



## COUNTRY REPORT CZECH REPUBLIC

Jaroslav Knápek

# Energy Without Russia

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

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Jaroslav Knápek

# Energy Without Russia: The Case of the Czech Republic

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

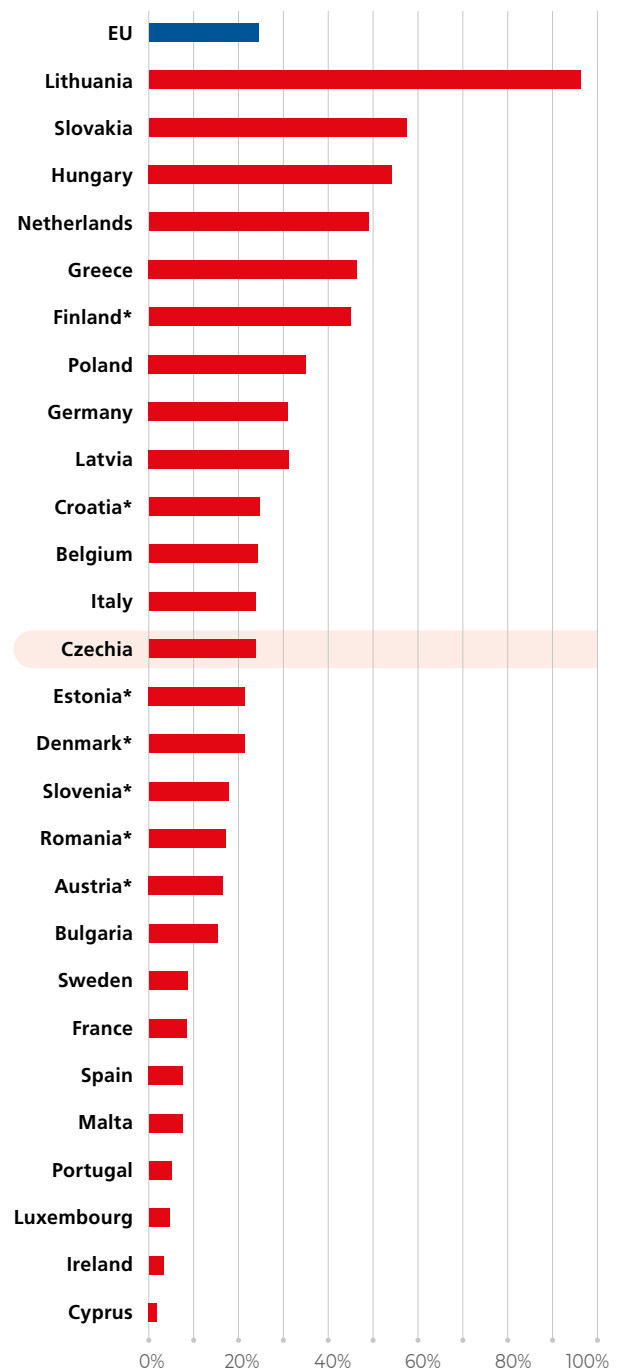
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# INTRODUCTION

The beginning of the war in Ukraine caught the Czech energy sector in a situation of ongoing changes – in the field of legislation, the development of the use of RES, and the fuel base for electricity and heat production. In general, after February 2022, there has been both an acceleration of some trends triggered by factors such as decarbonisation targets (investment in energy saving measures, development of small PV systems, etc.) and a change in certain priorities and targets.

The Czech Republic has so far been heavily dependent on imports of energy commodities from Russia, especially in the case of oil, petroleum products, and natural gas. This posed a high risk of supply shortages or shutdowns with potentially fatal consequences for the Czech economy. This was also true in principle for nuclear fuel, although the situation was not as critical in this case thanks to the nuclear fuel stocks at both nuclear power plants.

Figure 1  
Imports from Russia in gross available energy, EU, 2020



Source: Eurostat, including estimates for non-reported data for countries with\*

## 1

# THE CZECH REPUBLIC'S ENERGY SECTOR BEFORE 2022

The Czech Republic's (CZ) energy sector has historically been based on the use of domestic lignite and hard coal.

Since the early 1990s, there has been a gradual decline in coal extraction and use. Still, solid fuels (predominantly lignite and hard coal) accounted for about 31% of total primary energy resources (PEZ) in 2021, compared to 65% in 1990 (Fig. 2).

Due to the high share of industry in GDP, PEZ consumption remains relatively high. The share of industry in the creation of gross value added (GVA) in the Czech Republic has long been around 30% (in 2019 it was 29.2%), while the average of EU countries is around 20%.<sup>1</sup>

<sup>1</sup> Zábajnicková K. Odvětvová skladba České ekonomiky. STATISTIKA&MY. 11–12 | 2020 – ROČNÍK 10, ISSN 1804-7149.

The share of RES in final energy consumption has been gradually increasing, reaching 17.7% in 2021.

## 1.1 ELECTRICITY PRODUCTION

At the beginning of the 1990s, the dominant share of total electricity production was from coal-fired power plants and the Dukovany nuclear power plant. In 2002, after the commissioning of the Temelín nuclear power plant, the share of electricity from nuclear power plants began to increase significantly, while at the same time, although relatively slowly, the production of electricity from RES and natural gas is also growing. The peak of electricity production from natural gas was reached in 2021 (about 8.3% of gross electricity production).

Figure 2  
Structure of PEZ in the Czech Republic, 1990 and 2021

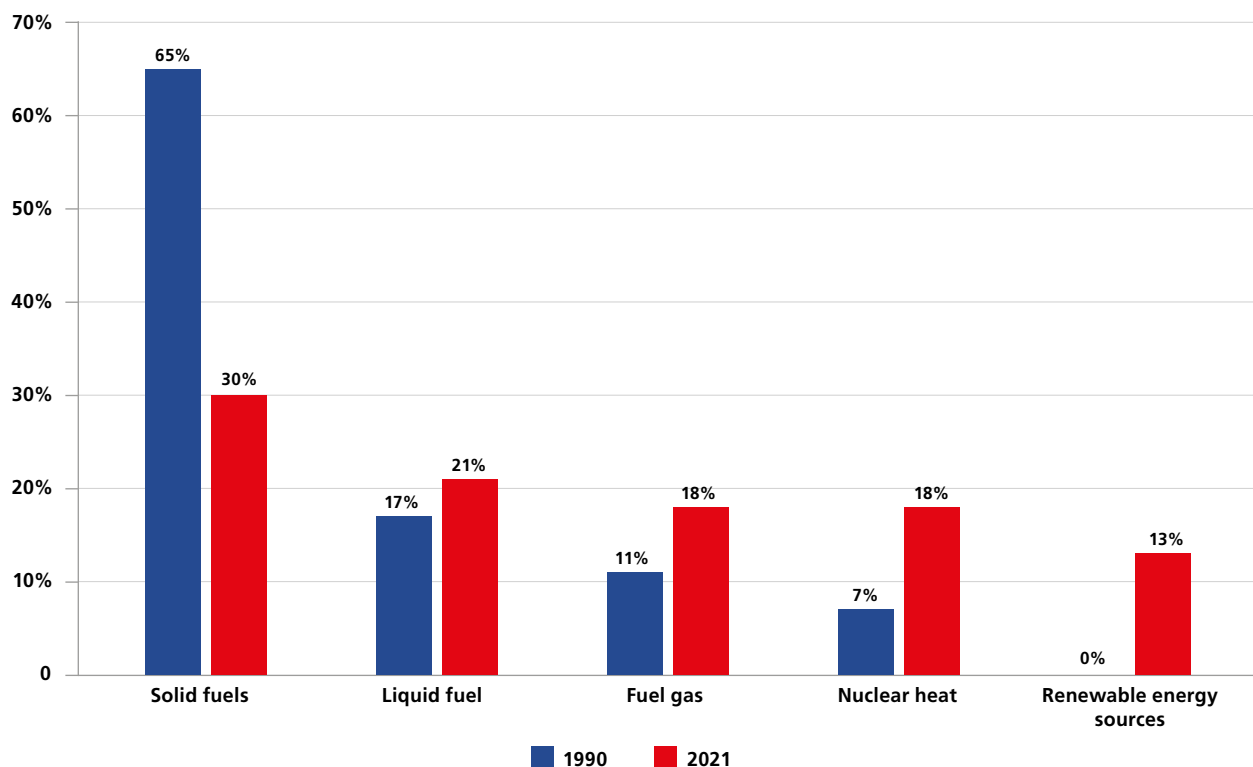
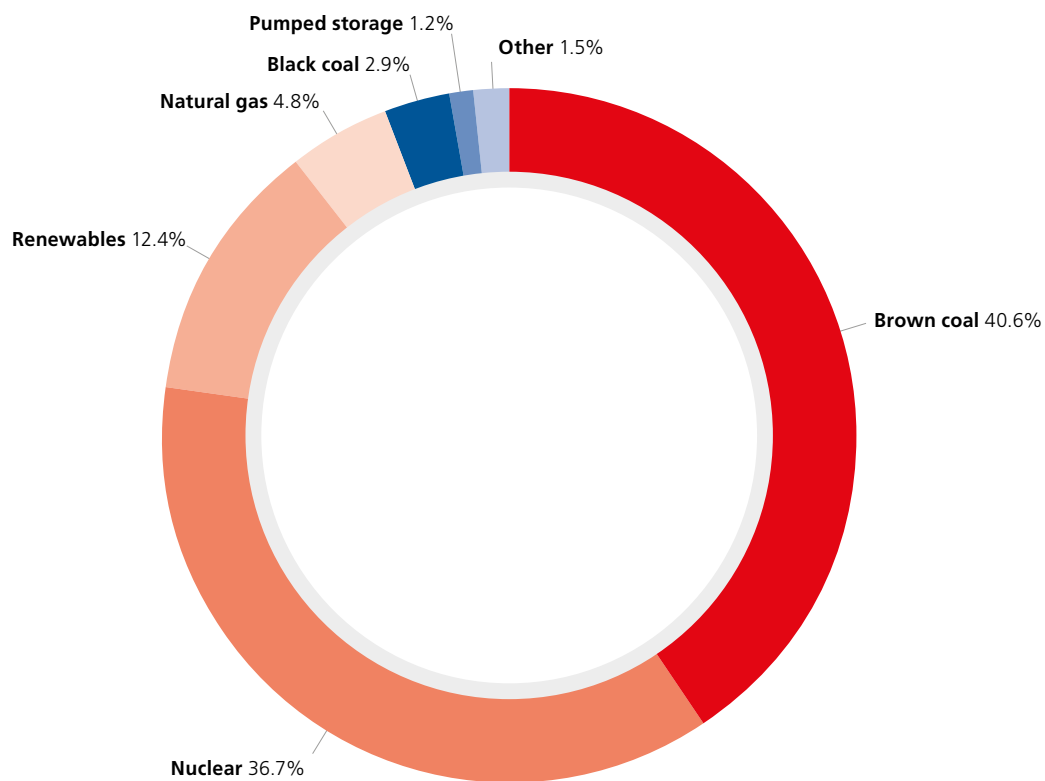


Figure 3  
Structure of gross electricity production in the Czech Republic by fuel types in 2022



Source: ERÚ. Roční zprávy o provozu elektrizační soustavy ČR.

Despite the gradual increase in electricity generation from RES and nuclear power plants, the share of electricity generation from coal remained high in 2022, at over 40% – see Fig. 3.

## 1.2 IMPORT DEPENDENCE OF THE CZECH REPUBLIC

Thanks to the use of domestic coal reserves, the Czech Republic has a relatively lower import dependence compared to the EU average. The gradual decline in domestic coal production and use has led to a gradual increase in import dependence on energy commodities, from less than 29% in 2011 to more than 40% in 2021.<sup>2</sup>

Until the outbreak of the war in Ukraine, the Czech Republic was characterised by a relatively high level of import dependence on Russia. In 2021, this dependence reached 25.4% (i. e. over half of the total import dependence). Imports of energy commodities from Russia were dominated by oil, liquid fuels, and natural gas.

The Czech Republic is almost 100% dependent on oil and natural gas imports. Domestic production of oil and natural gas amounts to only a few per cent of domestic consumption. The total import dependence of the Czech Republic in the natural gas commodity in 2021 was 92.1%, after taking into account the pumping of gas from underground storage (total imports of 8.7 bcm of gas, exclusively from Russia). Similarly, crude oil production in the Czech Republic covered only about 1.3 per cent of total oil consumption in 2021. Oil imports from Russia amounted to about 50% in 2021.

<sup>2</sup> MPO. Energetická statistika - Energetická dovozní závislost České republiky v letech 2011–2021. [https://www.mpo.cz/assets/cz/energetika/statistika/energeticke-bilance/2023/3/Dovozni\\_zavislost\\_2011-2021.pdf](https://www.mpo.cz/assets/cz/energetika/statistika/energeticke-bilance/2023/3/Dovozni_zavislost_2011-2021.pdf)

## 2

# ENERGY – REACTION TO THE START OF THE WAR IN UKRAINE

## 2.1 IMMEDIATE RESPONSE TO LIMIT THE RISK OF PEZ SUPPLY DISRUPTION

After the start of the war in Ukraine, the immediate priority for the Czech government was to secure alternative supplies of oil and gas to replace supplies from Russia. As it turns out, the bigger and more complex problem for the Czech Republic is to replace Russian oil supplies from other sources. The Czech Republic is connected via the IKL pipeline to the TAL pipeline system, which enables the transport of crude oil from Trieste via Vohburg in Germany to the Central Oil Tank Farm in Nelahozeves. The capacity of the TAL pipeline is fully utilised and it is not possible to immediately increase its capacity to meet the needs of supplies to the Czech Republic. In 2023, an agreement was reached with the other TAL pipeline shareholders to implement the TAL-Plus project, which will make it possible to increase the capacity of the TAL pipeline by about 4 million tonnes per year from 2025.<sup>3</sup> This will allow for the transport of a total of 8 million tonnes of crude oil per year to fully cover the needs of the Czech Republic. Oil transport via the Druzhba pipeline is exempt from EU sanctions imposed on Russia (ban on oil purchases) until the end of 2024. At the same time, a complete switch from Russian oil will require technological changes at the Litvinov refinery or finding oil suppliers with similar characteristics to Russian oil.

As with oil, the Czech government has been searching urgently for alternative gas suppliers since the beginning of the war in Ukraine. Through ČEZ, a.s., the Czech Republic managed to secure a stake in the new LNG terminal in Eemshaven in summer 2022, which would provide the Czech Republic with a capacity of up to 3 bcm of gas per year.<sup>4</sup> At the same time, the Czech Republic is negotiating participation in the expansion of the upcoming floating LNG terminal near Gdańsk (Poland). The Czech Republic is also a member of the Trident Initiative, which includes 12 countries located between the Baltic, Black, and Adriatic Seas. The initiative is aimed at linking the member countries and making efficient use of LNG terminals.

Another immediate response of the Czech government was to include natural gas as a new item in the strategic reserves. Gas purchases of 2.4 TWh were made in 2022.

One operative measure taken was an amendment to the Energy Act (in June 2022), which allows gas traders to withdraw contracted but unused capacity in underground gas storage facilities. This is a 'take it or lose it' rule, the purpose of which is that traders lose their unused reserved capacity without compensation. At the same time, there is an increased emphasis on monitoring the filling of the gas storage facilities for the following winter 2023/2024. Currently (as of 11 August 2023), the filling of the storage facilities is 92.1%.<sup>5</sup>

In the case of nuclear fuel, immediately after the start of the war in Ukraine, the decision was made to find a supplier other than the Russian company TVEL for security reasons. This company has been supplying nuclear fuel to the Dukovany power plant throughout its operation and currently also to the Temelín power plant. In 2022 (thanks to an exemption from the ban on flights from Russia to the EU), a total of three deliveries of new fuel assemblies for both plants took place. They thus have a fuel supply for 2 (Temelín) and 3 years (Dukovany) respectively. The new fuel supplier for both plants is Westinghouse, which will begin supplying fuel starting in 2024. The issue of supplying nuclear fuel for VVER-440 and VVER-1000 units operated by 5 EU Member States and Ukraine (18 VVER-440 units and 17 VVER-1000 units in total) is being addressed at the EU level through an agreement on the APIS project.<sup>6 7</sup>

## 2.2 MEASURES TO REDUCE ENERGY CONSUMPTION

Another immediate step taken by the government, governmental institutions, and the business sector was the introduction of energy saving measures, for example, limiting the temperature of heated areas. This, together with the pres-

<sup>3</sup> MERO ČR. Tisková zpráva. <https://mero.cz/mero-cr-dosahlo-dohody-na-rozsireni-kapacity-ropovodu-tal-cesko-diky-tomu-posili-svoji-energetickou-bezpecnost-a-od-roku-2025-ziska-ropnou-nezavislost/>

<sup>4</sup> Vláda ČR. Tisková zpráva. <https://www.vlada.cz/cz/media-centrum/aktualne/premier-petr-fiala-se-zucastnil-otevreni-lng-terminalu-v-nizozemskem-eemshavenu--198913/>

<sup>5</sup> Webový portál zásoby plynu. <https://www.zasobyplynu.cz/>

<sup>6</sup> APIS - Accelerated Program for Implementation of secure VVER fuel Supply. <https://apis-project.eu/>

<sup>7</sup> Westinghouse. Tisková zpráva. <https://info.westinghousenuclear.com/news/westinghouse-led-project-will-secure-vver-fuel-supply-in-europe-and-ukraine>

sure for savings brought about by the surge in energy prices, led to a significant decrease in energy consumption. In the case of electricity, total electricity consumption fell by 3.9% in 2022 compared to 2021, and in the case of households, electricity consumption fell by as much as 9%.<sup>8</sup> Natural gas consumption also decreased significantly, with 20% less gas consumed in 2022 than in 2021. When converted to the long-term temperature normal, the decrease in consumption was 16.5%.<sup>9</sup>

### 2.3 MEASURES TO REDUCE THE IMPACT OF RISING ENERGY PRICES ON CONSUMERS

The government and parliament have responded to soaring energy prices, particularly for electricity and gas. In October 2022, the so-called ‘savings tariff’ was introduced, which abolishes the RES charge of 495 CZK/MWh (+ VAT) and introduces an across-the-board support for households in the form of a direct one-off financial support of 2,000–3,500 CZK (depending on the category of consumption). The same was the case for natural gas. From the beginning of 2023, the energy-saving tariff was replaced by a cap on energy prices of CZK 2.5/kWh (excluding VAT) for natural gas and CZK 5/kWh (excluding VAT) for electricity. The capping (adopted until the end of 2023) applies not only to households but also to small and medium-sized enterprises (up to 250 employees). Larger entities have been given the possibility to benefit from direct support under the so-called Temporary Crisis Framework, which has been extended to all sectors of the economy. Energy-intensive enterprises were given the possibility to apply for direct support of up to EUR 45–200 million.<sup>10</sup>

In the case of electricity, especially for low-voltage end-users, a significant part of electricity payments is made up of transmission and distribution charges, including the cost of providing system services. Thus, another step was the capping of the price for transmission and distribution system services at the 2022 level (see ERO Price Decisions 13/2022 and 14/2022), coupled with compensation for losses to transmission and distribution system operators. CEPS, a.s. received a subsidy of CZK 7.2 billion for 2023 to cover electricity losses and a subsidy of CZK 15.5 billion to provide system services. These subsidies are intended to cover the increase in service prices compared to the period 2019–2021. Similarly, the state is paying compensation to distribution companies in 2023 in the total amount of CZK 13.3 billion. At the same time, CZK 2.1 billion has been provided for similar compensation for part of the costs of losses in gas systems.<sup>11</sup>

### 2.4 FINANCING MEASURES TO REDUCE THE IMPACT OF HIGH ENERGY PRICES ON CONSUMERS

The financing of measures to reduce the impact of extremely high energy prices on consumers has required raising extra revenue for the state budget. One important additional source of funds is the extraordinary windfall profits tax imposed in the Czech Republic on companies in the energy production and trade, banking, petroleum, and fossil fuel extraction and processing sectors that meet the criteria for the imposition of the tax. The temporary extraordinary tax is proposed for the period 2023–2025 and operates as a 60% tax surcharge on excess profits, defined as the difference between the tax base in those years and the average profits for the period 2018–2021 plus 20%. Another measure to raise funds is the levy on capped electricity producer prices. Electricity producers levy 90% of the difference between the selling price and the officially set capped price. For example, for nuclear power plants the officially set cap price is EUR 70/MWh, for coal-fired power plants EUR 140–170/MWh (depending on installed capacity), for biogas plants EUR 240/MWh, etc. Generating plants with a capacity of less than 1 MW and pumped storage plants are exempted from the levy. Initially, the estimated amount of the extra revenue received was CZK 85 billion from the excess profits tax and CZK 15 billion from the electricity price caps. The dividend from ČEZ, a.s. is also an important source for the state budget. The Ministry of Finance (representing the state at the General Meeting) proposed, and the General Meeting thus decided, to distribute 100% of the profit for 2022. This means a revenue of approximately CZK 54 billion for the state. Although it currently seems unlikely to collect extraordinary taxes and levies in the originally planned amount, the significant drop in electricity and gas prices on the markets is playing a positive role. This in turn reduces the pressure on financing measures to stabilise energy prices. For example, the weighted average price on the spot market organised by OTE in June 2023 was about 99 EUR/MWh.<sup>12</sup>[11] Even better price signals can be obtained from forward trades, e.g. on the PXE. The current price (as of 10 August 2023) of an annual electricity supply contract (www.pxe.cz) here is 138 EUR/MWh. This means that current prices of electricity as a commodity (similar to natural gas) are below the currently capped price.

### 2.5 CLIMATE TARGETS FOR THE CZECH REPUBLIC

The climate objectives and the instruments to achieve them are contained in three interrelated documents, namely the Climate Protection Policy<sup>13</sup>, the National Energy and Climate

8 ERÚ. Tisková zpráva. <https://www.eru.cz/domacnosti-v-roce-2022-rekordne-setrily-elektrinou>

9 ERÚ. Tisková zpráva. <http://www.eru.cz/sites/default/files/obsah/priloh/20232402tzspotrebaazasobaplynu2022.pdf>

10 MPO. Tiskové sdělení. <https://www.mpo.cz/cz/rozcestnik/pro-media/tiskove-zpravy/vladni-pomoc-firmam-podle-docasneho-krizoveho-ramce-se-rozsi-ri-na-dalsi-sektory--270511/>

11 MPO. Tisková zpráva. <https://www.mpo.cz/cz/rozcestnik/pro-media/ti>

skove-zpravy/ceps-ziska-dotaci-na-ztraty-energie-v-prenosove-soustave-a-na-zajisteni-systemovych-sluzeb--272691/

12 OTE, Roční zpráva o trhu s elektřinou 2023. <https://www.ote-cr.cz/cs/statistika/rocní-zprava?date=2023-01-01>

13 MŽP. Politika ochrany klimatu v České republice. 2017. [https://www.mzp.cz/cz/politika\\_ochrany\\_klimatu\\_2017](https://www.mzp.cz/cz/politika_ochrany_klimatu_2017)



Plan (NKEP)<sup>14</sup>, and the State Energy Concept.<sup>15</sup> The original targets of the NKEP were set at a 30% reduction in GHG emissions in 2030 (relative to 2005) and for RES to account for 32% of gross final energy consumption in 2030.

These documents do not reflect the dynamic changes taking place between 2019 and now (Green Deal, Fit for 55, REPowerEU, geopolitical developments). The Government of the Czech Republic adopted the key theses and starting points for the update of the documents in April 2023<sup>16</sup> with a deadline of the end of 2023. The strategic objectives for the energy transformation are: 1) security of energy supply (including diversification of imports of PEZ); 2) competitiveness and social acceptability (energy affordability, predictability of the regulatory environment, reduction of the risk of energy poverty, etc.); and 3) sustainability of energy management (inter alia, reduction of GHG emissions in line with EU targets). One of the key energy targets is to reduce the share of fossil fuels in the consumption of PEZ to 50% by 2030 and to phase out the use of coal for electricity and heat generation by 2033.

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**14** MPO. Vnitrostátní plán České republiky v oblasti energetiky a klimatu. 2019. <https://www.mpo.cz/cz/energetika/strategicke-a-koncepcni-dokumenty/vnitrostatni-plan-ceske-republiky-v-oblasti-energetiky-a-klimatu--252016/>

**15** MPO. Státní energetická koncepce. 2015. <https://www.mpo.cz/dokument158059.html>

**16** MPO. Východiska aktualizace Státní energetické koncepce ČR a souvisejících strategických dokumentů. <https://www.mpo.cz/cz/energetika/strategicke-a-koncepcni-dokumenty/vychodiska-aktualizace-statni-energeticke-koncepce-cr-a-souvisejicich-strategickych-dokumentu--273672/>

# 3

## CONCLUSION

The war in Ukraine has caught the Czech energy sector in a crucial initial phase of transformation, consisting mainly in the search for alternatives to domestic lignite and hard coal. It is not only the transformation of the electricity generation sector, but also the transformation of the heating sector, which currently appears to be one of the most important priorities of the Czech energy sector. But moving away from coal also means finding a long-term sustainable and workable solution for the approximately 300,000 households still using domestic coal for local heating. The transformation of the Czech energy sector away from coal has so far been built on two basic pillars, namely the combination of further development of nuclear energy and renewable energy sources, with natural gas playing a key role in the transformation of the heating sector, and in the provision of flexibility services in electricity generation.

Following the outbreak of war in Ukraine, the Czech government and the entire energy sector have been forced to respond rapidly to the situation. In addition to the need to address the extreme increase in electricity and gas prices, other critical aspects include finding ways to get rid of dependence on imports of energy commodities from Russia, especially in the case of crude oil, natural gas and nuclear fuel. In 2022 and 2023, it is possible to negotiate the replacement of natural gas from Russia by LNG supplies, including securing a participation in the LNG terminal at Eemshaven. Similarly, the replacement of oil supplies originally provided by the Druzhba pipeline through the intensification of the TAL pipeline with a connection to the IKL pipeline is being negotiated. The resolution of oil supplies is linked to technological measures on the TAL pipeline and the earliest possible date for the replacement of Druzhba pipeline supplies is towards the beginning of 2025. Similarly, the replacement of Russian natural gas is linked to the contracting of LNG imports to Europe (in addition to the strengthening of supplies from Norway). Here too, the rational horizon for getting rid of dependence on Russia seems to be around 2026. The key factors are the speed at which new LNG terminals can be built, and savings or reductions in gas consumption. In the area of nuclear fuel substitution, a solution has already been found and from 2024–2045 fuel supplies from the Russian company TVEL are to be replaced by supplies from Westinghouse.

The very rapid development of photovoltaic power plants continues, with the limit for unlicensed plants being raised from 10 kWp to 50 kWp in 2023. However, along with the

rapid development of these installations, issues regarding storage, the rational use of energy at the point of generation, etc. must also be addressed. Here, the reality is still somewhat behind the rapid development of PV applications.

At the same time, energy legislation is being amended to allow the introduction of new entities such as energy communities, storage and aggregation service providers. Alongside this, a new tariff structure reflecting the changes in the structure of energy production and consumption (including the rapid growth of PV installations in particular) is being designed and should be gradually phased into use between 2024 and 2026.

In conclusion, the Czech energy sector has managed the crisis period following the start of the war in Ukraine, despite the combination of several other factors, such as its having coincided with the transformation of the energy sector away from coal and the implementation of the Green Deal objectives. Nevertheless, for at least the next few years, the Czech energy sector will remain dependent (albeit to a much more limited extent) on supplies from Russia, especially for crude oil (at least until 2025).

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