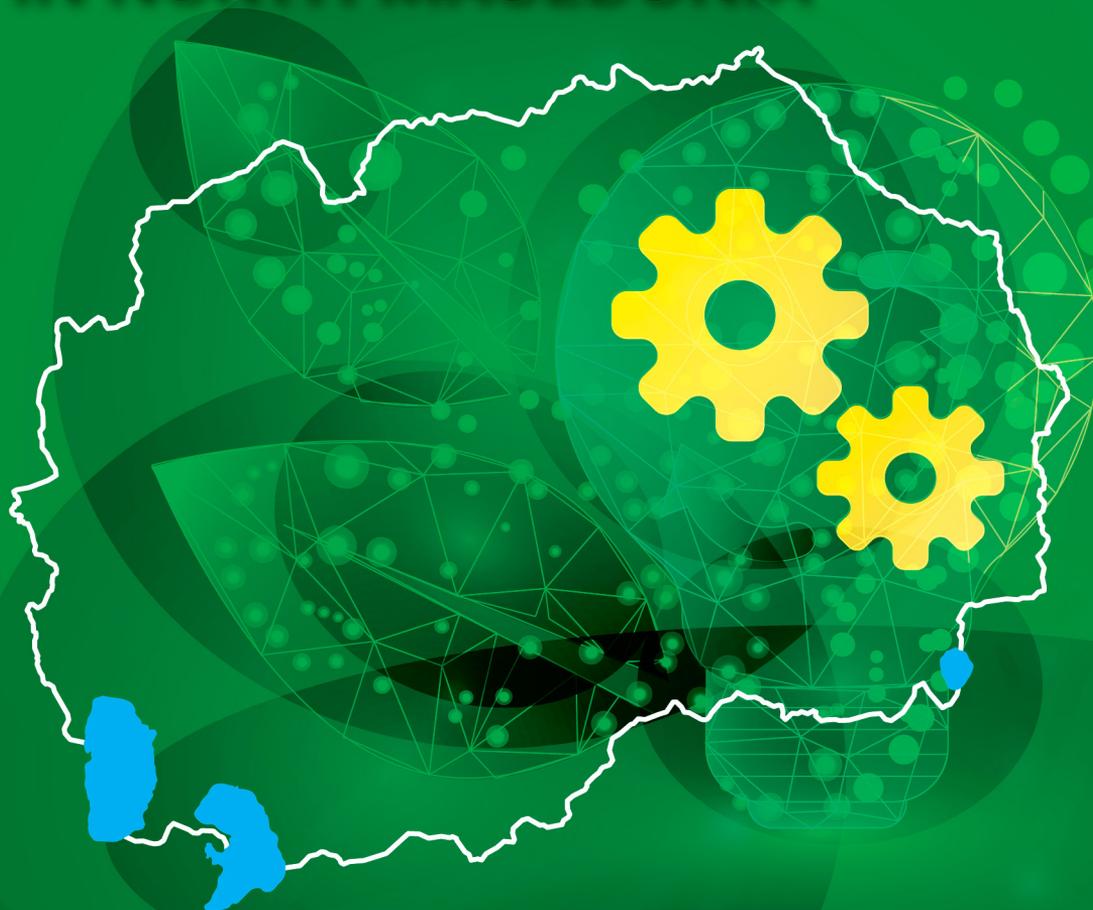


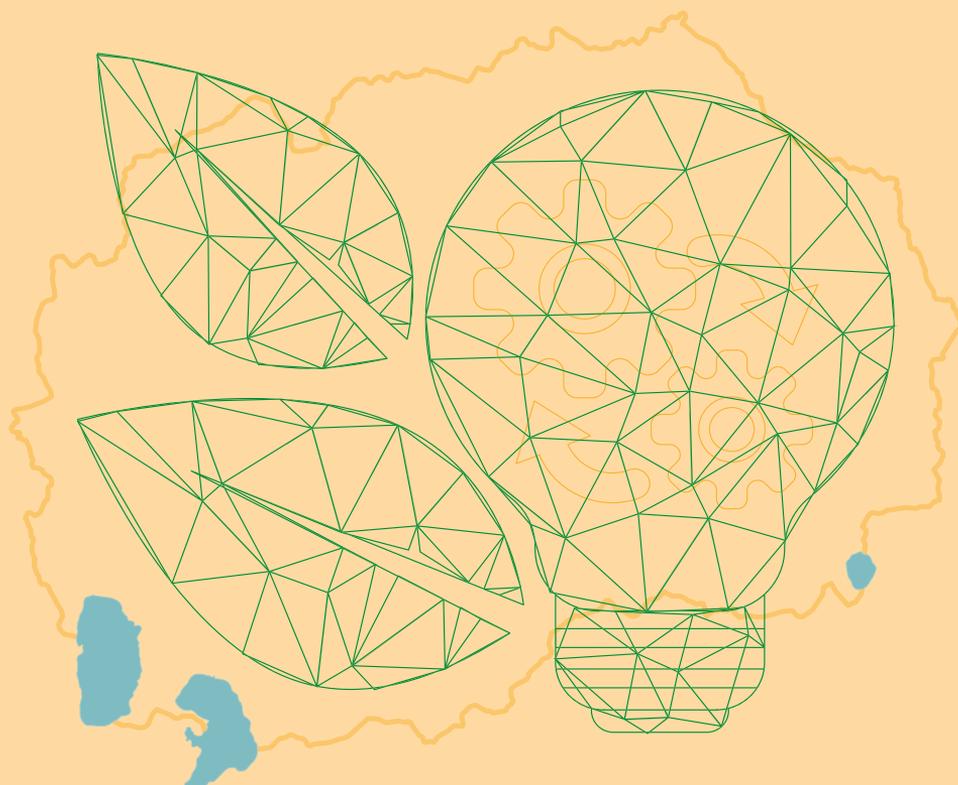


IMPACT ASSESSMENT OF THE UKRAINE CRISIS ON THE ENERGY AND AGRICULTURE SECTORS IN NORTH MACEDONIA





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INTRODUCTORY NOTE:

In May 2022 the UNDP country office in North Macedonia began a process that commissioned the making of two impact assessment studies aimed at providing a comprehensive valuation of the 'impact of the Ukraine crisis on the socio-economic situation' in the country.

We pursued two studies, one focusing on the impact of the crisis on local governments, and the other focusing on the availability and price of commodities in the energy and agricultural sector, and how in return this impacts the socio-economic milieu in the country.

With this publication, we would like to share the 'executive summary' from the report that investigated the impact assessment of the Ukraine crisis on the energy and agriculture sectors in North Macedonia.

Report commissioned
by the UNDP country office
in North Macedonia

The project team that worked on this report was led by PricewaterhouseCoopers (PwC) with assistance from key agriculture expert Prof. Dragi Dimitrievski and key energy expert Aleksandar Dedinec, Phd, as well as PwCs quality assurance and project support team.

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EXECUTIVE SUMMARY OF THE REPORT

The Russian-Ukrainian conflict caused significant movements in global markets in all areas, especially in energy supply and food availability. The conflict contributed to an additional negative impact on the global economy, already weakened from the consequences of the Covid-19 health pandemic, as it sent shockwaves across Europe, causing uncertain availability of certain products (including food and energy), unpredictable price increase, rising long-term inflation expectations and increasing the risk of social vulnerability as well as slowing down the goods/ services flow and exchange, i.e. supply chain disruptions.

North Macedonia, as one of the import-dependent countries for agricultural products, as well as energy commodities, is faced with finding alternative solutions and introducing measures to mitigate the consequences of the conflict. In order to determine the impact of the conflict an evidence-based study was conducted by gathering the experience and information from the private and the public sector.

I. Impact of the agriculture sector

The agriculture sector in North Macedonia has crucial socio-economic importance taking into consideration that on average for the period 2019–2022, the sector employed between 10% and 13% of the active working population and contributed 7.6% to the GDP of the country in year 2021.¹ Of the total arable land (516,733 hectares), about 200,000 hectares are state-owned, managed by the Ministry of agriculture, forestry and water economy.² This means that depending on the state's agricultural land management policies, the state has an impact on productivity and economic results in the agricultural sector. Agricultural production is carried out by family farms and agricultural enterprises. Family farms use about 85% of arable land³, and they contribute to the so-called “systemic weakness” of Macedonian agriculture - agricultural holdings are small (average size ~1.8 ha), agricultural production takes place on small production plots (average size ~0.2 ha), which makes it impossible to achieve economies of scale and affects opportunities for modernization and automation of production, makes it more expensive and limits its competitiveness.

¹ SSO: Report: GDP, first quarter of 2022

² SSO: Agricultural areas and crop production, 2021

³ National strategy for agriculture and rural development 2021-2027

The agriculture sector is strongly dependent on imports of crops, as well as fertilizers. The production of wheat is organised on somewhat more than 70 thousand hectares, and it has a decreasing tendency.⁴ Low average yields of 3 to 3.5 tons per hectare, i.e. 210–245 thousand tons per year, are not enough to meet the domestic market needs (total needs are about 300 thousand tons)⁵. The import of wheat is between 75 thousand and 100 thousand tons and the value of the imported quantities is about EUR 20 million. In addition to wheat, North Macedonia also imports between 40 and 50 thousand tons of wheat flour, with import value ranging between EUR 11 million and EUR 14 million.

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Barley is the second product of strategic importance for the agricultural and food sector, being a main input for livestock production. In 2021, barley was sown on about 48 thousand hectares⁶; productivity is low and amounts to about 3 tons per hectare. Barley imports have declined in 2021, mainly because of the increased domestic barley production.

Fertilizers are entirely imported – a total amount of about 70 to 90 thousand tons. According to the research, about 80% are imported from Russia and Ukraine. Even though a portion of the fertilizers is imported from Bulgaria, the ingredients used to make the fertilizer in Bulgaria come from Russia. A decrease in the imported quantities is noted in 2021, due to the increase of the prices of fertilizers. The decreased use of fertilizers can further decrease the already low yields – according to expert estimates, by up to 20%.

Globally, Ukraine and Russia are among the most important producers and exporters of agricultural products in the world, especially for cereal and oilseeds. Russia, in the last five years, has on average participated with 10% of global wheat production, and the participation of Ukraine for the same period is with 3%. Further, Russia and Ukraine are the first and fifth largest exporters of wheat, with 20% and 10% of world's exports, respectively. Russia, in 2020, accounts for more than 15 in global exports of fertilizers.⁷ Thus, the Russian-Ukrainian conflict and the suspension of exports from Russia and Ukraine caused an increase in prices of basic agricultural products, and consequently a serious disruption of the agricultural and food market. According to the SSO, the CPI as of July 2022 increased by 16.5% compared to the average CPI for 2021.

The Russian-Ukrainian conflict directly affects agriculture by increasing production costs

⁴ SSO: Agricultural areas and crop production, 2021

⁵ Macedonian associate of agricultural cooperatives

⁶ SSO: Agricultural areas and crop production, 2021

⁷ OECD study ("The impacts and policy implications of Russia's aggression against Ukraine on agricultural markets", August 2022)

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(e.g., the price of total agricultural inputs has increased by 19.2% in June 2022 in comparison to June 2021).

The production inputs in June 2022 have increased by 25.8% compared to the same period last year. The biggest impact on the increase comes from: 1) energy sources (fuel is especially important for agriculture) – prices increased by 50.7%; and 2) mineral fertilizers – prices increased by 65.9%. These cost increases are a burden on production; for cereal production, the costs for fertilization have a share of 30% in the total production costs, while the share of fuel costs ranges from 15% to 30% of the total production costs.⁸

This is also supported by the findings from the primary research showing that the agricultural and food sector companies consider that the Russian-Ukrainian conflict has a significant impact on their operations, especially in relation to the increase in the prices of raw materials and supplies, the limited access to raw materials and supplies, the increase in the price of energy, the value of agricultural export products, as well as in the overall market supply and demand.

⁸ Aleksandra Martinovska Stojcheska, et al. (2021). Determining the cost price of ten agricultural products of strategic importance, FAO - TCP/MCD/3703/C2.

II. Impact on the energy sector

The situation in the energy sector is as critical as in the agriculture sector. The Republic of North Macedonia belongs to the group of import dependent countries. Import dependence in 2021 was well above 65%, which is an increase of over 20 percentage points in the last 15 years. The total domestic demand of natural gas and other fuel products is covered by imports.⁹

Electricity production

Domestic electricity production, depending on the hydrology, covers between 65–75% of the total consumption while 30 % of the total electricity consumption is imported.¹⁰ What is notable in the last few years is the decrease in the participation of coal-fired thermal power plants, and a significant increase in the production of electricity from natural gas thermal power plants. According to the latest report of the Energy Regulatory Commission for 2021, the share of coal-fired power plants in 2021 is about 40%, while the share of natural

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⁹ https://www.erc.org.mk/odluki/22022.04.29_RKE%20GI%202021-FINAL.pdf

¹⁰ https://www.erc.org.mk/odluki/22022.04.29_RKE%20GI%202021-FINAL.pdf

gas thermal power plants (primarily TETO AD Skopje) is about 29%, which is almost identical to the share of hydropower plants (27.5%).¹¹

The increase in the production of electricity from natural gas further increased North Macedonia's import dependence, that is, it can be safely said that North Macedonia imports more than 50% of electricity (either as a finished product or imports another product for the production of electricity).¹² Import dependence is expected to increase in 2022 as well, taking into account that certain quantities of coal are imported for electricity production (primarily for TE Oslomej), but also fuel oil for the operation of TE Negotino. Domestic production from RES is also expected to increase as the Government announced three large projects of strategic interest. These are projects for investment in a wind power plant of over 400 MW, a photovoltaic plant of around 70 MW and another photovoltaic plant of 350 MW.

Oil derivatives and natural gas

As per Energy Regulatory commission reports for 2021, 83% of oil products are imported from Greece, and the rest mostly from Bulgaria (ca. 11%), coal for electricity production is imported from neighbouring countries (Kosovo, Albania and Greece), while imports of electricity is quite dispersed with imports from almost all countries in the region and beyond, but not from Ukraine and Russia.

¹¹ https://www.erc.org.mk/odluki/22022.04.29_RKE%20GI%202021-FINAL.pdf

¹² https://www.erc.org.mk/odluki/22022.04.29_RKE%20GI%2021-FINAL.pdf

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The Republic of North Macedonia is well connected with neighbouring countries in terms of electricity infrastructure, and according to the data for the period 2020–2022, North Macedonia imported electricity from 11 different countries, but there is no electricity import from Ukraine or Russia. Unlike electricity, coal imports can see a smaller amount of coal imported from Russia and Ukraine in 2020 and 2021.¹³ In 2022, as of May, there will be almost no coal imports from these two countries. Coal from Kosovo is imported at a price of about 35 EUR/t, while it is imported from Greece and Albania at a price of about 47 EUR/t. These prices do not include the cost of coal transportation. It cannot be compared with what the price of imported coal was before the energy crisis because ESM is importing such a large amount of coal for the first time. In the Energy Development Strategy of the Republic of North Macedonia until 2040, the price of coal from REK Bitola is between 17–20 EUR/t.

In the area of petroleum products, a problem with the delivery and supply of consumers in Macedonia should also not occur, because according to the data from the Regulatory Commission for Energy, there is no import of petroleum products from Russia or Ukraine. Most are imported from Greece, followed by Bulgaria and Albania.

¹³ https://www.erc.org.mk/odluki/22022.04.29_RKE%20GI%2021-FINAL.pdf

Almost 100% of natural gas is imported from Russia.¹⁴ This makes natural gas the most sensitive energy source in North Macedonia, which has a direct impact from the situation in Russia and Ukraine, so it can be concluded that the biggest problem in the area of energy supply may appear in the area of natural gas supply.

Impact on electricity prices

Although gas is the only energy commodity imported from Russia, the start of the conflict has significantly contributed to the overall price increase of all energy sources.

The increase in the price of electricity is particularly noticeable among consumers who are supplied on the free market, except for households and small companies (consumers). Namely, the market in North Macedonia is liberalized, which means that every consumer can choose the electricity supplier. The universal supplier EVN Home supplies electricity to households and small consumers, at lowest price. It purchases the energy from ESM at a lower price than the market price and therefore the negative effects of the enormous increase in electricity energy are reduced for these consumers. Their price increased by ca. 12% in the second half of 2021 compared to the first half of 2021, although the final price (including VAT) almost remained the same, because for households the VAT was reduced from 18 to 5%.

Unlike households and small companies, other consumers feel the benefits, but also the disadvantages of the electricity market. The price on the market in the last years was in their favour because it was quite low at certain times and up to 30 EUR/MWh, but as from the second half of 2021 the average increase in the price of electricity was two times higher and reached levels at 200 EUR/MWh (including VAT). This price level was kept in the beginning of the year 2022 until the start of the Russian-Ukrainian conflict, when prices began to rise and in July and August 2022 they reached 700–800 EUR/MWh.¹⁵ At the same time, the price on the derivatives market (this is a market where today you can buy energy for the next quarter or next year) for the last three months of 2022 and for 2023 is between 650–780 EUR/MWh (at day 8.09.2022), but there are certain tendencies to decrease towards the end of September 2023 (around 500 EUR/MWh).¹⁶

Both the price of natural gas and petroleum products increased as a result of the conflict, i.e. an increase of **45% and 56%** respectively, in the first 6 months of 2022

Both the price of natural gas and petroleum products increased as a result of the conflict, i.e. an increase of 45% and 56% respectively, in the first 6 months of 2022. All this affected the increase in the cost of living, which in the first 7 months of 2022 in the energy sector compared to the same period of 2021, increased by ca.

¹⁴ https://www.erc.org.mk/odluki/22022.04.29_RKE%20GI%202021-FINAL.pdf

¹⁵ <https://hupx.hu/en/>

¹⁶ <https://hudex.hu/en/>

10%. Only in the month of July 2022 the costs have increased by 18%.

Given the energy crisis caused by the Russian-Ukrainian conflict, the cost of energy supply has increased several times, affecting all aspects of life and causing a significant shift in economic parameters. Such negative impacts emphasize the shortcomings of the domestic energy sector in the area of insufficient production capacities for electricity and their reliability, energy dependence, lack of diversification in the supply of energy, the long-term non-investment in this sector.

According to the primary research, it is suggested that the Government should provide greater support for investments in renewable energy sources, especially in facilitating the procedures for obtaining permits for construction and connections. In addition, the respondents suggest that it would be of great importance to increase the public awareness for rational use of electricity, but also to ensure greater amounts of electricity to be produced from domestic sources. Further, it was also proposed to facilitate the trading processed through the Open Balkans initiative, by enabling access to the regional and EU markets, and optimising the administrative trading processes.

The situation caused by the crisis imposes the need to search for alternative innovative solutions that will increase efficiency in production (reduction of costs and corresponding amounts of raw materials), reduce dependence on imports, contribute to environmental protection and in the long term,

is expected to contribute to the increase in domestic production capacities.

The Energy Development Strategy by 2040 envisages the construction of 1400 MW of photovoltaic power plants and 750 MW of wind power plants by 2040.¹⁷ The crisis in the energy sector and the high prices of electricity have increased the interest in investments in RES. Requests for potential investments (connection to the grid) with a capacity of over 2000 MW photovoltaic and 2000 MW wind power plants have been submitted for approval to EVN and MEPSO (as per data provided by the companies).

These are only part of the measures which have been identified and additionally proposed as a result from the secondary and primary research.

For more information about this research process, please do contact the UNDP team in Skopje.

¹⁷ [https://www.economy.gov.mk/Upload/Documents/Energy%20Development%20Strategy_FINAL%20DRAFT%20-%20For%20public%20consultations_MK_29.10.2019\(4\).pdf](https://www.economy.gov.mk/Upload/Documents/Energy%20Development%20Strategy_FINAL%20DRAFT%20-%20For%20public%20consultations_MK_29.10.2019(4).pdf)

