



COUNTRY REPORT SLOVENIA

Tomislav Tkalec

Energy Without Russia

The Consequences of the Ukraine war and the
EU Sanctions on the Energy Sector in Europe

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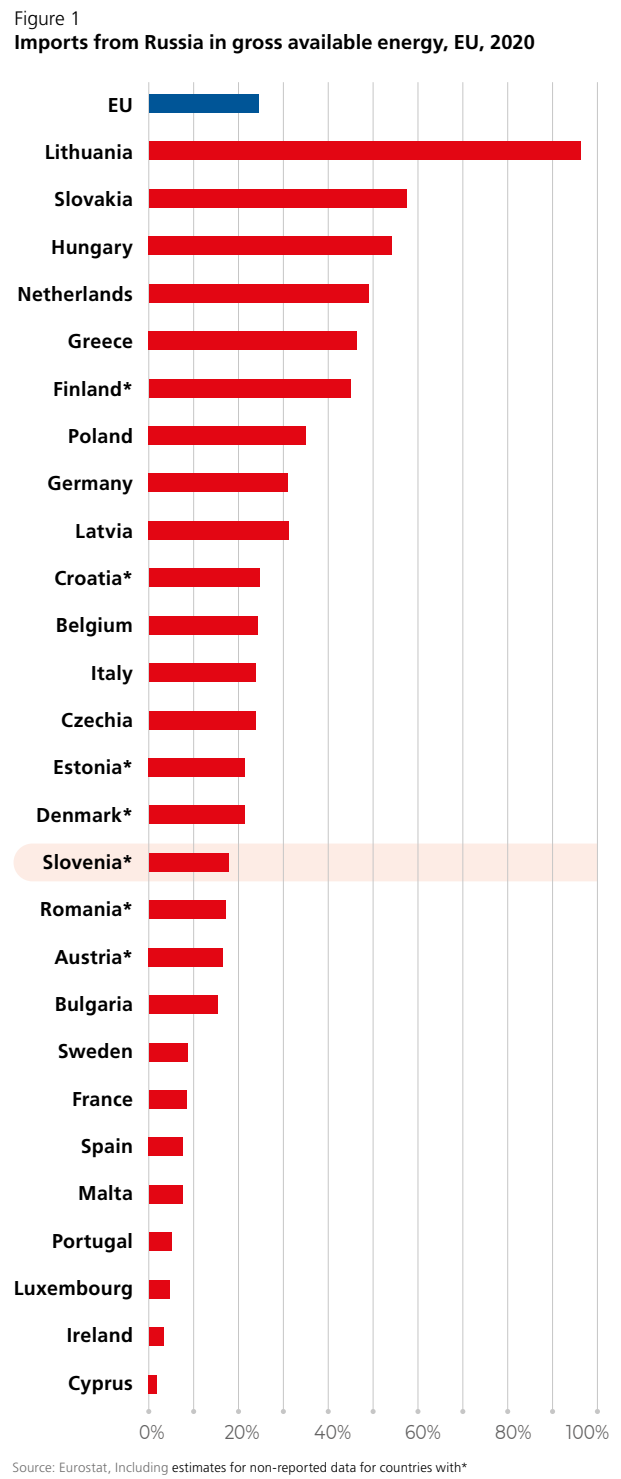
Energy Without Russia: The Case of Slovenia

The Consequences of the Ukraine War and the EU Sanctions
on the Energy Sector in Europe

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INTRODUCTION

As a result of the crisis in Ukraine, Slovenia experienced: high energy prices; increased risk due to its high, nearly 50 per cent energy import dependence, which reached 100 per cent dependence in the case of petroleum products and gas; and reduced energy security and reliability. Prior to the crisis, the dependence on Russia for natural gas stood at 80 per cent, while for petroleum products it was approximately 25 per cent. Numerous systemic and sectoral measures implemented by the government after the crisis have reduced this dependency, and a new strategic supply of natural gas has been secured from an African country. In recent months, the government has been focusing primarily on developmental and long-term measures in the energy sector to ensure a reduction in its vulnerability to similar risks in the future.



1

STATUS QUO ANTE (AS OF FEBRUARY 2022)

An overview of the Slovenian energy sector and energy use as of before February 2022 indicates that its energy mix, expressed as the share of fuels in gross available energy, was dominated by fossil fuels. In 2021, oil accounted for the highest share of Slovenia's gross inland energy consumption, followed by nuclear, renewables, coal, and natural gas, as seen in Figure 2 below.

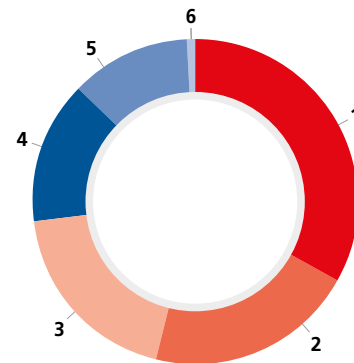
When it comes to final energy consumption, again oil and petroleum products have the highest share, followed by electricity, as seen in Figure 3.

The dominant sector in the energy consumption structure is transport, accounting for a share of 38 per cent. It is followed by the industry sector at 27 per cent, households at 23 per cent, and other use (agriculture, service sector, and other) with a combined share of 11 per cent (IJS CEU and other 2023). In 2021 Slovenia's energy supply per capita was 3.11 toe/capita, and final energy consumption per capita was 2.29 toe/capita (SURS 2023).

Slovenia's electricity generation still relies on coal, representing 25 per cent of the electricity mix in 2021. However, re-

Figure 2
Share of fuels in gross available energy in Slovenia, for 2021, in %

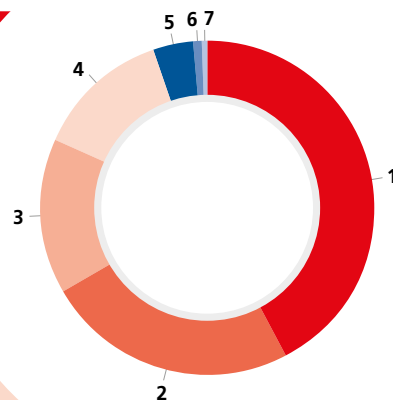
Fuel type	Share
1 Oil and petroleum products	33.3%
2 Nuclear heat	20.6%
3 Renewables and biofuels	19.2%
4 Solid fossil fuels	14.3%
5 Natural gas	11.8%
6 Non-renewable waste	0.8%



Source: Eurostat, 2023

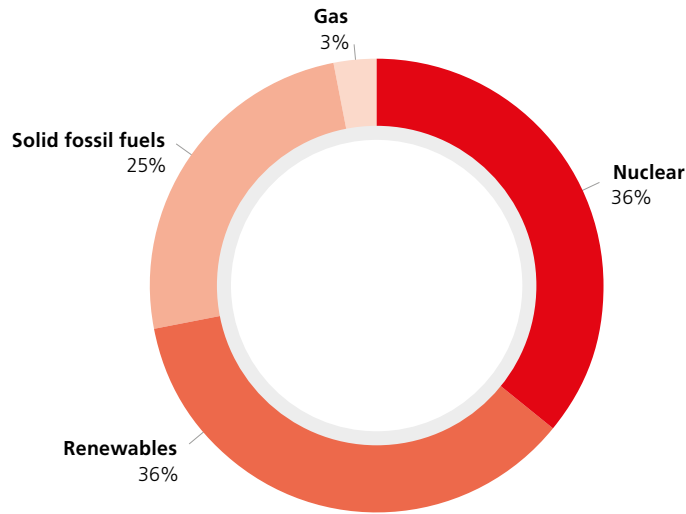
Figure 3
Share of fuels in final energy consumption in Slovenia, for 2021, in %

Fuel type	Share
1 Oil and petroleum products	42.4%
2 Electricity	24.3%
3 Renewables and biofuels	15.1%
4 Natural gas	12.9%
5 Heat	3.9%
6 Non-renewable waste	0.9%
7 Solid fossil fuels	0.4%



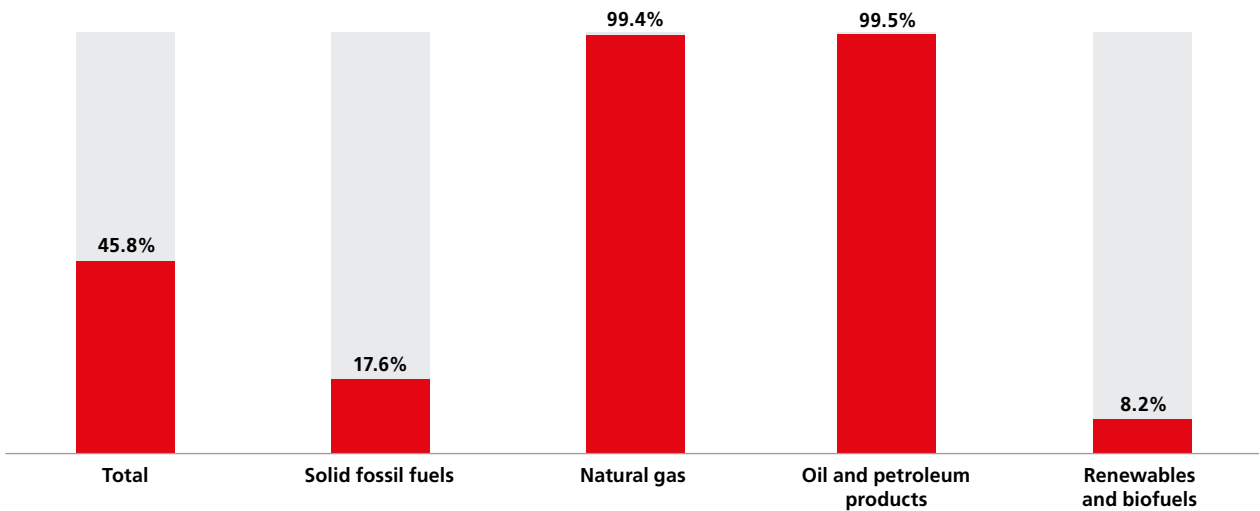
Source: Eurostat, 2023

Figure 4
Share of fuels in electricity generation mix in Slovenia, for 2021, in %



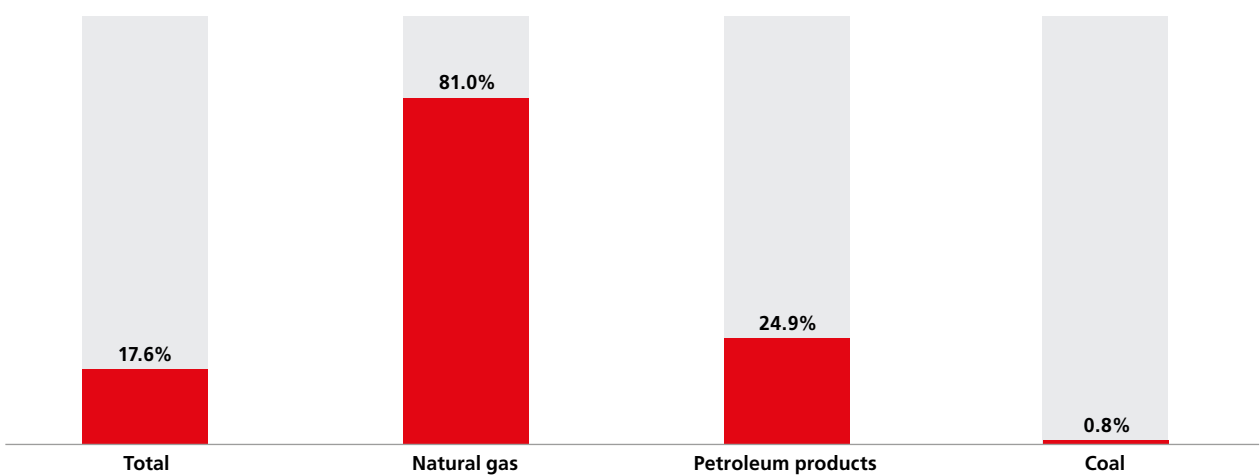
Source: Eurostat in European Commission 2023

Figure 5
Share of net imports in the gross available energy in Slovenia, for 2020, in %



Source: Eurostat 2023

Figure 6
Imports from Russia in gross available energy in Slovenia, for 2020, in % (including Eurostat estimates)



Source: Eurostat 2022

renewable energy sources constituted 36 per cent of the electricity mix, with hydro power alone contributing 31 per cent. The remaining 36 per cent was generated by the Krško nuclear power plant (Figure 4).

In 2020, Slovenia satisfied 54 per cent of its energy needs with domestic energy sources. The remaining required quantity was supplied through imports, with the supply of petroleum products and natural gas entirely dependent on imports. Figure 5 shows Slovenia's import dependency in 2020.

Before Russia's invasion of Ukraine, Slovenia depended heavily on Russia as its main supplier of natural gas, either directly (14 per cent) or through Austria (85 per cent) (European Commission 2023). While there are no clear data on Slovenia's import of fuels from Russia, on the basis of the Eurostat assumptions that approximately 80 per cent of imports from Austria are assumed to be from Russia, this would mean that in 2020 more than 80 per cent of natural gas and approximately 25 per cent of petroleum products were imported from Russia, as shown in Figure 6. This data shows how important imports from Russia were in the country's overall energy mix.

In Slovenia gas is used mainly in the industry sector, which in 2021 accounted for 62.3 per cent of overall gas consumption, followed by the energy sector (19.7 per cent), while households' share of gas consumption was only 14.5 per cent, services and public sector 2.9 per cent, and the transport sector only 0.6 per cent (Eurostat in European Commission 2023).

2

AD HOC RESPONSES AFTER FEBRUARY 2022

Since the beginning of the crisis in Ukraine, the government has implemented certain systemic and sectoral measures in the field of energy due to the increase in electricity prices and high import dependency in certain key energy sectors. To mitigate the consequences of high energy prices and limit the damage to consumers and the economy, newly adopted “crisis” laws introduced temporary measures to reduce import dependency in energy supply, increase energy production from renewable sources with additional assistance aid, and implement price controls for energy and fuels. Two additional laws were adopted to provide assistance to the economy. The state was providing financial support to companies by co-financing their costs of electricity and natural gas in 2022. The assistance to the economy for 2023 includes subsidising the high prices of electricity, natural gas, and process steam, subsidising two measures to preserve jobs, and implementing measures to ensure the liquidity of companies (Ministry of the Environment, Climate and Energy 2023a).

A Guarantee Law for energy companies was adopted in order to ensure uninterrupted gas supply. The main purpose was to ensure reliable access for eligible energy companies to short-term liquidity working capital needed to cover short-term extreme liquidity pressures. Three companies were eligible for state guarantees, with a total cap of €1.2 billion (Ministry of the Environment, Climate and Energy 2023b).

For end users, especially households, several other measures were put in place. Amendments of the Gas Supply Act in September 2022 ensured the right to basic gas supply for all households and provided mandatory and alternative gas supply to all protected consumers. By adopting the Law on an Urgent Measure in the Field of Value Added Tax to Mitigate the Increase in Energy Prices, the standard VAT rate for all electricity consumers, natural gas consumers, district heating users, and purchasers of firewood was reduced from 22 per cent to 9.5 per cent for the period from 1 September 2022 to 31 May 2023. Additionally, for natural gas and electricity, the excise duty was temporarily reduced by half, and for electricity, the contribution for RES was further reduced by half (Ministry of the Environment, Climate and Energy 2023a).

Estimates indicate that, due to the implemented measures, households and other small end users achieved savings of approximately 15–30 per cent on electricity costs (Ministry

of the Environment, Climate and Energy 2023c) and between 10–37 per cent on natural gas costs (Ministry of the Environment, Climate and Energy 2023d).

Since 21 June 2022, a regime of regulated margins for traders of petroleum products outside highways has been introduced in Slovenia, while a liberalised regime for setting prices of gasoline and diesel fuel on highways is still in place. The key objective of this measure was to eliminate uncertainty for the economy and consumers. The state has also temporarily waived the environmental tax (CO₂ levy) on diesel fuel, gasoline, heating oil, and natural gas until 9 May 2023. The contribution for renewable sources is exempted from the price of diesel fuel and gasoline outside highways and for diesel fuel at highway fuel stations (Ministry of the Environment, Climate and Energy 2023e).

Due to the increasing social hardship faced by the population, the Act on Temporary Measures for Mitigating the Consequences of Energy Costs for the Most Vulnerable Population Groups was adopted. The law provided payment of an energy supplement to recipients of monetary social assistance and protective supplement. The amount of the one-time energy supplement was €200 for single individuals and disabled persons, and €314 for families, with an additional €118 for each child in the family (Ministry of the Environment, Climate and Energy 2023f).

Also note that the government has for the first time adopted measures and recommendations for efficient energy use in buildings within the public sector, as well as recommendations for energy conservation in households.

3

MAIN CONSEQUENCES OF THE CONFLICT AND SANCTIONS SO FAR

Historically, Slovenia has relied almost entirely on Russian natural gas imports, both directly and indirectly. However, in 2022, Slovenia managed to secure alternative supplies from Algeria via Italy, which were adequate to meet approximately one-third of the country's annual consumption. These alternative supplies amounted to 0.3 billion cubic meters (bcm) or roughly one-third of Slovenia's total natural gas supply, which reached 0.92 bcm in 2021 (European Commission 2023).

Between August 2022 and March 2023, Slovenia achieved a 13.8 per cent reduction in gas consumption compared to the previous five-year average. These gas demand reductions were made possible through the implementation of measures that encouraged consumers, particularly large consumers, to voluntarily limit their gas consumption and transition to alternative fuels.

The decision of the European Union to ban the import of Russian oil starting from December 2022, and subsequently, the import of petroleum products starting 5 February 2023, has triggered a significant redirection of oil flows. Slovenia does not import crude oil as it does not have its own refinery. However, statistics show that before the sanctions on petroleum products came into effect, there was a substantial increase in their import from Russia. Calculations based on data on the import of petroleum products by Slovenian companies, published by the Statistical Office of the Republic of Slovenia, indicate that the share of Russian oil was 6 per cent in 2021, and by October 2022 it had increased to 13 per cent. In addition to the traditional flows from the Mediterranean region (via Greece and Italy), the import of oil from Saudi Arabia also significantly increased last year. This could potentially replace the Russian shortfall in the long term (Lončar 2023).

Slovenia imports half of its primary energy from abroad, making developments in external energy markets crucial for energy supply competitiveness in Slovenia. Given that Slovenia imports 100 per cent of its liquid fuels and natural gas, it is fully dependent on the uncertainties of oil and gas prices in global markets.

Due to established measures to reduce dependency on Russian energy resources and Russia's decision to reduce gas flow to the EU, the price of natural gas has increased, leading to the most significant energy crisis in decades (IJS CEU

et al. 2023). Higher gas prices continue to have a significant impact on gas-intensive manufacturing sectors, including basic metals, chemicals, paper, and paper products. Therefore, it remains a priority to take further actions to ensure supply security by continuing efforts to diversify away from Russian fossil fuels and reduce overall dependence on fossil fuels (European Commission 2023).

The Slovenian electricity market is at the intersection of three major European markets: the German-Austrian, Italian, and Southeast European markets, which also have the greatest influence on electricity prices in Slovenia. In the first half of 2022, electricity prices in the EU were 30 per cent higher compared to the previous year, mainly due to the increased price of natural gas. Considering recent events, future electricity prices are even more unpredictable, particularly due to efforts to reduce dependence on imported natural gas (IJS CEU et al. 2023).

An additional complicating factor was the constrained supply of domestically produced coal from the Velenje coal mine, which resulted in the temporary shutdown of the Šoštanj thermal power plant in late 2022. This situation coincided with the scheduled maintenance of the Krško nuclear power plant. Consequently, there was a substantial decrease in domestic electricity generation, necessitating increased reliance on electricity imports for Slovenia.

4

MEDIUM- AND LONG-TERM ANSWERS

Slovenia is currently preparing an update to the National Energy and Climate Plan (NECP), which outlines the direction of energy policy development, the long-term energy scenarios and the set of energy and climate targets for GHG emission reduction, RES share, and energy savings for the year 2030. As this plan is in preparation after the start of the Ukrainian crisis, it incorporates and enhances core principles that resulted from this situation and are focusing on secure, reliable, and competitive energy supply.

The draft update of the NECP indicates that Slovenia sets its goals within the framework of contributing to achieving the EU’s net-zero greenhouse gas emissions by 2050, which serves as a basis for planning objectives, policies, and necessary measures until 2030. The phase-out of coal is planned by no later than 2033.

The further development of the energy sector in Slovenia will require coordinated actions in the technological, legislative, economic, and social domains with the aim of reducing energy needs, decreasing import dependency, increasing diversification (of sources, technologies, production locations, supply routes, etc.), and energy storage, as well as managing risks and emergency situations in energy markets (IJS CEU and other 2023).

FUTURE ENERGY MIX

In the draft update of the NECP, under the scenario that includes additional measures, which follows two different paths after the year 2030 (100 per cent RES and RES + nuclear), the following energy supply is projected for the year 2030, as seen in Table 1 for gross available energy and in Table 2 for final energy consumption. Oil and petroleum products will remain their highest shares, although slightly lower than in the year 2021, while the share of renewables will slightly increase. Also, hydrogen and synthetic fuels will be added to the fuel types used in 2023 in comparison to 2021.

ENERGY SUPPLY AND DIVERSIFICATION STRATEGIES

Energy security, primarily due to the energy crisis, is now at the forefront of the NECP (National Energy and Climate Plan) renovation. Ensuring a reliable and competitive energy supply is set as one of the key objectives. In the case of electricity, these objectives translate into ensuring an adequate level of supply reliability, which means at least 85 per cent of electricity supply from domestic generation by 2030 and 100 per cent by 2040, as well as continuing the utilisation of

Table 1
Share of fuels in gross available energy in Slovenia, for 2030
 (in %, as planned in the scenario that includes additional measures in the draft update of the Slovenian NECP)

Fuel type	Share
Oil and petroleum products	26.42%
Nuclear heat	23.76%
Renewables and waste	27.34%
Solid fossil fuels	10.82%
Gas	13.31%
Hydrogen	0.56%
Synthetic fuels	0.85%
Electricity import	-2.18%

Source: IJS CEU and other 2023

Table 2
Share of fuels in final energy consumption in Slovenia, for 2030
 (in %, as planned in the scenario with additional measures in the draft update of the Slovenian NECP)

Fuel type	Share
Oil and petroleum products	35.32%
Electricity	29.31%
Renewables and waste	18.46%
Gas	12.49%
Heat	3.58%
Hydrogen	0.75%
Solid fossil fuels	0.09%

Source: IJS CEU and other 2023

nuclear power and making a transparent decision on the construction of a new nuclear power plant no later than 2027 (IJS CEU and other 2023).

Regarding gas, the plan includes further development of the natural gas pipeline system in line with changing gas flows, including new gas sources from RES and waste, also domestically produced. Given the altered geopolitical conditions in the eastern supply corridors since February 2022 and the EU's measures to reduce exposure to eastern supply sources, a priority is given to increasing transmission capacity at the border point with the Italian transmission system. Only about 30 per cent of natural gas is delivered to end consumers through the distribution network, which exists in 83 out of 212 local communities. The future development of existing and new gas distribution networks depends primarily on the ability to ensure supply of renewable replacement gases (IJS CEU and other 2023).

The NECP foresees the preparation of the system for the introduction of hydrogen in line with gas flows and system capabilities, as well as the introduction of hydrogen. In the long term, the focus will be primarily on hydrogen production through electrolysis of water, utilising surplus electricity from RES (sector coupling) (IJS CEU and other 2023).

RENEWABLES

Slovenia lags behind in terms of deploying renewables. Slovenia reached its 2021 renewable energy sources target by using the EU mechanism of cross-border cooperation in line with Directive 2018/2001/EU (statistical transfers). The draft update of NECP sets a target value of at least 30–35 per cent share of RES in final energy consumption by 2030 (IJS CEU et al. 2023).

The country needs to significantly increase efforts in deploying renewable energy installations, streamline the procedures for obtaining permits, and putting more investments

in the distribution grid and energy storage infrastructure for the uptake of renewables (European Commission 2023). There is a particular emphasis on solar energy, with advancements in wind energy utilisation also expected by 2030. Geothermal energy utilisation and biomass use are envisioned primarily for heating purposes.

ENERGY EFFICIENCY AND DEMAND REDUCTION

The NECP foresees the accelerated improvement of energy and material efficiency in all sectors as a key factor for successfully overcoming the energy crisis and achieving effective implementation of the green agenda based on the principle of "energy efficiency first". This is a prerequisite for a successful and competitive transition to a climate-neutral society (IJS CEU et al. 2023).

As a consequence of soaring gas prices, it is crucial to tackle the industry sector's high energy and carbon intensity through the implementation of energy efficiency policies and investment measures. Although energy prices have declined, uncertainties persist for the upcoming winter, emphasising the need for ongoing endeavours to structurally reduce gas demand.

NUCLEAR ENERGY

In recent months the government, primarily with the energy crisis in mind, has announced a serious consideration of the construction of a second unit at the Krško nuclear power plant and expressed support for the long-term use of nuclear energy. However, it still insists on holding a referendum, which will take place when sufficient data and information about the project are available for an informed decision-making process. It is anticipated that the updated NECP will clearly and decisively outline the long-term use of nuclear energy (UMAR 2023).

5

CONCLUSION

Slovenia responded to the energy crisis by implementing an extensive set of mitigating measures that have addressed the issues fairly successfully but with a significant impact on the state budget. The past 15 months have placed the dilemma of energy security, reliability, and competitiveness at the forefront of energy policies. As a result, in addition to RES and energy efficiency, nuclear energy has come to the forefront in Slovenia in recent months, with increasing support. While the government is shifting towards more development-oriented and long-term measures in energy policies, Slovenia still needs to address short-term challenges and barriers to adequately develop its RES potential and strive to achieve the target of increasing the share of RES in final energy consumption by 2030. These challenges primarily include spatial planning issues, lengthy procedures, and the upgrade of the power grid.

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