CAUSES AND CONSEQUENCES OF THE 2021 ENERGY CRISIS

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Abstract

The growth rates of the fuel and energy complex of countries exports energy resources are closely related to economic growth rates of countries imports these. The growth or decline in macroeconomic indicators of exporting and importing countries is accompanied by a change in energy balance and, accordingly, a change in the state of energy markets. This market is also influenced by the policies promoted by the world key players. Therefore, it is very important to investigate the causes and consequences of the 2021 energy crisis. The article systematizes the opinions of a number of economists about the causes of the energy crisis, provides evidence confirming the author's opinion on this subject of research and presents the expected consequences of the crisis both for the economy and for the welfare of the population. This study has been supported by the State Program 20.80009.0807.29 "Improving the application mechanisms of the innovative instruments oriented towards the sustainable growth of the well-being of population of the Republic of Moldova."

Key words*: energy crisis, tariff, natural gas, pricing and tariff policy, the welfare of the population.*

JEL Classification: *D60, Q43.*

Introduction

The energy markets have undergone major changes in recent years with the sharp rise in prices of hydrocarbons. There have also been significant changes in energy balances in both developed and developing countries. The largest buyers in the European market did not take into account that, in market conditions, liquefied gases could be redirected to the Asian market, where prices were higher, bypassing the European market.

The introduction of the third energy package, the refusal to extend long-term gas supply contracts, the transition from the type of OPE (Oil Price

Escalation) pricing mechanisms to the GOG (Gas-on-gas Competition), the admission reducing gas reserves in European storage facilities, setting ambitious targets for the transition to green energy without taking risks into account are some of the reasons for the fever in the hydrocarbon markets in 2021, especially in the natural gas market (Gutium, 2021a). The energy crisis as well as the financial crisis has a negative impact on both national economies and the population. Under these conditions, governments must promote policies to support citizens, especially vulnerable groups (Gutium, 2021a). All of the above proves the relevance of studying the causes and consequences of the 2021 energy crisis.

1. The evolution of the economy

2021 has been the year of the global economic recovery after the 2020 recession caused by pandemic and lockdowns. According to forecasts, the rate of economic growth to vary significantly across countries. Development gaps depend on access to vaccines and government support measures taken early in the pandemic COVID-19. Based on quarterly data on the growth of real Gross Domestic Product (GDP), the author predicted economic growth of GDP in 2021 for the major economies of the world (Figure 1).

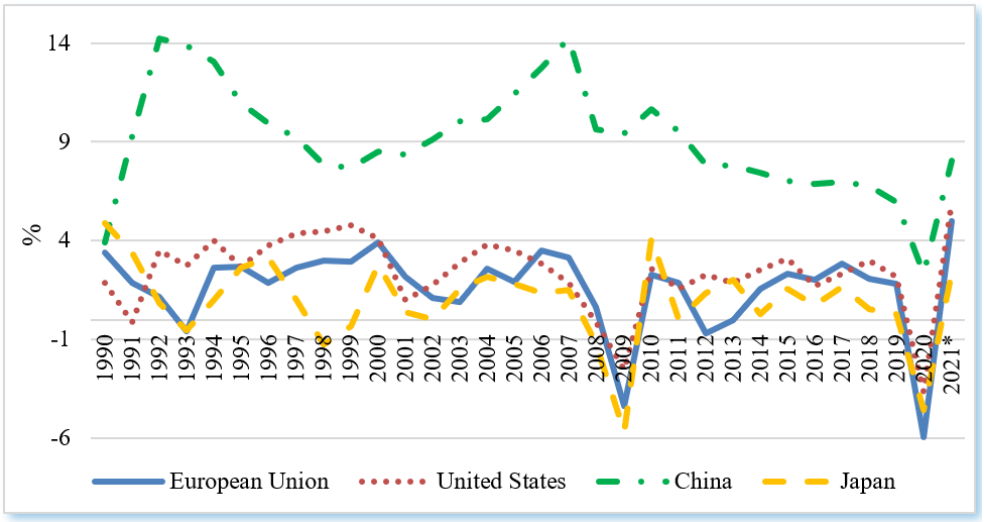

Figure 1. Gross Domestic Product growth (annual %)

Source: The World Bank data (The World Bank, 2021a) and the elaborated forecast.
Note: * – forecast value.

2020 year has dealt the most devastating blow to the economy in a very long time. The global economic downturn in the first year of the pandemic was 3.36%. This is the largest recession in 30 years, more than 2.6 times more than during the 2009 global financial crisis.

The global economy is undergoing a robust but uneven recovery in 2021. Economic growth has been observed mainly in several developed countries that are exporters of energy resources. At the same time, most of the emerging market and developing economies lagged markedly behind the bigger economies. The global economy is projected by author to grow 5.7% in 2021.

During the thirty years 1990-2019, China's economy grew at an average rate of 9.34% annually. In 2020, despite the pandemic, real GDP did not decline, but grew by 2.35%. This result was achieved due to the fact that the Chinese economy was the first to start recovering from the nationwide lockdowns in the first wave of the pandemic. After a downturn in the first quarter, real GDP grew by 3.2% in the second quarter, 4.9% in the third and 6.5% in the fourth quarter of 2020. The record growth of the Chinese economy in the first quarter of 2021 by 18.3% compared to the same period last year, made it possible to predict real GDP growth for 2021 by 8.02%.

The European Union's economy is estimated to grow by 4.966% in 2021, less than the growth of the global economy. Considering that the decline in real GDP was much larger in the previous year, the EU economy did not recover in one year. The main cause is the 2021 energy crisis.

For the period 1960-2021, there was no gas as expensive as in the fall of 2021 in Europe yet. The average monthly price for natural gas increased 6.35 times over the year (the ratio of October 2021 to October 2020). The current situation raises the question of what are the causes of the current energy crisis and whether it could have been prevented.

2. The evolution of prices for energy resources and expert opinions on the causes of the 2021 energy crisis

The main reason for the significant increase in natural gas prices is the rapid recovery of economic activity after lockdowns. Many countries have implemented fiscal stimulus and business support policies that have contributed to the rapid recovery of the global economy and increased demand in energy markets. Since Asian countries began to rebuild their

economies earlier than European countries, natural gas prices in this market began to rise earlier since October 2020 (Figure 2).

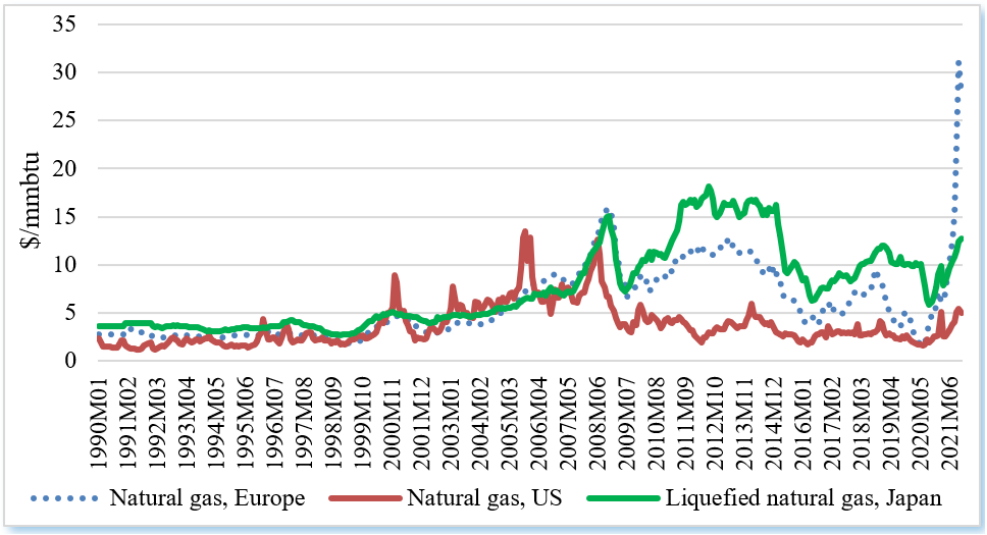

Figure 2. Monthly prices of natural gas in nominal US dollars, 1990M01-2021M11

Source: The World Bank data (The World Bank, 2021b).

Over the past 32 years, the prices for Liquefied Natural Gas (LNG) in the Asian market have been higher than prices for natural gas in the European market in following periods 1990-2004 and July 2009 - May 2021. In mid-2020, Asian LNG prices were 6.4 times higher than European gas prices. As high prices redirected gas tankers from the European to the Asian market, this led to a decrease in supply in the European gas market, and subsequently to an increase in gas prices in this market. Gradually, the gap between prices narrowed, and starting from June 2021, the highest prices are already registered in the European market. In October 2021, European gas prices are 2.5 times higher than Asian LNG prices and 5.7 times higher than US gas prices. Naturally, this gap will redirect gas tankers in the near future to the European market.

Another cause of the energy crisis is the small volume of gas in European underground storage facilities (Figure 3). According to Gas Infrastructure Europe, as of December 30, more than a third of the volume of

gas injected this year (36.47%) has been withdrawn from underground storage facilities in Europe (Gas Infrastructure Europe, 2021).

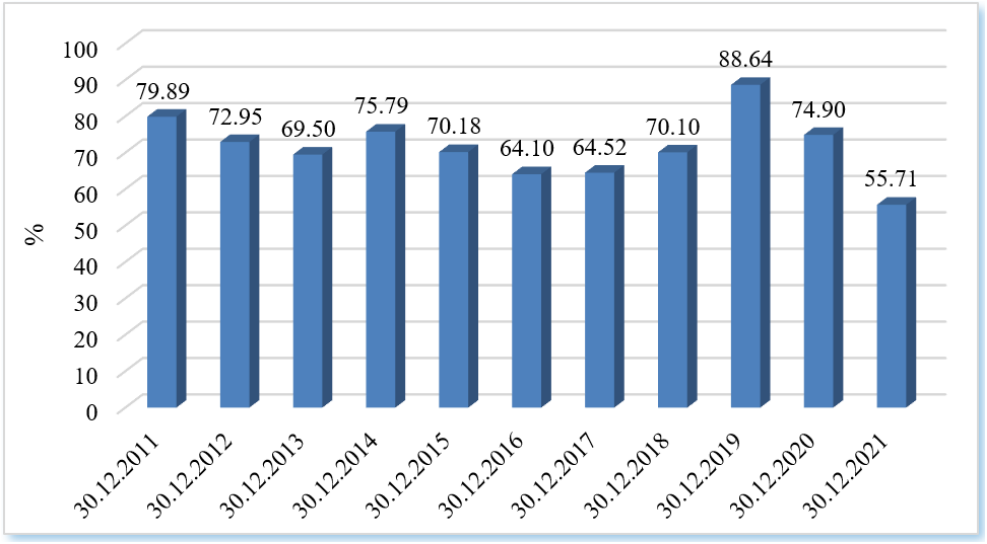

Figure 3. Gas in European underground storage facilities

Source: Aggregated Gas Storage Inventory, Gas Infrastructure Europe, historical data (Gas Infrastructure Europe, 2021).

The focus on green energy is also the cause of the energy crisis of 2021. Developed countries have set themselves the goal of replacing carbon-intensive economies with a green economy in a relatively short time, that is, they have set ambitious goals to completely replace fossil fuels. At the same time, European countries began to refuse to sign long-term contracts for pipeline gas, and began to move from the OPE pricing mechanism to GOG pricing.

As a result, this strategy did not help nature, but, on the contrary, harmed and provoked an energy crisis. First of all, today's reality suggests that green energy cannot replace hydrocarbons by 100%. The weather brings us surprises. A drought in the South of the United States reduced the hydroelectric power plant's generation to a minimum for the first time in 10 years and led to the closure of the 644-MW Edward Hyatt Power Plant – „the fourth-largest energy producer of all California's hydroelectric facilities" (Power, 2021). The United States had to deal with the situation by increasing use of coal and gas for electricity generation, which naturally led to an

increase in the levels of GHG emissions. The Energy Information Administration estimates that „the U.S. will have 22% more coal-fired generation in 2021 than in 2020" (Energy Information Administration, 2021).

Without wind across Europe, plus cold winters and hot summers, increased the demand for electricity. As a result, the United Kingdom had to activated the mothballed West Burton coal power plant instead of promoting green energy. And as we know, „compared to oil and coal, natural gas is a relatively environmentally friendly fuel" (Gutium, 2021b).

In addition, modern green energy is not as harmless as it was thought. First, until now there has been no serious research on the impact of wind power plant on the environment, although it is already known that the generated frequencies are harmful to the ecosystem. Damage to live fauna in the vicinity of wind power plants has been observed, especially to birds, bats and their habitats. These stations create noises harmful to humans in various sound spectrum.

The blades of wind farm are made from composite materials, they are not easily recyclable. To date, there are no harmless technologies for the disposal of blades. Today, those blades that are not reused or incinerated end up in a landfill and are simply buried in, causing irreparable damage to the environment. Summarizing the above, according to the author, wind power plants cannot be classified as pure green energy.

The situation with solar panels is similar to the situation with the blades of wind farms. Solar panels contain harmful substances such as lead, copper, gallium, cadmium, arsenic, synthetic materials. Solar panels placed over large areas can affect the climate by disrupting the natural temperature regime. Low efficiency of solar panels and high cost of solar photovoltaic cells indicate low profitability of their use.

The production of photovoltaic cells and panels is chemically dirty, wastewater and waste gases have a detrimental effect on the environment. The earth, water and air in the vicinity of solar panel manufacturers factories can contain harmful substances, which is a threat to all life around these factories. Harmful to ecology are both production and recycling solar panels. The lifespan of modern structures is estimated at 20-30 years. After that, it is necessary to take care of their disposal. „The problem of recycling solar panels could explode with full force in two to three decades and cause significant harm to the environment, as it creates a huge amount of waste and is difficult to recycle" (Shellenberger, 2018).

Another mistake of the European Union, which will exacerbate the energy crisis, is the abandonment of nuclear power plants. Germany has decided to completely renounce nuclear energy. German Nuclear Power Plants will be shut down in next year – 2022.

It should be noted that Germany is one of the largest importers of natural gas from the Russian Federation. According to Gazprom, 41.6 billion cubic meters were exported to Germany in 2020 (Figure 4).

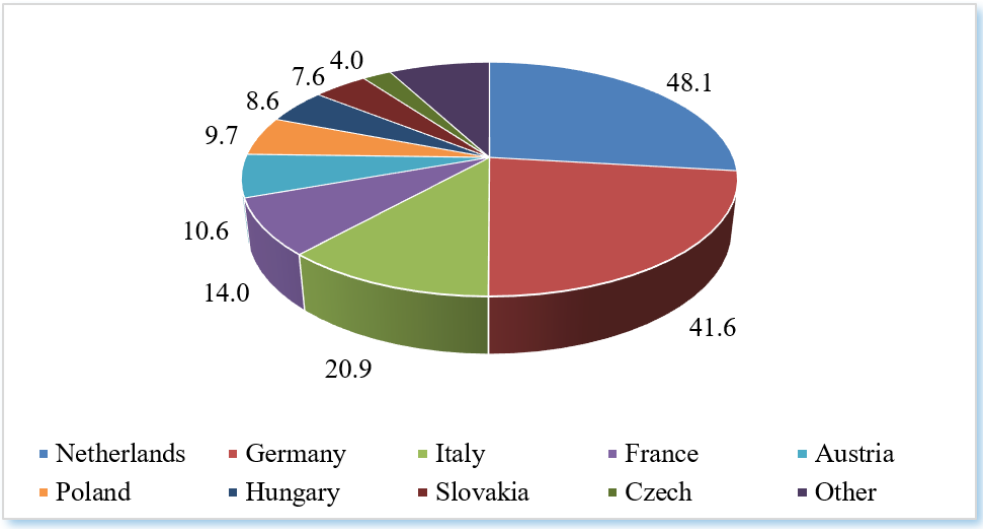

Figure 4. Natural gas sales by Gazprom Group in 2020 to European Union countries, billion cubic meters

Source: Gazprom data (Gazprom, 2021).

The International Energy Agency in report „World Energy Outlook 2021" suggested that in the process of transferring the economy to renewable energy, the world will have to go through more than one energy crisis like the current one (International Energy Agency, 2021). Forbes journalist Ariel Cohen wrote in his article that one of the key reasons for the energy crisis in the region is Europe's „arrogant" policy and the desire to switch to green energy at any cost. The main lesson: it is impossible to carry out transformations in the energy sector without creating a sufficient number of reliable and cost-effective base generating capacities (Cohen, 2021).

The Secretary General of the World Energy Council (WEC) has another opinion. According to Angela Wilkinson, „the 2021 energy crisis is

caused not so much by geopolitics as by an unexpected recovery in demand and a redistribution of the market" (Report, 2021).

Conclusion

According to many world-class experts and the author, the main causes of the 2021 energy crisis are:

- the development of the world economy;
- the transition to the green energy;
- the small volume of gas in European underground storage facilities;
- the refuse to sign long-term contracts for pipeline gas with fix price, and the move from the OPE pricing mechanism to GOG pricing.

Consequences of energy crisis are:

- chain reaction of increasing prices;
- increasing the unemployment rate;
- inflation;
- increasing the number of bankruptcies (for example, fertiliser producers, etc.);
- decreasing the solvency of the population;
- increasing the absolute poverty rate;
- increasing the Gini coefficient;
- decreasing the welfare of the population.

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