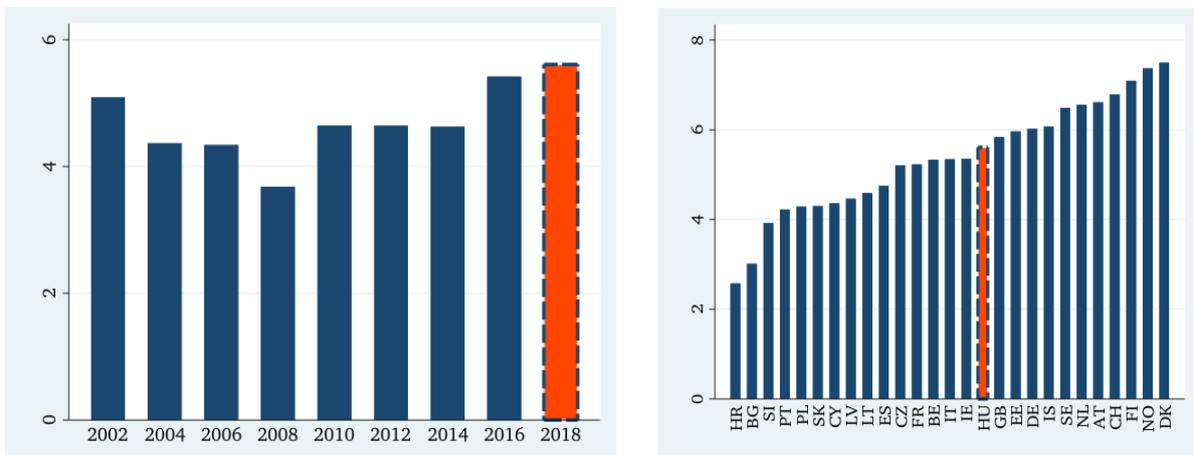
All components of the rule of law except public security reflect negative tendencies and a study by Jakab and Gajduschek (2018) reports that the gap between the actual practice pursued by institutions and formal rules is growing. Hungarian people have a low level of trust in justice indicated by the fact only a little over 50% of the respondents in a survey conducted in 2015 said they would use the justice system in case of a serious conflict. (Jakab és Gajduschek, 2018).

Figure 20: General trust in people on a scale of 0 to 10 in Hungary and in other countries participating in the European Social Survey (2018)¹⁷



Source: European Social Survey (ESS)

Figure 21: Trust in justice in Hungary and in countries participating in the European Social Survey (2018)¹⁸



Source: ESS

Satisfaction with the state of the economy

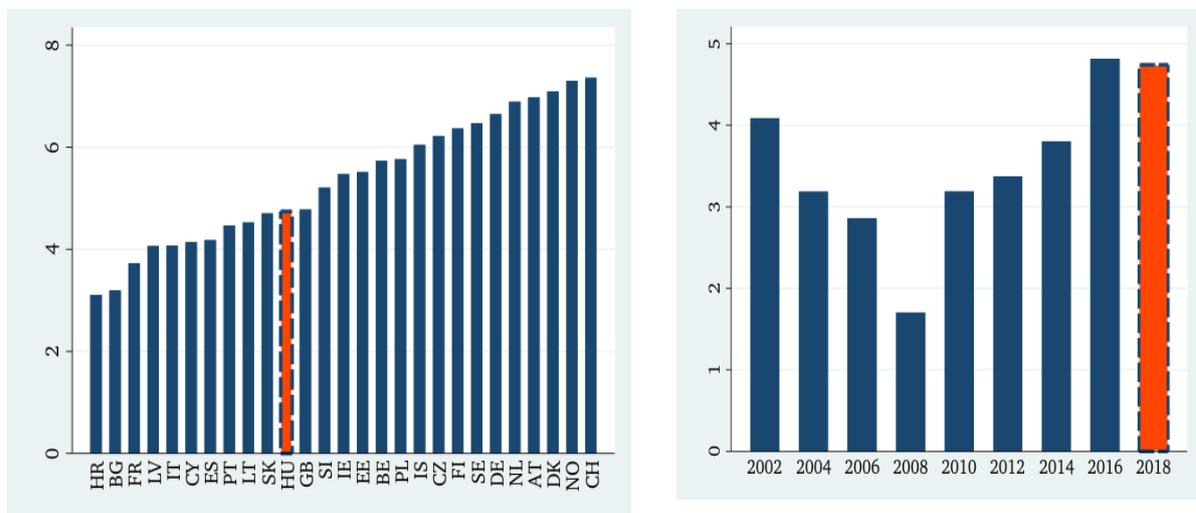
¹⁷ Source: European Social Survey (ESS) Question: Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10 where 0 means you can't be too careful and 10 means that most people can be trusted. Higher average score on the graph represents higher level of trust.

¹⁸ Source: European Social Survey (ESS) Question: Using this card, please tell me on a score of 0–10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all and 10 means you have complete trust. Firstly, how much do you trust in ...'s legal system? Higher average score on the graph represents higher level of trust.

While satisfaction with the present state of the economy was steadily rising between 2008 and 2016, it never reached the median value of 5 on the scale. Data from 2018 reflect a slight decrease from 4.8 in 2016 to 4.7.

A study by TÁRKI (2021) remarks relating to the indicator measuring satisfaction with the economy that the relevant data of the ESS fail to meet the requirement that data concerning the various indicators are as recent as possible. As satisfaction with the economy is extremely sensitive to daily changes and surveys about the state of the Hungarian economy (including international ones) are much more frequently conducted than the biennial ESS, they recommend that the development of the sustainability indicators should include a more sensitive and recent indicator than the present ones and should incorporate data sources that supply data on a more frequent basis.

Figure 22: Satisfaction with the present state of the economy in Hungary and in countries participating in the European Social Survey (2018)¹⁹



Source: ESS

Satisfaction with the democratic system

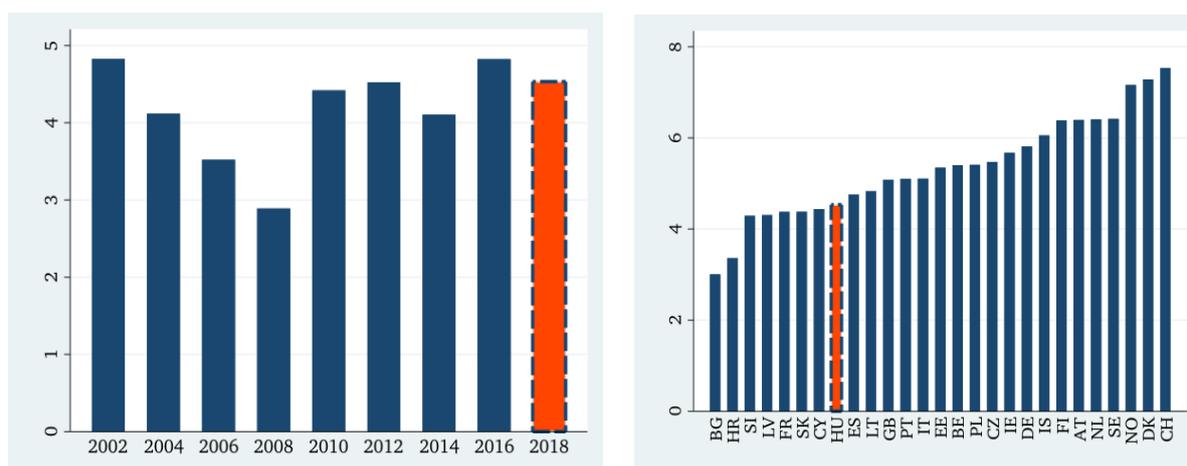
The decrease in satisfaction with the democratic system of Hungary between 2002 and 2008 was followed by a rise after 2010 but it failed to reach the level of 2002 even by 2012. In the period after that there were varying trends with satisfaction declining by 2014 (4.1) then rising by 2016 (4.8) and finally declining again by 2018 to 4.5, which ranks Hungary in the lower middle range across the ESS countries. Hungary is different from the other countries surveyed in the sense that there are smaller variations in this indicator elsewhere with the exception of Greece which was most badly hit by the economic crisis and the Ukraine which is teetering on the brink of civil war. People living in Switzerland and Denmark are the most satisfied with the democratic system.

In Hungary, there is a particularly strong correlation between the state of the democratic system and the economy: 80% of those not satisfied with the economy are not satisfied with

¹⁹ Source: European Social Survey (ESS) Question: On the whole, how satisfied are you with the present state of the economy in (Hungary)? Please answer using this card where 0 means extremely dissatisfied and 10 means extremely satisfied. Higher average score on the graph represents higher level of satisfaction.

the democratic system either while only 26% of those satisfied with the present state of the economy are not satisfied with the democratic system. Satisfaction with the democratic system is also subject to whether respondents agree that their rights to express their views in public are protected and that elected officials care what ordinary people think (Pew Research Center, 2019).

Figure 23: Satisfaction with the democratic system in Hungary and in countries participating in the European Social Survey (2018)²⁰



Source: ESS

Corruption and rent seeking

Transparency International (TI) determines the Corruption Perceptions Index (CPI)²¹ every year that measures public sector corruption in a country based on interviews of experts and businesspeople examining the degree of infection in public institutions, the economy and the society. In 2020, Hungary ranked 69th on the list of the 180 countries surveyed scoring 44 (in 2018 when the previous monitoring report was written, it scored 46 and ranked 64th) and lost 11 scores after 2012. In the European Union, Hungary shares the last place on the list with Romania and Bulgaria. Similarly to the trends of previous years, two Nordic countries, Denmark and Finland topped the list in 2020 as well. As regards the degree of corruption, Hungary is strongly lagging behind the other Visegrad countries: on the scale of 0 to 100, Slovakia was given 5, the Czech Republic 10 and Poland 12 more scores than Hungary.

The latest report from Transparency International reminds that the COVID-19 pandemic also caused a corruption crisis challenging even high ranking countries leading in many cases to lack of transparency in pandemic related procurements

Based on the TI's report²², Hungary's score was adversely affected by the introduction of the constitutional state of emergency, the withdrawal of some of the powers and revenues of local governments (establishment of special economic zones, vehicle tax, business tax).

²⁰ Source: European Social Survey (ESS) Question: On the whole, how satisfied are you with the way democracy works in Hungary? Please answer using this card where 0 means extremely dissatisfied and 10 means extremely satisfied. Higher average score on the graph represents higher level of satisfaction.

²¹ <http://transparency.hu/INDEXEK>

²² <https://transparency.hu/adatok-a-korrupcirol/korrupcio-erzekelesi-index/cpi-2020/>

The time frame to respond to requests for public data went up from 15 to 45 days while the seventh amendment to the Fundamental Law redefined the concept of public money and narrowed the accessibility of public data.

5.2.4.4 Increase of satisfaction with working conditions, enjoyment

Satisfaction with working conditions

Stress at work is not an individual problem, it is a collective issue. Half of the time spent on sick leave and sick pay is attributable to work-related stress. Long term stress can easily lead to serious health conditions (e.g. anxiety, depression, ulcer). Stress can cause various diseases, the loss of concentration and motivation, which impairs the capacity and the productivity of workers and indirectly of employers also. Work-related stress causes quantifiable losses in the economy. The survey of the European Agency for Health and Safety at Work shows that the loss of production caused by untreated work-related stress amounts to nearly EUR 136 billion in the European Union every year (including HUF 440 billion in Hungary). In Hungary, 21% of the employers have a plan to manage work-related stress, which is the lowest rate in the EU (Dabronaki, 2017).

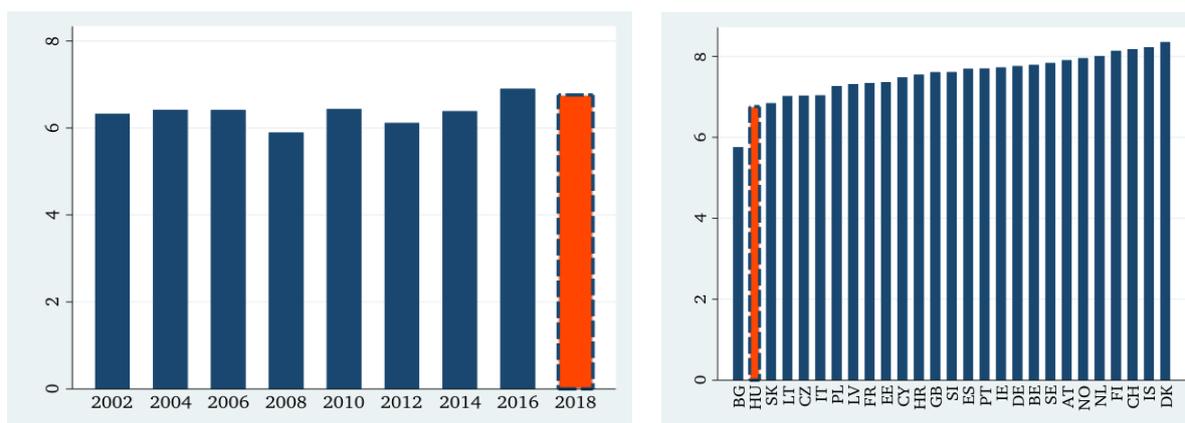
In Hungary, the sectors affected by the highest rate of irregularities related to occupational health and safety and employment are the construction industry, agriculture, the catering, the trade and the processing industries. To address this issue, funding under the Economic Development and Innovation Operational Programme was offered to improve the working conditions in these industries. In the meantime, the growing demand for labour²³ is increasingly stimulating employers to offer better working conditions than their competitors.

Personal happiness

Hungary scores around 6 in personal happiness on a scale of 0 to 10. This is an extremely low score within Europe as the mean level of personal happiness is above 7 in most countries participating in the ESS. By 2016, Hungary was able to move away from the last place outperforming Russia and Lithuania with its score of 6.9. By 2018, there was a slight decline recorded with the indicator going down to 6.8. With this, we are only ahead of Bulgaria although Russia and Lithuania did not participate in the 2018 survey. Economic growth does not directly lead to a rise in the level of people's personal happiness and there is no reverse correlation either as there are countries where personal happiness constantly increased between 2002 and 2012. (Tárki, 2021)

²³ See section "Economic resources".

Figure 24: “How happy would you say you are?” Average scores in Hungary and in countries participating in the European Social Survey (2018)²⁴



Source: ESS

5.2.4.5 Nourishment of our heritage, strengthening of identity

The government’s cultural development programme includes both top priority national institutions and rural, local and regional cultural institutions. Decree 30/2014. (IV.10.) of the Ministry of Human Capacities defines the key responsibilities of the national museum, the national speciality museum, the national library, the national speciality library and the library of the national university including social convergence, the reduction of social disadvantages, modern dissemination of knowledge and information, the constant improvement of general access to cultural assets and the empowerment of underprivileged regions and groups.

The investments related to institutions with a national scope of responsibilities that took place in the period under review include the reconstruction of the palace in Andrásy road housing the Hungarian National Opera, the construction of the new art studio of the Opera House, the reconstruction of the Museum of Applied Arts, the renewal of the Hungarian National Museum (first by the restoration of the Museum Garden), the construction of the Transylvania section of the Open Air Museum and the reconstruction of the Budai Vigadó.

The most prominent cultural investments in the rural areas are the cultural projects of the Modern Cities Programme, which focus on cultural community spaces of cities with county rights. The Folk Architecture Programme granted by the Prime Minister’s Office supports the restoration of the folk architecture heritage while the Makovecz Imre Programme offers funding for the construction of the unbuilt plans of Imre Makovecz and the conservation of the buildings he designed.

The Intellectual Cultural Heritage in Hungary portal is a site for the general public offering information on programmes, traditions and good practices related to the preservation of cultural heritage and traditions, on the outstanding items of the Hungarian cultural heritage, the related regulatory documents and the contact details of the related organisations.

²⁴ Source: European Social Survey (ESS) Question: Taking all things together, how happy would you say you are? Please use this card On the scale of responses, 0 means extremely unhappy and 10 means extremely happy. Higher average score on the graph represents higher level of satisfaction.

There were many programmes in 2017 and 2018 as well helping to strengthen the Hungarian identity of the diaspora and supporting Hungarian organisations outside Hungary. Hungarian cultural and educational organisations outside Hungary and the organisations in Hungary supporting foreign-born Hungarians are primarily financed from the budget of the State Secretariat for National Policy and the Bethlen Gábor Fund. The amount allocated for this purpose was HUF 81 billion in 2017 and over HUF 90 billion in 2018. Grant programmes contributed to the programmes and developments of over 3000 and nearly 4000 Hungarian institutions and civil organisations outside Hungary in 2017 and 2018 respectively.

There are multiple other programmes designed to support Hungarian communities living in the diaspora and to develop connections with Hungarians living in Hungary. In 2017, the government announced the Csoóri Sándor Programme, which primarily offers professional support to folk dance groups, folk song groups and folk music bands, which work to maintain Hungarian and ethnic traditions across the Carpathian Basin. In the period under review, the Petőfi Sándor and Kőrösi Csoma Sándor programmes supporting dispersed Hungarian communities in the Carpathian Basin continued, together with the Mikes Kelemen programme designed to collect the heritage of the Hungarian diaspora, the Diaspora Programme offering study tours to young people in the diaspora to Hungary and the Rómer Flóris Plan working to protect our built heritage. Under the Without Borders Programme, students of Hungarian schools can go on government-funded field trips to visit areas of the neighbouring countries where foreign-born Hungarian communities live. Funding was also made available to Hungarian theatre and dance organisations outside Hungary; the Library Institute provided continuing education to culture and library professionals as part of its transboundary training activities. In 2017, the establishment of the folk art network system of the Carpathian Basin began under the coordination of the Hungarian Heritage House, which is planned to be completed by 2019.

5.2.5 GOVERNMENT MEASURES

The following government measures relating to social resources are noteworthy.

- Based on the experiences of the 2015-2018 National Anti-Corruption Programme as well as proposals from ministries and government bodies, the National Protective Service (hereinafter “NVSZ”) drafted and the government adopted in government decree 1328/2020 (VI.19.) the National Anti-Corruption Strategy (hereinafter “NKS”), which defines the strategic goals of anti-corruption policy until 2022. The specific actions designed to implement the interventions defined in the NKS, the entities in charge of such actions and their schedule are included in a special action plan, which also addresses the monitoring of the implementation of these actions based on the reporting system determined in the plan.
- In September 2020, the National Police Department signed a cooperation agreement with the National Protective Service about trainings organised in order to fulfil the goals of the medium term national anti-corruption strategy for the period between 2020 and 2022.
- The National Cooperation Fund (hereinafter “NEA”) is an appropriation of the central budget, which is used by a partnership of civil society organisations and the government: The National Cooperation Fund provides funds to civil society organisations, mainly through applications. The purpose of the grants offered is to support Hungarian national civil society organisations, to strengthen the civil

society, to help fully extend the social participation of civil society organisations through partly or fully financing the operating costs of civil society organisations. The NEA works under the control of the minister for civil and social relations. The professional managerial duties of this responsibility are performed by the deputy secretary of state for social and civil relations under the control of the minister. The actual use of the NEA is in a system where civil society organisations intended to be financed by the fund are involved in decision making at various levels.

- Schools are institutions for education therefore action to stop school violence must be taken. The government adopted a variety of preventive measures including raising the number of school psychologists, introducing more severe sanctions on violence against teachers and establishing the school security service in 2020. The school security service started to operate on September 1 2020. The school security service works as an independent police entity under the control of the police mandated to maintain security and internal order in public education institutions where particularly needed. The presence of the guards is meant to provide a sense of safety to teachers and other staff. Prior to starting their duties, guards are required to complete a complex training including pedagogical and psychological competencies.
- Based on its resolution 18/2019 (VI. 18.), the Parliament declared 2020 the year of national unity “commemorating the centenary of the Treaty of Trianon signed on June 4 1920 dividing the historical territory of Hungary and placing one-third of the nation’s population under the control of foreign states”.
- To achieve sustainable development, more efficient use of the resources, further advances in technology and the knowledge-based society must be promoted, which also requires the continuous development of the competencies and skills of government officials. In order to be able to adopt changes in laws and regulations and to comply with professional requirements and social expectations, it is essential that the competencies and skills acquired are refreshed, renewed and kept up-to-date. Between 2018 and 2020, a total of 1065 training events took place as part of continuous development attended by 28 820 participants based on 117 central, 96 in-house registered accredited continuous development programmes together with 96 of the same provided by the University of Public Service.

5.2.6 SUMMARY CONCLUSIONS

Positive trends	Risk factors
<p>Sustainability as a value has become part of the public discourse.</p> <p>The number of programmes supporting national unity and the survival of the Hungarian diaspora continued to rise.</p> <p>Indicators on the infrastructure of trust slightly improved.</p>	<p>While sustainability continues to primarily exist in the dimension of climate change, the demographic aspect seems to be gaining higher importance.</p> <p>The level of personal happiness fell after the previous monitoring report, which means that Hungarian people remain one of the unhappiest nations within the EU.</p> <p>Similarly to earlier, the civil sector continued to shrink.</p> <p>In Hungary, the level of corruption is higher than the EU average.</p>

5.3 NATURAL RESOURCES

5.3.1 GENERAL OVERVIEW

The state of natural resources has become a central topic of public discussion in recent years and as a result people are increasingly responsive to environmental issues. Nevertheless, the state of our environmental resources has not improved at all in the last decade.

In Hungary, the shrinkage of habitats, the decline in the state of the remaining habitats, i.e. land degradation appear to be a sustained and severe trend. The loss of biodiversity leads to a decline in the quality of ecosystem services.

The rate of biologically inactive areas has been stationary for years. Problems include an increase in the use of fertilisers and the high rate of intensive agricultural production, which cause a decline in the quality of our surface and underground waters. One of the objectives of the next seven-year EU budget is to significantly reduce the use of fertilisers within the European Union.

While natural resource productivity has improved since the previous monitoring report, the quantity of natural resources required to achieve a specific economic result is still higher than the EU average, which is primarily explained by the boom in the construction industry and large visible government investments. An improvement in waste management is the steadily growing rate of selectively collected waste together with the quantity of recovered waste. In harmony with EU objectives, the issue of the circular economy is now addressed by public policy making in Hungary as well, which is likely to lead to serious progress made in the next budgetary period.

In the area of air quality, the pollution by particulate matter in ambient air is the most severe problem in Hungary, which mostly comes from transport and residential heating using solid fuels. Contrary to the former trend, measurement data from recent years show that transport as the primary source of PM₁₀ was replaced by emissions from the general public. Thanks to the spread of new technologies, emissions from vehicles are lowering while the application of the stricter, so-called Euro type-specific emission standards led to a slight reduction in particulate matter in ambient air in cities. Meanwhile, the positive impacts of stricter environmental standards are set off by the growing number of vehicles to a significant extent.

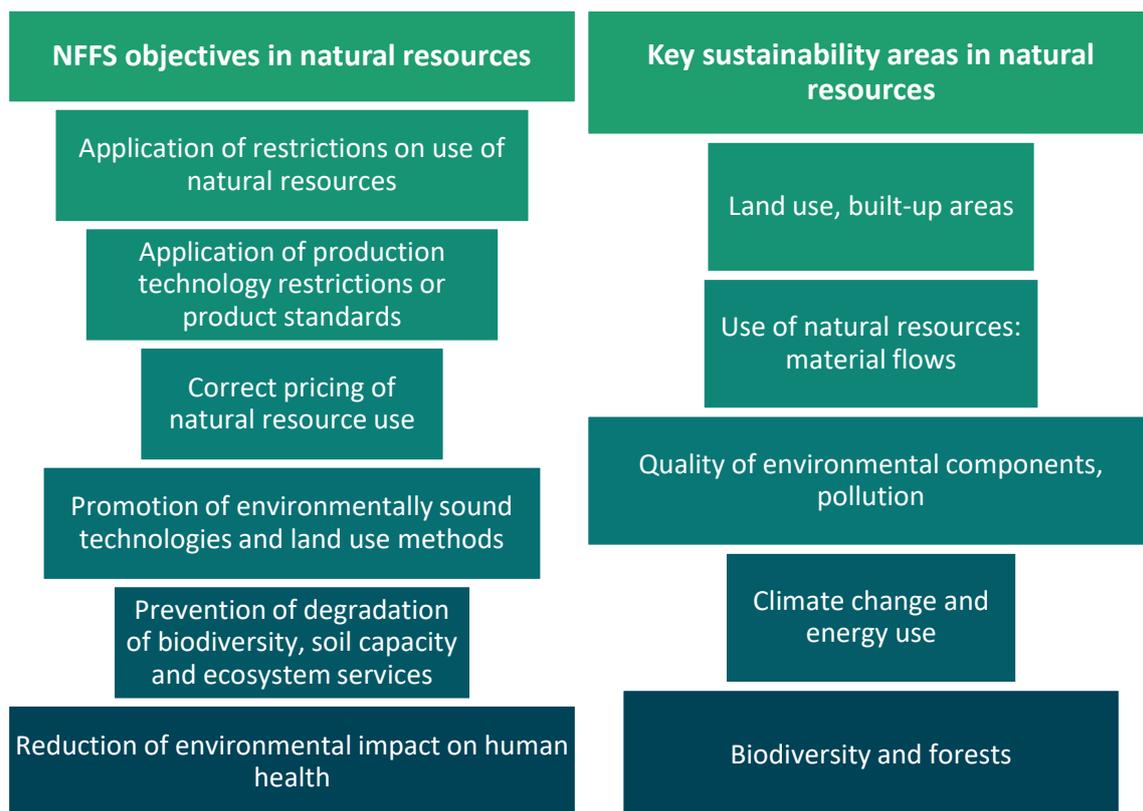
As a result of climate change, extreme weather events are becoming more frequent in Hungary. The prevalence of days with excessively high temperatures and heavy downpours is constantly rising, which is being partly addressed by the current development of Hungary's third river basin management plan, which is going to be used as the strategic basis for the protection and improvement of our water environment.

5.3.2 CHANGES IN KEY INDICATORS

Indicator	Latest value	Most recent value known at monitoring report for 2017-2018	Assessment of the changes in NFFS's key indicators
Biologically inactive areas as % of total area	67.5% (2018)	67.5% (2018)	More recent data have not been published since the issue of the previous monitoring report.
Natural resource productivity (GDP/DMC, €/kg)	0,96 (2020) – estimate	0.88 (2018)	While Eurostat only published an estimate for 2020, it shows that resource productivity in Hungary once again rose after a decrease in 2018, however, it is still only 43% of the EU27 average.
Public exposure to particulate matter pollution [PM(10)] (µg/ m³)	24.4 (2019)	26.5 (2017)	While air quality improved compared to the previous monitoring report, the average rate of pollution by particulate matter in ambient air is unfavourable relative to Europe as Hungary is among the worst-performing 25% of the EU member states.

5.3.3 OBJECTIVES AND CHALLENGES DEFINED IN THE NFFS

In 2013, the NFFS identified six objectives for the area of natural resources. In the light of these objectives, the transition to sustainability may be analysed based on five areas of natural resources all having a key importance for Hungary.



5.3.4 SOCIO-ECONOMIC AND ENVIRONMENTAL DEVELOPMENTS AFFECTING THE OBJECTIVES

5.3.4.1 Land use and built-up areas

Europe has the most intense land use in the world, a very high level of natural landscape fragmentation and varied pattern and fragmentation of habitats²⁵. Changes in artificial land cover highly affect the natural environment, biodiversity and eco-system services as well as the environmental pressure on people living in urbanised areas²⁶.

Between 2009 and 2018, artificial land cover went up by 12%, which is the tenth highest growth within the European Union. From 2015 to 2018, the growth slowed down relative to the previous period reviewed. As regards artificial land cover, a total of 13 member states, roughly half of the countries surveyed, performed better than the mean EU27 growth rate of 4% by 2018 relative to 2015 and 9 of them report a declining trend. The highest rate, a reduction in excess of 20% was recorded in Luxembourg (24%) and Lithuania (22%). Hungary's rate is close to the EU average and shows a reduction of 2% for the period between 2015 and 2018.

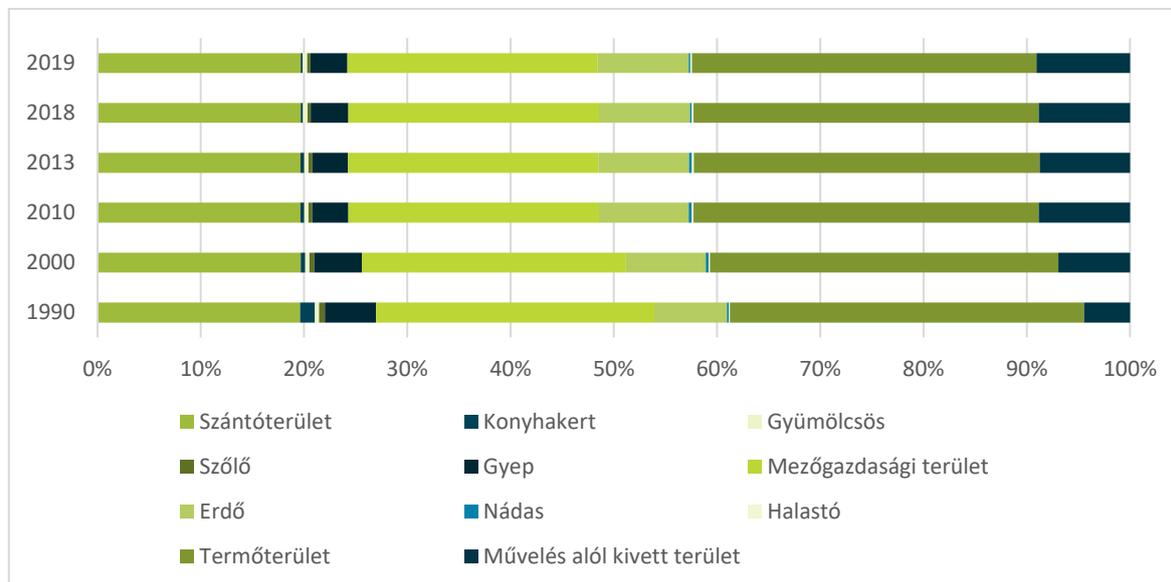
When comparing Hungary's rate of land cover to the EU average, data from 2018 reflect that despite a slower growth, artificial land cover in Hungary is still higher than the EU

²⁵ HOI, 2020: Herman Ottó Intézet Nonprofit Kft.: Magyarország Környezeti Állapota 2020. Szerk.: Dobi Bálint - Holes Annamária, ISSN 2064-4086, Budapest, 2020. p78.

²⁶ EU, 2019: Az uniós környezetvédelmi politikák végrehajtásának 2019. évi felülvizsgálata. Országjelentés-Magyarország. Európai Bizottság, Brüsszel, 2019.4.4. SWD(2019) 121. <http://ec.europa.eu/environment/eir/pdf/reporthuhu.pdf>

average²⁷. The share of agricultural land remains markedly above the EU average. In spite of the rise in Hungary, the ratio of forests and urban green areas continues to be substantially below the EU average. There is a smaller gap in case of water bodies.

Figure 25: Land use in Hungary, 2019



Source: KSH

There have been no significant changes in land use structure in the last 30 years and no changes took place in the way land is used relative to the previous monitoring report. National data naturally hide regional disparities to some extent as, for example, the rate of land covered by forests in Nógrád county is over 30%, the same proportion is hardly 5% in the Jászság region.

To evaluate land use, it is important to examine the spatial pattern of built-up areas, which demonstrate impacts on the landscape as one of the consequences of anthropogenic influences that are partly manifested in changes in land use and land cover. The effects human activities have on the landscape is not only a very visible and traceable phenomenon but frequently also the cause of complex processes that lead to changes in a variety of factors. Essentially, no land in Hungary has been left free of the influence of socio-economic activities. The rise in artificial land cover has a variety of adverse indirect impacts on biodiversity, the quality of ecosystem services or water management.

5.3.4.2 The use of natural resources

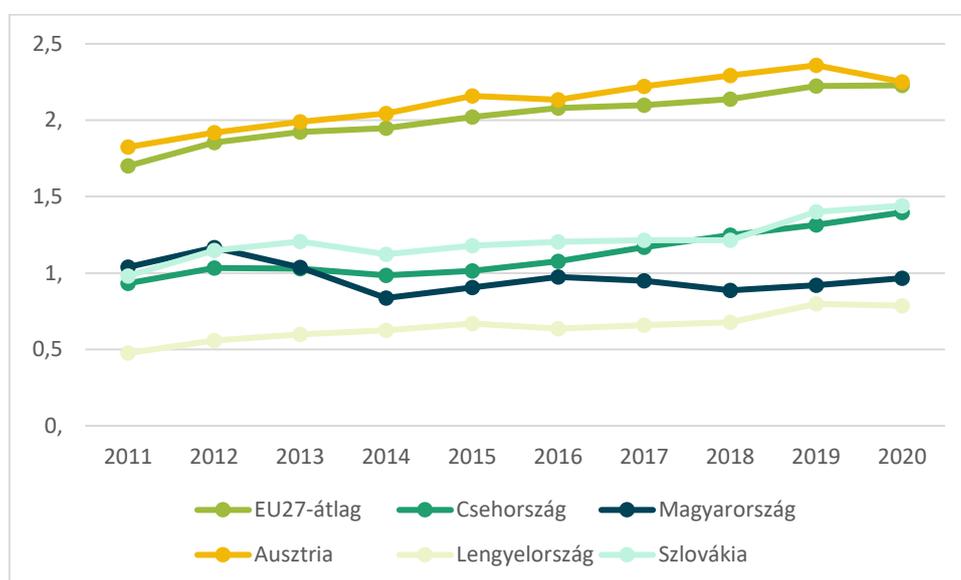
Since the industrial revolution, production and consumption have been dominated by a linear model in which raw materials are extracted, goods are manufactured from raw

²⁷ HOI, 2020: Herman Ottó Intézet Nonprofit Kft.: Magyarország Környezeti Állapota 2020. Szerk.: Dobi Bálint - Holes Annamária, ISSN 2064-4086, Budapest, 2020. p78.

materials, sold, used, and then discarded as waste. The majority of the natural resources used as raw materials are available in scarcity, and cannot be replaced at all or only at a very high cost. These aspects promoted the spread of the circular economy where one of the key factors is the improvement of the efficiency of management with natural resources. Based on the circular model, products or their certain parts are reused or recycled helping to significantly reduce demand for natural resources. This chapter describes the aspects of the circular economy taking into account Hungarian material consumption and mineral resource management.

One of the international indicators of natural resource management is domestic material consumption (DMC), which shows the rate of the use of natural resources in parallel with economic growth. After hitting bottom low in 2018, resource productivity rose in Hungary by 2020, however, it is still substantially lagging behind the EU27 average.

Figure 26: Changes in natural resource productivity in V4 countries and the EU between 2011 and 2020



Source: Eurostat

While the resource productivity of EU member states is constantly growing, this indicator went down in Hungary between 2012 and 2014. There was a temporary and moderate improvement after 2014 but resource productivity once again declined from 2016 and the gap between Hungary and the EU average is widening.

Ore mining has been significantly downsized in recent years in Hungary and bauxite mining is taking place only in Bakonyoszip at present. At present, no iron ore, lead-zinc ore, copper ore, noble metal ores, manganese ore and uranium ore is extracted in Hungary. Production in the uranium mine in Pécs was terminated in 1997 as extraction became more and more difficult and expensive.

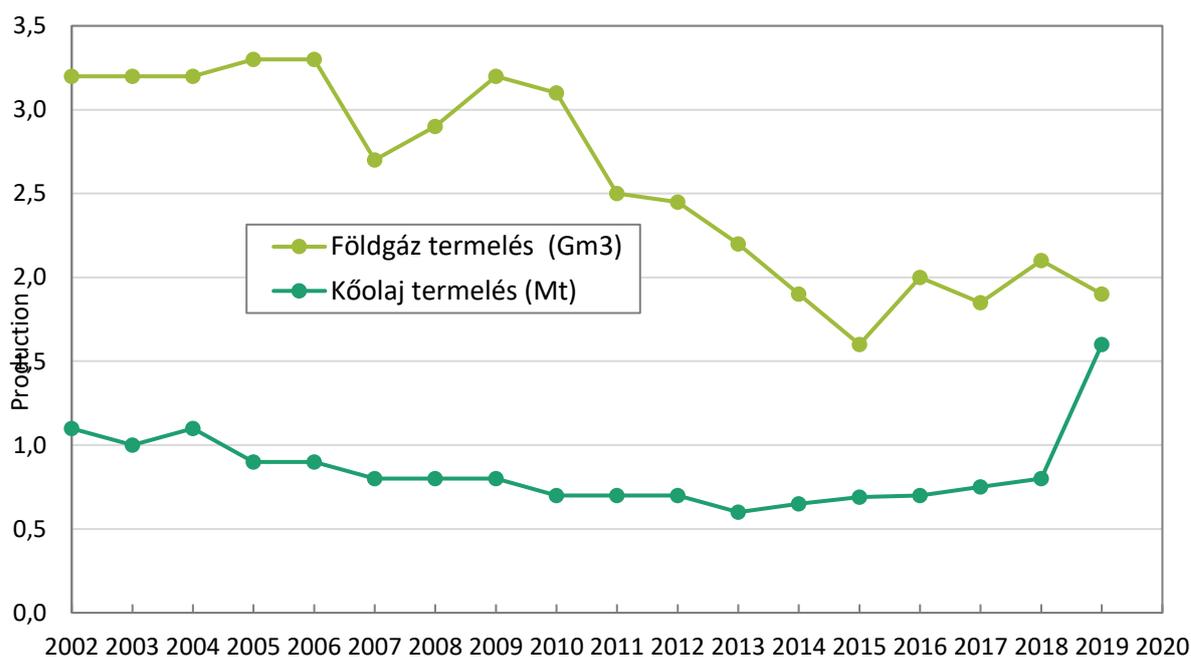
It is important to note that Hungary has sizeable reserves in raw materials for certain fossil fuels (e.g. lignite: 5.7 Mt, brown coal: 3.2 Mt, unconventional gas: 3.9 billion m³) but their extraction would be counterproductive for sustainability.

Thanks to the extension of the family benefits system in part, the growth of the construction industry has not stopped since the previous monitoring report. Mining for non-metallic

raw minerals, mainly for use by the construction industry, is steadily rising: it exceeded 40 million tons in 2019, which is one and a half times the volume produced in 2015²⁸.

Based on 2019 data from the Hungarian Office for Mining and Geology, natural gas production in Hungary in the past decades decreased until 2015 and has been fluctuating since then due to changes in the global price of natural gas. For petroleum, there is a steadily constant trend. Petroleum production reached an extremely high volume in Hungary in 2019; it doubled reducing our dependence on petroleum import by roughly 10%.

Figure 27: Extraction of petroleum and natural gas in Hungary between 2002 and 2019



Source: Hungarian Office for Mining and Geology

Water management will play a key role in the mitigation of the impacts of climate change. According to a review of the National Water Strategy, the renewable domestic water surface per capita is roughly 12 000 m³ per capita per year, which is one of the highest values across Europe. The country's surface water resource in a large part comes from abroad, three-fourths of our water resources from rivers is supplied by the Danube, Tisza, Drava and Sava. As far as the level of water stress, which is the average annual water withdrawal as a proportion of the average annual available and renewable water resources for a specific body of water, is concerned, Hungary performs excellently relative to the rest of the European Union. This is due to the extensive surface water network resulting from the basin form, the large amount of surface flow-in as well as the extremely rich deep karstic layers and porous aquifers associated with the geological structure.

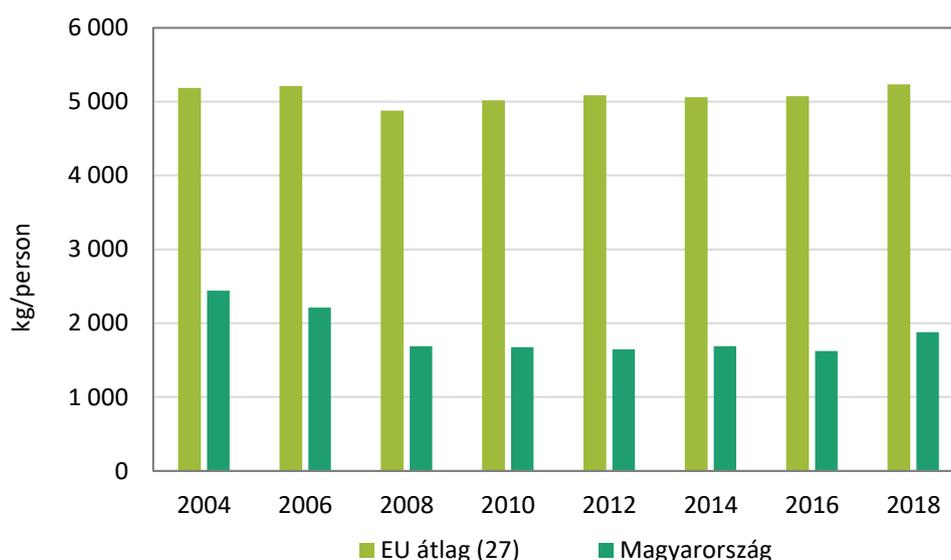
Another typical indicator of the use of water resources is the use of irrigation water. In Hungary, the conditions for agricultural production are favourable, however the uneven distribution of rainfall in space and time requires careful planning of water use in the agriculture in the future. It is especially important to avoid the excessive use of water resources for irrigation, which leads to water scarcity as well as poor or weak state of surface

²⁸ <https://mbfsz.gov.hu/index.php/asvanyvagyonyilvantartas>

water resources in terms of hydrology and ground water resources in terms of quantity. These risks may be minimised by controlling water withdrawals and reducing demand (regional water retention, advanced, water efficient technologies). Meanwhile, the basic infrastructure in agricultural water management, water abstraction and pumping structures and water drainage ditches are in poor condition and were put out of use in many places because of high energy and fuel prices. Government measures focusing on irrigation are designed to stimulate growth in the agriculture and these measures for the purpose of meeting demand for irrigation water in the long term require water efficient irrigation technologies, precision agriculture as well as irrigation and drought monitoring. In 2019, the government adopted a number of major irrigation development measures: the irrigation season was extended to last from March 1 until October 31, the system of extraordinary water use for irrigation was introduced and procedures concerning irrigation permits were simplified. As warming and extreme periods regarding precipitation are expected to continue in the future, the parliament adopted the draft law of the Ministry of Agriculture on irrigated farming in December 2019²⁹.

In addition to water management, the other priority area of resource productivity is waste management. Based on the concept of circular economy, the main purpose of waste management is the prevention of waste from being generated and the conversion of waste generated into a resource.

Figure 28: Total per capita waste generation per year between 2004 and 2018



Source: Eurostat

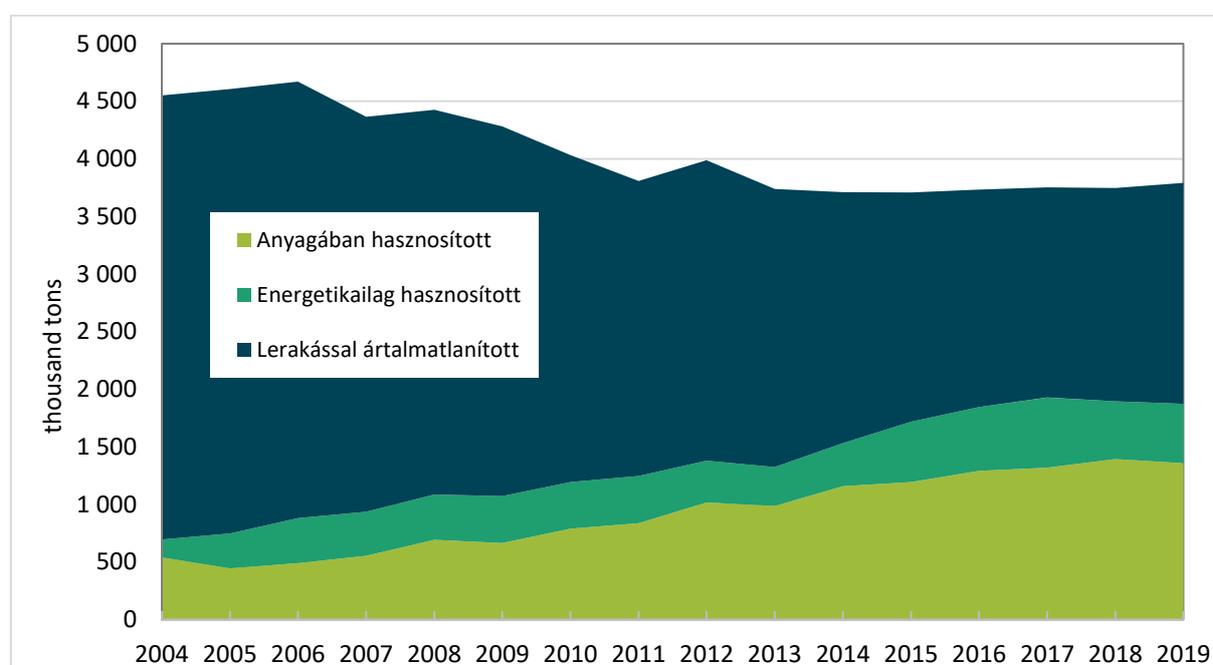
The total per capita waste generation in Hungary is below the EU average, which is mainly explained by economic disparities. Between 2014 and 2016, the total per capita waste generation fell by 4% in Hungary, which is primarily explained by the reduced quantities of industrial waste due to new laws and regulations as well as new technologies. Between 2016 and 2018, there was a nearly 14% growth. This is the result of the rise in the volume

²⁹ NAIK Agrárgazdasági Kutatóintézet (2020): Statisztikai jelentések - Öntözésjelentés - 2019. év - XXIII. évfolyam 1. szám, 2020, ISSN 1418 213

of construction and demolition waste, which went up by over 2 million tons³⁰. In 2018, production in construction, mainly due to investments financed from EU funds, rose by 22.3% and the rate of the construction of buildings and other structures showed a year-on-year increase of 16% and 31.4% respectively. According to data based on the registered office, production grew in each of the country's regions³¹.

Another important indicator of waste management focuses on the way the generated municipal waste is treated. A key objective of the EU's community environment policy is the conversion of municipal waste into resources in order to diminish the use of raw materials and minimise waste generation. In Hungary, the amount of municipal waste decreased in absolute terms between 2000 and 2016 but started rising again after 2016. There were substantial changes made in waste treatment methods as well. The amount of municipal waste generation was approximately constant from 2013; there was a slight rise in 2019 totalling 3 791 000 tons. The rate of waste disposed at landfills went down by 50% between 2004 and 2019 and the share of recycling (material recovery) more than doubled while the amount of waste used to generate energy more than tripled.

Figure 29: Municipal waste management between 2004 and 2019



Source: KSH

The domestic construction industry has fully recovered in the past few years and, similarly to the positive trends taking place in the economy overall, has been solidly growing since 2016. Construction and demolition waste generation is essentially subject to the industry's performance. Construction and demolition waste generation is found to be markedly rising as the construction industry is growing: the rate of growth has been roughly 20% per year since the mid-2010s. Waste disposal at landfills requires large areas. In addition to its large annual quantity, the composition of waste is also a cause for concern as it has a high asbestos content, which is a serious risk for people's health. While the value of construction

³⁰

<https://ec.europa.eu/eurostat/databrowser/view/ENVWASGENcustom1128877/default/table?lang=en>

³¹ KSH, 2018: Helyzetkép az építőiparról, 2018

production rose by 140% between 2016 and 2019, construction and demolition waste “only” went up by 73%, which means relative decoupling was achieved.

In 2019, 908 669 tons food waste was generated in Hungary on a yearly basis the per capita value of which (95 kg/capita/year) is massively higher than the EU average (75 kg/capita/year). Compared with other countries across the EU, Hungary is in the third worst place; only Malta and Greece generated more food waste than Hungary. The survey³² collecting data for Hungary included households supplying information by completing detailed waste logs. Average food waste is estimated at 65.49 kg per capita every year and the survey found that roughly 50% of the food waste generated, consisting mainly of ready-to-eat foods, vegetables, fruits, bakery and dairy products, would be avoidable.

5.3.4.3 Quality of environmental components

The quality of environmental components means the quality of water, soil and air. The indicators used to assess the state of sustainability are chemical and ecological status of water bodies for water, the nitrogen and phosphorous balance for soil and the concentration of particulate matter in ambient air smaller than 10 micrometers, for air.

The 2000/60/EC Directive of the European Parliament and of the Council, the Water Framework Directive (WFD) defines goals that require harmonised action both on national and EU level and requires all member states to achieve “good” status both for surface and underground waters by 2015 and maintain this status in the long term. The implementation of the WFD strongly relies on river basin management planning and Hungary is required to prepare its third river basin management plan (hereinafter “RBMP3”) for the 2022-2027 period until December 22 2021. The present chapter is based on the RBMP3 version released for expert and social consultation³³.

In European comparison, Hungary has a high rate (90%) of waters which are not in at least “good” ecological status or potential, contrary to Nordic countries or even Romania, Slovakia, which have a high rate of waters in “high” or “good” ecological status. The reason for this is that rivers and lakes located in mountains are usually in a better status than bodies of water situated on lower areas and the water quality of the lower sections of large European rivers is poorer. Hungary requested an open timeline for almost all the categories for the improvement of the quality of surface waters, committing to achieving the good status after 2027 at the earliest.

As a fundamental environmental component of terrestrial ecosystems, soil is under intense pressure from human activities, which may cause threats for many soil functions and lead to soil degradation. As conditionally renewable natural resources, the protection of the quality of soils, the maintenance of their functionality and their reasonable use is of paramount importance. As a result of intensive farming and other human activities, natural or semi-natural soils have become very scarce by now.

The most serious risks are intensive farming and fertiliser use, which may equally lead to soil acidification, the accumulation of toxic elements, the increase of nitrates, the pollution

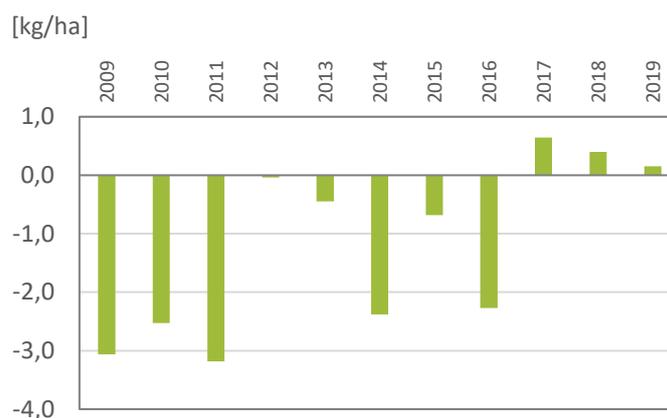
³² Kasza, G., Dorkó, A., Kunszabó, A., & Szakos, D. (2020). Quantification of Household Food Waste in Hungary: A Replication Study Using the FUSIONS Methodology. *Sustainability*, 12(8), 3069. <https://doi.org/10.3390/su12083069>

³³ Second revision of Hungary's river basin management plan, Hungary's river basin management plan – 2021 II Vitaanyag <http://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-vitaanyag/>

of groundwater etc. Excessive use or unbalanced distribution of fertilisers can cause metabolism disorders in cultivated plants and can change the biological activity of the soil. While this may have a positive impact on the environment in the short term, it is inevitably harmful in the long run, partly due to higher CO₂ emissions. Relative to pre-industrialisation levels, the quantity of phosphorus entering the biosphere has tripled, which is the result of increasing fertiliser use.

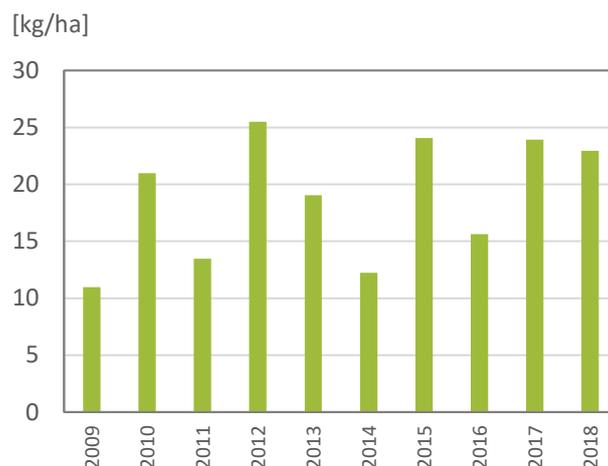
Being one of Hungary's most important conditionally renewable resources, soil totals roughly 22% of all national resources according to expert estimates. The nutrient balance, which is defined as the difference between the nutrient inputs entering a farming system (fertilisers and other means) and the nutrient outputs leaving the system, reflects the changes in the nutrient condition of the soil and the turnover of minerals essential for vegetation. A key nutrient input is nutrients supplied through fertilisers while the output is determined by the quantity of crops harvested, which is strongly dependent on weather conditions in a specific year. In case the balance is steadily and significantly positive for a nutrient, the risk of nutrient leaching and the resulting water pollution is high. A steadily negative balance reflects problems with the sustainability of the agricultural practices used. The reason why soil replenishment in response to the specific properties of soil is particularly important is that excessive amounts of nitrogen entering lakes cause eutrophication, algal bloom.

Figure 30: The phosphorus balance of soil



Source: KSH

In Hungary, the nitrogen balance per one hectare of agricultural land was above zero in every year in the period shown in the figure: it sharply rose by 2012, went down to roughly 50% of the 2012 levels by 2014, significantly increased in 2015, decreased to approximately 50% of the level of the previous year in 2016 then returned to the 2015 levels again in 2017 and 2018. 65% of the total nitrogen input was added to the soil in the form of fertilisers. The phosphorus balance per one hectare of agricultural land was below zero in every year between 2009 and 2016, with the exception of 2012 when it was balanced (around zero), which is a risk for the sustainability of agricultural production. It went above zero between 2017 and 2019 then going down to near zero by 2019. As phosphorus is less mobile than nitrogen, the surplus remaining in the soil continues to accumulate year by year raising the soluble and total phosphorus content of the soil. Phosphorus input is approximately one order of magnitude lower than nitrogen input. The balance of both nutrients mainly changes depending on the quantity of crop taken from a specific area.

Figure 31: The nitrogen balance of soil

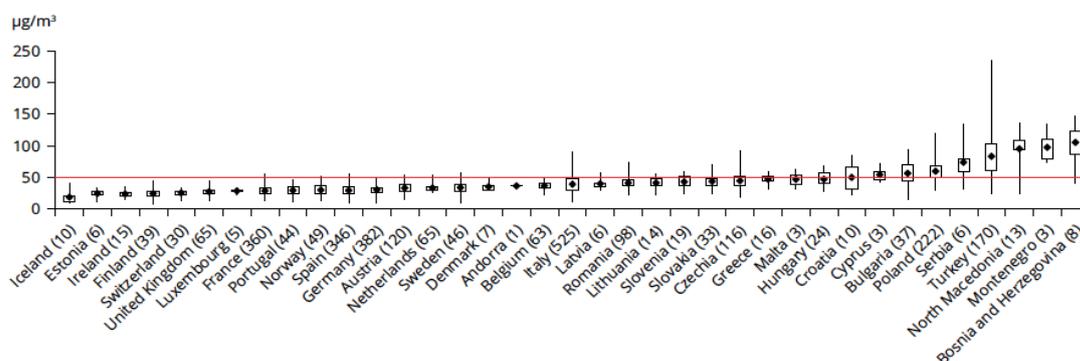
Source: KSH

Air pollution is a major health risk factor following smoking in the second place on the WHO (World Health Organisation) list ranking the leading causes of mortality from noncommunicable diseases. Poor air quality is a problem affecting a large share of the population and air pollution may cause adverse short and long term health outcomes. In the past decades, the most serious environmental health problem has been airborne particulate matter (particles with an aerodynamic diameter $\leq 10 \mu\text{m}$, dubbed commonly as airborne particulate matter) pollution, which increasingly comes from transport and residential heating using solid fuels. As a result, the pollution by small aerosol particles (PM₁₀, PM_{2.5}) has been in the centre of air quality regulations in recent years due to the higher health risk involved.

The air pollutants that cause one of the biggest problems in Hungary are particles with a diameter under 10 micrometers and in particular, particles smaller than 2.5 micrometers. These so-called fine particles directly affect the vital function of the atmosphere as a natural resource. These particles are able to travel to the deepest parts of the respiratory system causing respiratory problems and worsening the condition of patients suffering from heart and lung diseases. In European comparison, Hungary's average pollution by particulate matter in ambient air is bad; we belong to the worst quarter among EU countries.

Figure 32: Changes in PM₁₀ concentration in Hungary

Source: OMSZ

Figure 33: Daily mean PM₁₀ concentrations in relation to the daily limit value – European comparison

Source: EEA, 2020

It is also a cause for concern that as two neighbouring countries (Croatia and Serbia) rank even worse than Hungary, transboundary air pollution (advection) is also a serious risk for health. Within the European Union, the status of Hungary did not change compared to the data presented in the 2018 report of the European Environment Agency (hereinafter EEA). The limit values for PM₁₀ defined by the air quality directive of the European Union became effective in 2005 (annual: 40 µg/ m³, day: 50 µg/ m³; allowed to be exceeded up to 35 times every year). Certain monitoring stations in Hungary regularly register concentration levels exceeding the daily limit. While a report from 2016 showed exceedances for the air hygiene index registered 466 times in 33 monitoring stations, the number rose to 1132, registered in 30 monitoring stations, in 2017 and there were 1069 cases registered in 52 monitoring stations in 2019.

In 2008, the European Commission brought action against Hungary for failure to fulfil its obligations on limit values. In response to this and to address the issue, the Intersectoral Action Plan on the Reduction of Particulate Matter in Ambient Air (PM₁₀) was adopted in the form of government decree 1330/2011 (X.12.) Moreover, the National Air Pollution Reduction Programme was developed in 2019 and 2020, which provides a comprehensive implementation and monitoring framework in harmony with the EU's guidelines. As the European Commission found that Hungary did not meet several of its obligations under

the directive on ambient air quality, it submitted a request in 2018 to the European Court of Justice to declare that there was a failure to fulfil obligations (the judgment was issued on February 2 2021).

The actual state of air quality is perfectly demonstrated by the statistics from stations exceeding the daily and annual limit values for PM₁₀ and PM_{2.5}, which, however, have also unfortunately been unavailable since 2017. We believe the continued collection and publication of data would be highly important as this information, and in particular the number of days when the limit values were exceeded, provides a comprehensive picture about the state of air quality in Hungary.

5.3.4.4 Climate change and energy use

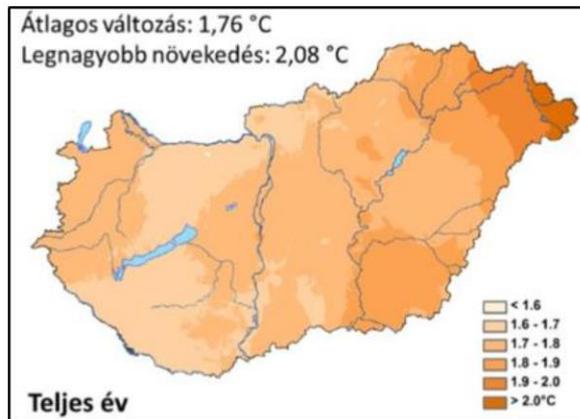
Climate change

The overarching issue of climate change is probably one of the most complicated systems that has ever been studied: its drivers are present virtually in every sector and greenhouse gases accumulating in the atmosphere as a result of human activities raise the risk of further changes in climatic conditions. The issue of climate and energy despite its comprehensive impact on various socio-economic activities on nearly all environmental aspects requires an integrated approach in order to improve the quantity and the condition of the four national resources. In this section, we will examine the changes in and the vulnerability of climate in Hungary, the use of fossil and renewable primary energy sources and the tendencies of greenhouse gas emissions.

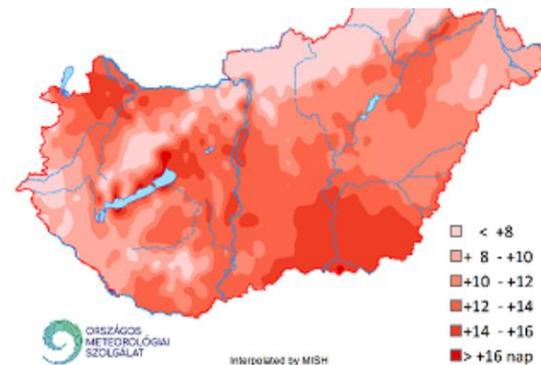
Surveys by the National Meteorological Service demonstrate that domestic temperature changes are in line with global tendencies: the rise of the national temperature of 1.2°C, occurring since the beginning of the last century, exceeds the global estimate of 0.9°C. There has been intensive warming experienced in the last 30 years: its degree was the highest in the eastern and north-eastern regions of the country, exceeding 1.8°C. The review of seasonal changes indicate that summers have become warmer in the first place, nearly by 2.2°C on average nationally with summers recorded to be warmer by over 2.4°C around the Mecsek Mountain and also by over 2.2°C in the middle Dunamenti region and in eastern Hungary.

In 2019, the national mean temperature was roughly 1.9°C in excess of the multi-year average and this year was recorded as the hottest after 1901. 2020 was slightly colder exceeding the multi-year average by 1.1°C and ranking as a result as the eighth hottest year. It is very interesting that eight of the ten hottest years occurred after 2000.

Figure 34: Changes in annual mean temperatures

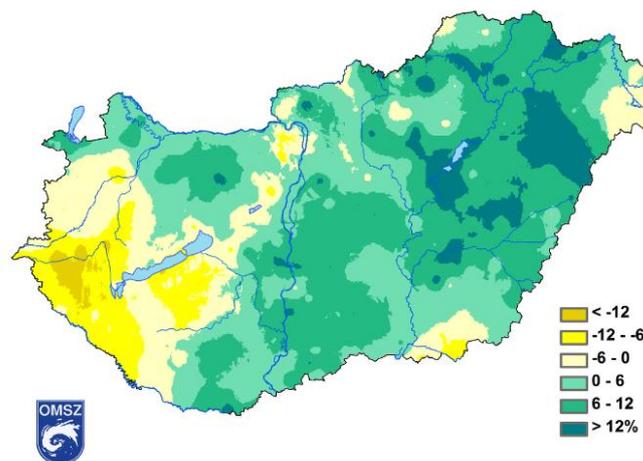


Source: OMSZ

Figure 35: Number of excessively hot days where $T_{mean} > 25\text{ °C}$ 

Changes recorded in extreme temperatures indicate that the climate change entails the obvious increase of extreme hot weather and the decrease of extreme cold weather. The number of excessively hot days ($T_{mean} > 25\text{ °C}$) went up by nearly 12 compared to the 1980s. The highest increase affects Hungary's north-western and the southern part of the Great Plain where hot weather lasts for over two weeks in large areas. Simultaneously, the number of freezing degree days ($T_{min} < 0\text{ °C}$) went down by typically 14 days on average nationally.

Figure 36: Changes in the total quantity of precipitation between 1961 and 2018



Source: OMSZ

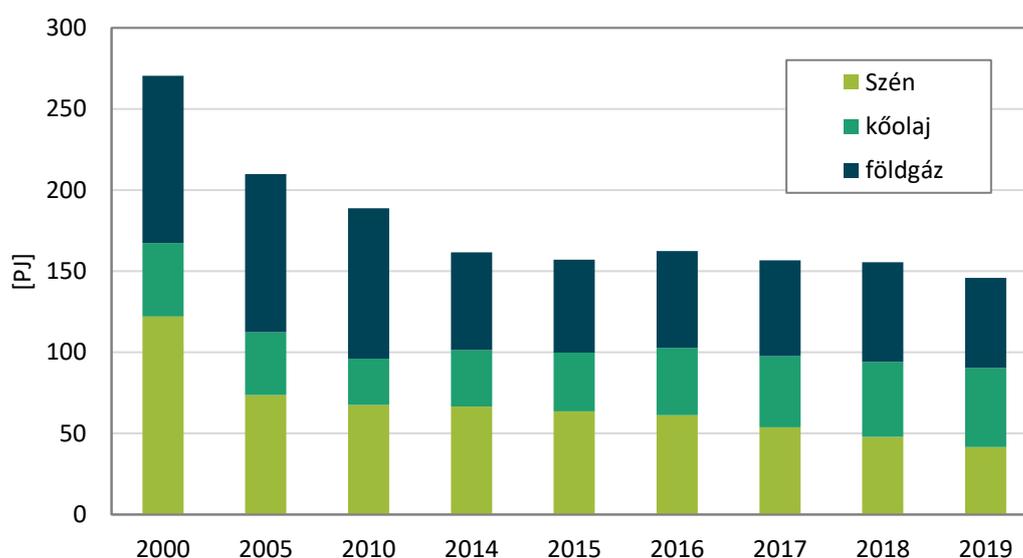
The precipitation tendencies recorded in the last three decades show some (insignificant) rise both annually and seasonally, especially in the summer. There are more intensive rains in the summer leading to reduced absorption capacity and stronger surface runoff. Dramatic fluctuations have been experienced in the past few years, floods and droughts are equally possible while the probability of extremely dry years has also risen. Since the beginning of the 20th century, the number of days with precipitation in excess of 20 mm has risen by over 2 days while the maximum length of dry periods has significantly increased (by nearly 5 days per year).

The national annual total quantity of precipitation was around the average both in 2019 and 2020. During the year, May and November had above-average amount of precipitation while March was extremely dry. The annual average total quantity of precipitation was 631 mm in 2019, which is 105% higher than the multi-year average of the period between 1981 and 2010. In 2020, the national average quantity of precipitation was 615 mm, which is only 2% higher than the multi-year average (1981-2010), however, its distribution both in space and time was extremely varied. June and October were very wet while April and November were extremely dry with very low rainfall.

Energy consumption

As domestic production of natural gas, petroleum and lignite covered only 17%, 13% and 70% of the domestic primary energy consumption in 2019, respectively, Hungary's aggregate import dependence relating to fossil fuels is close to 80%. (This indicator of import dependency has been rising in the past decade, which means that a growing share of our fossil fuel demand is met from foreign sources.)

Figure 37: Domestic production of fossil fuels (2000-2019)



Source: MEKH

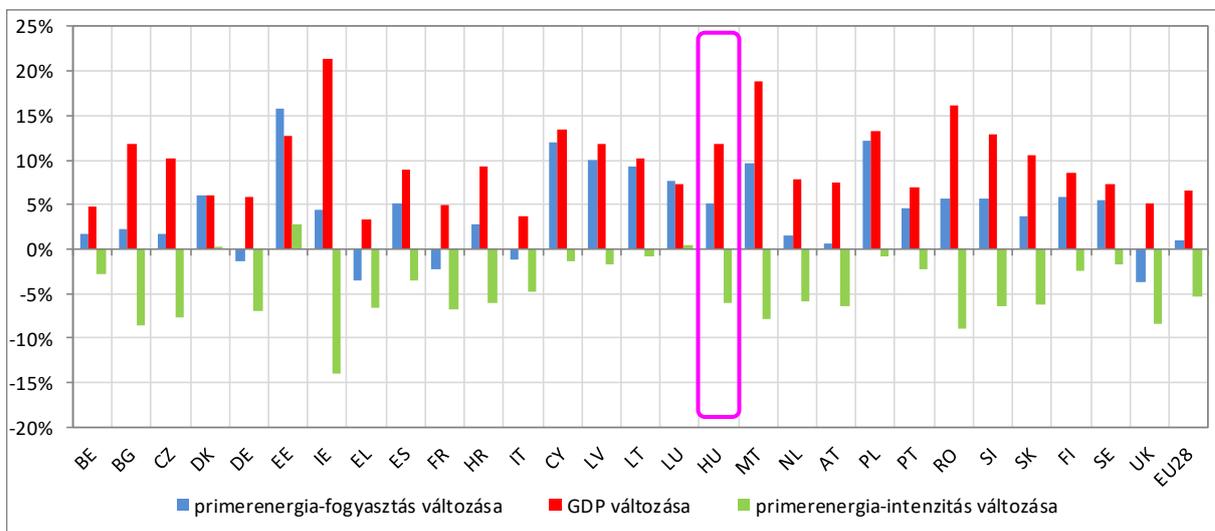
Domestic production, both in terms of the environmental pressure and emissions from mining and the combustion of fossil fuels, leads to a variety of environmental problems. In the meantime, domestic production promotes energy security, may help reduce energy dependency, significantly improve our foreign trade balance, increase the employment rate, generate lasting and public tax revenues, enhance the professional culture, the domestic industry and even SMEs through the domestic supply chain. As the only high capacity brown coal deep mine was closed in 2014, lignite production by surface mining is practically the only remaining operation of coal mining in Hungary. Hungary's petroleum and natural gas deposits totalling cca. 600 are concentrated in Zala county and the southern part of the Great Plain. From the point of view of sustainable land use, the size of mining sites is also relevant: in this respect, the southern part of the Great Plain is leading as mines here are larger in area than in Western Hungary. In the Hódmezővásárhely and

Makó districts, mining sites occupy over 40 000 hectares, which is nearly 60% of the territory of these microregions while mining sites take up 40% of the Kistelek district.

Between 2010 and 2019, domestic natural gas production fell considerably, by about 40% primarily due to the favourable price of import gas and the growth of the use of biomass as a substitute for natural gas. Between 2015 and 2019, there was a roughly 35% reduction in lignite production, an approximately 35% rise in petroleum production while the production of natural gas slightly fluctuated.

The analysis of decoupling between economic performance and energy consumption in European perspective shows that energy intensity, i.e. the amount of energy needed to produce a unit of gross domestic product, improved in many member states.

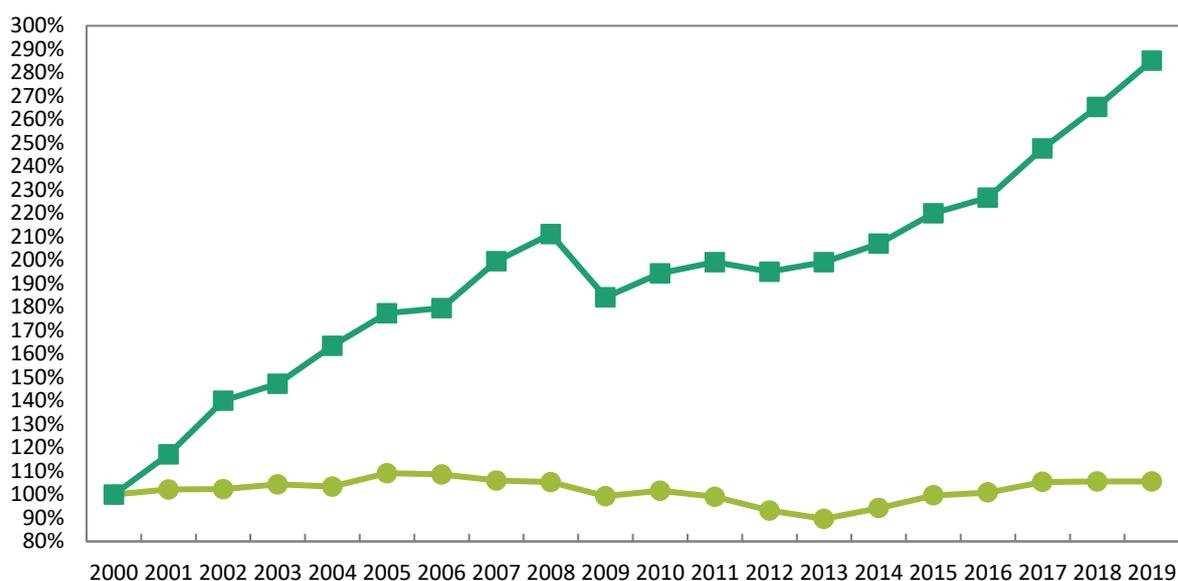
Figure 38: Relative change between primary energy consumption, primary energy intensity and GDP (2005-2018)



Source: EC

In Hungary, energy intensity steadily improved until 2013: the amount of energy needed to produce a unit of gross domestic product went down by 50% compared to the early 2000s. This decoupling (Figure 40), which promotes the transition towards sustainability, is primarily the result of economic restructuring, which involved the downsizing of energy intensive sectors and the growth of services and production activities that are less energy intensive and represent higher added value.

Figure 39: Decoupling of primary energy consumption and the GDP ratio



Source: Eurostat and MEKH

Between 2013 and 2017, energy consumption began rising and the former positive tendency for energy intensity was replaced by stagnation. During this period, primary energy demand was growing at an annual rate of roughly 3.5% causing the rise in energy demand to approach GDP growth and thus decoupling was, temporarily, interrupted. Since 2017, primary energy consumption has been stagnant giving hope that the decoupling will be stable.

The use of renewable energy sources reflects a complex situation in Hungary. On the one hand, available data indicate that the share of their use has been lowering since 2013, totalling below 12.6% of the final energy consumption in 2019. (The reason for the decline of recent years is that as the rise in final energy consumption is in excess of the growth of the use of renewable energy sources, their ratio is decreasing.)

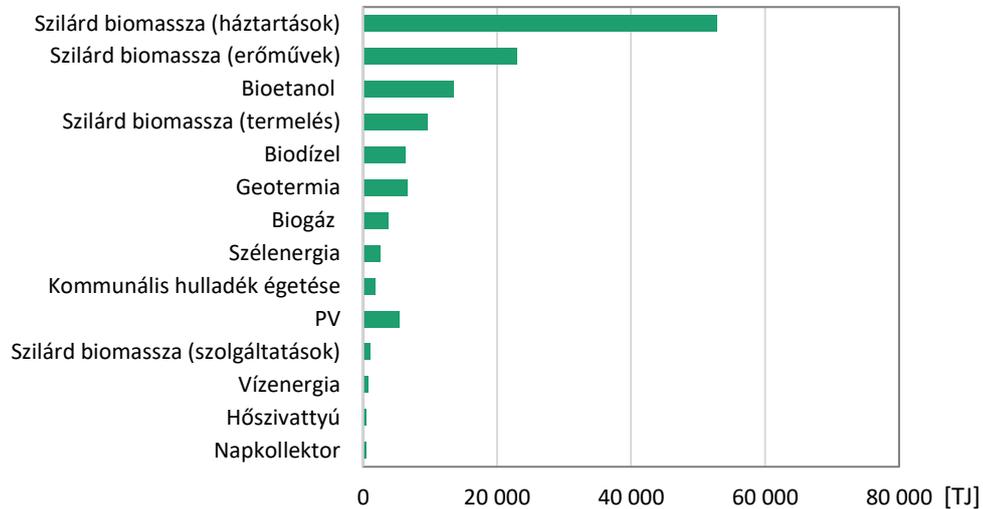
Hungary's status is unfavourable compared to the rest of Europe. The EU committed to achieving in total a 20% share of renewable energy sources in the final energy consumption by 2020 and member states developed their own national action plan to meet this target. Member states set indicative trajectories for the share of energy from renewable sources in their gross final consumption of energy by 2020: based on its commitments, Hungary is positioned in the last third among EU countries. According to preliminary expert estimates³⁴, the share of energy from renewable sources was 13.5% in 2020, which is over 1% lower than the national target for renewables. Significant efforts will be necessary to reach the share of 20% from renewable sources set for 2030, especially as final energy consumption continues to rise.

The actual use of biomass, the backbone of renewable energy sources, which accounts for over 80% of the use of energy from renewable sources, is strongly dependent on the cost of other sources of energy and their consumption. Based on the NEKT (National Energy and Climate Plan), the dominance of biomass will continue, particularly in the heating and cooling sector. Meanwhile, the growth of the domestic GDP seems to go hand in hand with

³⁴ Self-calculation based on the monthly energy balance of the National Energy Strategy and Public Utility Regulatory Authority

a steady rise in the consumption of natural gas, a substitute product for household biomass. Furthermore, as described by the NEKT, the sales price of biomass for energy is strongly subject to the demand for pulpwood and paper wood in addition to the import possibilities.

Figure 40: Use of energy from renewable sources by sector, 2019

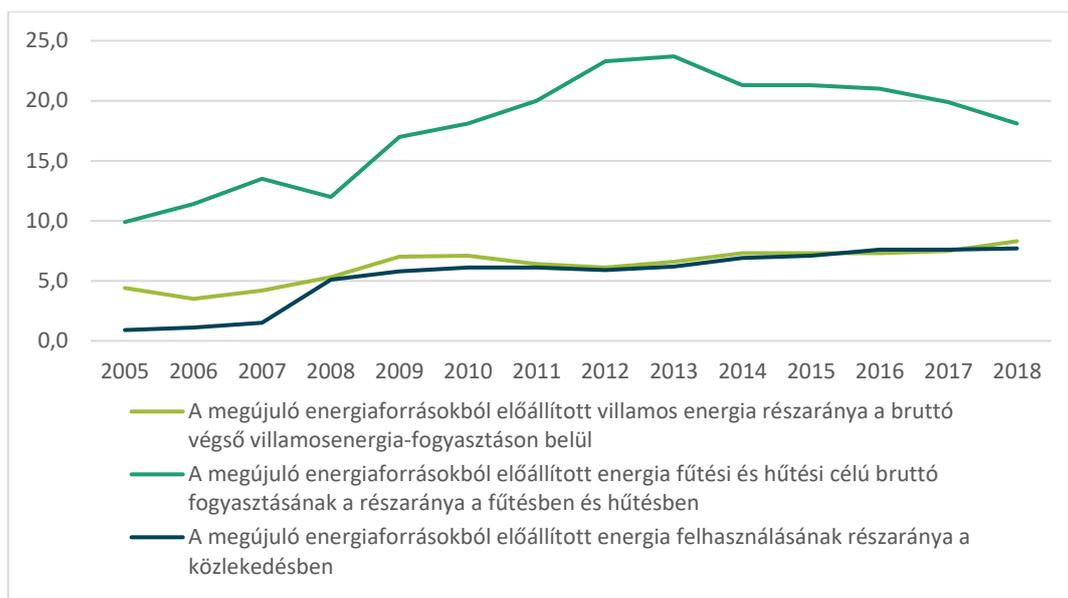


Source: Eurostat

The status report of the National Energy and Climate Plan (NEKT) shows a slight decline in the share of the use of energy from renewable sources (in the gross final energy consumption). As data from the Hungarian Energy and Public Utility Regulatory Authority (MRKH) indicate, Hungary is less and less likely to achieve the national target of 14.65% by 2020. The highest share to date (16.2%) was reached in 2013 and the rate has been steadily lowering since then accounting for only 12.5% in 2018, which is even below the previous commitment of 13%. The examination of the specific “places” of consumption indicates that the reduction is associated with the gross consumption for heating and cooling while the share of electricity and transport has been constantly growing³⁵.

³⁵ HÉTFA Kutatóintézet (2021): A 2021- 2027-es kohéziós politika és a klímavédelmi célok Magyarországon

Figure 41: Share of energy from renewable sources in the gross final consumption of energy (2005-2018)



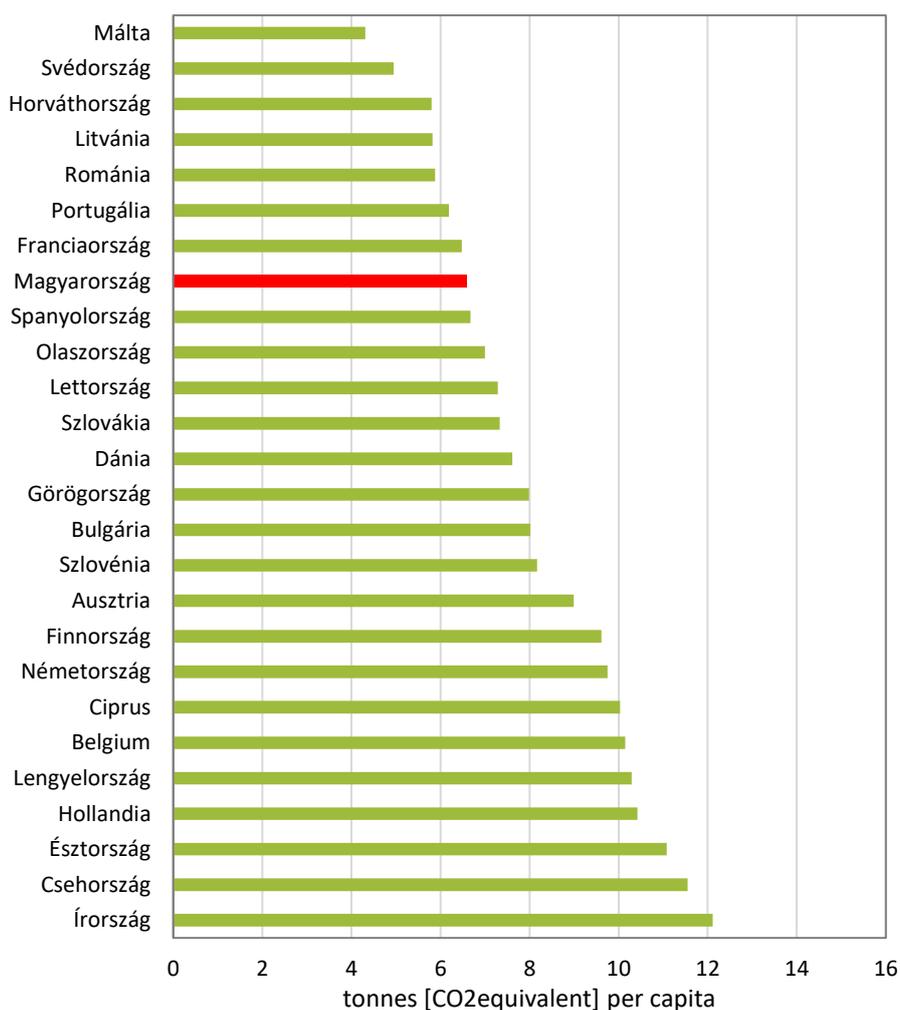
Source: MEKH

The share of small-scale household power plants (HMKE), particularly solar panels, in the renewable generation of electricity continues to rise. Based on a MEKH report, photovoltaic capacity went up by over 20% between the end of 2019 (481.8 MWp) and June 2020 (584.15 MWp).

Hungary contributes less than 1.6% of all GHG-emission in the EU. The analysis of per capita GHG emissions shows (Figure 43) that Hungary is in the top third within the EU, which is primarily explained by the significant share of nuclear energy, the downsizing of the energy intensive industries and, in part, to the relative rise in energy efficiency and the use of renewable energy sources. In the meantime, it is unfavourable that Hungary went down 4 places on the EU ranking of greenhouse gas emissions per capita between 2012 and 2019. The main reason for this is, as it was discussed above, that Hungary performs on average within the EU as regards the improvement of energy intensity of the national economy while the share of energy from renewable sources is one of the lowest across the member states and is not rising.

It is likely that Hungary's options in terms of decarbonisation potential (i.e. additional emission reductions) are poorer than that of the countries where the share of electricity and heat generated from coal is still dominant within the energy industry and where the energy intensive sectors still have a high potential for decarbonisation.

Since 1990, there have been some easily distinguishable periods in the trends in greenhouse gas emissions. In the early 1990s, there was a drastic decrease in emissions thanks to the termination of the operations of the "Socialist" heavy industry and the economic restructuring. The substitution of coal with natural gas starting in the early 1990s and the ongoing efficiency improvement efforts in combination with economic growth led to relatively stable favourable conditions.

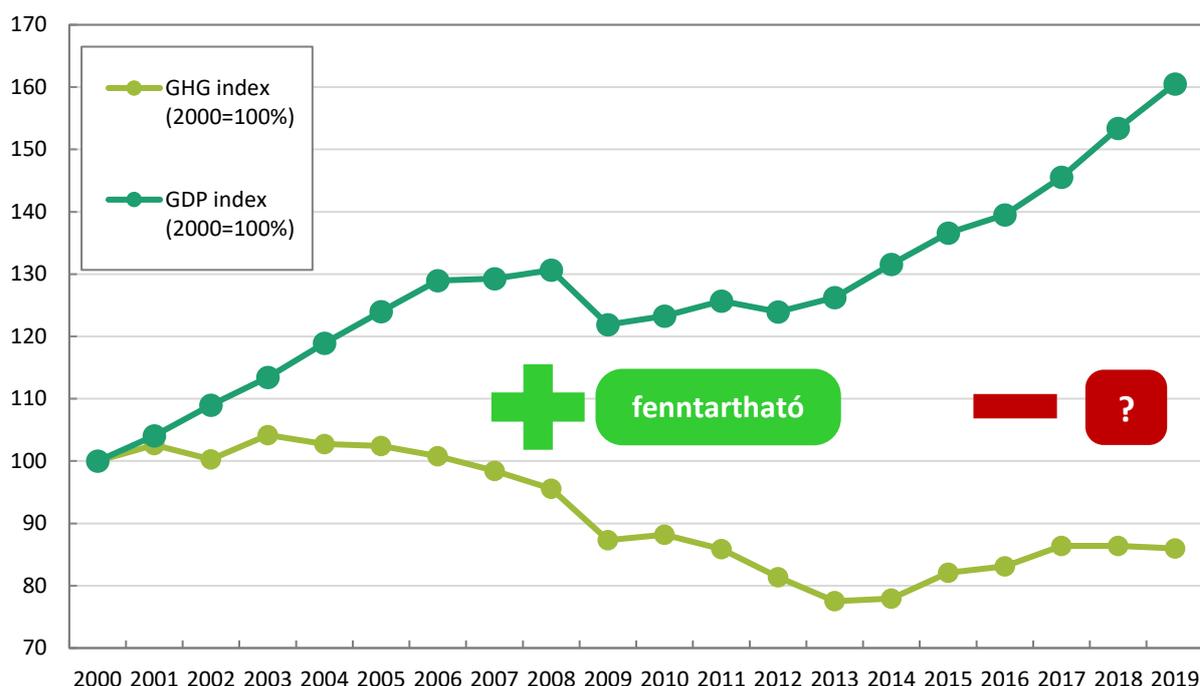
Figure 42: Greenhouse gas emissions per capita by European countries, 2019

Source: EEA

The analysis of the decoupling of greenhouse gas emissions and the GDP shows that the global financial crisis that started in 2008 had an enormous impact on the performance of the Hungarian economy as well and indirectly fundamentally influenced greenhouse gas emissions in Hungary. Between 2008 and 2009, our emission rates fell by 8.6% and while there was slight rise in the Hungarian economy after 2010, GHG emissions fell again until 2013. However, between 2014 and 2017, simultaneously with the changes in primary energy use, greenhouse gas emissions began rising. It is positive that the emission of greenhouse gases has been stable since 2018, accompanied by solid economic growth, however, it is yet to be known whether it is only temporary or will continue in the long term.

Overall, trends in GHG emissions in Hungary over time are dual: while Hungary's GHG emissions have fallen by approximately 14% in the last two decades, the previous apparent decoupling has ended. As emissions have been stable since 2017, a key issue for climate protection in Hungary is whether decoupling will resume in a lasting manner in the face of a growing economy.

Figure 43: Changes in GHG emissions and the GDP



Source: EEA

The main reason for the use of biomass for energy may include Hungary's dependency on the import of primary energy sources, the enhancement of the security of supply and price stability. In the last two decades, both in the case of electricity and heat generation in power plants/heating plants and the heating of buildings, the use of biomass significantly reduced the use of fossil fuels. In 2019, the use of solid biomass totalled about 76 PJ/year, which is 10% of the final energy consumption. The quick spread of the use of solid biomass in household heating in the early 2010s was especially remarkable where the share of solid biomass peaked at 31% in 2015.

From 2016, the use of household firewood went down by 6% on average every year leading in total to a "deficit" of 21 PJ/year in the use of energy from renewable sources in Hungary. It is a positive tendency for sustainability that the use of firewood in households decreased by roughly 22% between 2017 and 2019, which is in part the result of the rising cost of firewood and indirectly the reduction of utility prices.

As biomass is a conditionally renewable primary energy source, the planning for its use as an energy source should consider the energy, social, ecological etc. uncertainties, objections and potential benefits that may occur in the production, transportation and use of biomass. One potential solution for sustaining production, for the use of unnecessary agricultural products and for employment is the conversion of agricultural production for food for the generation of energy. Meanwhile, this is also one of the most sensitive points of the efforts for the use of biomass if we consider the very limited availability of land for production and food security.

The production of biomass itself on energy crops, depending on the species and agricultural technology used, may involve very high inputs: energy, pesticides, fertilizers, machinery, which may raise concerns regarding the sustainability of biomass production. (It is

important to note that fertilizers on energy crops may be substituted by sewage sludge, which also ensures the water supply of the soil.)

The sustainability of electricity generation based on biomass involves an energy management uncertainty: the electric power generated from agricultural products as primary energy sources has restricted ability to meet actual demand. The fluctuations in power generation caused by varying yields prevent reliable input on the supply side and the predictable balance of the performance of production and consumption.

5.3.4.5 The state of biodiversity

As life on Earth is impossible without biodiversity, clean water and air, its protection and improvement is not only one of the priorities of sustainable development but is also key for the survival of the human race, nature and wildlife. Biodiversity enables a broad range of ecosystem services: it is the foundation for the production of healthy food, helps create and regenerate a variety of habitats, is essential for the socio-economic operation and plays a key role in the mitigation of the impacts of climate change.

The number of endangered species did not change in the last five years (2016 to 2020). This is why it is very important how the number of individual animals within the population of a specific species changes. This is the purpose of the species conservation plans that cover both the work carried out in the area by official entities and the land management activities relating to the habitat of a specific species. Under the species conservation programme, species conservation plans for a total of 26 animal species and 20 plant species were developed until September 2020. In the 2019 and 2020 period, there was only one new animal species conservation plan added while the number of species conservation plans for plants did not change relative to 2019. Considering that there are 1178 endangered animal species and 733 endangered plant species at present, the number of available species conservation plans is extremely low. Besides, the species conservation plans cannot be implemented without land management plans. The importance of species conservation plans is much smaller than that of the management plans of protected natural areas and the management plans of Natura 2000 sites as these plans include not only key data, objectives and requirements for the area but also for the animal species living there. Currently, based on the draft document of the National Biodiversity Strategy, approximately 200 (61 778 ha) of the 322 protected natural areas of national relevance established by specific legal acts have a nature conservation management plan promulgated in legislation and 89% of the Natura 2000 sites (470 of 525 sites) have non-binding management plans.

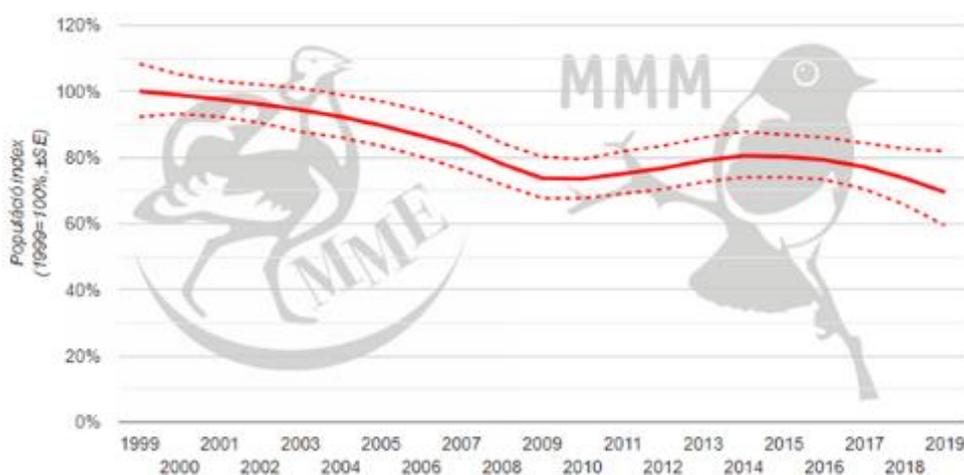
Within the endangered species, there are 87 strictly protected plant species and 185 strictly protected animal species. In 2020, the number of strictly protected invertebrates went down by one relative to 2019. In order to protect these species, even rational farming is allowed to be restricted, subject to the provision of appropriate compensation, and the killing of an individual animal of these species is a crime. The conservation status of roughly 62% of the species protected under the Habitats Directive is unfavourable or bad while the rate of species in favourable conservation status is only 36%.

The protection of species is based on the protection of their habitats; the survival of protected, strictly protected species of fauna and flora as well as those of Community interest depends on the availability of places free from intensive land use and functioning as an ecological refuge. Under the MÉTA Program (Vegetation Heritage of Hungary), 12

indicators have been defined to classify habitats based on their vulnerability, which were used to identify Hungary's most vulnerable habitats: steppic oak forests on sand and loess, tussocks, extensive orchards, closed lowland oak forests, tall-herb vegetation of stream banks and fens, wood pastures, loess walls, wet and molinia meadows, highland meadows, fen forests, semi-dry grassland and salt steppic oak forests.

The conservation status of roughly 81% of the habitat types protected under the Habitats Directive is unfavourable while the rate of habitats in favourable conservation status is only 19%. There has been visible decline in the conservation status of 6.5% of the habitat types of Community interest, 3 of 46 habitat types, (e.g. Euro-Siberian steppic oak forests) (AM, 2019a). The analysis of the conservation status of the various habitats shows that farmland habitats and aquatic habitats most vulnerable to environmental impacts are in the most unfavourable state.

Figure 45: Farmland bird biodiversity (1999-2019)



Source: Mindennapi Madaraink Monitoringja (MMM) ³⁶

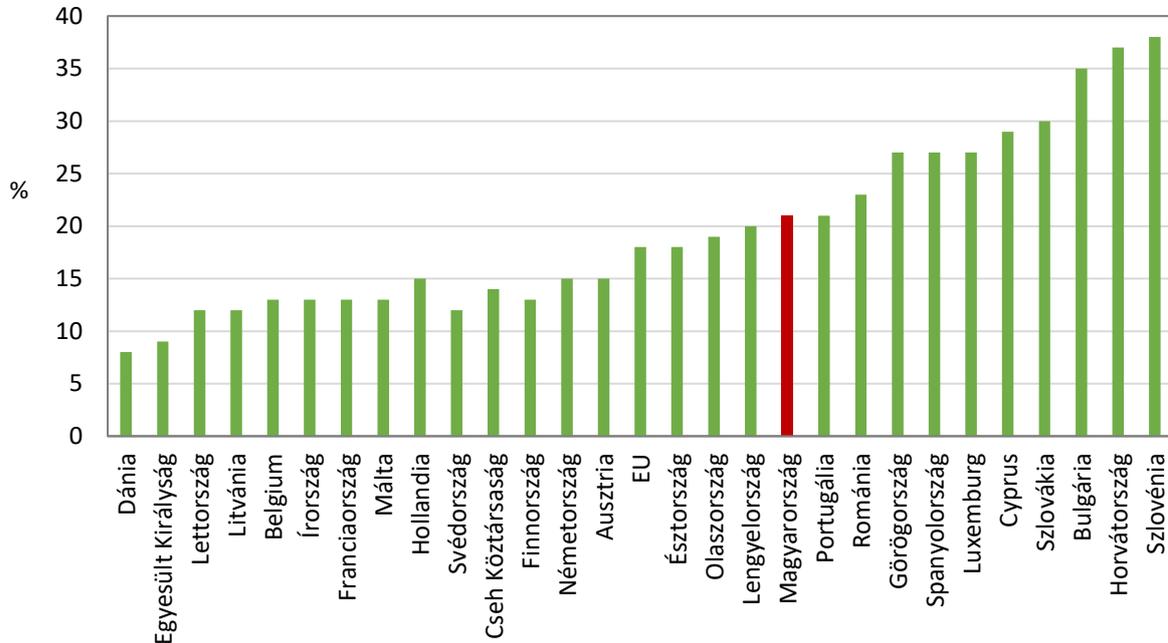
The abundance of Hungary's valuable natural assets is reflected by the fact that 22.2% of Hungary's territory is protected by EU or Hungarian nature conservation laws and regulations. The size of the Natura 2000 sites has not changed in the last two years, its territory remains 1.995 million hectares (21.4%). The sites were designated based on 101 bird species, living in special protection areas for birds, 46 habitat types, located in special areas of conservation as well as 105 other animal species and 36 other plant species. The protection of a total of 101 bird species living in Hungary and of Community importance and migrating through Hungary in large numbers is supported by 56 special bird protection sites.

The Natura 2000 network is in part based on the existing network of protected natural areas while also including areas that were not protected earlier. If we consider Hungary's unique nature and that natural assets are more effectively protected here than in most Western European countries, the size of designated areas in Hungary is slightly larger than the EU average. However, based on the size of the areas designated only for national protection in member states (not included in the Natura 2000 network), Hungary loses several places on the ranking of protected areas (positioned in the lower middle section). In Hungary, there are only a handful of areas that are protected exclusively by national

³⁶ <https://www.mme.hu/mindennapi-madaraink-monitoringja-mmm>

legislation and are not included in the Natura 2000 network. The EU has other member states where the number of areas protected exclusively by national legislation is also high.

Figure 46: Share of Natura 2000 protected areas, 2019



Source: Eurostat

In recent years, there has been no change in the share of Natura 2000 sites across the EU's member states except in Bulgaria where a 1% rise was achieved.

The analysis of Hungary's wild animal populations shows that the number of certain wild animals such as fallow deer, red deer, pheasants and wild rabbits is steadily growing while the population of roe deer is declining. From 2018, strong action was taken to stop the reduction in the number of pheasants and wild rabbits (cooperation with agricultural producers, protection and extension of habitats). As indicated in Figure 57, the actions taken in 2019 and 2020 led to a slow rise in the population of pheasants and a reduction in the number of roe deer. The populations of pheasants and wild rabbits were declining at an increasingly faster pace from 2009, which was successfully stopped in 2019. The main reason for the reduction in animal stocks is the shrinkage of natural habitats, the removal of borderlines and hedges, which served as breeding and hiding sites. With the spread of intensive agricultural production, as the variety of plant species in their habitats diminished, which is the result of monoculture, single crop farming, rabbits in the summer died in large numbers as the crops grown were harvested at the same time, which left no food for them in the area. The strengthening and single cropping had a positive impact on the population of wild boar as these animals had more space to find food and shelter while the rate of their use remained low. This in turn led to more damage caused by these animals as they destroy mainly corn and sunflower crops resulting in high financial losses for producers. The African swine fever (ASF) is spreading slowly but steadily and this is one of the reasons (there was also a rise in shootings and diagnostic shooting) why the population of wild boar decreased by 15 to 20% between 2018 and 2020. In summary, big games in Hungary are highly overpopulated, which means that in order to protect biodiversity and

natural habitats as well as to mitigate losses in forests and agriculture, the number of big game should be massively reduced.

A survey under the MÉTA Programme shows that roughly 17% of Hungary's territory is covered by vegetation that is part of the natural vegetation heritage, i.e. may be classified as the remainder of natural vegetation. 2% of the vegetation heritage may be classified as natural, 27% as semi-natural, 50% as moderately degraded and 21% as highly degraded. This means that only 0.6% of the country is covered by natural vegetation, a further 5.6% by semi-natural vegetation, 8.1% by degraded vegetation and a further 3.0% by highly degraded vegetation. As the most common reason for the reduction of the natural capital is the degradation of natural habitats, their protection is the most urgent task in order to mitigate the loss of biodiversity. If this is achieved, natural succession and spontaneous introduction may help improve the present situation.

As an important step forward, Hungary's ecosystem base map was completed in 2019 managed by the Ministry of Agriculture under the National Ecosystem Service Mapping and Assessment (NÖSZTÉP) project. The ecosystem base map includes six main categories: artificial surfaces, agricultural areas, grassland and other herbaceous vegetation, forests and other woody plants, aquatic habitats and surface waters. The KSH started to develop a methodology for ecosystem accounts in 2020.

Figure 447: Hungary's ecosystem base map, 2019



Source: Ministry of Agriculture

In general, the natural vegetation heritage is highly endangered in Hungary. Key threats to the vegetation include changes in the type of cultivation (ploughing, mining, creation of ponds, reclassification as gardens), the methods of grassland and forest use (overuse, industrial forest management, overpopulation of wildlife, discontinuation, abandonment of traditional farming) and the human control of the groundwater balance in flat areas. Meanwhile, the spontaneous spreading of non-native, i.e. alien species (e.g. false acacia, goldenrods, silkweed, desert false indigo) has become one of the most serious risk factors in the past two to three decades. With their high population densities, they displace native

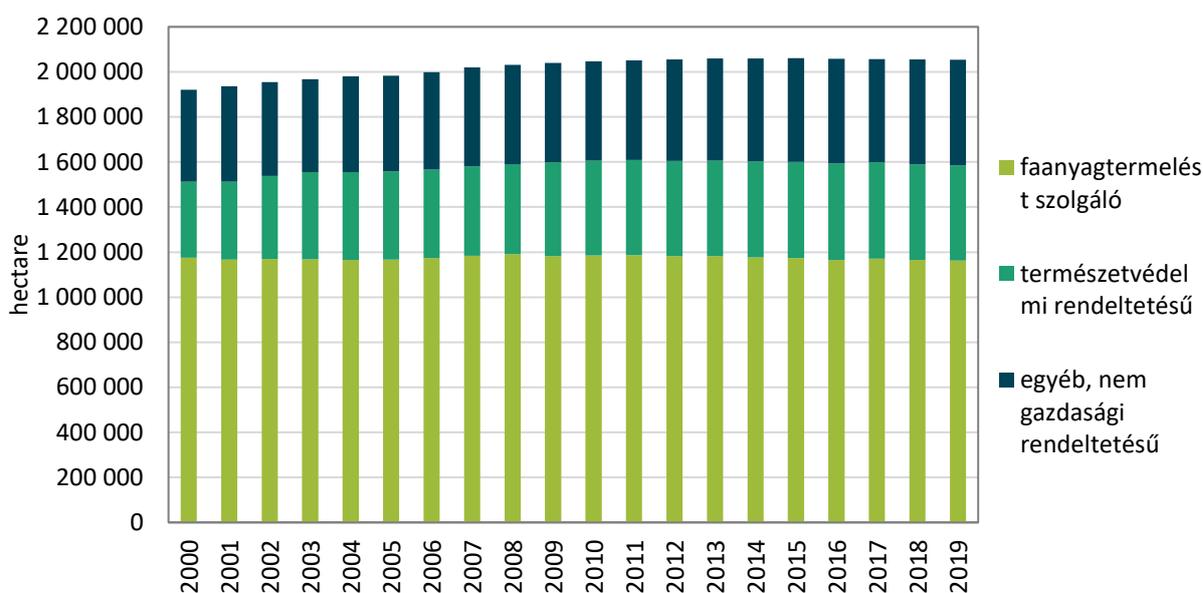
species and these Asian and North American species gradually gain dominance in the biomass of vegetation while the biodiversity of native species is decreasing.

As regards Hungary's forests, 22% of Hungary's territory is covered by forest management areas. Compared to the previous monitoring report, the size of areas used for forest management was reduced by nearly 3 000 hectares, the size of areas used for logging by 9777 hectares and the size of forests used for nature conservation by 4213 hectares.

Data from 2019 show that nine-tenths of forest areas consist of broad-leaved species and one-tenth of coniferous species. In the last ten years, the largest reduction (1.5%) has affected resinous trees. Meanwhile, the quantity of false acacia and turkey oaks each went up by 0.3%. The population of oak tree, beech tree and hornbeam forests has changed only minimally (0% to 0.1%).

The naturalness category of our forests may be classified as heterogeneous; two-thirds of our present forest areas include partly or fully replaced populations. Forest management methods crucially influence species diversity at canopy level, the state of naturalness of forests: mosaic-type, fragmented forest covers have lower biodiversity.

Figure 458: Forest areas in Hungary by main purpose (2000-2019)



Source: KSH

Overall, forest health in Hungary improved between 2017 and 2019 if only minimally. In 2017, the rate of healthy forests in terms of defoliation was 29.9%, which went up to 31.6% by 2019. Based on the results from samples, the rate of moderately and severely damaged as well as dead foliage equally lowered relative to 2017. Only the share of slightly damaged forests based on defoliation grew from 29.1% to 33.3% compared to 2017. As the data demonstrate, the proportion of healthy and slightly damaged trees has risen by 1.7% and 4.2% in the last two years respectively. Compared to 2017, the rate of moderately, severely damaged and dead trees decreased by 4.6%, 0.9% and 0.4% respectively. Only the health of slightly damaged trees declined, which predicts a solid rise in the quantity of moderately and severely damaged trees in the near future. Out of our tree species, mainly the health of oak and beech trees has declined, which is the result of the growing lengths of droughts. Similarly to agricultural habitats, there is substantial decline observed in the biodiversity

of forest habitats. The populations of the indicator bird species of forest habitats rose constantly until 2016 followed by a downward trend that started in 2017 and continued until 2019.

5.3.3 GOVERNMENT MEASURES

The following were the most important government measures and strategies adopted concerning natural resources in the period of the monitoring report.

- The Waste Water Sludge Treatment and Reuse Strategy (2018-2023) was completed³⁷. The priority of the various utilisation methods is agricultural use, recultivation use and burning of sludge for energy. This strategy defines the rates and ways of future use, which is also the basis of the planning of EU investments after 2021. Pursuant to Government decree 50/2001 (IV.3.) on the rules of the agricultural use and management of wastewater and sewage sludge, agricultural use is subject to authorisation and the availability of a soil protection plan.
- Since 1997, the National Environment Programmes (NKP) have comprised the comprehensive framework for Hungary's environmental goals and actions. The development, purpose, content and implementation of the National Environment Programmes are defined in Act LIII of 1995 on the general rules of environmental protection. The report on the implementation of the 4th National Environment Programme for the period of 2015-2020, adopted by Parliamentary Resolution 27/105 (VI.17.) and the 5th National Environment Programme for the period of 2021-2026, harmonised with the EU's 8th Environment Action Programme for the period until 2030, published in October 2020, have been completed, the government will finalise and submit it to the Parliament.
- Hungary's nature conservation strategic planning document. It is a policy strategy that as an independent but integral part of the National Environment Programme defines the key objectives to achieve relating to the government's nature conservation responsibilities, identifies the directions of actions not only for nature conservation administration but for all government bodies. The National Nature Conservation Core Plan for the period of 2021-2026 has been completed, which describes the changes occurring in the most important parts of the nature conservation sector in the implementation period of the previous planning cycle, presents the current situation and identifies the objectives to pursue and accomplish between 2021 and 2026 based on that. Following the finalisation of the draft document, the government will submit it to the Parliament together with the National Environment Programme attached as its schedule.
- The strategy aims to stop the loss of biodiversity and the further degradation of natural resources and ecosystem services and promote their improvement as much as possible in Hungary. As the timeline of the national strategy for the protection of biodiversity for the period of 2015-2020 ended, its evaluation and the drafting of the new national strategy for the period until 2030 began.
- The second National Climate Change Strategy for the period of 2018-2030, which also offers an outlook for the period until 2050, includes an assessment on the potential impacts of climate change on Hungary, its natural and socioeconomic consequences as well as the vulnerability of ecosystems and industries to climate

³⁷ Adopted by Government decree 1403/2017 (VI.28.).

change. Furthermore, it includes the National Decarbonisation Roadmap, which identifies the goals, priorities and action courses for the reduction of greenhouse gas emissions until 2050 as well as the National Adaptation Strategy, primarily designed to prevent risks and mitigate the damage associated with climate change and climate security. It also addresses activities focusing on education and awareness raising to promote the prevention of, preparation for and adaptation to climate change.

- The first Climate Change Action Plan was adopted by the government on January 8 2020 in combination with four climate and energy policy strategic documents. The accomplishment of the mid-term strategic objectives specified in the second National Climate Change Strategy is supported by four successive three-year Climate Change Action Plans. The main purpose of the Climate Change Action Plans is to translate the objectives of the second National Climate Change Strategy into actual actions.
- Directive 2009/128/EC of the European Parliament and of the Council establishing a framework for Community action to achieve the sustainable use of pesticides requires member states to develop National Action Plans to reduce risks and impacts of pesticides on human health and the environment. These National Action Plans are required to be reviewed every five years; the latest review took place in 2019: the main purpose of the revised National Plant Protection Action Plan (2019-2023) remains to promote the development and introduction of integrated pest management and safer alternative pest management technologies. Bees and other pollinating insects are also a priority in the strategy.

In addition to the adoption of a variety of strategic documents, a number of excellent initiatives were also launched to protect our natural resources.

- One of the most important methods of the prevention of food waste is public education and awareness raising. Since its launch in 2016, WasteLess, a food waste prevention programme has had 96 million outreaches, which means that each ordinary Hungarian consumer has received messages on food waste prevention nearly 10 times. In 2019, they published a Christmas recipe booklet to help use leftovers, in 2020, they organised a public food donation collection programme in cooperation with the Hungarian Food Bank Association and prepared a Stockpiling guide to promote conscious purchase of food supplies. They also collected best practices to reduce food waste generated in the food supply chain, which were published in 4 guides for the food processing, retail trade, catering industry and the civil sector.
- Under the Climate and Nature Conservation Action Plan, the government launched the project “Let’s Clean the Country” to eliminate illegal landfills and to prevent other illegal dumping. By eliminating illegal landfills detected on the areas managed by them or reported via the Waste Radar application, public forestry companies cleaned up over 2600 m³ of waste in 2020 in public forests.
- The Network of Green Kindergartens was designed to provide environmental education in preschool education and care in a planned and coordinated manner. Environmental awareness has been at the heart of preschool education and care for a long time. Creative workshops for preschool teachers were set up where exemplary pedagogical methodologies were developed together with the tools and resources to be used in preschool environmental education. The Network of Hungarian Eco-

schools has been working since March 2000 as part of an international network, under the OECD–CERI (Organisation for Economic Cooperation and Development, Centre for Educational Research and Innovation) ENSI (Environment and School Initiatives) project.

- Under Operational Programmes, a total of HUF 947.5 billion of funding was available for energy efficiency improvement, heating modernisation, energy retrofitting and power generation from renewable sources of energy, which also includes funds that need to be repaid (zero interest loans). These developments contribute to the reduction or replacement of power generation from fossil fuels.
- Another key project is the LIFE project coordinated by the Ministry of Internal Affairs (LIFE MICCAC³⁸), which is designed to implement small-scale water retention projects mainly through nature-based solutions and to strengthen the role of municipalities as integrators and coordinators in adaptation to climate change.

5.3.6 SUMMARY CONCLUSIONS

Positive trends	Risk factors
<p>The total per capita waste generation in Hungary is below the EU average, which is mainly explained by the structural differences of the various economies.</p> <p>The rate of selectively collected and recycled waste is growing.</p> <p>Despite a slowing pace of growth, artificial land cover in Hungary continues to be higher than the EU average.</p> <p>A key objective of the of circular economy is the conversion of municipal waste into resources in order to diminish the use of raw materials and minimise waste generation.</p> <p>Hungary has abundant supplies of water including in European comparison, which is due to the large amount of surface flow-in, the extensive surface water network resulting from the basin form as well as the extremely rich deep karstic layers and porous aquifers.</p> <p>Being one of Hungary's most important conditionally renewable resources, soil totals 22% of all national resources according to expert estimates.</p>	<p>Within Hungary, the highest rise (10.1% in 2015) in artificial land cover occurred in the Central Hungarian Region, followed by a sizeable backlog by the other planning statistical regions.</p> <p>Mining for most non-metallic raw minerals has been rising since 2016, which, for example in the case of sand and gravel, is in substantial excess of GDP growth causing negative decoupling.</p> <p>As regards water withdrawal for irrigation, key issues are unregistered, unauthorised boreholes and dug wells and the proposals to simplify agricultural irrigation adversely affecting sustainability.</p> <p>The coronavirus pandemic changed hygiene habits of the population leading to rising household water consumption.</p> <p>The impacts of the coronavirus pandemic on waste management is primarily reflected by the large quantities of healthcare waste generated.</p> <p>There are large quantities of food wasted in Hungary.</p>

³⁸ <https://vizmegtartomegoldasok.bm.hu>),

<p>Hungary's nitrogen balance remains above zero.</p> <p>Compared with the river basin management plan (VGT2), the overall status of surface waters is improving: there was a 4% growth in the rate of surface waters that are in at least "good" ecological status (although it is still low!), a 22% growth in "moderate" status, an 11% reduction in "weak" status and a 2% reduction in "bad" ecological status.</p> <p>Hungary contributes less than 1.6% of all GHG-emission in the EU. Based on per capita emissions, Hungary is ranked among the top 25% across the member states although it went down 4 places on the EU ranking of greenhouse gas emissions per capita between 2012 and 2019.</p> <p>Basically, there has been no change in the size of the Natura 200 sites in recent years and the territory designated in Hungary is slightly above the EU average.</p> <p>There was a significant rise in the number and size of Natura 2000 sites with available management plans: 80 new management plans were approved between 2017 and 2020.</p> <p>In order to prevent the spread of the African swine fever, plans to reduce the populations of wild boar were developed for the various regions of Hungary.</p>	<p>As Hungary is a downstream country, the quality of our water bodies is strongly influenced by cross-border impacts.</p> <p>In the future, the analysis of the state of surface waters will have to address several new forms of pollution not studied or believed to be less harmful before (e.g. pharmaceutical residues, microplastics).</p> <p>The territory and distribution of the various climate zones have vastly changed since the beginning of the 20th century. The most conspicuous is the expansion of warm-dry zones: until the 1990s, this most extreme category only included very small areas but nowadays it covers roughly 50% of Hungary's total territory.</p> <p>Compared to other EU countries, Hungary is extremely vulnerable to climate change.</p> <p>Trends in GHG emissions in Hungary over time are dual. While Hungary's GHG emissions have fallen by approximately 14% in the last two decades, the previous apparent decoupling ended after 2014. As emissions have been stable since 2017, a key issue for climate protection in Hungary is whether decoupling will resume in a lasting manner in the face of a growing economy.</p> <p>As there is a dynamically growing emission trend in non-ETS activities (mainly road transport and sources of buildings with individual heating systems based on natural gas), a trend shift is needed to be able to achieve the decarbonisation targets, which cannot be reached with the measures currently in place.</p> <p>As regards farmland bird biodiversity, the populations of 9 and 15 of 16 bird species were observed to decline in the breeding time in 2017 and 2019 respectively.</p>
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	Both the number of beekeeping companies and beehives lowered between 2017 and 2019.
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5.4 ECONOMIC RESOURCES³⁹

5.4.1 GENERAL OVERVIEW

The Hungarian economy has been steadily growing in the last decade reflected primarily by GDP growth and the improvement of employment rates. In the first three quarters of 2020, the COVID-19 pandemic caused a significant plunge in both of these indicators, explained by the lockdown measures and a decrease in global trade. Actions taken to manage the pandemic and to boost the economy put an enormous strain on the central budget, which led to a sharp increase in public debt to GDP ratio by the end of 2020.

In our previous monitoring reports, we noted that economic growth went hand in hand with the dynamic increase in investments. The COVID-19 pandemic, however, led to the disruption of the dynamic growth of investments, similarly to consumption. Prior to the COVID-19 outbreak, Hungary's rate of investments was the second highest across the EU. The rise in corporate investments was the result of, on the one hand, low interest rates and, on the other, labour shortages.

As the Public Finance Report of October 2020 of the Hungarian National Bank indicates, the measures adopted in response to the pandemic had devastating consequences on the performance of most of our export market partners, the recovery of the export market will likely be slower than expected. The COVID-19 pandemic caused a disruption in the dynamic growth of exports and imports as well.

From 2016, the rate of R&D spending was rising both relative to the GDP and in real terms and simultaneously, the number of people employed as researchers increased significantly (20% since 2012).

One of the key indicators of the Framework Strategy is the employment rate for people aged 20 to 64, which has been steadily rising in the last decade reaching the EU average by 2020. The value of 77.5% measured at the end of 2020 is higher than the target defined in the Europe 2020 Strategy. One of the main drivers of the increase of the employment in the last decade was the public employment programme, which facilitated the entry of groups of people in the labour market who had been unable to do so earlier. However, the importance of the public employment programme has notably decreased since the previous monitoring report: while the number of people employed under the programme was 113 000 in December 2018, it was only 87 900 in January 2021.

5.4.2 CHANGES IN KEY INDICATORS

Indicator	Latest value	Most recent value known at monitoring report for 2017- 2018	Assessment of the changes in NFFS's key indicators
Employment rate of people aged 20-64 (KSH)	75.7% (2020)	74.4% (2018)	While the COVID-19 pandemic led to a fall in the employment rate in the second quarter of 2020, it bounced back, and even exceeded, the pre-

³⁹ The chapter describing the state of the economic resources is based on a study from 2021 by H-SOFT.

			pandemic rate by the end of the fourth quarter.
Gross fixed capital formation rate as % of GDP	26.8% (2021)	25.5 (2018)	There was a slight rise in the rate of gross fixed capital formation after the publication of the previous monitoring report.
R&D spending as % of GDP	1.6% (2020)	1.35 (2017)	Based on the MNB's Inflation Report, R&D spending grew both regarding their share and in real terms.
Public debt as % of GDP	80.9% (March 2021)	70.2% (2018)	As one of the socio-economic impacts of the COVID-19 pandemic, public debt radically went up relative to the previous monitoring report.
Old age dependency ratio	31.2% (2021)	28.5% (2018)	As the population is gradually ageing, the old age dependency ratio steadily rose compared to the previous monitoring report.

5.4.3 OBJECTIVES AND CHALLENGES DEFINED IN NFFS

Economic resources are aimed to be increased not only preserved. In order to do so, the NFFS defines the following objectives:

Localisation, local economic relations and international cooperation

- 1. Balance of localisation and international cooperation: Creation of a business friendly environment – in combination with the termination of special benefits offered to foreign investors;
- 2. Strengthening of local economic relations (e.g. a town and adjacent areas);

3. Strengthening of the infrastructure of trust in the economy)

4. Development of business capital, reduction of burdens on businesses

5. Increase of innovation spending

6. Increase of employment

7. Sound fiscal management

8. Gradual restoration of generational balance

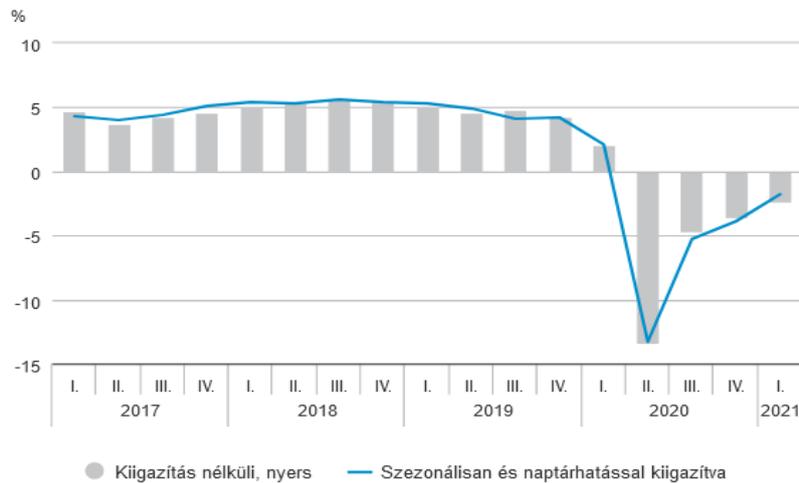
5.4.4 SOCIAL AND ECONOMIC DEVELOPMENTS AFFECTING THE OBJECTIVES

5.4.4.1 Economic growth

Between 2013 and 2019, the performance of the Hungarian economy rose by 3.7% per year on average, which is 1.8 percentage points in excess of the mean growth rate of the euro area. This dynamic growth trend was disrupted by the coronavirus pandemic.

Currently, the most important question is how the pandemic affected the performance of Hungary's economy.

46 Figure 9: Changes in GDP growth rates



Source: KSH

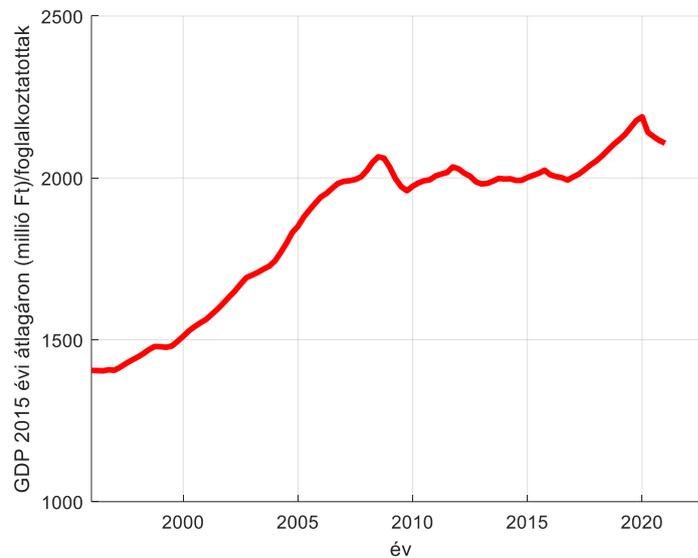
As clearly indicated by the data, the COVID-19 pandemic had the biggest impact on Hungary's economy in the second quarter of 2020, which means that the nearly total lockdown introduced in the first wave had serious economic consequences. A significant negative risk, i.e. a new recession following imminent recovery, is to be expected if the severity and length of the pandemic require the restrictions to be maintained or potentially to be tightened in Hungary or in our major foreign markets. This negative risk is mitigated by the population's vaccination rate. According to the forecast of the inflation report of June 2021 of the Hungarian National Bank, the convergence of the Hungarian economy to the euro area will continue in the years to come but its pace is expected to be slower.

Changes in employment seem to closely follow the fluctuations in GDP. As this is mostly true for the private sector, it is important to examine how the coronavirus pandemic changed employment and what further changes are anticipated. After learning the lessons of the first COVID-19 wave, companies in the private sector became much more adaptive for the second wave leading to a smaller decline in the employment rate.

Based on the study of the period prior to the COVID-19 pandemic, the productivity report of November 2020 of the Hungarian National Bank finds that the key driver of economic growth was the dynamic increase of employment between 2013 and 2016 while the same between 2017 and 2019 was the improvement of labour productivity. This shift from extensive to intensive growth mainly occurred in the case of small and medium-sized enterprises. It is particularly interesting because the structural problems caused by the mistakes in economic policy after 2002: the decline in investment activity, excessive indebtedness, rising unemployment and the global financial crisis of 2008/2009 led to a massive decrease in labour productivity at the end of the 2000s. It is noteworthy about the trends in Hungary's labour productivity that labour market reforms introduced from 2010 to simultaneously stimulate both the demand and supply led to a robust rise in the number

of the economically active and employed population. However, as the productivity of new employees is usually below the average, the rise in the rate of employment temporarily slowed down the improvement of productivity. As a result, the economic growth until 2016 was characterised by an extensive phase when the growth rate of fixed capital was not in excess of the growth rate of employment. Consequently, the dynamic rise in employment was accompanied by stagnating productivity. From 2017, as the rate of unemployment was lowering, economic growth became increasingly capital-intensive, that is fixed capital was rising faster than the quantity of labour used in production leading to an increase in labour productivity as well.

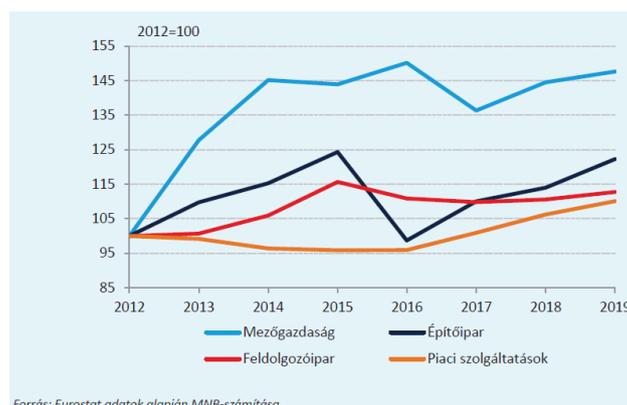
Figure 50: Changes in labour productivity



Source: KSH

Prior to the coronavirus pandemic, there were differences in how labour productivity changed in the various sectors. The reason for the strong fluctuations in the construction industry is that building companies thought that the decrease in EU funds in 2016 was only temporary and therefore decided not to go through with massive downsizing in their workforce. As these business anticipations later turned out to be correct, the labour productivity of the sector nearly returned to the peak value of 2015 by the end of 2019.

47Figure 1: Changes in labour productivity in the various industries



Source: KSH

Economic performance should be evaluated based on not only changes in GDP and labour productivity but also the economy's ability to create added value. This indicates the amount of added value per a unit of output. The ability of Hungary's economy to create added value began rising from 2011, surpassing regional economies by 2018 and starting to narrow the gap with the EU average. One problem for these convergence efforts is that the working capital invested in Central Europe predominantly outsourced production while keeping activities representing higher added value such as research and development or marketing in the home country.

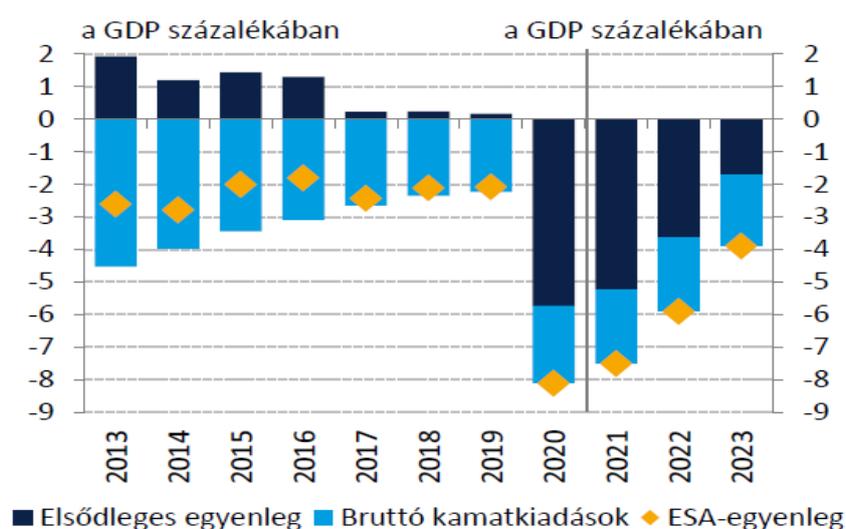
5.4.4.2 Fiscal policy

Stringent fiscal policy is crucial for sustainable development. Until 2019, Hungary had one of the highest rates of GDP growth across the EU. However, the COVID-19 pandemic had a devastating effect on economic growth across the world and increased budget deficits as percentage of the GDP.

In harmony with domestic and international principles, the analysis of the changes in public debt focuses on trends in public debt as percentage of GDP.

Changes in budget deficit are illustrated in the figure below. The most important indicator for sustainable development of the three is the change in accrual-based deficit, i.e. the change in the ESA balance. The figure clearly shows the drastic rise the coronavirus pandemic caused in the public deficit. However, this increase was necessary because of the costs of the actions against the coronavirus pandemic in combination with the expenses of the measures taken to promote economic recovery. The essential need for these costs is reflected by the fact that the European Union's general derogation clause partially suspending fiscal rules remains effective between 2020 and 2022 and thus the target of 3% specified in the Stability Pact must not be achieved until the end of 2023.

48Figure 2: Changes in budget deficit



Source: Hungarian Central Bank

The act of 2020 on the central budget adopted in July 2019 defined the ESA deficit, i.e. the budget deficit as 1% of the GDP with fiscal reserves equalling 1% of the GDP. This lowest ever deficit target and high reserves provided a large room for manoeuvre to be able to respond to the health and economic impacts of the coronavirus pandemic. While measures having a direct impact on the budget may account for 7.3% of the GDP and the loss in GDP markedly diminished tax revenues relative to the planned amount, which may be lower by a total of HUF 1160 to 1300 billion (2.5 to 2.8% of the GDP) compared to the budget appropriation.

The analysis of the period prior to the coronavirus pandemic must consider that the rate of revenues from taxes and contributions relative to the GDP fell in 2019 as well similarly to previous years. Tax centralisation went down, at a pace slower than in the previous years, by roughly 0.5 percentage point to 37% of the gross domestic product, which is positive as it helps prevent corruption.

The main purpose of the tax amendments introduced in 2020 is to mitigate the economic impacts of the coronavirus pandemic. These typically temporary and specific changes in rules and tax cuts were meant to reduce primarily the taxes and contributions payable by businesses and employees. Measures to reduce the tax burdens of businesses and to help stabilise their liquidity included the postponement of the submission date of tax returns for corporate tax and the local business tax, the specific exemption from payment of the fixed-rate tax of small taxpayers and other minor tax categories and the shortened period for VAT refunds. Labour taxes and contributions were reduced by providing a specific partial exemption from the payment of contributions to industries hit by the pandemic. As a coverage for the actions against the pandemic, sector-specific extra taxes were introduced in the financial and the retail trade sectors. Further measures adopted or announced prior to the outbreak of the pandemic affecting 2020 were the reduction of VAT payable by accommodation service providers, a further rise in the excise tax of tobacco according to the next stage of the EU harmonisation and the increase of e-tolls. As of 2020, mothers with four or more children are fully exempted from paying personal income tax.

Based on the all-sector financial accounts of the Hungarian National Bank, the gross public debt as percentage of GDP was 70.3% at the end of the first six months of 2020, which is a

marked increase of 4.9% relative to the rate of 65.4% reported at the end of 2019. Compared to the same period in the previous year, the rate of debt rose by 3.2 percentage points. In addition to net debt issuance, revaluations and the slower pace of economic growth also contributed to the higher rate of debt in the first six months of the year. The rate of the central government debt denominated in foreign currency rose from 17.3% at the end of 2019 to 19% by the end of the second quarter of 2020 due to the issue of government bonds in foreign currency. The share of foreign debt relative to total public debt went down from 33.9% at the end of last year to 33.7% by the first six months of this year.

The conclusion based on the above is that the coronavirus pandemic hit Hungary when its public finances were relatively good: in a situation when its indebtedness was not particularly high. This relatively positive situation offered room for manoeuvre for fiscal policy to fight the negative impacts of the pandemic. For example, this will facilitate the presumably smooth financing of the high deficits shown in Figure 31.

Based on preliminary data, public debt as percentage of GDP was 80.9% on March 31 2021, which is an extremely high year-on-year rise totalling 16 percentage points. (The growth forecast of the Public Finance Report of October 2020 of the Hungarian National Bank was below 10 percentage points.) This unexpected rise is partly the result of the high costs of actions against the coronavirus pandemic and the decline of GDP shown in Figure 1. Changes in public debt as percentage of GDP are presented in Figure 33. The forecast in the figure is based on the presumption that exchange rates in effect at the end of 2020 remain unchanged.

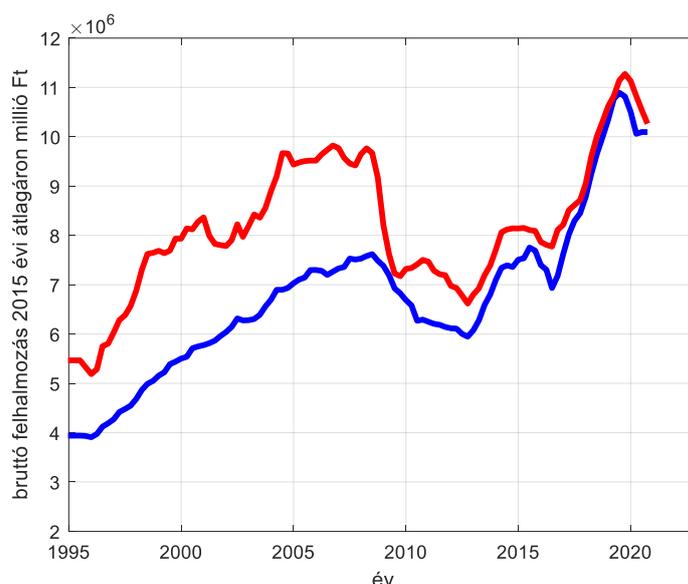
As presented, the coronavirus pandemic led to a massive rise in public debt as percentage of GDP, which is predicted to lower at a slow pace. Meanwhile, no robust growth in the foreign currency rate of public debt is expected although its downward trend stopped in 2019. The moderate increase is explained by the issue of foreign-currency bonds in 2020.

5.4.4.3 Investments

The coronavirus pandemic led to the disruption of the dynamic growth of investments, similarly to consumption. Meanwhile, three additional observations can be made here:

- The decline is at least the same magnitude as it was in 2016 when EU funds were temporarily reduced.
- In the last decade, fixed capital formation gradually reached the level of gross capital formation. This means that the share of stock purchases decreased, i.e. the production sector works using smaller amounts of stocks. This development is truly a step forward in the direction of sustainable development even if we take into account that a low-interest environment goes hand in hand with low stockpiling costs.
- In the meantime, developments suggest that minimal stocks of raw materials and intermediate goods challenge the sustainability of production.

49Figure 3: Gross capital formation in total (red) and gross fixed capital formation (blue)



Source: KSH

What is also particularly noticeable in this figure is the extremely dynamic growth of capital formation in 2018 and 2019. This was possible because the Hungarian economy spent a significant share of the GDP on investments. In this period, Hungary's rate of investments was the second highest across the EU. This high rate of investment was simultaneously true for businesses, the government and households. The rise in corporate investments was the result of, on the one hand, low interest rates and, on the other, labour shortages requiring the replacement of human labour by machinery and equipment. This was supported by the Funding for Growth Scheme and the investments of numerous South Korean and Chinese companies in Hungary. Investment activity in the household sector was stimulated by the rise in real wages, the family housing allowance scheme (CSOK) and the related government measures. As a result, although the volume of investments went down due to the coronavirus pandemic, Hungary's rate of investment is still at the top in the European Union.

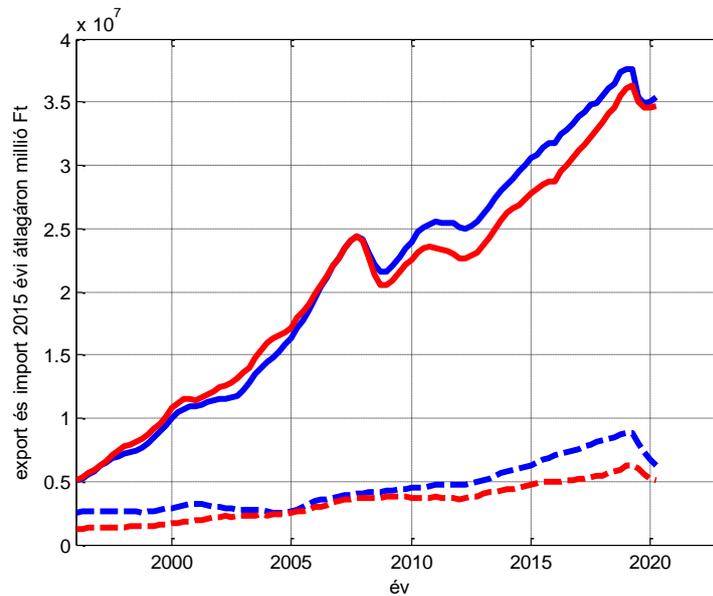
The most important reference document regarding the period following the coronavirus pandemic outbreak is the Public Finance Report of October 2020 of the Hungarian National Bank. Based on this, government investments as a result of the measures to protect the economy were at a high level despite the pandemic, which means that counter-cyclical fiscal policy was pursued.

5.4.4.4 Foreign trade

As the Public Finance Report of October 2020 of the Hungarian National Bank indicates, the measures adopted in response to the pandemic had devastating consequences on the performance of most of our export market partners, the recovery of the export market will likely be slower than expected. The COVID-19 pandemic caused a disruption in the dynamic growth of exports and imports as well. However, the figure below is based on data also from the first quarter of 2021 but in order to exclude seasonal fluctuations, quarterly data were annualised. As the figure indicates the reduction in exports and imports stopped and even a slight rise has been observed lately.

The dynamic growth of the export performance from the second half of 2020 was the result of the post-pandemic recovery of foreign markets. Taking into account that a robust amount of export capacity was built in Hungary as the result of the investments of the previous years, domestic production is likely to be able to respond to the rising demand caused by the recovery by further growth, which means that expanding exports will remain a key driver of economic growth. Meanwhile, growing exports in combination with rising consumption and investments led to a higher demand for import energy, raw materials, intermediate goods, capital goods and consumer goods, which in turn disrupted the downward trend of imports.

Figure 54: Changes in exports (blue) and imports (red) including services indicated with a dashed line



Source: KSH

It is also noticeable that the shift in the foreign trade of services has not yet taken place. The reason for this is the prolonged decline of international tourism. Considering, however, the dynamic rise in the vaccination rate in European countries, tourism prospects are improving and thus the growth of the export of services may also begin in the second half of 2021. Based on all of this, the Inflation Report of June 2021 of the Hungarian National Bank forecasts a growth in excess of 10%.

It may seem surprising at first glance that the downward trend of net exports, that is the difference between exports and imports, that started in 2016 was disrupted by the coronavirus pandemic and the foreign trade balance began improving. Another peculiarity about this shift is that the response to the coronavirus pandemic also led to a sharp rise in import demand. On the other hand, the rising export of goods accompanying the renewed growth of shrinking consumption and industrial production further improved the foreign trade balance. A further reason for this shift worth mentioning is the impact of exchange rate resulting from the low exchange rate of the forint. The explanation for this is that the exchange rate of the forint is able to respond to the foreign trade balance and thus prevent its fatal decline. No survey on the degree of how this exchange rate impact contributed to the shift illustrated in Figure 28 is available but if this impact is significant, it strongly questions the necessity of the introduction of the euro in Hungary.

5.4.4.5 R&D&I

Based on the Productivity Report of November 2020 of the Hungarian National Bank, R&D spending, both relative to the GDP and in real terms, has been rising since 2004 and especially since 2016, and simultaneously, the number of people employed in research positions has gone up by at least 40% since 2008 and by at least 20% since 2012. However, the growth in resource use took place without a notable rise in government subsidies. In this regard, two factors need to be mentioned. On the one hand, the transition between two EU financing cycles caused a temporary lack in funds and on the other, the large reduction of the corporate tax decreased the level of available grants as well. The impact of the temporary interruption of government subsidies allocated to businesses occurred in 2016. In the meantime, the setback in 2016 failed not only to have a negative impact on the trend, but on the contrary, research & development & innovation inputs rose at a faster pace.

The rate of employees working in knowledge-intensive positions decreased when the Hungarian economy underwent a period of extensive growth but has been rising since 2017. The main reason for the decrease before 2017 is the composition effect. The government's labour market reform launched in 2010 strongly focused on the employment of people previously excluded from the labour market and this group has a low rate of employees qualified to work in knowledge-intensive positions (first two main groups in the standard classification of occupations [FEOR]). The rate of employees in knowledge-intensive positions was rising in this period as well but the total rate of employment was growing even faster and thus the share of the former group went down.

The analysis of the key performance indicators of R&D activity shows that the rate of the citations of scientific publications from Hungarian scientists, researchers has been effectively improving since 2015 while the number of patents is steadily decreasing.

One of the key performance indicators of innovation, the number of innovator businesses shows a downward trend. While one-third of the businesses in Hungary innovated in 2012, this rate based on the most recent survey (2016-2018) went down to 28.7%, which corresponds with the regional average but is below the EU average, which reflects that 50% of the businesses are innovators. Between 2015 and 2017, the number of high-growth businesses, the so-called gazelle companies was in general changing positively. It is important as this indicator is the best demonstration of the number of innovator companies through business data while the results are also strongly influenced by economic upswing as well. The number of gazelle companies hit bottom low during the global financial crisis but began sharply rising after that. Following the outstanding year of 2016, a growth trend returned again in 2017 in terms of the quantity of gazelle companies, which was roughly 2 to 2.5 times higher in 2017 compared with 2010. With nearly 600 gazelle companies, Hungary outperforms the Czech Republic (500 gazelle companies). Interestingly, the number of gazelle companies does not necessarily correlate with the size of an economy as reflected by the example of Lithuania where over 500 gazelle companies have been recorded every year since 2014 based on sales revenues, roughly equalling the number for the Czech Republic whose territory is four times bigger.

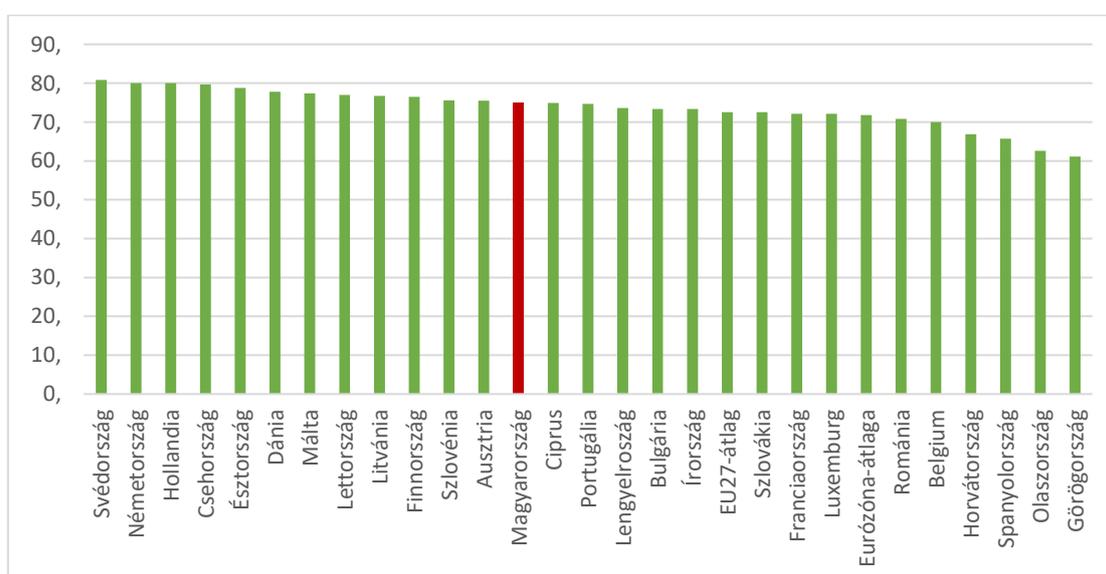
The cited report concludes that the growth in the quantity of human and financial resources used in research and development activities is not reflected in the results achieved; innovation efficiency is declining in Hungary.

5.4.4.6 Labour market

The employment rate of the population aged 20 to 64 rose steadily in Hungary: by over 15% to 77.5% relative to 2010. This rate is already in excess of the target of 75% agreed to in the EU2020 strategy.

A variety of factors played a role in the rise of the employment rate in the last decade, including the public employment programme, which integrated a segment of the inactive population into the labour market, which had been on unemployment benefit and worked on a casual basis for years. However, the importance of the public employment programme has notably decreased since the previous monitoring report: while the number of people employed under the programme was 113 000 in December 2018, it was only 87 900 in January 2021. As people who could find a job in the primary labour market and exit the public employment programme mostly include more skilled people or people living in places with better transport connections or with more job opportunities, this programme remains the only labour market option for many people in the most disadvantaged microregions.

Figure 50: Employment rate of the population aged 20 to 64, 2020



Source: Eurostat

As the data above indicate, the employment rate of the population aged 20-64 was above the EU average in Hungary even in the year seriously affected by the COVID-19 pandemic. The COVID-19 pandemic influenced the structure of work as well: as demonstrated in the table below, the rate of teleworking changed in harmony with the various waves of the pandemic.

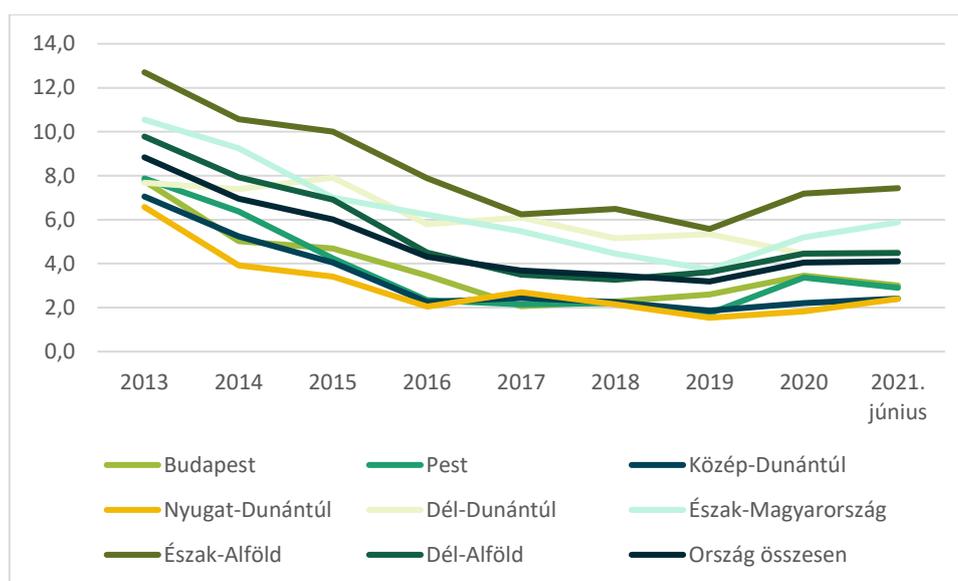
Table 4: Changes in the number of people teleworking between 2019 and 2021

Year	Period	Regular teleworking in the last 4 weeks, persons	Occasional teleworking in the last 4 weeks, persons	No teleworking in the last 4 weeks, persons	Total, persons
2019	January-March	28.642	64.802	4.403.608	4.497.051
	February-April	30.649	54.548	4406444	4.491.641
	March-May	37885	51 656	4 410 815	4 500 356
	April-June	36 795	47 925	4 426 139	4 510 859
	May-July	42313	48 843	4,426,750	4 517 906
	June-August	38 574	50 089	4 428 828	4 517 492
	July-September	40 335	45 601	4 435 054	4 520 990
	August-October	38 577	49 603	4 432 273	4 520 453
	September-November	39 758	48 159	4 429 125	4 517 042
	October-December	38 185	59 168	4 422 228	4 519 581
	November-January 2020	40 572	67 751	4 389 362	4 497 685
	December-February 2020	42 846	67 724	4 379 031	4 489 600
2020	January-March	83 596	107 098	4 275 062	4 465 756
	February-April	188 258	202 270	4 045 401	4 435 929
	March-May	273992	334,451	3,794,619	4,403,062
	April-June	292155	403,646	3,712,423	4,408,224
	May-July	199176	365,413	3,874,345	4,438,933
	June-August	120288	274,125	4,082,859	4,477,272
	July-September	83786	197,047	4,204,705	4,485,538
	August-October	90443	191,070	4,200,931	4,482,445
	September-November	117299	203,932	4,155,218	4,476,449
	October-December	144154	228,788	4,109,377	4,482,318
	November-January 2021	172178	258,690	4,035,486	4,466,355
	December-February 2021	186585	282,744	3,966,400	4,435,729
2021	January-March	229154	339,370	3,859,016	4,427,541
	February-April	259646	334,804	3,838,492	4,432,943
	March-May	254385	324,110	3,877,001	4,455,496
	April-June	195060	279,686	4,005,487	4,480,233
	May-July	135880	255,878	4,112,432	4,504,190

Source: KSH

As much as it was possible, employers tried to maintain the levels of production by having their employees work from their home. As clearly shown above, on the one hand, changes in the data are in harmony with the waves of the COVID-19 pandemic in Hungary and on the other, the number of people working in home office is manifold even in the summers between two waves relative to data from before the COVID-19 pandemic.

Figure 51: Changes in unemployment by region



Source: KSH

The COVID-19 pandemic slightly raised the unemployment rate, standing at 4.1% in June 2021, which is much more positive than the rate of 8.8% in 2013. In the meantime, the number of people losing their jobs in association with the coronavirus pandemic may only be estimated as the data do not include people who are no longer eligible for the unemployment benefit but have not yet found a job.

Regional data clearly demonstrate that the pandemic had a more adverse effect, at least in terms of employment, on underprivileged counties. The pandemic caused the fastest growth in the unemployment rate in Northern Hungary.

The review of unemployment across the EU shows that the EU27 average was 7.1% in 2020, which is 3% higher than the Hungarian rate. Regionally, only Austria had a higher unemployment rate (5.4%) than Hungary while the 2 other V4 countries were in an even more favourable position than Hungary.

For the purpose of sustainability, it is very important to examine the employment rate of young people (aged 15–24 years) as early unemployment may pose a strong risk for stable employment. The youth unemployment rate was 12.8% in Hungary in 2020, which is a rise of 2.6% relative to 2018. The employment rate of this age group was 27.2% in 2020, which is a decrease of nearly 2% relative to 2018. These data show that the labour market situation of young people has declined since the previous monitoring report was published.

The gross average wage of full-time employees was HUF 263 000 in 2016, which went up to over HUF 400 000 (HUF 403 616) by 2020. In addition to government measures such as the increase of the minimum wage and salary rise in multiple areas of the public sector, the competition for human resource resulting from labour shortages also significantly helped drive up wages.

Wages reflect strong regional variations: the gross average wage is only higher than the national average in Budapest and Győr-Moson-Sopron county (it was in excess of HUF 500 000 per month in Budapest in 2020) while it is the lowest in Northern Hungary, namely in Szabolcs-Szatmár-Bereg county (below HUF 280 000).

5.4.5 GOVERNMENT MEASURES

The government adopted the following key measures in the field of economic resources in the last two years:

- Businesses required to pay corporate tax were supported by a number of actions designed to stimulate investments in 2019 and 2020. As of January 1 2019, the limit of the development reserve was raised from HUF 500 million to HUF 10 billion and the limit of 50% for pre-tax earnings was also cancelled in 2020, which businesses were allowed to optionally use for their tax year of 2019 as well. This means that businesses in the tax years 2019 and 2020 were allowed to make reserves for their future investments up to the total amount of their positive pre-tax earnings, up to HUF 10 billion as a tax base benefit.
- As of July 24 2019, small and medium-sized enterprises are offered more favourable conditions to use the development tax benefit after their investments. Instead of the former limit of HUF 500 million, the new threshold for eligibility for the development tax benefit is HUF 300 million for small enterprises and HUF 400 million for medium-sized enterprises for investments in net present value.
- As of January 1 2020, the rate of the small business tax went down from 13% to 12%. As of the tax year of 2019, the entry and cancellation limits for the small business tax were raised, which means that a wider range of businesses have access to this more favourable form of taxation with simplified administration.
- Actions to provide housing for workers and to improve their willingness for mobility play an important role in the response to structural labour shortage and in reaching a territorial balance between labour market demand and supply. This is the purpose of the central labour market programme, called “Access to Workers’ Accommodation”, which invites municipalities, municipal associations and businesses to apply for funds to build or refurbish workers’ accommodations with a capacity of at least 80 persons.
- While also having a different structure than the previous programme strategies, the most important characteristic of the National Research, Development and Innovation Fund Programme Strategy of 2020 is that it responds to the new challenges affecting the economy and the society, particularly the R&D needs associated with innovation and the coronavirus pandemic. To this end, new calls for applications have been announced in addition to the “traditional” ones:
 - SME START INNOVATION (2020-1.1.1-SME START)
 - Acceleration lane (2020-1.1.5-ACCELERATIONLANE)
 - Startup Factory (2020-1.1.4-STARTUP)
 - Investment in the future (2020-1.1.5-FUTURE)
 - COVID Fund (2020-2.1.1-ED).
- Since the announcement of the state of emergency due to the coronavirus pandemic on March 11 2020, the government has mobilised billions of forints to stimulate the economy by adopting a variety of measures. One such measure was the government agreeing to finance 40% of the wages of employees working in research, development and innovation positions. The first round of the programme approved a total of 1123 applications offering funds in relation to 20 661 people. The funds approved totalled HUF 16.42 billion. The programme was reopened on January 4 2021 receiving 1282 applications until May 5. The funds applied for were HUF 13 billion in total in relation to 17 125 people.

5.4.6 SUMMARY CONCLUSIONS

Positive trends	Risk factors
<p>The public debt as percentage of GDP was further lowering prior to the pandemic, however, it rose by the end of 2020 as a result of the measures in response to the pandemic.</p> <p>Between 2013 and 2019, the performance of the Hungarian economy rose by 3.8% per year on average, which is 2 percentage points in excess of the mean growth rate of the euro area. This dynamic growth trend was disrupted by the coronavirus pandemic.</p> <p>Labour productivity has been improving since the adoption of the previous monitoring report.</p> <p>While employment experienced dynamic growth prior to the pandemic, the rate of employment was again in excess of the pre-pandemic levels by the end of 2020.</p> <p>Both the average wage and the minimum wage rose at a rate higher than the rate of inflation, which may help reduce emigration.</p> <p>Tax centralisation went down, at a pace slower than in the previous years, by roughly 0.5 percentage point to 37% of the gross domestic product, which is positive as it helps prevent corruption.</p> <p>Following the first two waves of the pandemic, the economy bounced back on a growth trajectory relatively quickly.</p>	<p>The COVID-19 pandemic led to a sharp rise both in public debt and in the budget deficit.</p> <p>Economic growth shows massive regional variations.</p> <p>While labour productivity has risen since the previous report, it remains below the EU average, which challenges the sustainability of the rate of economic growth.</p> <p>The old age dependency ratio has further risen putting more pressure on the working-age population.</p> <p>As regards the average wage, there are large variations within the country, which are relatively in line with the territorial distribution of economic growth.</p> <p>While the departure of the labour force was still at high levels prior to the pandemic, the degree of emigration was mitigated by the travel restrictions introduced in response to the pandemic.</p> <p>There has been no substantial change in R&D&I spending.</p>

5.5 THE IMPACT OF THE COVID-19 PANDEMIC ON SUSTAINABILITY

The monitoring report covering the period of 2019 and 2020 must definitely address the COVID-19 pandemic and its impacts on the society, economy, demographics and natural resources.

While the in-depth analyses already discussed the impacts of the pandemic, this chapter is a summary of our key observations. However, it is important to note that as the most recent data for several of the areas are from 2019, the analysis may sometimes seem incomplete.

The chapter on the impacts of the COVID-19 pandemic follows the structure of the in-depth analyses and presents the most important impacts relying on the same topics and indicators. Social resources will not be specifically addressed in this chapter as the indicators linked by the Framework Strategy to social resources are not particularly relevant in terms of the COVID-19 pandemic. Consequently, human resources, natural resources and economic resources will be discussed in detail herein.

5.5.1 HUMAN RESOURCES

In the area of human resources, the COVID-19 pandemic had negative impacts mainly on demographics while it also affected education.

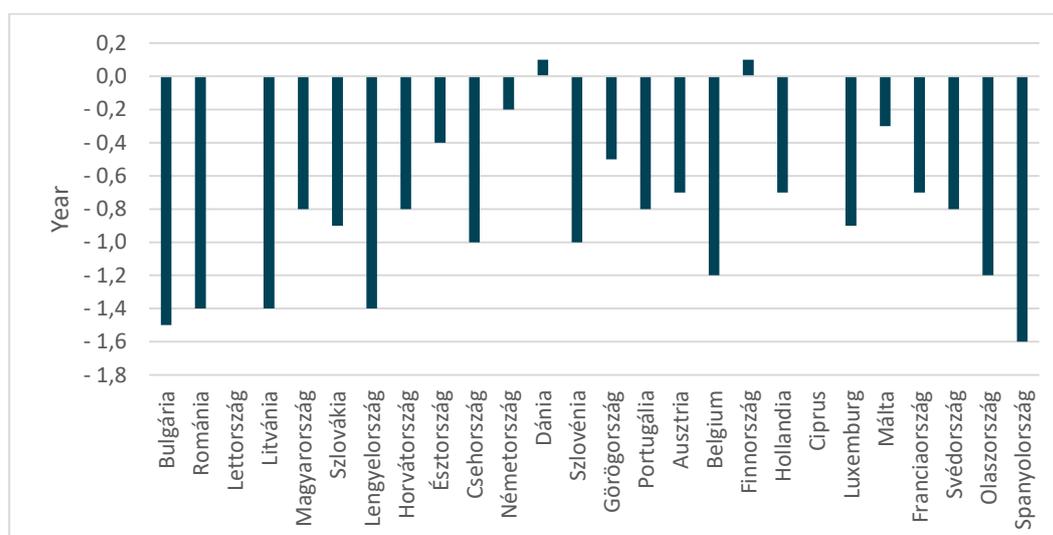
As regards childbirths, the numbers in 2020 were clearly higher than in the previous years but this was also affected by the pandemic as lower numbers were recorded in the last months of 2020. While the drop in childbirths is only presumed to have had an adverse impact on fertility rates, it is important to note that the uncertainty surrounding the pandemic and the changes in health care operations were likely to cause a delay in the birth of children planned for the end of 2020.

Surprisingly, the coronavirus pandemic did not affect the number of marriages as a record-breaking number of over 67 000 marriages took place in 2020. This rise is partly the result of the requirement that only married couples may be eligible for the majority of the family benefits. The higher number of marriages also led to a steady rise in the number of children born in wedlock.

Data from 2020 for life expectancy show that life expectancy at birth went down by 0.8 year from 2010 to 2020 due to the COVID-19 pandemic while a further decline of 1 to 1.5 years may be expected for 2021. The Demographics Newsletter of March 2021⁴⁰ of the Demographic Research Institute of the Central Statistical Office (KSH NKI) contained a lengthy article about excess mortality caused by the COVID-19 pandemic. The methodology focused on the comparison of mortality rates from 2020 with mortality data from previous years. However, it is important that the data of the KSH NKI exclude all potential positive and negative impacts on mortality data and exclusively concentrate on the actual effect of the coronavirus pandemic. Indirect impacts range from the overload of the health care system, mental problems caused by the crisis through the restrictions of surgeries deemed as allowing postponement and the milder influenza epidemic due to people wearing masks to the lower number of traffic accidents resulting from the lockdowns.

⁴⁰ <https://demografia.hu/kiadvanyokonline/index.php/korfa/article/view/2812/2700>

Figure 52: Life expectancy loss in 2020 relative to 2019 as the result of the COVID-19 pandemic in European Union countries



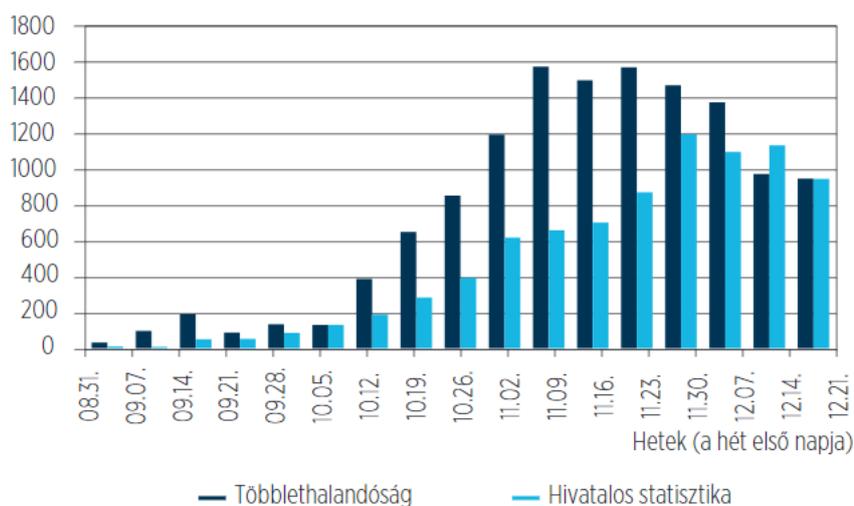
Source: Eurostat

The higher rate of mortality caused by the COVID-19 pandemic reduced life expectancy by nearly one and a half years in Bulgaria, Romania, Lithuania, Poland, Italy and Belgium in 2020. Countries suffering a loss of close to one year include Hungary, Slovakia, Croatia, the Czech Republic, Portugal, Austria and Sweden. In the meantime, Denmark, Finland and Cyprus, countries especially successfully addressing the pandemic (and Norway, which is not included among EU member states) recorded a slight rise in life expectancy, despite the pandemic, and the loss suffered by Germany was also minimal.

Excess mortality in Hungary for 2020, the year under review, was estimated at 13 700 persons by KSH NKI in March 2021. In the full period under review, that is between week 12 and week 52, the mean monthly excess mortality rate was 14%, which corresponds with the EU average. This indicator was above 20% in six countries (Spain, Poland, Slovenia, Belgium, Czech Republic and Bulgaria) and below 6% in 4 member states (Denmark, Finland, Latvia and Estonia). Based on government data, over 30 000 Hungarian citizens died due to the pandemic by September 2021. The estimate for excess mortality shows that 86% of the deceased were older than 65 and only 4% were younger than 49.

The Ombudsman for Future Generations reminded that there is a link between air pollution and deaths caused by the COVID-19. There are already multiple domestic and international scientific studies confirming a tight link between the COVID-19 and air quality. These studies conclude that the rate of people at risk of death is higher for persons exposed to air pollution for extended periods than for persons living in environments with clean air.

Figure 53: Changes in excess mortality in the last four months of 2020



Source: KSH

As regards migration, the number of foreign migrants arriving in Hungary went significantly up (up until 2020) in the last few years. In 2017, their number was in excess of 36 000 (not experienced since 1990) and nearly reached 50 000 in 2018 while 55 297 foreign nationals arrived in Hungary in 2019 while the “adjusted” number of immigrants was over 64 000 in 2019. This growth trend was interrupted by the coronavirus pandemic; the rate of immigration substantially declined in 2020: there were 43 785 immigrant foreign nationals registered and the “adjusted” number of migrants was 51 000. Simultaneously, lockdowns and travel restrictions introduced in response to the COVID-19 pandemic reduced the degree of emigration as well.

The coronavirus pandemic that started at the end of 2019 brought about changes in everyday life and education that had not been experienced in times of peace in the developed world, that is for two decades. In just a matter of a few months, the virus spread so rapidly that radical cautionary measures had to be taken as early as March 2020 including the shutting down of schools and switching to distance learning. The COVID-19 pandemic had an enormous impact on the effectiveness of education and sustainable development as well.

The sustainability activities defined by the European Commission for 2020 were shaped with view to the pandemic. Due to the slowdown in growth, a key goal is the recovery of the economies but the EC report stresses that it must be carried out taking into account sustainability criteria (European Commission, 2020).

Nearly as soon as education system switched to online teaching and schools were shut down, scientists began studying this issue and hundreds of thousands of articles have been published about the analyses and scientific results in the last one and a half years. This section focuses on three key topics of these publications: the direct impacts of school closures, the estimation of long term effects and the mitigation of negative impacts.

After being closed at the same time in most countries across Europe, schools started to switch to online teaching. This situation came unexpected for all education systems, however, there were large variations in terms of what the pedagogical culture of each education system is like, how competent teachers are as regards general teaching methods,

what resources may be mobilised, what infocommunication tools and digital learning materials are available. These factors influenced how fast and flexible the shift was, how successful online teaching was, or looking at the problem from the other side, what disadvantage students suffered during their time away from school.

The length of school closures varied from country to country. According to a study prepared for the OECD (Hanushek & Woessmann, 2020), it lasted between 15 and 58 days in OECD countries. In Europe, Lithuania and Belgium were two of the countries with shorter school closures while Italy and Estonia shut their schools for the longest time. The length of the closure depended in part on how fast the virus was spreading and in part on how prepared the education system was for online teaching. For example, in the two countries with the longest school closures, Estonia and Korea, the advanced level of the information technology infrastructure was one factor that played a central role in the decision on a prolonged period of out-of-school teaching. Because digital learning worked efficiently, a fast return to schools was not urgent.

The differences in every aspect of the digital transition occurred not only from country to country but also from region to region within a country. The various social groups did not have equal access to modern devices and other aspects of communication such as broadband internet (Nahalka, 2021). Meanwhile, analyses based on empirical studies showed that a disadvantaged situation in itself does not prevent efficient support as it can be compensated through properly developed, specific programmes and sufficient effort and thus differences can be set off (Szilveszter, Kassai, Takács & Futó, 2021). The success of home learning cannot be explained every time by the familiar characteristics of a disadvantaged situation as it is also influenced by relations within the family (Engler, Markos & Dusa, 2021).

The effectiveness of the education was affected by the digital competence of the parents, where, as it was shown before, Hungary's performance is rather poor. The starting point for most related studies is that the global pandemic exacerbates differences both between countries and between the various social groups within a country (Engzell, Frey & Verhagen, 2020). In international comparison, the availability of information technology in schools in Hungary is average. According to domestic surveys, the quantity of ICT devices in schools is insufficient and the majority of the available ones are outdated (Polónyi, 2021).

School closures deprived students of their normal social interactions and the online work had a variety of negative mental effects not only on students but also on their parents and teachers. The reversal in the academic progress of students is not only the result of the technical difficulties of communication but also the anxiety and other emotional impacts arising from the sudden changes experienced (Duckworth et al. 2021). To study the mental problems caused by this new situation, a variety of indicators and questionnaires were developed. These include, for example, the questionnaire to measure the anxiety caused by the coronavirus and the pandemic (Coronavirus Anxiety Scale, Lee, 2020).

Numerous studies investigated the impacts of increased online communication on mental health. The special exhaustion caused by extended periods of online work has been named *Zoom fatigue* after one of the most popular online platforms. The questionnaire to measure zoom fatigue (*Zoom Exhaustion & Fatigue Scale*) is available online as well. The studies have identified the factors leading to high levels of fatigue through extended periods of online presence. These range from the overuse of the eyes through mirror anxiety to the state of being physically trapped (Fauville, Luo, Queiroz, Bailenson & Hancock, 2021a,

2021b). The results also confirm that digital education represents a special stress for teachers as well and increases the risk of teacher burnout (Pressley, 2021).

While the pandemic and, in particular, the out-of-school period are likely to have long term effects, their degree and length are currently unpredictable therefore scientists are working out various estimates. As it seems highly probable that this learning loss will have consequences affecting even economic results, economists too started studying the problem (Hanushek & Woessmann, 2020).

This time spent away from school has the most in common with summer breaks and it is a well-known phenomenon that this period affects students with various social backgrounds differently. Summer learning loss or summer setback is one of the most widely studied phenomena where the majority of the analyses focused on its impacts on the development of cultural core skills, reading comprehension and computation skills (Cooper, Nye, Charlton, Lindsay & Greathouse, 1996). Many studies concurrently concluded that the setback may be significant. Its degree may be equal to the progress made by learning for the same period as the time spent away from school and on average may be higher in mathematics than in reading comprehension. Furthermore, numerous studies found proof that the setback is more significant among students with lower socioeconomic status. The reason for this is that while students with higher socioeconomic status have access to activities that promote their development, disadvantaged students stand a lesser chance to do so.

By using data from former out-of-school periods, different model calculations provide estimates about the potential long term effects of the school closures due to the COVID-19 pandemic. Subject to the data included in the model and the input criteria, different values are presented for learning loss. According to one of the most pessimistic estimates, if the learning setback fails to be systematically addressed, the long term loss may correspond with learning of up to a full academic year (Kaffenberger, 2021). The reason for this fairly strong negative effect is that the lost knowledge and the delay in the development of skills have a lasting adverse impact on successful learning. According to estimates, if the problem is properly treated and interventions are made for development, the loss can be halved.

Scientists studying social differences reminded early on in association with the coronavirus pandemic that school closures will further deepen the gap between the academic achievement of students with various socioeconomic backgrounds (Sait & Ayse, 2020). The degree of the growth of differences may be estimated using some key factors such as financial status and access to information technology and private teaching.

Using national data, American scientists concluded that where the standard deviation in the achievement gap was 1 prior to the pandemic, it will go up to 1.5 as the result of the school closures (Bailey, Duncan, Murnane & Au Yeung, 2021). Similarly, American researchers showed that the digital divide in terms of access to technology and equipment leads to increased differences in academic achievement during the pandemic (Lai & Widmar, 2021). Having studied reading skills, Danish scientists found that school closures augmented differences in academic achievement by socioeconomic status (Reimer, Smith, Andersen & Sortkær, 2021). The analysis of a large database by Atteberry and McEachin (2021) also reports a significant setback. They found that some students lose nearly all their school year progress during the summer break.

To assess the impacts of the school closures due to the COVID-19 pandemic, Dutch scientists conducted the analysis with one of the largest statistical samples (Engzell, Frey & Verhagen, 2021). They analysed data from academic progress tests taken by nearly 350 000

pupils aged 8-11 years between 2017 and 2020. Schools were closed for 8 weeks and students participated in online teaching. They compared data from the year affected by school closure with the results of previous normal school years. They found that that the loss, the lack of knowledge relative to the previous years roughly corresponds with the learning of one-fifth year. This approximately equals the time when students did not go to school. One of their other findings was that online teaching could increase the differences in academic achievement between students with various socioeconomic backgrounds by up to 50 to 60%.

Based on the results of surveys conducted in the Flemish region of Belgium, the Belgian researchers found a 0.17 standard deviation in mathematics scores and a 0.17 standard deviation in the language skills of students due to the school closure in 2020 compared with the scores of students from previous years. They also identified the increase of differences based on socioeconomic status (Maldonado & De Witte, 2020). Similarly, evidence of strong setbacks and of increasing differences was reported by English researchers (Andrew, et al., 2020) and American scientists (Agostinelli, Doepke, Sorrenti & Zilibotti, F. (2020; Bacher-Hicks, Goodman & Mulhern, 2021).

In summary, the extended period of anti-pandemic measures and the economic crisis can lead to the emergence of a so-called lockdown generation who share the same powerful experience of the COVID-19 restrictions, which brought major changes in their everyday lives. Young students were challenged by a sudden shift to an education system that had never or only minimally been tested before, compounded by isolation and the lack of the company of their peers. As practical training in vocational and adult education was also suspended in many areas, there were students who had to take their exams being less prepared or had to postpone their studies. Digital education represented special difficulties (raising the risk of early school leaving in the meantime) for students for whom the adaptation to the new circumstances of education was hard or impossible, who lost the visual contact with their teachers due to their limited access to electronic devices and who missed the security of the school community and the motivating force of their teachers⁴¹.

5.5.3 NATURAL RESOURCES

For the time being, no impacts of the COVID-19 pandemic on land use have been identified. The reason for this partly is that statistical data for land use become available with a significant delay (of multiple years) only and also, the economic effects are unlikely to have substantially penetrated in land use. For the time being, the impacts of the measures designed to stimulate the economy on land use cannot be assessed.

The pandemic caused a temporary reduction in industrial activity, presumably decreasing the degree of water withdrawal for industrial use (harmful for the ecosystem) for this period, however, quantitative information about this was not yet available when this monitoring report was written.

As the coronavirus pandemic changed hygiene habits and people spent more time at home working and studying, household water consumption is believed to have risen. As the central component of the protection against the virus, public announcements were urging people to thoroughly and efficiently wash their hands several times a day in warm water while the use of chlorine disinfectants grew and laundry habits changed (use of higher

⁴¹ HÉTFA (2021): A járvány sokkal jobban veszélyezteti a fiatalok munkaerőpiaci esélyeit, mint az egészségét

washing temperatures), which puts the supply system under pressure in terms of waste water treatment.

From mid-March 2019, boat traffic was minimised on the Danube and its tributaries due to the coronavirus restrictions, passenger and cargo ships practically disappeared, which improved the quality of water all along the river, however, this impact is most probably only temporary and the former levels of boat traffic will resume as the economy restarts.

A further impact is the penetration of the COVID-19 virus in waste water as well while this is not known to have a high health risk (there is no literature on the virus causing illness by being present in water bodies).

The impacts of the coronavirus pandemic on waste management are primarily reflected by the large quantities of medical waste generated. Vast amounts of waste are generated when patients are treated in hospitals, when the vaccination programme is implemented and when single use personal protective equipment (e.g. masks, latex gloves, protective clothing) is used. Due to the pandemic, the quantity of infectious waste generated is expected to rise, which may require the storage capacity to be increased. While there has been no evidence found to date that medical waste transmits the infection, all waste generated in patient care must be handled as infectious waste. Potentially infectious medical waste must be collected and treated pursuant to the effective legal and technical requirements applicable to medical waste, which will ensure the prevention of the spread of the coronavirus infection. The disposal of potentially infectious medical waste may be carried out by companies handling this waste using disposal technology approved by the environmental authority and recorded in their waste management authorisation. There has been a rise in household waste resulting from the use of disposable personal protective equipment (e.g. latex gloves, masks) and the packaging of cleaning products used for surface disinfection.

As many people had to stay in their homes for a long time due to the lockdown during the pandemic, food stockpiling, especially in the first wave, sufficient for even potentially longer periods of isolation, became a key issue. Most households bought foodstuff enough for two weeks (Kasza et al, 2020), which in case of panic buying easily leads to the wasting of food and the generation of large amounts of food waste. In the meantime, food stockpiling, provided that it involves conscious and pre-planned shopping and use, may promote the transition to sustainability. From the point of view of growing consciousness in food consumption, the challenges caused by the pandemic may be seen as positive opportunities. By adopting a conscious behaviour in buying food supplies and meal planning, food stockpiling may contribute to the reduction of food waste (Kasza et al, 2020). There was a rise in the quantity of packaging waste related to foodstuffs during the pandemic as consumers typically chose pre-packaged products due to hygiene reasons including people who were previously making purchases trying to avoid waste as much as possible. Additionally, food ordering of ready-to-eat meals also became widespread during the pandemic, which led to the generation of more waste as well (Hegedűs et al, 2020). In response to that, the Nébih prepared a Food Stockpiling Guide⁴² offering useful advice and tips to the public on what foods to buy for the home, how to store and use them and how to avoid food waste (Kasza et al, 2020).

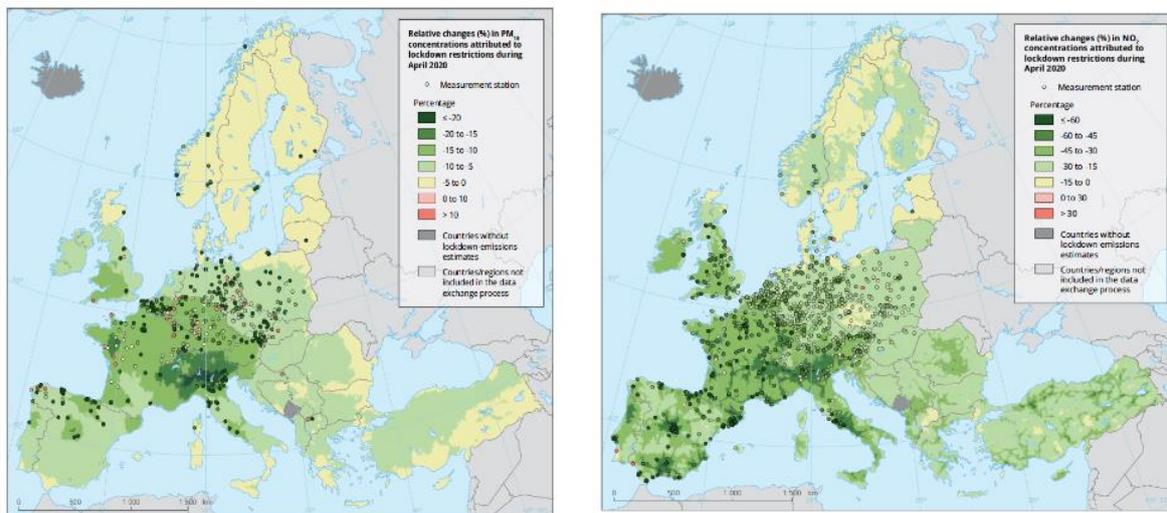
⁴²<http://maradeknelkul.hu/wp-content/uploads/2020/09/elelmiszer-tartalekolasiutmutatov%C3%A9gleges-pdf.pdf>

Measures to contain the spread of the coronavirus pandemic led to a sharp fall in industrial activity and the intensity of road and air traffic. The COVID-19 restrictions offered an unexpected opportunity to assess how the reductions in emissions for the whole continent and the whole world affected air quality, including in particular the background concentrations of PM₁₀ and NO₂.

The highest reduction is the background concentrations of PM₁₀ during the lockdowns was estimated at monitoring stations near transport nodes in Spain and Italy, identifying a drop of nearly 35 to 40% on average, followed by France and Norway (cca. 25%). The lowest relative reduction was estimated at rural background stations located further away from emissions predominantly from transport (and other sources). (A reduction in background concentrations was not related to weather conditions.) In the meantime, the background concentrations of PM₁₀ went down by only 5 to 10% in Hungary in April 2020, which suggests that household heating in Hungary has a relative higher share in emissions compared with the EU average than transport. A general conclusion for Europe as a whole is that a sizeable reduction in the background concentrations of PM₁₀ took place in areas with a high level of industrial activity and intensive road traffic while a small decline was recorded in countries where the primary source of PM₁₀ emissions is residential heating using solid fuels.

During the COVID-19 restrictions, the surface background concentrations of NO₂ lowered by over 60% in some areas around the EU. The analysis of the territorial distribution of background concentrations indicates a marked reduction in countries most affected by the restrictions imposed in April 2020 (Spain, Italy, France). The highest drop was recorded in densely populated urban areas where NO₂ emissions from transport are concentrated. In Hungary, the background concentrations of NO₂ lowered by 15 to 30% explained by the minimal reduction in transport intensity. The reason for this may be the high degree of transit traffic by guest workers from Eastern Europe working in Western Europe travelling home through Hungary in April 2020 at the beginning of the lockdown, which set off the reduced intensity of transport resulting from the restrictions.

Figure 54: Relative changes in PM₁₀ and NO₂ concentrations attributed to lockdown restrictions (April 2020)



Source: EEA

The COVID-19 pandemic substantially influenced energy consumption and CO₂ emissions. The analysis of the changes in GDP and energy consumption shows that while the annual economic recession was 4.8%, energy consumption practically remained the same. Throughout the year, negative decoupling took place, that is the reduction in GDP was much higher than the reduction in energy consumption and it is particularly notable that a lowering GDP in the fourth quarter was accompanied by growing demand for energy. Overall, energy intensity in Hungary went down by roughly 4% in 2020, similarly to the decline between 2013 and 2017.

The review of the impacts of the lockdown restrictions on energy use by energy source shows that the reduction in electricity consumption was limited to the period between April and June when the use of electric power lowered by approximately 8%. There was a fast and strong bounceback from September and the electricity consumption in the last quarter was 3.5% higher than in the same period in 2019. Annually, only 0.5% less electricity was used in 2020 than in 2019.

Figure 55: Changes in GDP and gross energy consumption relative to 2019 [%]

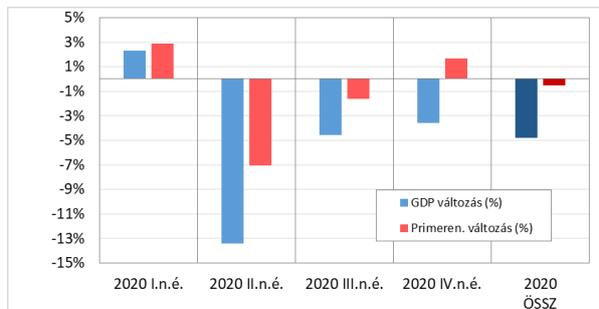


Figure 56: Changes in demand for electricity [GWh]

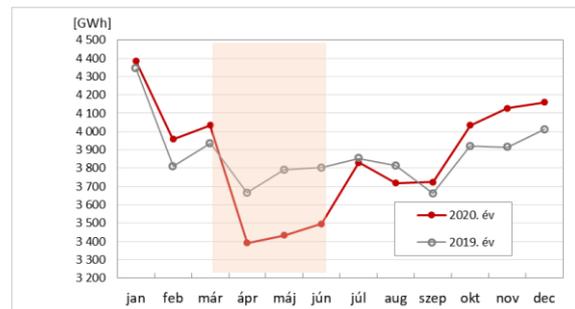


Figure 57: Changes in natural gas consumption [TJ]

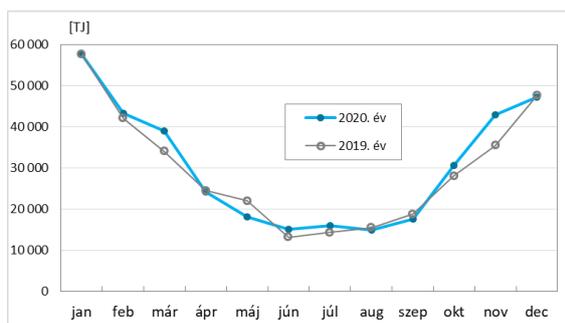
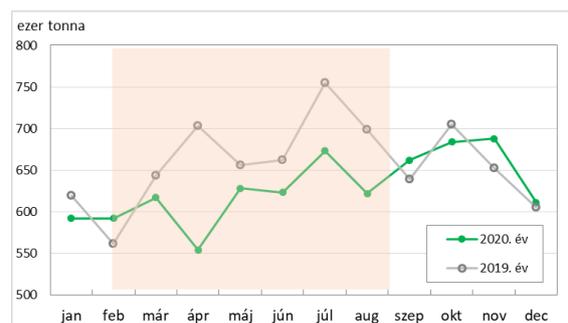


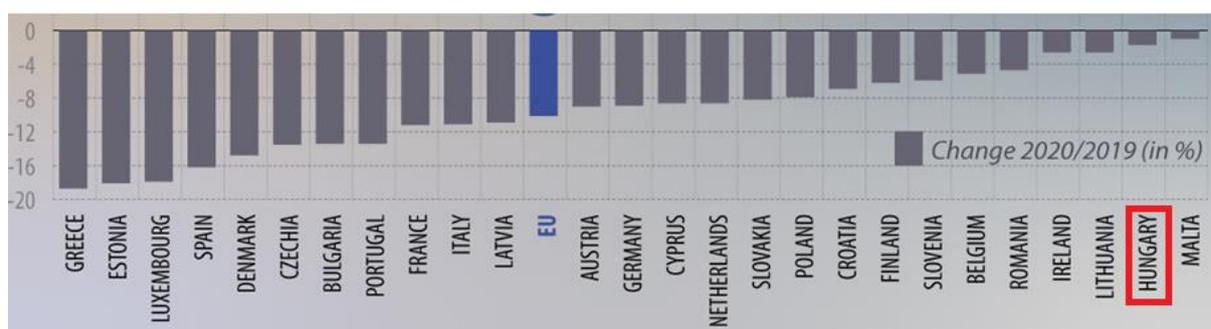
Figure 58: Changes in petroleum consumption [thousand tons]



While the consumption of natural gas did not change notably, there was a 4% rise on annual level, which is likely the result of higher demand for heating due to the home office with the quantity of natural gas used by the industry remaining the same. There was a long and marked reduction in the consumption of petroleum for transport: 21% in April and 4.5% on average per annum. Motor fuel consumption remained significantly lower even in the period between July and August, the reduction accounting to roughly 11% due to the loss in tourism. Overall, “what was saved on petroleum, was lost on natural gas and electricity”.

Based on monthly energy data, the Eurostat computed an estimate on the changes in CO₂ emissions from energy use in 2020 in the member states. CO₂ emissions fell by 10% on average in the European Union, the largest drop from one year to the other not seen in emissions since 1990. The largest decrease was recorded in Greece, Estonia and Luxembourg. In harmony with the tendencies in energy use described above, Hungary is the last but one in the EU, with a reduction of only 1.7%, which means that CO₂ emissions did not markedly lower due to the lockdown restrictions. This also means that Hungary practically failed to achieve an emission gain in relation with the pandemic and accordingly, the COVID-19 pandemic “does not contribute” to the fulfilment of the emission reduction commitments of the country.

Figure 59: Estimated CO₂ emissions in 2020 (relative to 2019)



Source: Eurostat

For the time being, the quantification of the impacts of the COVID-19 pandemic on biodiversity and forests is not possible as scientific analyses and statistical data are not yet available. However, two crucial consequences that are associated with the pandemic and the relevant measures must be highlighted:

- The COVID-19 restrictions prompted a growth in the number of people enjoying the outdoors. Forest dirt roads and educational trails became packed with hikers, which led to a sharp rise in damage caused by trampling of vegetation, pampering with habitats and disturbing wildlife. Also, there was an increase in the quantity of waste left in nature as well as in noise and air pollution in the vicinity of tourist destinations.
- Following an improvement in the pandemic, economic recovery became a top priority for governments, which predicts the intensive use of natural resources.

5.5.3 ECONOMIC RESOURCES

5.5.3.1 The state of the economy

Between 2013 and 2019, the performance of the Hungarian economy rose by 3.8% per year on average, which is 2 percentage points in excess of the mean growth rate of the euro area. This dynamic growth trend was disrupted by the coronavirus pandemic.

Based on the Financial Stability Report of November 2020 of the Hungarian National Bank, nearly one-fifth of the companies with business loans expect a strong decrease in sales revenues in excess of 30% in 2020. In the meantime, a survey conducted in August by the Hungarian National Bank shows that the impacts of the pandemic on the real economy were not negative for all the companies; roughly one-fifth of the companies forecast a rise

in their sales revenues for 2020 relative to 2019. However, the majority anticipated a reduction in revenues. 42% of the respondents expected a reduction in revenues in excess of 10%. The degree of the adverse impacts of the pandemic was above the average for smaller businesses. The most affected industries were art, entertainment, leisure time activities, tourism and catering where over 50% of the businesses anticipated a reduction in revenues of at least 30% in 2020.

Quarterly GDP data indicate that the COVID-19 affected the performance of the Hungarian economy most severely in the first six months of 2020. However, economic performance has been steadily improving since the 3rd quarter of 2020 while there are risk factors that may strongly influence the economic “bounceback” predicted by the Hungarian National Bank:

- further recession is likely if Hungary or its key foreign trade partners are required to introduce additional restrictions if the pandemic becomes more severe or continues in the long term. This risk is mitigated to a certain extent by the high vaccination rate of the population.

As regards labour productivity, while the key driver of economic growth was the substantial rise in employment before 2016, between 2017 and 2019 the same was the improvement of labour productivity. This shift from extensive to intensive growth mainly occurred in the case of small and medium-sized enterprises. It is particularly interesting because the structural problems caused by the mistakes in economic policy after 2002: the decline in investment activity, excessive indebtedness, rising unemployment and the global financial crisis of 2008/2009 led to a massive decrease in labour productivity at the end of the 2000s. As it was already discussed in the in-depth analysis, the COVID-19 pandemic caused a decline in labour productivity.

As regards household consumption, there was a change identified in consumption habits due, in part, to the pandemic and also the growth of digitalisation. The representative survey based on questionnaires conducted by the NÉBIH in 2020 shows a reduction in in-store shopping while the volume of online shopping rose. The increase of e-commerce in Hungary of close to 40% is the third fastest growth in Europe. Nevertheless, the share of e-commerce in Hungary is still below both the EU average and the average of the Visegrad countries.

According to the NÉBIH survey referred to above, as a further consequence of the pandemic, the demand of Hungarian households, in line with international trends, shifted from catering services to shopping for ingredients needed for home cooking. A tendency that is less likely the result of the coronavirus pandemic is that Hungarian households increasingly prefer choosing food products made in Hungary. This is extremely positive for sustainable development as it improves both the foreign trade balance and the profitability of domestic producers. This development may be partly explained by the reduction in illegal food imports and secondly the support of farmers’ markets.

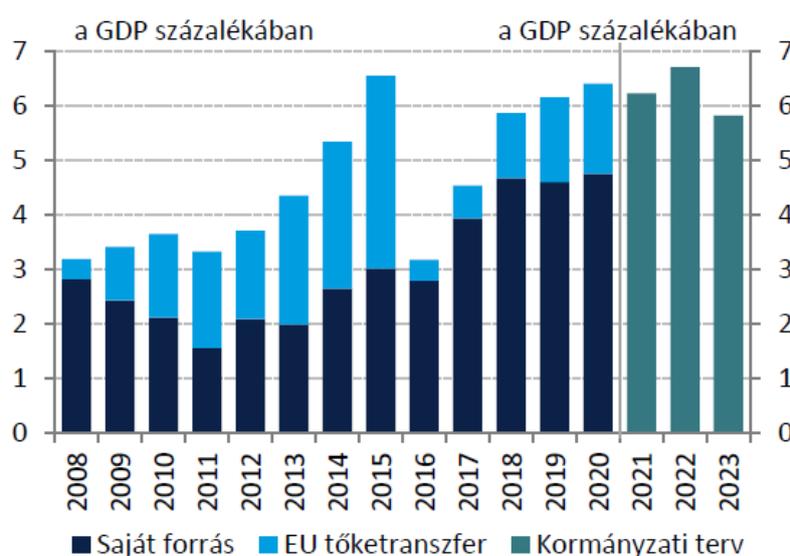
Another change in consumer attitudes is the shift towards active transport (bicycles, scooters) in local mobility needs, to the detriment of services of transport companies (buses, trams etc.). This trend began even before the coronavirus pandemic and was further promoted by the restrictions imposed because of the pandemic, primarily by the increase in the activities of courier services (e.g. Wolt) delivering food ordered via e-commerce. This trend, however, has a particularly adverse impact on sustainable development for the following reasons:

- The revenues of local transport companies are lowering limiting their funds not only for investments but even for maintenance. A good example for this is the radical reduction in routes in Miskolc. The reason why this is a particularly serious problem is that many people are excluded from active transport due to their age, health or simply bad weather.
- Besides, the infrastructure for active transport is unavailable in almost all of Hungary's cities. Instead of constructing bicycle lanes, the most common solution is longitudinal division of pavements by painting into two sections (e.g. in Szeged) for pedestrians and bikers. However, even where bicycles are forbidden in pedestrian zones (e.g. in Pécs), authorities are unable to enforce this prohibition. Bicycles and scooters travelling at high speeds among pedestrians do not only pose a risk of accidents but also reduce the quality of life of pedestrians depriving them of the pleasures of urban walks.

As regards the impact of the coronavirus pandemic on consumption, there was an upward trend in consumption starting from 2014. The reduction in 2020 is unlikely to represent a real shift: the Inflation Report of June 2021 of the Hungarian National Bank predicts a further growth both in household consumption and community consumption for the period between 2021 and 2023. This raises the question whether this upward trend in consumption can be maintained in the long term. Will rising consumption lead to a similar situation for the Hungarian economy as between 2002 and 2007 when an excessively high share of the GDP was consumed and as a result, the growth achieved in this period proved to be unsustainable in the long run.

In addition to consumption trends, the upward trend of capital formation was also disrupted by the COVID-19 pandemic. As it was already discussed in the in-depth analysis, the degree of the decline is similar to that of in 2016 when it was due to the temporary reduction in EU funds. The reference document for the period following the outbreak of the pandemic is the Growth Report of October 2020 of the Hungarian National Bank: based on this, government investments as a result of the measures to protect the economy were at a high level despite the pandemic, which means that counter-cyclical fiscal policy was pursued.

Figure 60: Changes in government investments



Source: KSH, MNB

Based on the Inflation Report of June 2021 of the Hungarian National Bank, government investments are forecast to grow by 7.2% in 2022 compared with 0.2% in 2021. These are mostly construction projects, which repeatedly brings up the problem of the scarcity of building capacity. This scarcity was to some extent diminished by a lower demand caused by the coronavirus pandemic but both the shortage of labour and building materials may pose a huge problem as the pandemic ends. The rise in investments in equipment will predominantly involve military procurements, which will also raise imports. As shown in the figure, while the share of government investments financed from EU transfers is lowering, government investments relative to the GDP are likely to shrink to some extent in 2023, similarly to 2016 when this took place because of a temporary reduction in EU transfers. The current high rate of government investments relative to the GDP aims to promote economic recovery and support the investments of the household sector through the Home Improvement Programme.

As regards foreign trade, the restrictive measures adopted due to the COVID-19 pandemic adversely affected the volume of foreign trade. The COVID-19 pandemic caused a disruption in the dynamic growth of exports and imports as well, however, they began rising again in the first quarter of 2021. The dynamic growth of the export performance from the second half of 2020 was the result of the post-pandemic recovery of foreign markets. The industry that has been and continues to be hit the hardest by the COVID-19 pandemic is tourism and catering, which forecasts the lack of any significant change in the foreign trade of services, however, the growing rate of vaccination may be reason for hope.

As regards government spending, the fight against the coronavirus pandemic required the increase of government expenditure. Favourably, this went hand in hand with the growth in the savings of the household sector, which was also facilitated by the moratorium on loan repayment. Consequently, the rising funding by the government was effectively compensated by the private sector. The growth of government expenditure led to a sharp rise in budget deficit. The increased government spending has two components: on the one hand, the expenses of the actions in response to the pandemic and on the other hand, the costs of the measures designed to restart the economy. The act of 2020 on the central

budget defined budget deficit as 1% of the GDP, which was the lowest ever deficit target. This low deficit target and high reserves provided a large room for manoeuvre for the government to be able to respond to the health and economic impacts of the coronavirus pandemic. While measures having a direct impact on the budget may account for 7.3% of the GDP and the loss in GDP markedly diminished tax revenues relative to the planned amount, which may be lower by a total of HUF 1160 to 1300 billion (2.5 to 2.8% of the GDP) compared to the budget appropriation.

Government measures designed to stimulate the economy included interventions relating to the tax system adopted primarily to diminish the tax and contribution burden of businesses and employees. Measures to reduce the tax burdens of businesses and to help stabilise their liquidity included the postponement of the submission date of tax returns for corporate tax and the local business tax, the specific exemption from payment of the fixed-rate tax of small taxpayers and other minor tax categories and the shortened period for VAT refunds.

As the gross public debt relative to GDP was 70.3% prior to the pandemic, in the first quarter of 2020, it is fair to say that the coronavirus pandemic hit Hungary when its public finances were relatively good: in a situation when its indebtedness was not particularly high. This relatively positive state offered room for manoeuvre for fiscal policy to fight the negative impacts of the pandemic. According to preliminary data, the public debt relative to GDP was 80.9% at the end of the first quarter of 2021, which is the result of the spending on anti-pandemic actions and the GDP reduction due to the restrictions. In the first six months of 2020, government revenues went down by 1.4%, mainly explained by the reduction in social security contributions and sales taxes in the second quarter. The year-on-year growth of the spending of the first six months was 12.6%. In the first quarter of 2020, the deficit of the public sector was only 1.9% of the quarterly GDP, which went up to 9.1% in the second quarter. Revenues from taxes and contributions were HUF 1200 billion lower than the planned amount. The highest reduction occurred in the case of taxes and contributions on sales and labour. In the first eight months, government revenues from taxes and contributions reached only 60% of the planned amount. The high reduction in taxes collected was partly set off by the higher than planned revenues related to EU funds and also by payments of government bodies and institutions into the residual funds, which raised budget revenues relative to the appropriations in a technical sense.

The expenditures of the central budget may be HUF 2300 billion higher than the appropriations. This rise in expenditures is mainly explained by the surplus expenses spent on anti-pandemic measures, which is reflected both in higher expenses of the central government bodies and the Health Insurance Fund. Furthermore, surplus expenditure in excess of the appropriations also includes the impact of measures adopted to address the negative economic effects of the coronavirus pandemic such as expenses related to programmes designed to stimulate employment and promote job security. Surplus expenses are partly financed by the reallocation of funds within the central budget and by using reserves while a part of the impacts of the measures raises the budget deficit.

One conclusion to make here is that no matter how efficiently and effectively national defence forces, the public health sector or disaster relief services perform their duties, an economic system is always exposed to external positive or negative shocks. A massive, negative exogenous shock such as the coronavirus pandemic offers a good opportunity to test the resilience of an economy. The data presented above clearly demonstrate that the Hungarian economy is resilient, is able to tolerate shocks relatively well, which is

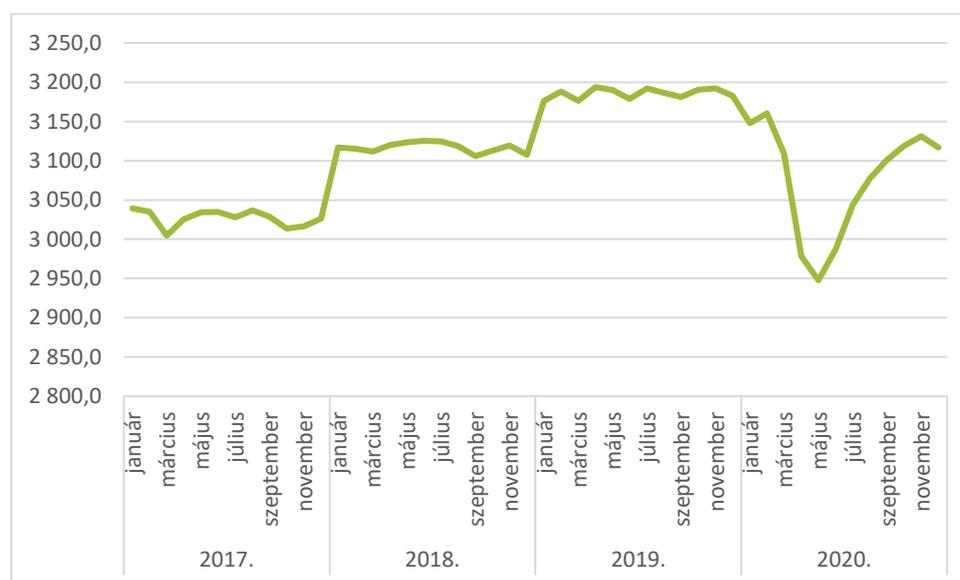
predominantly the result of the fiscal and monetary policy pursued since 2010. This, however, does not mean that Hungary's sustainable development is not exposed to numerous risks or that there is no possibility to make further development more sustainable.

5.5.3.2 Labour market

In the first wave of the pandemic, the labour market was shocked by a round of massive lay-offs not seen in a long time. By the summer of 2020, the situation began to stabilise, which was, in large part, the result of the recovery of domestic tourism and seasonal jobs. The figure below clearly indicates that the bottom low in employment was the spring of 2020, that is the period of full lockdown. The figure also shows that changes in the number of employed persons are in harmony with the waves of the COVID-19 pandemic in Hungary as the next, albeit more moderate, reduction took place in the autumn of 2020.

Without doubt, the 212 000 positions terminated between February and May 2020 may be attributed to the employment impacts of the coronavirus pandemic. More precisely, it is the minimum number as these data from the KSH exclude businesses employing up to five employees and sole proprietorships. Most of these positions were terminated by businesses while the number of employees made redundant between February and May was roughly 4000 in the government sector, 3000 in non-profit organisations and 8000 in the public employment programme⁴³.

Figure 61: Changes in the number of employees, 2017-2020



Source: KSH

Businesses working in the tourism industry responded to the crisis the most rapidly and extensively and this sector started to grow the fastest from the beginning of the summer season. However, lay-offs continued in March and April as well. This was predictable due to the immediate and solid impacts on the sector and the widely used flexible forms of employment. Meanwhile, the degree of lay-offs reflects a totally radical stoppage in spring months. In two months, 22% of the sector's employees (nearly 30 000 people) were made

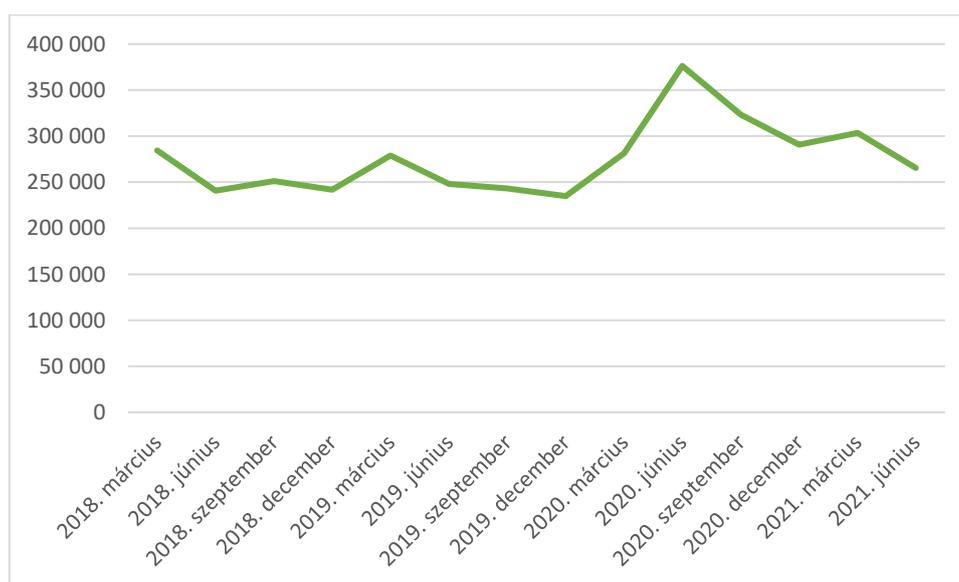
⁴³ HÉTFA (2020): Hullámvasúton az üdülőkörzetek munkaerőpiaca

redundant but the rate of employees was 12% lower already in March than a month prior to that. This reduction in headcount seems even more alarming if we consider that March and April including the long weekend because of the national holiday on 15 March, Easter and the school spring break are usually a time of hiring in tourism.

In May, lay-offs nearly stopped in the sector and employment started rising in June by 6%. Another business area severely affected by the pandemic was personal services: the number of employees in this sector was reduced by 11% until May. This sector involves a number of services (e.g. beauty care, laundry, massage, fitness), which had to completely shut down during the lockdown. After the restrictions were lifted, the reduction in the number of employed persons stopped and started to rise in June in this sector too. The pattern identified with the three largest employment sectors is very similar. In the area of commerce and vehicle repair, the processing industry, transport and storage, the number of employed persons went down by 5% until May with the highest reduction occurring in April. All three sectors recorded a minimal growth in employment in June.

The second wave of the pandemic had a much less adverse impact on employment as the year-end data of 2020 were already close to the pre-pandemic levels. Not unlike almost every crisis, people mostly affected by the lay-offs were young people under 25 and employees approaching their retirement age.

Figure 62: Changes in the number of registered job seekers, 2018-2021



Source: KSH

Based on the report of December 2020 of the National Employment Service (NFSZ), the number of current job seekers was in excess of 290 000, a rise of roughly 60 000 relative to pre-pandemic levels. In December 2020, job seekers aged under 25 totalled 38 000, which is the total population. As the data above demonstrate, the number of job seekers almost returned to the pre-pandemic levels by the summer of 2021.

5.5.4 SUMMARY/CONCLUSIONS

While evidently all four resource groups were affected by the COVID-19 pandemic and its consequences, its degree varied. Perhaps, the best summary is that the pandemic first

threatened our lives then our livelihood, which means the most adverse effect was experienced in the area of economic and human resources.

The COVID-19 pandemic significantly raised the rate of excess mortality in 2020, reduced life expectancy and prevented many patients from receiving timely medical care. It did not go unnoticed that the health care system, which was already underfinanced and struggling with labour shortage, was put under enormous pressure because of the pandemic.

In the field of human resources, the deficiencies of the education system were also augmented by the pandemic. Due to the digital education introduced in response to the pandemic, roughly 10% of underprivileged students were excluded from education. This added to the selectivity of the education system and it is currently too early to estimate what impacts digital education in place for almost over one school year will have on academic and labour market achievement in the long term.

As regards economic resources, both employees and employers were deeply affected by the COVID-19 pandemic. There were sectors such as tourism and catering, whose business prospects turned very bad because of travel restrictions and the lockdowns, which was only mildly mitigated by the record-breaking level of domestic tourism in the summer of 2020.

A good amount of consideration must also be given to whether the economy based on the global supply chains is sustainable in its present format as it was evident that it was absolutely vulnerable to external impacts. For this very reason, the next few years will most probably focus on resilience building both at national and at EU level.

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