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**THE ECONOMIC CONSEQUENCES OF THE RUSSIAN INVASION OF  
UKRAINE: IMPACT ON THE ENERGY SECURITY AND PRICE  
STABILITY OF THE SLOVAK REPUBLIC**

Ekonomické dôsledky ruskej invázie na Ukrajinu: vplyv na energetickú bezpečnosť a cenovú stabilitu Slovenskej republiky

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**ABSTRACT:** The Russian invasion of Ukraine in 2022 significantly altered the economic landscape of the European Union, with particularly profound consequences for the Slovak Republic. This paper focuses on the economic aspects of the crisis, specifically its effects on the energy sector, rising energy prices, inflation, and Slovakia's energy dependence on Russia. The analysis is based on data from Eurostat, the Statistical Office of the Slovak Republic, and relevant academic literature. It presents concrete data on energy imports, the decline in gas consumption, and the development of electricity and gas prices for both households and industry. The paper highlights the challenges associated with the energy transition and emphasizes the need to enhance resilience against external shocks.

*Key words:* Russian invasion of Ukraine – Slovak Republic – energy security – inflation – public policy response

**ABSTRAKT:** Ruská invázia na Ukrajinu v roku 2022 výrazne zmenila ekonomickú situáciu v Európskej únii, pričom mimoriadne závažné dôsledky mala pre Slovenskú republiku. Príspevok sa zameriava na ekonomické aspekty krízy, konkrétne na vplyv na energetický sektor, rast cien energií, infláciu a energetickú závislosť Slovenska od Ruska. Analýza je založená na údajoch z Eurostatu, Štatistického úradu Slovenskej republiky a relevantných akademických štúdií. Príspevok uvádza konkrétne údaje týkajúce sa dovozu energií, poklesu spotreby plynu a vývoja cien elektriny a plynu pre domácnosti aj priemysel. Štúdia zároveň poukazuje na výzvy energetickej transformácie a potrebu posilnenia odolnosti voči vonkajším šokom.

*Kľúčové slová:* ruská invázia na Ukrajinu – Slovenská republika – energetická bezpečnosť – inflácia – reakcia verejnej politiky

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**INTRODUCTION**

Energy security and price stability are fundamental prerequisites for the economic and social stability of any state. The military aggression of the Russian Federation against Ukraine,

which began in February 2022, had not only security and geopolitical consequences but also a significant economic dimension. It severely disrupted the functioning of the European energy market, led to a sharp increase in energy prices, and consequently contributed to a surge in inflation affecting the entire European Union. The Slovak Republic, as a country with a high level of dependence on energy imports from Russia, found itself in a particularly vulnerable position, especially with regard to the supply of natural gas, oil, and nuclear fuel.

In response to the emerging crisis, a range of measures was adopted to diversify supply chains and reduce energy dependency. However, these changes were accompanied by substantial economic costs that impacted the business sector, public finances, and the daily lives of citizens. The rapid increase in energy prices was reflected in consumer prices, business costs, and, subsequently resulted in a significant rise in the inflation rate.

The aim of this paper is to analyze the economic consequences of the Russia–Ukraine conflict, with a focus on the development of Slovakia’s energy dependency, changes in energy prices, and the inflation trajectory during the period 2022–2023. The article also highlights the degree of success of diversification measures and examines the effectiveness of policies aimed at mitigating the impact of the crisis on the Slovak economy and population. The analysis is based on official statistical data, scholarly literature, and data from international institutions, with the primary objective of providing an expert reflection on the economic aspects of this crisis period in the context of the Slovak economy.

## **METHODOLOGY AND OBJECTIVE**

The examination of the economic impacts of armed conflict requires contextualization within a broader framework of economic theory. Wars represent external shocks that disrupt market stability and have far-reaching effects on production, consumption, price levels, and economic growth. From a theoretical standpoint, it is appropriate to approach this issue through a combination of supply-shock theory, commodity dependency theory, and macroeconomic models of inflation. According to the classical AS-AD (aggregate supply – aggregate demand) model, an external supply shock, such as an interruption in energy supplies, shifts the aggregate supply curve to the left, resulting in higher prices and a decrease in real GDP (Blanchard, 2017).

The theory of energy security emphasizes the risks associated with unilateral dependence on energy imports, which is particularly relevant in the case of Slovakia. Prior to 2022, the country relied predominantly on imports of natural gas, oil, and nuclear fuel from the Russian Federation. As Yergin (2006) states, the diversification of energy sources is a key

condition for maintaining national security and economic stability. Energy dependence creates asymmetric power relationships that can be exploited during times of conflict.

Macroeconomic theory offers several approaches to explaining rising price levels. In 2022-2023, inflation in Slovakia was primarily cost-push in nature, driven by increases in energy and input prices. According to the Keynesian concept, such inflation results from higher production costs being passed on to final consumers, manifesting as an increase in the Consumer Price Index (CPI) (Samuelson & Nordhaus, 2010). Rising prices for gas and electricity also generate secondary effects in the form of more expensive food and services, thereby reducing the real purchasing power of the population.

Methodologically, this paper is based on a descriptive analysis of statistical data from both domestic and international sources, particularly Eurostat, the Statistical Office of the Slovak Republic, Enerdata, Macrotrends, and European Commission reports. A comparative approach is also employed to examine developments in key economic indicators (e.g., inflation, energy prices, and gas consumption) before and after the outbreak of the conflict. Secondary analysis of scientific studies and think-tank reports (e.g., Bruegel, IEA) serves to interpret the observed phenomena within a broader European context and to formulate conclusions with practical relevance for public policy.

This framework forms the basis for further analysis of the impacts of the Russia–Ukraine conflict on the Slovak economy in terms of energy dependence, price stability, and economic resilience. In this way, economic theory provides the analytical tools necessary to understand the mechanisms that have shaped economic reality under crisis conditions.

## **SLOVAKIA’S ENERGY DEPENDENCE AND ITS IMPACTS DURING THE CRISIS**

Energy dependence represents a significant economic and geopolitical factor that determines a country's resilience to external shocks. The Slovak Republic has long been among the countries with a high degree of dependence on energy imports from the Russian Federation. Prior to the outbreak of the war in Ukraine in 2022, more than 85% of Slovakia’s natural gas, oil, and nuclear fuel originated from Russia. This dependence resulted from long-term contracts, historical infrastructure ties, and the cost advantages of Russian energy supplies.

According to data from the Statistical Office of the Slovak Republic and Eurostat, in 2021, natural gas imports from Russia accounted for approximately 26% of Slovakia’s total energy consumption. The supply of nuclear fuel (23%) and oil (21%) was also heavily dependent on Russian sources. In total, more than two-thirds of the Slovak Republic’s energy

balance relied on imports from a single country, representing a significant security and economic risk (Statistical Office of the Slovak Republic, 2021).

The energy balance of Slovakia in 2021 was as follows:

Commodity	Volume (in million EUR)	Share of Total Consumption
Natural gas	4,551.1	26%
Nuclear fuel	4,051.1	23%
Oil and petroleum products	3,714.4	21%
Solid fossil fuels	2,823.3	16%
Renewables and other sources	2,325.1	13%
Non-renewable waste	273	1%

*Source: Statistical Office of the Slovak Republic, Eurostat (2021).*

The high concentration of energy supply from a single source became a critical issue following the outbreak of the war. The threat of supply disruptions and geopolitical coercion created an urgent need for diversification. Slovakia began signing contracts with alternative suppliers of gas and electricity, including companies such as ENI, RWE, SNAM, and Enel. The Slovak Gas Industry (SPP) also secured LNG deliveries from Norway and non-EU countries.

Despite these efforts, the level of dependence remained high. By the end of 2022, according to data from expert studies, as much as 60% of Slovakia's gas supply was still sourced from the Russian Federation (Puntíková et al., 2023). This indicates the limited capacity for rapid transformation of the country's energy mix. Moreover, the higher prices of alternative supplies led to increased energy costs, which were subsequently reflected in consumer prices and contributed to elevated inflation levels (Puntíková et al., 2023).

The economic consequences of high energy dependence can be divided into direct and indirect effects. Direct effects include rising commodity prices, supply uncertainty, increased costs related to alternative transit routes, and the need to invest in new infrastructure. Indirect impacts involve pressure on public finances, deterioration of the business environment, and reduced competitiveness of Slovak industry. Furthermore, households faced rising energy bills, which led to the introduction of state compensation measures and price regulation.

In conclusion, due to long-neglected energy vulnerabilities, Slovakia found itself in a situation that required strategic decisions to be made within a short timeframe and under significant economic pressure. The experience of the years 2022-2023 underscores the necessity of systematically reducing energy dependence, developing domestic energy production, and increasing energy efficiency as long-term objectives of economic policy.

## **THE RISE IN ENERGY PRICES AND THEIR IMPACT ON INFLATION AND THE ECONOMY**

The war in Ukraine led to an unprecedented increase in energy prices across Europe, with Slovakia among the countries that experienced significant cost increases for both households and industry. According to Eurostat (2023), electricity prices for households in the EU rose by an average of 32% between the second half of 2021 and the second half of 2022. In Slovakia, the increase amounted to 18%, the second-lowest in the EU after Croatia, largely due to extensive price regulation and state subsidies (Eurostat, 2023).

A similar trend can be observed in the development of gas prices for households during the same period. While the average increase across the EU reached 75%, gas prices for Slovak households rose by only 18% (Eurostat, 2023). Despite the relatively low percentage increase, Slovak households paid the lowest absolute gas price in the EU, averaging €4.5 per 100 kWh in the second half of 2022.

In the industrial sector, the increase in costs was even more pronounced. Gas prices for industrial enterprises rose year-on-year by as much as 90% in some months of 2022, while electricity prices peaked in the second half of the same year (Eurostat, 2023). Although prices stabilized somewhat in 2023, they remained significantly elevated compared to the pre-crisis period. The average electricity price for households in the EU in the first half of 2023 was 23.2 euro cents per kWh, whereas in Slovakia it stood at 17.1 euro cents per kWh (Eurostat, 2023).

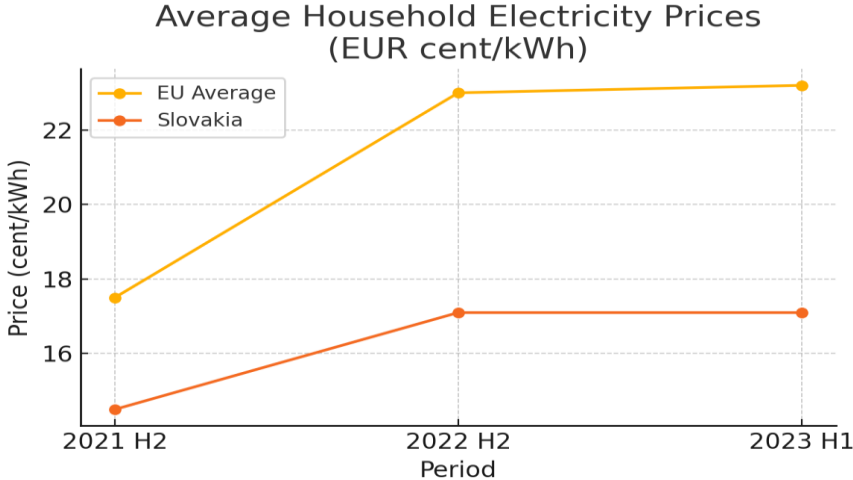
The surge in energy prices directly translated into inflationary pressures. In 2022, the average inflation rate in Slovakia reached 12.8%, with energy-related categories, such as housing, water, electricity, gas, and other fuels, recording year-on-year price increases exceeding 20% (Statistical Office of the Slovak Republic, 2023). These figures are consistent with the cost-push inflation model, where overall price levels rise due to external inputs and supply-side shocks (Samuelson & Nordhaus, 2010).

Higher energy costs increased the overall operating expenses of businesses, significantly impacting energy-intensive sectors such as chemicals, metallurgy, and building materials production. Many companies were forced to halt production or to substantially raise product prices, further intensifying inflationary pressures. These secondary effects also impacted consumers and had a pronounced impact on real wages, which declined by 4.5% in 2022 (Statistical Office of the Slovak Republic, 2023).

Although the government implemented several measures to mitigate the effects of the energy price shock, including caps on household energy prices and subsidies for businesses, the impact of these interventions was only partial. Public expenditure on compensation measures

reached nearly 2% of GDP in 2022 (Ministry of Finance of the Slovak Republic, 2023), placing additional strain on public finances. From a macroeconomic perspective, the energy price crisis deepened existing structural weaknesses in the economy and revealed a limited level of preparedness for external shocks.

**Figure 1:** Average Household Electricity Prices in Slovakia and EU (EUR cent/kWh)



Source: Eurostat (2021–2023).

**POLITICAL RESPONSES, ENERGY CONSUMPTION AND ECONOMIC RESILIENCE**

The unprecedented energy crisis triggered by the war in Ukraine forced governments across the European Union to adopt urgent policy measures aimed at mitigating the socio-economic consequences of rising energy prices. Slovakia, as one of the most affected countries due to its high dependence on Russian gas and oil, implemented a combination of fiscal and regulatory interventions. These measures included price caps for households, compensation schemes for vulnerable groups, and direct subsidies for energy-intensive industries. In 2022, the Slovak government allocated over €1.5 billion to support energy affordability and stabilize inflationary pressures (Ministry of Finance SR, 2023). (IMF, 2023; OECD, 2023).

Despite these interventions, Slovakia recorded only a marginal reduction in natural gas consumption. According to Eurostat (2023b), natural gas consumption in the EU decreased by 19.3% between August 2022 and January 2023 compared to the average for the same months in 2017–2022. By contrast, Slovakia managed to reduce its gas consumption by only 1%, making it one of the least responsive countries in terms of energy savings. This outcome indicates structural rigidity in energy demand and limited flexibility in switching to alternative energy sources. (Eurostat, 2023b; IEA, 2023).

The limited decline in consumption can be attributed to several factors. First, a significant share of natural gas consumption is related to residential heating, where substitution options are limited in the short term. Second, many industrial processes in Slovakia are gas-dependent, and their operation is closely linked to the country's export-oriented economic structure. Third, the relatively mild winter of 2022/2023 reduced incentives for more pronounced behavioural changes in households (Bruegel, 2022).

From a macroeconomic perspective, the resilience of the Slovak economy during the energy crisis was partially supported by temporary government interventions but remained vulnerable to external shocks. While these interventions were effective in preventing immediate socio-economic destabilization, they imposed a significant burden on public finances. As the crisis persisted, concerns about fiscal sustainability and inflation expectations became more pronounced.

In conclusion, Slovakia's political response helped to cushion the short-term impact of the energy crisis. However, the relatively low level of consumption adjustment, combined with high fiscal costs, highlights the need for more structural and long-term solutions. These include investments in energy efficiency, the development of renewable energy sources, and greater diversification of energy suppliers to enhance long-term economic resilience.

Moreover, the crisis revealed deeper structural vulnerabilities in Slovakia's energy governance framework. The lack of timely diversification policies prior to 2022, insufficient investment in renewable energy infrastructure, and underdeveloped energy storage capacities contributed to limited systemic preparedness. The lessons drawn from the crisis underline the importance of coordinated EU-level action in energy solidarity, cross-border infrastructure development, and the strengthening of a unified energy market that enhances the resilience of small and import-dependent economies such as Slovakia (European Commission, 2023; Energy Community, 2022).

## **ECONOMIC OUTLOOK AND LONG-TERM POLICY IMPLICATIONS**

The energy crisis triggered by the Russian invasion of Ukraine not only caused short-term disruptions but also exposed fundamental structural challenges in Slovakia's economic model. As a small open economy with a high degree of energy import dependence, Slovakia faces considerable risks to both industrial competitiveness and fiscal sustainability. The long-term economic outlook is therefore closely linked to the country's ability to adapt to new geopolitical and market conditions.

According to the forecasts by the National Bank of Slovakia (NBS, 2023), moderate economic growth is expected in the coming years, with GDP growth projected at 1.7% in 2024 and 2.5% in 2025. However, these projections are subject to substantial uncertainty. Energy prices remain volatile, external demand is fragile, and inflationary pressures persist despite central bank interventions. The European Central Bank (ECB, 2023) notes that core inflation across the euro area is expected to remain above the 2% target throughout 2024, further complicating monetary policy coordination and constraining real wage growth.

From a structural perspective, Slovakia must accelerate the diversification of its energy mix. The International Energy Agency (IEA, 2023) emphasizes that sustained investment in renewable energy sources and energy storage systems is essential to ensure long-term energy security. Although Slovakia has made some progress, particularly in solar and hydro power, the share of renewables in total final energy consumption remains below the EU average. This discrepancy poses risks not only in terms of resilience but also in fulfilling EU climate obligations under the Fit for 55 package and the European Green Deal.

Another critical challenge lies in improving energy efficiency, particularly in the industrial and building sectors. The OECD (2023) highlights that targeted investments in insulation, heating systems, and energy management technologies can significantly reduce energy demand and enhance economic resilience. In this context, public policy must shift from compensatory subsidies towards proactive structural reforms, supported by EU funding instruments and green finance mechanisms.

Fiscal implications of the energy crisis are also significant. The Ministry of Finance of the Slovak Republic (2023) warns of rising budget deficits if temporary compensatory measures become permanent. Without a medium-term fiscal consolidation strategy, the long-term debt trajectory may become unsustainable. This risk is particularly relevant as the government seeks to invest heavily in energy infrastructure while maintaining social protection mechanisms.

Strategic foresight must therefore include the development of national capacities in energy technology innovation, workforce upskilling and regional cooperation. Slovakia's participation in regional energy platforms, such as the Three Seas Initiative or enhanced cooperation within the V4 framework, can support diversification of energy routes and strengthen geopolitical stability.

In conclusion, the energy crisis represents a turning point for Slovakia's economic policy. Short-term stabilization must be complemented by long-term adaptation strategies that enhance energy independence, accelerate decarbonization, and strengthen macroeconomic

resilience. The effectiveness of these measures will determine Slovakia's ability to withstand future shocks and maintain competitiveness in an increasingly fragmented global economy.

To fully understand the long-term economic trajectory of Slovakia in the post-crisis environment, it is necessary to move beyond short-term macroeconomic projections and focus on structural vulnerabilities, global market dynamics, and domestic policy capacity. One of the most pronounced vulnerabilities remains the country's heavy industrial structure, particularly its dependence on the automotive sector. This sector, while highly productive, is both energy-intensive and export-dependent. Any prolonged increase in energy costs or disruptions in global supply chains could significantly undermine Slovakia's competitive position (World Bank, 2023).

Furthermore, the crisis exposed weaknesses in the governance and regulatory frameworks governing energy and environmental policy. According to the Energy Policy Review of Slovakia by the International Energy Agency (IEA, 2022), institutional coordination remains fragmented, with overlapping competencies among ministries and limited implementation capacity at the regional and municipal levels. A more integrated approach to energy transition governance is therefore critical to ensure coherence, efficiency, and accountability.

Labor market implications also deserve close attention. As Slovakia moves towards a more sustainable and low-carbon economy, reskilling and upskilling of the workforce will be required. The OECD Skills Outlook (2023) warns of potential labor displacement in carbon-intensive industries if adequate training and support mechanisms are not established. Strategic investment in education, vocational training, and innovation ecosystems will be essential to enable the workforce to adapt to emerging sectors.

At the regional level, disparities between western and eastern Slovakia may deepen in the absence of targeted interventions. Regions characterized by lower economic diversification and higher levels of energy poverty face an increased risk of stagnation. EU cohesion funds and the Just Transition Mechanism should be leveraged to address spatial inequalities and promote inclusive development (European Commission, 2023b).

Moreover, the international dimension of Slovakia's economic outlook must be taken into account. As a member of the euro area and the EU internal market, Slovakia's recovery and structural transformation are embedded within broader European strategies. Participation in joint energy procurement schemes, regional interconnectivity initiatives, and coordinated climate policy will determine the country's strategic positioning within the evolving European energy architecture (European Council, 2023).

Finally, strengthening institutional resilience, policy coherence, and strategic foresight capacities should become central pillars of Slovakia's post-crisis governance framework. This requires not only technical reforms but also fostering public trust, improving communication of policy objectives, and ensuring transparent use of recovery and resilience resources. The European Court of Auditors (2023) emphasizes that effective absorption of EU funds remains a persistent challenge in Slovakia, which could hamper implementation of necessary structural reforms.

## **CONCLUSION**

The economic implications of the war in Ukraine and the ensuing energy crisis have severely tested Slovakia's economic, institutional, and strategic capacities. The country's high dependence on imported fossil fuels, particularly from the Russian Federation, exposed it to acute vulnerabilities that translated into price shocks, fiscal pressures, and constrained policy options. Although short-term government interventions helped to mitigate the immediate social impact of rising energy prices, they also revealed deeper structural shortcomings in energy diversification, governance capacity, and long-term resilience planning.

The analysis of economic indicators, government policies, and comparative data from other EU Member States suggests that Slovakia's response, though immediate and robust, must evolve into a more systemic transformation. Strengthening the renewable energy sector, enhancing energy efficiency, reducing regional disparities, and improving institutional effectiveness are not only essential prerequisites for sustainable economic recovery but also key determinants of strategic resilience in an increasingly volatile global environment.

Furthermore, Slovakia's economic model requires recalibration of its industrial base and labor market to better align with the principles of sustainability and digital transformation. Targeted investments in innovation, workforce upskilling, and inclusive regional development can support this transition and improve the country's positioning within the evolving European economic framework. Cooperation with EU partners, effective utilization of recovery funds, and commitment to long-term fiscal discipline will be crucial for ensuring economic sovereignty, competitiveness, and resilience to future shocks.

In sum, the current crisis represents not only challenges but also a strategic opportunity. If appropriately managed, Slovakia's transition towards a greener, more resilient, and innovation-driven economy can lay the foundation for long-term prosperity and stability.

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