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## AN INFORMATIVE ARTICLE OUTLINING THE CURRENT REGULATORY LANDSCAPE OF CZECHIA'S ELECTRICITY SECTOR

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## 1 Regulatory legislation

The Czech Republic implements EU energy directives and regulations to promote market liberalization, competition, and consumer protection. The base was established in the early 2000 years in primary national legislation:

### **Energy Act (Act No. 458/2000 Coll., as Amended)**

- The Energy Act is the primary legislation governing the business conditions and state administration in the Czech Republic's energy sector, including electricity. It outlines the legal framework for energy production, distribution, transmission, and supply.
- The Act covers various aspects, including licensing, tariffs, energy efficiency, renewable energy sources, and consumer protection. It sets an institutional framework for sector regulation, especially the competencies of the Ministry of Industry and Trade (MPO) and the Energy Regulatory Office (ERO).
- Several amendments were adopted during the critical situation in European electricity markets in 2022/3 (as discussed further).

### **Energy Management Act (Act No. 406/2000 Coll., as Amended)**

- The Energy Management Act focuses on requests from legal bodies and citizens concerning energy management, especially consumption.
- The Act establishes the rules for implementing documents such as the State Energy Policy, Regional Energy Concepts, and the State Program for the Support of Energy Savings.

Czech legislation actively adopts all European regulations, including the Third Energy Package, which includes the Electricity Directive (2009/72/EC) and the Electricity Regulation (714/2009), and the 2019 initiative Clean Energy for All Europeans Package, which includes directives and regulations that promote renewable energy, improve energy efficiency and enhance the governance of the Energy Union. The Czech Republic is aligning its national policies with these EU-wide goals.

At the end of 2022, EU Council Regulation 2022/2577 entered into force to establish a framework for accelerating the deployment of renewable energy - all these installations are considered to be of overriding public interest to the enumerated provisions of the EU directives under the regulation. The regulation was introduced for 18 months, i.e. until mid-2024. The new European directive RED III contains the same regulation. It stipulates the obligation for Member States to enshrine it in national legislation - the introduction of the presumption of overriding public interest of RES projects should be fulfilled by Czech lawmakers by February 2024.

## 2 Institutional framework

### 2.1 Energy Regulatory Office (ERO)

ERÚ works within the framework of the Agency for the Cooperation of Energy Regulators (ACER), which aims to harmonize regulatory practices across the EU.

ERO was established as an administrative office for the enforcement of regulation in the Energy Sectors in 2001 by the Energy Act, which also sets out its competencies:

- They significantly protected the legitimate interests of customers and consumers in the energy sectors. Therefore, ERO is the authority consumers can dispute with their energy supplier/distributor.
- It is regulating energy prices. ERO controls prices, or, more precisely, the regulated components of energy prices, on which it issues Price Decisions every year.
- Promoting competition in the energy sectors, ERO supports technological and legal progress in energy transmission infrastructure and establishes energy commodities markets.
- ERO supervises energy markets by licensing energy producers, traders, and other energy players and subsequently supervising them.
- Under the law, ERO specifies aid for renewable energy sources in its price decisions to promote renewable and secondary energy sources.
- ERO Ensuring compliance with EU regulations and directives.

ERO's head office is in Jihlava, with offices in Ostrava and Prague.

In exercising its powers, the ERO acts independently and is governed only by laws and other legal regulations. In exercising its powers, the ERO may not accept or request instructions from the President of the Republic, the Parliament of the Czech Republic, the Government, or any other body of executive power or a natural or legal person. The ERO proceeds in such a way as to ensure transparency and predictability in the exercise of its powers. ERO's financial management is subject to a distinct title (chapter) of the national budget.

The ERO has a five-member board, and one of the members is the board chairman. The Government appointed and dismissed the members and the Chairman based on a proposal submitted by the Minister of Industry and Trade. The term of office of the members is five years and starts on 1 January. One member is appointed each year at most twice in succession. The ERO Board Chairman heads ERO and acts on behalf of ERO. In specified cases, the ERO Board decides.

## 2.2 ČEPS (Czech Transmission System Operator TSO)

ČEPS is a 100% state-owned subsidiary of MIT with an exclusive license for managing the high-voltage transmission network (ca 6000 km) in the Czech Republic.

ČEPS coordinates cross-border electricity flows with neighbouring countries' TSOs. ČEPS is actively involved in the European Network of Transmission System Operators for Electricity (ENTSO-E), facilitating cooperation among European TSOs.

Since 2022, ČEPS has been a Core Flow Based Day-ahead Market Coupling member. This method considers the physical flow of electricity across the network to optimize cross-border capacity allocation, enhancing the efficiency and reliability of electricity markets.

ČEPS participates in EU Projects of Common Interest (PCIs) to improve cross-border energy infrastructure. Key projects include interconnectors and upgrades to the transmission network to facilitate better integration and energy security.

ČEPS is the leader in Smart Grid implementation in the transmission sector in CR.

### 2.3 OTE (Czech Nominated Electricity Market Operator NEMO)

OTE is a 100% state-owned subsidiary of MIT with an exclusive license for operating the Czech electricity market, including the day-ahead and intraday markets, and manages market settlement.

OTE, as a Nominated Electricity Market Operator (NEMO) in the Czech Republic, cooperates with other European NEMOs to implement the single day-ahead and intraday electricity markets across Europe, as set out in the European Commission Regulation 2015/1222 of 24 July 2015 (CACM Regulation) establishing a guideline on capacity allocation and congestion management. OTE representatives are thus actively involved in individual market coupling projects. OTE is responsible for evaluating, clearing, and settling deviations between agreed and actual supplies and electricity and gas consumption.

- **Day-Ahead Market Coupling:** The Czech Republic is part of the Multi-Regional Coupling (MRC) project, which integrates day-ahead electricity markets across Europe. Access to the day-ahead market (Day-Ahead Auction) is organized via the PXE platform. This Czech spot market is part of the SDAC (Single Day-Ahead Coupling) project, which aims to create a single-day-ahead electricity market throughout Europe.
- **Intraday Market Coupling:** The Czech market is also involved in the Cross-Border Intraday (XBID) project, which enables continuous cross-border trading of electricity in the intraday market. This allows for more flexible and efficient use of electricity generation and consumption closer to real-time.

OTE carries out other assigned activities:

- OTE is the national administrator of the Trading Register greenhouse gas emission allowances (EU ETS). The Czech Republic is part of the EU Emissions Trading System (ETS), which aims to reduce greenhouse gas emissions through a market-based approach.
- OTE is certified by ACER as a Registered Member—Reporting Mechanism (RRM) under the REMIT Regulation.
- OTE operates the system for Registration of Guarantees of Origin (EZP). The Guarantee of Origin documents which energy source, in which production plant, and in what period and quantity the energy has been produced. Consumers use it to prove the origin of the energy they consume.

### 2.4 PXE (Energy Exchange)

POWER EXCHANGE CENTRAL EUROPE, a.s. (PXE) is an energy exchange specializing in the energy markets of Central and South Eastern Europe. Established in 2007 (originally named

the Prague Energy Exchange), it began offering electricity trading in the Czech Republic. PXE then expanded its activities to other countries and started organizing natural gas trading with a delivery point in the Czech Republic.

In 2016, PXE became part of the EEX Group (part of Deutsche Börse Group). In 2017, PXE energy derivatives trading was converted to the EEX platform. The PXE is co-owned by the Prague Stock Exchange (PSE).

PXE holds a commodity exchange license issued by the Ministry of Industry and Trade (MPO), under which it operates its PARC commodity platform. Derivative products ensured by PXE are traded under a license from the European Energy Exchange AG (EEX) and on the EEX platform (T7 trading system).

## 2.5 Ministry of Industry and Trade (MPO)

MPO is a state authority that controls government interferences in the energy sector, which should initially concern strategic decisions. According to the abovementioned legislation, it is responsible for creating strategic documents such as The State Energy Plan (SEK) and The National Climate and Energy Plan of the Czech Republic (NECP). During the crisis of 2022-2023, its role was strengthened by direct intervention in the electricity market and amendment to energy legislation.

### 3 Czech electricity sector

The Czech electricity sector has been very stable in terms of the technologies used to generate electricity for the last decade, see Table 1.

Table 1: Electricity Balance, Czech Republic

Electricity Balance [TWh]	2014	2018	2022	2014	2018	2022
<b>Gross electricity production</b>	<b>86.0</b>	<b>88.0</b>	<b>84.5</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Lignite	35.8	37.7	34.3	42%	43%	41%
Nuclear Fuel	30.3	29.9	31.0	35%	34%	37%
Natural and other gases	4.7	6.4	5.3	6%	7%	6%
Coal	4.9	3.5	2.4	6%	4%	3%
PVPP pumping	1.1	1.1	1.0	1%	1%	1%
Biomass and biogas	4.7	4.8	5.4	5%	5%	6%
Hydro PP	1.9	1.6	2.1	2%	2%	2%
PVE	2.1	2.3	2.3	2%	3%	3%
Wind PP	0.5	0.6	0.6	1%	1%	1%
<b>Energy sector consumption and loses</b>	<b>11.3</b>	<b>11.7</b>	<b>10.5</b>			
Technological c. for electricity production	6.1	6.1	5.8			
Transmission system losses	3.8	4.3	3.4			
Consumption per PVPP pumping	1.4	1.4	1.3			
<b>Net electricity + local consumption</b>	<b>58.4</b>	<b>62.4</b>	<b>60.5</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Large-scale consumption from HV	7.3	7.9	7.3	12%	13%	12%
Large-scale consumption from LV	22.6	24.6	23.0	39%	39%	38%
Small-scale consumption entrepreneurs	7.7	8.1	7.7	13%	13%	13%
Small-scale consumption households	14.1	15.0	15.7	24%	24%	26%
Local consumption	6.7	6.7	6.7	11%	11%	11%
<b>Net export</b>	<b>16.3</b>	<b>13.9</b>	<b>13.5</b>			

Source: Annual Report on the Operation of the electricity system 2022, [www.eru.cz](http://www.eru.cz)

The key player on the production side is the majority state-owned ČEZ Group, with 70% of the market share. ČEZ operates two nuclear power plants in the Czech Republic (50% of ČEZ production, 30% of the country's production), with an installed capacity of 4 x 510 MWe in NP Dukovany and 2 x 1,100 MWe in NP Temelin. The expected timeline of NP Dukovany is 2045-2047 and 2060 and 2062 in NP Temelin (2024 State Energy Policy). Another two nuclear blocks with a capacity of 1,050 MW each should be built up to 2036 and 2039 with CAPEX around 200 billion CZK by South Korean KHNP (announced by the Czech Government, July 17<sup>th</sup>, 2024).

A significant part of electricity has been generated by lignite combustion (40% of country production, half of it by ČEZ). Generating electricity and heat from coal is not competitive as the emission allowance price at the EU ETS has been rising. Also, the actual NECP and SEP foresee dampening using the coal until around 2030.

The market share of RES has grown slowly in the recent decade (from 10% to 12%). Hydropower plants are traditional electricity sources in the Czech Republic; their potential is,

however, quite exhausted. The potential of wind power has not been utilized fully yet, with a capacity of 0.34 GW in 2022, when only a few units have been installed since 2015.

The share of photovoltaics (PVE) boomed in early 2010, resulting in disproportionately high electricity costs (as described further). In recent years, PV installations have been rising again, with a total installed capacity of 2.1 GW in 2022.

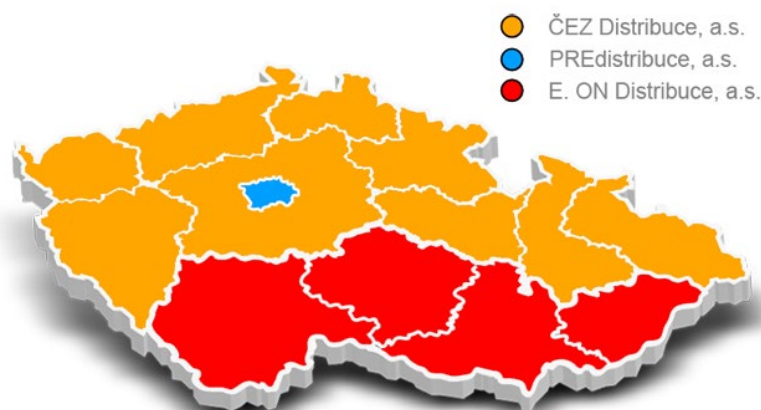
So far, the share of natural gas is marginal (6% of CZ production), but it is expected that the role of natural gas (with CCS in later years) will increase, in particular, to satisfy resource adequacy (LOLE below 7 hours a year). The lack of Russian natural gas caused the crisis in the electricity markets around Europe (as described further).

The transmission system connects Czechia to neighbouring systems; the monopoly in this field belongs to ČEPS.

As the net export of electricity is 20% of net production (14 TWh), the total exchange is threefold. There is constant import from Poland (9 TWh) and export to Austria (13 TWh) and Slovakia (11 TWh). Trade with Germany is about 7 TWh, both directions. As compensation becomes more significant in raising the RES market share, especially in Germany, renovation and strengthening of the primary lining will be necessary.

In the 1990s, the Czech electricity distribution organization was established when part was privatized. Today, three companies supply over 99% of customers, and another two hold licenses for distribution in local industrial areas. The three large distributional companies include:

- ČEZ Distribuce (a subsidiary of ČEZ Group, majority state-owned) – the Eastern and the Northern part of Czechia, with 60% share of total supply,
- EG.D (owned by the foreign investor) – southern area, with 25% of total supply points,
- PRE Distribuce (owned by the municipality of Prague/foreign investors) – the capital of Prague, with 15% share



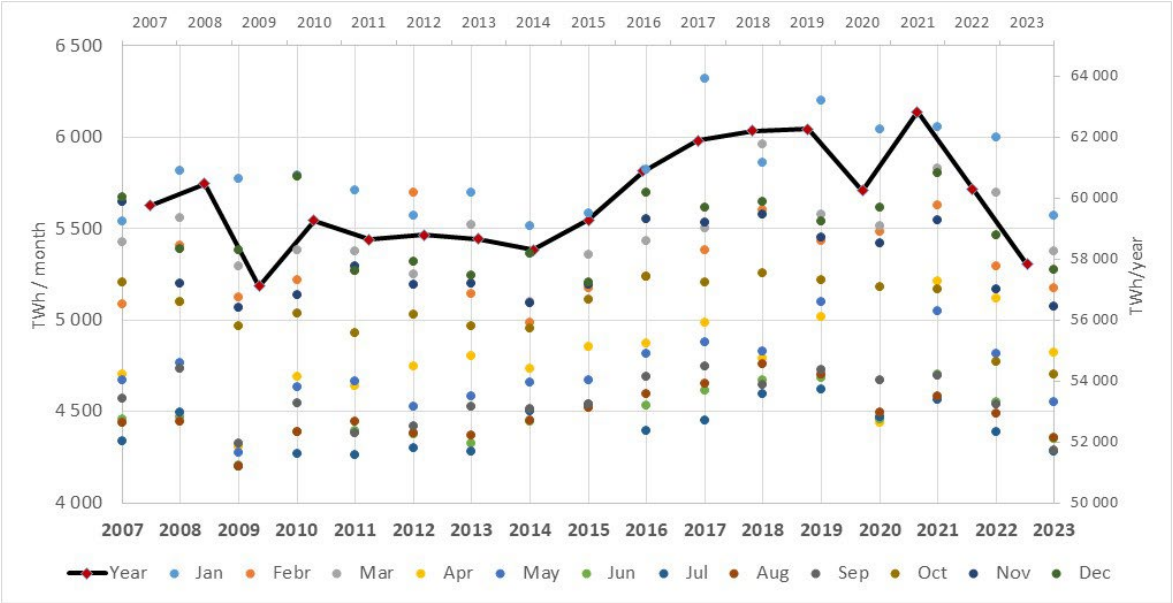
Despite massive state support for energy-saving measures, electricity consumption has been still growing, except during the first year of the COVID-19 pandemic in 2019 and during the Russian attack on Ukraine in 2022-2023 (see black line on next figure, with scale on the right



axis), with significant monthly variation (see dots, with the scale on the left axis on the same figure). Still, domestic consumption has been stable, ranging from 60–62 TWh a year in the last decade.

The increasing use of heat pumps has become a significant factor on the demand side in the last few years. Still, battery electric vehicles represent a very low share of the vehicle fleet, and the effect of charging electric vehicles is expected to be significant only after 2030.

Figure x: Electricity net consumption, Czech Republic 2007-2023





## 4 Electricity Pricing

A two-part tariff has been applied to price electricity consumption. The first is fixed and paid per month, covering a point-grid connection and a payment for the main circuit breaker. Typically, it ranges between 100 and 300 CZK per month. The second represents a variable part of the tariff directly linked to electricity consumption (paid for each kWh).

The latter variable part consists of two components: regulated and non-regulated.

The regulated variable price is set regularly by ERO and comprises:

- *distribution cost* covers investments in distribution networks; this cost component is calculated by distribution company and depends on volume of electricity consumed,
- *system service cost* covers investments in the distribution network and operating costs calculated by TSO ČEPS. The extreme rise, by 140%, in 2024 was caused by the Government's decision not to cover transmission losses in the previous period, in 2024 it is 212.8 CZK per kWh,
- *support of electricity generated from supported (renewable) sources* that is 495 CZK per MWh; in 2023, the Czech Government cancelled this fee to relieve household expenses due to energy price jumps due to Russian attack of Ukraine,
- *excise tax on electricity* given by EU Directive that is 28.3 CZK per MWh,
- *market regulations and administrative costs* (ERO) is a monthly lump sum payment of 4.14 CZK.

The non-regulated component of the variable part of the tariff reflects production costs. The price of electricity is set at public energy exchanges, at PXE in the Czech Republic, where electricity primarily from all CEE countries is traded. PXE allows trading participants to access the day-ahead market, which is organized in the Czech Republic by OTE. This cost component again varies across utilities and depends on electricity consumed.

Table 2: Average price of electricity prices (EUR/MWh)

	2022	2023	2024
<b>Regulated part</b>	<b>130</b>	<b>116</b>	<b>170</b>
Distribution price	65	64	83
System services	4	4	10
Lump sum payments *	40	47	57
RES support	20	0	20
<b>Electricity generation</b>	<b>125</b>	<b>200</b>	<b>159</b>
<b>VAT (21%)**</b>	<b>53</b>	<i>exempted</i>	<i>exempted</i>
<b>TOTAL</b>	<b>308</b>	<b>316 (381)</b>	<b>329 (395)</b>

\* Unit price per MWh is calculated for an annual consumption of 2.5 MWh.

\*\* VAT was waived in 2022 and 2023, final price including VAT is shown in the brackets for the two years.

Source: <https://www.seznamzpravy.cz/clanek/ekonomika-firmy-koho-nejvice-dozene-zdrazeni-regulovane-slozky-ceny-elektřiny-239270>

## 5 Regulation/Market Failures

### The 2009-2010 PV boom

Since the early 1990s, the purchase price for newly established hydro and wind power plants in the Czech Republic has been guaranteed for 15 years above the competitive price. In 2010, both prices were 100 EUR/MWh, which are still the same today.

Until 2008, investment in PVE was so expensive that no capacity was installed despite several fold higher guaranteed purchasing price. At that time, solar panels started to be imported from China at a fraction of the previous costs. It caused a PVE boom in 2009 - 2011 with state-guaranteed purchasing prices for 15 years at that high price. ERO reacted to this investment cost decrease with a delay of more than two years, so the purchasing price lasted above 600 EUR/MWh. This resulted in sub-optimal high public costs and hence an enormous price increase of electricity since then still to date. For the last 15 years, PVE investors have been earning 1 billion EUR yearly that was collected from customers through one regulated component of electricity tariff (see above).

### The 2022 energy price crisis

Energy prices reached an all-time high in 2022, mainly due to Russia's unjustified invasion of Ukraine and the use of gas supplies as a weapon of war. The wholesale price of electricity in the EU's internal market is directly related to the gas price, which is mainly imported. Russia's deliberate reduction in gas supplies was the leading cause of the sharp increase in gas prices in the EU, which impacted the price of electricity produced by gas-fired power plants and affected electricity prices overall. As a result, the spot price of electricity peaked at 1000 EUR/MWh in October 2022 (compared to 100 EUR/MWh in October 2021) and stayed over 300 EUR/MWh for eight months.

In October 2022, the EU Council had to formally adopt a regulation on emergency intervention to address high energy prices. The regulation introduced common measures to reduce electricity demand and prevent electricity poverty. The EU Member States have agreed to choose measures to collect excess revenues and redirect them to support and protect final electricity consumers—households and small and medium-sized enterprises.

The Council decided to cap market revenues for electricity producers, including intermediaries who use so-called inframarginal technologies such as renewables, nuclear power, and lignite, to generate electricity at 180 EUR/MWh. These operators have made unexpectedly high financial profits without increasing their operating costs because natural gas was used as a marginal source for pricing, which currently increases the final price of electricity. In cases where a Member State's net dependence on imports is equal to or greater than 100 %, they shall conclude an agreement with the exporting Member State on the appropriate allocation of excess revenue.

In 2023, The Czech Government intervened in the electricity market by non-market measures, including introducing a cap on price of electricity consumed by households and small enterprises, VAT reduction and temporally suspension for the RES support, and financial contribution to cover partly escalated electricity bills to mitigate adverse impact on

households. Despite these mitigation measures, the average prices of power electricity for final consumers increased by 70% year-on-year from 2023 to 2022. Despite the price of generating electricity returning back to the 2021 level, ERO increased the regulated components of electricity price in 2024.

## 6 Conclusion

The Czech electricity market is an integral part of the European Union's electricity market, participating in various EU-wide initiatives and frameworks to create a single, competitive, and efficient energy market. This integration facilitates cross-border electricity trade, enhances market efficiency, and contributes to the overall energy security and sustainability goals of the European Energy Union. The legislation and institutional framework are highly aligned with the EU standards.

Technically, the Czech electricity distribution system has been developed and is open to cross-border transmission. On the production side, there was a problem of high dependency on lignite combustion, nowadays high market price of the EUA's emission allowances this market segment has made economically not competitive, and lignite is remaining only a problem for generating heat. Next pathway and energy transition will be set in the NECP, the revised State Energy Policy and the Climate Protection Policy of the Czech Republic which are all prepared by the Czech Government in the spring-summer 2024.