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# Some Aspects of Fiscal and Monetary Tools of the Environmental Sustainability – Through the Case of Hungary<sup>1</sup>

Csaba Lentner\*, Sándor J. Zsarnóczai\*\*

\* Full Professor, Head of the Széll Kálmán Public Finance Lab of the University of Public Service, Faculty of Governmental and International Studies, e-mail: [Lentner.Csaba@uni-nke.hu](mailto:Lentner.Csaba@uni-nke.hu)

\*\* Researcher, Széll Kálmán Public Finance Lab of the University of Public Service, Faculty of Governmental and International Studies, e-mail: [zsarnoczai@yahoo.co.uk](mailto:zsarnoczai@yahoo.co.uk)

**Abstract:** On the one hand, *economic sustainability* depends on an environmentally friendly and energy-saving economy, though it rather means the continuous functioning of businesses and the national economy, which is expressed in the balance of accounting, foreign trade and budget balances.

On the regulatory side, monetary policy, alongside fiscal policy, serves ensuring economic sustainability, as the main objective of central banks is to ensure price stability and maintain financial equilibrium to underpin continued economic activity. However, in our energy crisis-ridden world, there is an increasing emphasis on energy-efficient, environmentally friendly management. The focus of our study is on the environmental sustainability context of Hungarian fiscal and central bank tools, with a particular focus on the legislative and programmatic elements of the green economy development of the Magyar Nemzeti Bank (Hungarian National Bank, hereinafter: MNB).

**Keywords:** green economy, green investments, financial regulation, Hungary

## 1. Introduction

Global warming is increasingly posing serious problems for the world economy, including Hungary. Several scientific studies have proved that human activity is the main cause of global warming, which is a direct consequence of the increase in gas emissions, primarily the increasing emissions of carbon dioxide. By the end of 2020, the

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<sup>1</sup> This paper is a new research area of the Széll Kálmán Public Finance Lab of the University of Public Service, an initial wing unpacking focusing on a general overview of the subject area. And let us add that it has begun at a difficult time, because, although the theoretical aspects of the green economy have gained momentum in the previous decade, but the economic effects of the coronavirus and the war have somewhat delayed the “green economy”.

amount of gas emissions reached 35 billion tons (Ritchie, 2022). From 1940 to the end of 2019, global warming was 0.80 °C (Ritchie et al., 2017).

The relevance of the study is that, in addition to the significant environmental damage caused by human activity, the uncertainty of the energy supply has increased recently, which is partly due to the depletion of fossil energy sources, and partly due to the Russian–Ukrainian war and the EU embargo on Russian energy sources. In addition to these, the worldwide demand for hydrocarbons continues to increase, contributing to a significant increase in their price. Act II of 2021 amended certain previous provisions on energy and *waste management* that aim to reduce pollution, for example in relation to waste management and the *use of electric cars*. This law is an amendment to Act I of 1988.

The declining resources and the increasing demand for them are causing the price increase, which has been exacerbated by the economic consequences of the recent Russian–Ukrainian war. Our domestic energy supply is traditionally based on external energy sources, which is in line with the general Western European unilateral external energy dependence, the extent of which, in the case of fossil energy sources, reaches more than 90% of the needs of domestic energy consumption. For further economic development of Western European countries, increasing fossil energy sources are needed (Zivot & Andrews, 2002; Otto & Gugushvili, 2020).<sup>2</sup> This also contributes to a significant increase in their world market price. Access to alternative energy sources, production of renewable energy sources and their expansion require significant financial resources. The importance of environmentally conscious management is reflected in the fact that the MNB has been given a green mandate<sup>3</sup> as its fourth monetary policy objective in 2021, which is also of outstanding importance globally. Based on the Central Bank Act, the Hungarian National Bank supports the maintenance of the stability of the financial intermediation system, increasing its resilience, ensuring its sustainable contribution to economic growth, and now, by helping the green economy gain ground, the government's policy related to economic and environmental sustainability without jeopardising its primary goal.

However, the so-called green mandate is not without precedent for the Magyar Nemzeti Bank. Through its Green Programme, announced in February 2019, the MNB has mobilised instruments to mitigate risks related to climate change and other environmental problems, as well as to reduce risks related to the domestic green economy and, in turn, to stimulate the financing of the green economy. The strategic document *Sustainability and Central Bank Policy – Green Aspects in the Monetary Policy Toolbox of the Hungarian National Bank* adopted by the Monetary Council accordingly provides a unified framework and presents the possible directions with the help of which the central bank can implement sustainability aspects into its monetary policy toolbox (MNB, 2021a). The Green Programme of the MNB, launched in February 2019, and its parliamentary endorsement can facilitate the implementation of a new overall economic development strategy based on carbon neutral investments, both at the macro-micro and

<sup>2</sup> <sup>3</sup> We base this finding on the fact that the European Union's efforts to develop a green economy are being realised very slowly, and on the other hand, there is significant civil resistance to the use of nuclear energy.

<sup>3</sup> See Act CXXXIX of 2013 on the Magyar Nemzeti Bank effective from 5 April 2019, as well as *Act II of 2021, Amendment to Act I of 1988*.

household level. The development of production technology in this way, involving the increasingly carbon neutral nature of product emissions, can ensure an environmentally friendly structural shift of the whole Hungarian society, promoting the competitiveness of the economy in national and international markets. Accordingly, there is a good link between our competitiveness and carbon neutrality through innovative technological development.

## 2. Literary background

In line with the appreciation of environmental protection, international and domestic literature has expanded significantly regarding this extremely important problem, as the modern market economy has been growing strongly at the micro-macro level, which is accompanied by a scarcity of energy sources.

In the 20<sup>th</sup> century, Alfred Pigou (1920) pointed out that if the market is unable to deal with externalities, they will distort the market demand–supply mechanism, which will not be beneficial for the public.

In 1987, the World Commission on Environment and Development made its report entitled *Our Common Future*, which sets out the principles and requirements that will be used by future generations. These principles have become known as the principles of sustainable development worldwide (UN, 1987). Sustainable development is a development that can meet the needs of the present without threatening future generations' ability to meet their own needs (Meadows et al., 1992; Bank of America, 2021). The three conditions set by Herman Daly (2001) for sustainable development are as follows:

- the rate of use of renewable resources should not exceed their regeneration rate
- the rate of use of non-renewable resources shall not exceed the pace of sustainable renewable substitutes
- the rate of pollutant emissions should not exceed the assimilated capacity of the environment (Daly & Cobb, 1989)

In addition to the above-mentioned Herman Daly, Opschoor addresses the time factor, when he states, as a fourth condition, that the time factor of human intervention must be in balance with the timing of natural processes, as well as the decomposition of waste or renewable raw materials and the regeneration rate of ecosystems (Opschoor, 2000).

Shan and his co-authors (2021) emphasised that green technological innovations (GTIs) and clean energy are the essential factors that can help to achieve the carbon neutrality goal.

At the same time, limits are important for sustainability, including the maintenance of the Earth. In ecology, the Carrying Capacity is a population that an area can support without damaging it. In principle, we may question the Earth's ability of providing favourable living conditions for a significantly increasing population (Szlávik, 2011).<sup>4</sup>

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<sup>4</sup> See in detail Fritz et al., 2021; Arvaniti & Habla, 2021.

In our opinion, these findings also indicate a different approach to advanced and less developed countries in the fields of sustainability and ability. Undoubtedly, the waste production of developed market economies is a significant additional natural resource use, both in raw materials and energy carriers, and often regardless of the growing extent of environmental damage and waste. In our view, the market economy system does not mean the wasteful use of natural resources under an increasing environmental load. For the sake of the cycle economy, the recovery of pollutants has also come to the fore, which has also been enshrined in law in Hungary.<sup>5</sup>

The above overview also shows that population growth and rising consumption levels significantly affect the Earth's capacity. More and more developing countries are becoming increasingly overpopulated, as the national economies of given countries are unable to supply and maintain their population. Population problems are linked to the Covid-19 pandemic and the Ukrainian–Russian war, which also presents serious environmental challenges. Hantoko and other authors declared that the Covid-19 pandemic has imposed a global emergency and has also raised issues regarding waste management practices. The amount of food and plastic waste also increased during the pandemic (Hantoko et al., 2021). These factors are increasingly raising awareness and promoting good practice in environmentally conscious economies and company management, including in Hungary.

### **3. The promotion of an environmentally conscious economy and management in international and domestic conditions**

Recently, in the world, because of growing energy production and intensive use of energy sources, it is necessary to reduce the rate of increase in gas emissions, which leads to global warming thereby seriously endangering the wildlife of our planet. Gas emissions have reached critical levels, which has made it increasingly difficult to reverse the process of global warming. These global problems have drawn the attention of governments and international organisations to find ways of limiting climate change through adequate environmentally friendly economic policies in parallel with reducing environmental pollution. The Russian–Ukrainian war has significantly strengthened the energy imports from outside Russia, and the need for a wider use of renewable energy sources. This is even more prominent with regard to the peaceful application of nuclear energy. The Western energy embargo sets the entire economic system of the European Union against Russian fossil energy imports, along with all its consequences.

As a compensation for this, more emphasis should be placed on the use of renewable energy sources and the electricity obtained from it. In this context, for example, in Hungary, Act II of 2021 provides for an integrated electricity business by the developing accounting separation rules and separate accounting records that ensure the transparency of individual activities, non-discrimination, and excludes cross-financing between activities and distorting competition.<sup>6</sup>

<sup>5</sup> Act CLXXXV of 2012 on waste.

<sup>6</sup> Act CLXXXV of 2012 on waste; Act II of 2021 amending certain laws on energy and waste management.

Air pollution is one of the leading causes of serious respiratory illness, chronic obstructive pulmonary disease, ischemic heart disease and others. It is estimated that 4.2 million deaths occur every year because of exposure to ambient (outdoor) air pollution (Grover & Singh, 2020; Jain et al., 2022).

International agreements are rapidly trying to limit the extent of gas emissions associated with the international quota system, which allows for gas emissions trading between countries with excess gas emissions and smaller gas emissions within their national quotas. In this area, the goal is to bring economic growth to new innovative technological procedures through the reduction of gas emissions. A further goal of the quota system is to preserve or reduce gas emissions at the global level, while ensuring further economic growth using less energy and raw materials. This should in any case be accompanied by reducing additional waste contaminants, such as the by-products of production, and additional circular industrial use.

Aspects of an environmentally conscious economy also appear in the Hungarian state financial regulations. The fundamental law emphasises the principle of permanent sustainability, which is also the responsibility of future generations.

The Hungarian Government has set significant environmental and green economic policy goals since 2010; these have achieved great results. Most importantly, the NES (National Energy Strategy) of 2018 set objectives, it examined the technological possibilities of decarbonising the domestic energy sector as the only exception to the NÉS-2. Based on this, the most important statements of the document are that the development of carbon capture and storage (CCS) technology can also contribute to reducing emissions. In the long run, it is not only used for coal-fired but also for natural gas-based power plants. Hungary's position within the European Union for the emissions of greenhouse gas emissions is favourable. By 2019, emissions dropped to 64 metric tons (MT)<sub>2</sub> CO<sub>2</sub>e from 95 MT CO<sub>2</sub>e in 1990, leading to an average annual decrease of 1.4% in this period. At the same time, Hungary experienced an annual 1.7% increase in GDP, demonstrating the potential for achieving significant economic growth without an increase in carbon emissions (NCE, 2015; NÉS, 2018; Békés et al., 2022).

Government green economic programmes have placed great emphasis on decarbonisation and reducing increasing emissions, but this requires maintaining the capacity of the existing Paks Nuclear Power Plant and its expansion with Paks II. The Green Program forecasts that after 2030, further renewable energy development and such expansion can make it realistic to reduce CO<sub>2</sub> emissions from power generation by nearly 100%. Carbon neutral energy management affects the environmental development of the country's entire economy, as everything depends on the energy sectors.

In connection with the resolution of the Hungarian economic and financial crisis, public finance reform has placed significant emphasis on encouraging environmental investments. In the monetary toolkit of the MNB, the use of individual monetary policy tools can be replaced by climate-compatible principles, such as coordinating balance sheet assets with green transition and enforcing green aspects when assessing cover. The MNB is organically linked to other Member State and non-EU central banks and thereby to some international initiatives and experiences. Green aspects can be enforced by modifying the rules of asset purchases (e.g. discrimination of pollutants) or, for example, by

incorporating the climate risk into the central bank modelling process. An important aspect may be that the climate objectives are implemented through central bank tools that are permanent. Meanwhile, it may be difficult for EU legislation to set tight limits on the tools with green objectives that the European Central Bank can support. From January 2021, the Swedish Riksbank will only buy corporate bonds that meet international sustainability standards and demands. The Riksbank has justified its decision on financial stability grounds; according to the central bank, climate change carries a significant risk of physical impacts and transition, which all central banks as the national body responsible for financial stability, must address, suggests the Hungarian central bank (MNB, 2021a).

The Network for Greening the Financial System has developed important principles and recommendations for the MNB, in which the four main general recommendations for central banks and supervisors are essential. The first is to integrate climate risks into financial stability monitoring and supervisory procedures. The second is the incorporation of sustainability aspects into the central bank's own portfolio management. The third is to expand data, improve their quality and strengthen green financial awareness. Further recommendations of the organisation for political decision-makers, which can also be supported by central banks, appear in standardising the publication of climate and environmental risks and developing an international taxonomy (MNB, 2021a; OECD, 2022; Paris Agreement, 2015).

The MNB's monetary policy enables the government budget to strengthen the development of green investments significantly, both in industrial production and in the field of residential consumption, to reduce the environmental burden.

Since 2013, the MNB has led banks within the framework of its Growth Loan Program (GLP), especially targeting small and medium-sized businesses, in making green investments and increasing the use of renewable energy sources. It was also in this period that, with the active participation of the MNB, by the end of 2015 Hungarian households had become completely free from foreign currency loans. Subsequently, it was possible to increase the purchasing power of the population, which later (indirectly) caused the implementation of the residential green investment loan programs. Based on these principles, the MNB launched the Green Home Program (GHP) as part of the Monetary Policy Toolkit in October 2021, as part of the Growth Loan Program (MNB, 2016; Matolcsy, 2015).

Green objectives funded by the Green Bond Portfolio cover a very wide spectrum, including the creation of renewable energy investments, energy efficiency projects and green buildings. Projects, primarily due to supranational issuers, are global in coverage, and bonds are also financing activities in many developing regions (such as Africa and Asia), which will result in even more effective green "paybacks" due to green investments that replace the general pollution of these countries.

On 2 June 2020, the Government Debt Management Centre (GDMC) issued the first (international) green bond in Hungary. Green bonds are those for which the issuer undertakes to make some environmentally positive investment from the collected source. According to the GDMC, the 15-year bond was oversubscribed more than five times and the issue brought in a total of EUR 1.5 billion. The GDMC remains an important player in the market; on 11 September 2020, it issued Samurai bonds, denominated in Japanese

yen. Two of the series of four were green bonds, with a total of 20 billion yen issued for a seven and ten-year term (MNB, 2022).

This program was the first time that these types of bonds had been issued, thus encouraging green investments and their yield-increasing capacity.

Since 2010, the financial system has introduced new funding tools to encourage monetary stability, decrease vulnerabilities and promote green investments under preferential credit conditions. With this new monetary and fiscal economic policy, such instruments have become accessible beyond the corporate sector – primarily to SMEs and households, partly to reduce the government and municipal budget deficit.

#### **4. Fiscal and monetary assets in Hungary**

Examples of green investments are forward. According to international estimates in 2014, by 2030, the infrastructures needed for a global climate-friendly economy would require investments of US\$ 93 thousand billion. Thus, it is imperative for financial institutions to convey more capital to green developments and investments (NCE, 2015). This estimate also confirms that the most important players in the Hungarian economy, both the government's fiscal policy and the MNB's monetary policy and its assigned monetary tools, should make significant efforts to ensure the development of the environmentally conscious (green) economy in the future.

These efforts are also linked to the 2018 decision of the Hungarian Parliament, which aims to switch Hungary gradually to a low-carbon economy. The implementation of decarbonisation is not planned to have a constitutional competitive limit to the Hungarian economy, and, through the development of innovation and the green economy, the State can contribute to the modernisation of production sectors and the re-industrialisation of Hungary.

The MNB was linked to the direction of the green policy passed by the Hungarian Parliament and converted the three basic pillars of its green program accordingly. The MNB's Green Program (MNB, 2021a) comprises the following:

Pillar 1: Program points for the financial sector:

- analysis of ecological and financial risk
- making financial services greener
- encourage the greening of market players

Pillar 2: Social, International Relations:

- expanding cooperation with domestic partners
- information dissemination, education in green finance
- active participation in international work related to climate risks, green finance

Pillar 3: Further greening of the MNB's operation:

- to further reduce the MNB's own ecological footprint
- to further expand the MNB's own environmental publication

The Monetary Council set the available funds of the Growth Loan Program and Green Home Program at 200 billion HUF when it commenced, and by its decision of 5 April 2022, the program's credit line increased to HUF 300 billion. Accordingly, credit institutions can first provide HUF 120 million from this HUF 300 billion budget to residents applying for home loan contracts. After the use of this amount, the remaining HUF 180 billion will be used. Such programmes by the MNB are closely linked to Government Decree 16/2016 (II),<sup>7</sup> on housing support related to the construction and purchase of new homes. Within the framework of the GLP GHP, the central bank provides a 0% interest, up to a 25-year refinancing loan to credit institutions, to buy and build energy-efficient new residential real estate in Hungary, and to purchase land for new home construction sites. Act CLXII of 2009 on consumer loans (hereinafter: CLL), a Hungarian forint foreign currency, up to 2.5% a year (CLL Credit rate) loan (hereinafter: "home loan"), is further lending to the CLL consumer, and other credit institutions are refinanced for the same purpose (MNB, 2020; MNB, 2022). Government Decree 641/2020 (XII. 22.)<sup>8</sup> in order to introduce a home renovation loan, it also intends to promote the resolution of the public to amend certain government decrees. The social significance of this is outstanding. Norbert Kis (2019) emphasises the importance of accessing a home. Affordable and appropriate housing in a safe environment is a fundamental need and right, which would reduce poverty and social exclusion, but even today, many of the European countries are challenged financially.

Some authors even approach sustainability as a new dimension from economic social aspects, namely that Cognitive Sustainability (CogSust) investigates the links between the research areas of sustainability and cognitive sciences. The former can be interpreted as an environmental discipline issue to a first-order approach; alternatively, as an engineering challenge in a broader range of interpretations but can be interpreted in many more disciplines (Zöldy et al., 2022; Kolozsi et al., 2022).

Kutasi (2022) emphasised the correlation between economy and nature, in that the further interlocking of the ecosystem model and the New Keynesian model is hindered by a crucial difference in their fundamental approaches to the relationship between economy and nature. The ecosystem model of ecological economics regards economy as one of its subsets of the ecosystem, which participates in the flow of resources, energy and waste. In contrast, the mainstream economics model considers the economy to be an overall set, which includes nature as one of the subsets in the circulation of factors and income.

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<sup>7</sup> Government Decree 16/2016 (II), which is to support housing related to the construction and purchase of new homes.

<sup>8</sup> Government Decree 641/2020 (XII. 22.) on the amendment of certain government decrees in order to introduce the home renovation loan. Government Decree 17/2016 (II. 10.) on the home purchase subsidy for families for the purchase and extension of used homes. Amendment of Government Decree 518/2020 (XI. 25.) on home renovation support for families raising children.

Due to the above constraints of the domestic corporate loan stock, we currently only have an older but relatively reliable picture of the stock of green loans in terms of *loans related to energy production*. The outstanding bank solar-power loan portfolio can be estimated to be at least HUF 237 billion at the end of 2019. Considering and correcting for the data gap, the fair value of the exposure could be between HUF 250 and 270 billion. This is of the order of 2.5% of the total domestic corporate loan portfolio. The MNB intends to implement the gradual green rating of loans in additional sectors, with incentives in the form of a regulatory discount. Accordingly, the MNB, together with the Association of Hungarian Banks, industry players and industry stakeholders, including business leaders, will regularly review the capital relief for loans (or bonds) financing renewable energy production introduced by the MNB from 2020. International examples are also presented in international literature, which clearly show what serious initiatives have been launched within the framework of green environment-friendly programs (Hirvilammi & Koch, 2020; Otto & Gugushvili, 2020). Tax policy also has a level role to play in strengthening environmental programmes in government policy (Budziszewska & Glod, 2021).

In the future, it will become necessary to expand the provision of green loans further (taxonomy-based) for domestic companies, thereby encouraging the more widespread use of renewable energy sources. Pursuant to its regulations, which will come into force from 2022, the EU requires credit institutions to disclose the proportion of their green loans, in this way also promoting the expansion of the sustainable lending system in the domestic context (MNB, 2020; MNB, 2021a; MNB, 2021b). The MNB extended the capital requirement discount to companies' green bonds, and then in 2021, based on the MNB's previous ideas, to economic sectors that comply with the taxonomy according to EU requirements and related investments, including cases of sustainable agriculture and energy efficiency of non-residential properties (MNB, 2021c).

In *the Green Program*, the MNB specifically strives to ensure that market participants have and can have the appropriate skills and expertise. In this context, the MNB facilitated the availability of domestic and international training courses, in cooperation with the Budapest Institute of Banking (hereinafter: BIB) and other organisations. In addition, four universities have now started green finance courses with the professional support of the MNB.

In 2019, the Monetary Council decided to launch a dedicated green bond portfolio, making the MNB one of the first central banks worldwide to demonstrate its commitment to green objectives in foreign reserve management. The rate of the green bond portfolio within the reserve approximates the rate of the global green bond market, which currently stands at around 1% of the total bond market. The risk-return characteristics of the portfolio do not differ significantly from similar investments. Its slightly longer maturity structure compared to other MNB portfolios supports a long-term view on green finance.

In June 2020, green bonds were issued first in euro and then in Japanese yen in September, with a combined market value of HUF 671 billion at the end of 2020. The Hungarian Government will use the proceeds of the green bond issuance to finance and refinance certain green expenditures of the central budget in line with its sovereign Green Bond Framework Programme. This dedicated amount to finance green investments is

currently negligible, at only 1.9% of the central government's outstanding stock of debt securities of some HUF 36,000 billion at the end of December 2020. Green bond portfolios have global coverage because they provide a green "return" in many developing regions due to green investments replacing more polluting operations.

It is also important to stress that the MNB does not assume the risk of the projects in question, but the credit risk of the highly rated issuers – in many cases 'AAA' (Paulik & Tapaszi, 2022), while positive environmental impacts can still be achieved. The share of investment funds related to environmental or social sustainability in the domestic market is still low, at around 0.5%, accounting for only HUF 27 billion of the total investment fund portfolio of around HUF 5,500 billion (MNB, 2020; MNB, 2021b). In its lending activities, the MNB monitors the competitiveness of businesses, including SMEs, in line with green environmental programmes.

The Hungarian central bank believes that positive macroeconomic and competitiveness effects can be achieved through a green turn and energy-efficient management, which will provide the basis for catching up and then sustainability.<sup>9</sup> In its 144-point competitiveness programme (MNB, 2022), the MNB considers it important to create a more favourable economic situation for companies, which in part strengthens the stability of domestic macroeconomics, including a positive balance of the budget and the balance of payments, or a minimal deficit, as well as better wage and tax incentives, while ensuring corporate profits. This requires taking steps to improve technology and productivity from the company's side as well. Furthermore, we must switch to the intensive growth model. The Hungarian economy is at a disadvantage both in terms of domestic labour productivity, which is the 4<sup>th</sup> lowest in the European Union, and the proportion of domestic added value within exports from Hungary is ranked the same. According to the MNB's proposal, our goal is for domestic labour productivity to reach the EU average by 2030 and to increase the domestic added value of exports to 70% on the intensive growth path (MNB, 2022). The rise of an environmentally friendly economy plays an important role in the realisation of these goals. It is a fact that the era of cheap labour and energy, as well as low interest rates is over, so an efficient production structure is the way forward. Due to its limited resources, achieving the multiplicative effect and building vertical systems at the same time is of particular importance. With this in mind, the MNB's priority company types are the start-up ecosystem of domestic businesses, those already integrated into global value chains, and companies that supply the internal market.

According to the MNB's opinion, in order to achieve a high domestic added value content, it is *essential for our competitiveness* to have breakthrough points: the shift towards diversified services, the promotion of the entry of SMEs into foreign markets, the encouragement of investments in intangible assets, successful capital investments, the integration of inflowing capital into the domestic production networks, lower intermediate import consumption and supporting the activities of domestically owned exporting companies.

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<sup>9</sup> Another key area of the MNB's competitiveness concept is to improve the quality of training and health of the human resources factor, which is no longer the subject of this paper.

For the measures to improve technology and productivity, the MNB proposes to develop the domestic entrepreneurial and start-up ecosystem, including the creation of an iconic building in a prime location as a start-up innovation hub, the creation of a university entrepreneur status, among a series of technology and productivity improvement measures. In addition, the emergence of university incubator houses as venture capital investors, ensuring corporate access to established public research capacities, and the development of the Resource and Competence Map Platform (EKTP) are essential. However, the implementation of a clear professional direction is affected by adverse developments. For reasons of space, we will mention only two. For example, in the meantime, the world is facing new challenges, notably the war between Russia and Ukraine.

The Russian–Ukrainian war has significantly increased the world market prices of fossil energy, primarily in the field of crude oil and natural gas and caused a significant increase in the global food market prices. With this, there is a risk of an energy crisis and food shortage in the world economy. As a result of the Government’s quick and decisive action, in European terms, both utility costs and gasoline prices are at a significantly lower level in Hungary compared to the other EU member states. In addition to the energy crisis, the domestic population is increasingly at serious risk by the rise in food prices on the world market, also in connection with the Russian–Ukrainian war, since Russia and Ukraine account for nearly 10% of the world’s total food exports. Further elaborating on the topic: Russia and Ukraine exports account for about 12% of total calories traded in the world, and the two countries are among the top five global exporters for many important cereals and oilseeds, including wheat, barley, sunflowers and maize. Ukraine is also an important source of sunflower seed oil, supplying about 50% of the global market (Glauber & Laborde, 2022), in addition to global drought damage. This poses a significant impact also on the Hungarian agriculture and enforces a shift towards high level technology.

The global energy crisis resulted by the war stimulated to use more renewable energy resources, but additionally to renewable energy resources the countries need using more fossil energy resources instead of energy resources coming from Russia. As a result of an international embargo against Russia, due to significantly reduced imports, EU Member States need to find other alternative fossil energy resources, which at the moment is to expand these resources along with renewable energy resources. At the same time, EU Member States sometimes put fossil fuels to renewable energy sources. For example, in Hungary, the case of the Mátra Power Plant, which is based on renewable biomass energy resources, but causes gas emissions. In addition, the domestic coal fire system is expanding, which also causes gas emissions, but may be a solution to the decrease in gas consumption.<sup>10</sup> Of course, the economic strategy does not give up the future development of renewable energy resources. The war negatively affects the development of a green economy. Hopefully this will only be temporary.

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<sup>10</sup> The war is already creating constraints in the economy. Battery production is perhaps the most polluting industry in the world. Yet the Hungarian Government should consider taking advantage of the opportunity offered by investors to produce batteries in Debrecen, Dunaújváros and Gyórszentiván, because employment and GDP production are important. The economic interest of the moment should not override the primacy of a green economy in the long term.

## 5. Summary

Protecting the environment, including curbing global warming, has become an important goal, both domestically and internationally. In international and national economic terms, the transition to a carbon neutral economy will entail considerable sacrifices for countries, companies and industries, but it can lead to sustainable economic growth in the long term. However, a failed transition will have a greatly increasing impact on financial, economic, and social systems, potentially making it impossible for a modern, technological society to function. The choice is therefore clear from both financial-economic and social political perspectives (MNB, 2020; MNB, 2021a; MNB, 2021b). The sustainable catch-up of the Hungarian economy is a *sine qua non* for the country's escape from the development trap, and, in the first instance, out of the crisis.

The MNB is committed to taking the necessary steps to ensure that the Hungarian economic and financial system, together with the introduction of innovative measures, can contribute to our country's environmental sustainability and climate neutrality.

The targeted central bank programmes have significantly boosted demand for loans from businesses and focused the attention of credit institutions on businesses and, in turn, the SME sector, to increase their competitiveness in an increasingly competitive international economy.

Among the achievements of the government's fiscal policy, the government has adopted the National Clean Development Strategy and the Climate and Nature Action Plan, which include operational measures in addition to the strategic goal of achieving full climate neutrality by 2050. A competitive economy is based on the creation of an energy-efficient and at the same time environmentally friendly economy, which requires a continuous and green economy-centred coordination of fiscal and monetary tools.

However, it is essential to state that the comprehensive public finance reform starting in 2010 and the environmental and energy-saving management aspects formulated during the successful previous decade were key aspects of the competitiveness of the Hungarian economy. The economic effects of the coronavirus and the Russian–Ukrainian war have significantly squeezed government development funds, and the Magyar Nemzeti Bank has again been faced with the task of stabilising the economy and combating inflation and has been forced to make some adjustments to its toolkit. It is a fact that the financial means for financing clear energy efficiency and environmental protection tasks have become more limited, although we cannot give up on environmental reform despite the crisis, since scarce and expensive energy resources are an elementary requirement for an environmentally conscious and energy-efficient economy. This is a prerequisite for a competitive economy in the long term. In fact, if we draw a deeper conclusion: the energy crisis that is now weighing on us should force us to manage in a more environmentally friendly and energy-efficient way. We must not make the mistake of the 1970s, when, despite expensive energy sources, Hungary's industry and agriculture failed to modernise as expected.

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