EUROPEUM
INSTITUT PRO EVROPSKOU POLITIKU
INSTITUTE FOR EUROPEAN POLICY

European Solidarity with Gas: The Czech Outlook

Gas in Numbers

Last updated on 12 September 2022

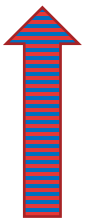
Michal Hrubý

August 2022

How to regulate EU energy prices?

- On Friday, 9 September, EU ministers discussed possible **proposals to counter high energy prices** (electricity and gas) during an emergency Energy Council. As the **impact of the gas price on the electricity price is significant**, the proposals were aimed at both commodities.
- **The ministers requested the Commission** to elaborate on the selected proposals, specifically the following:
  - **Capping the income** of those electricity producers who currently earn high profits, including the contribution from the fossil fuel giants, and **suppressing the worst price impacts on consumers.**
  - **Capping commodity prices**, including natural gas, which would have a **positive impact on electricity prices**, but would **not undermine efforts to save** both commodities.
  - A plan to **reduce electricity demand across the EU**, in a very similar sense to the previously agreed plan to reduce gas demand.
  - A **financial support** instrument for **electricity market participants to enable** the energy exchange to **operate smoothly** and for trading to gradually **stabilise**.
- The meeting also discussed other proposals aimed at **successfully managing this current commodity war and macroeconomic situation.**

Gas and electricity



Up to 90%
The effect of gas price on the increase in price of electricity from a gas-fired power plant.

Market price
The price of electricity is determined by the most costly plant needed at the moment.

Gas decides
This source is often gas, so other producers make high profits and consumer prices are high.

Natural gas savings from an EU perspective

- Over the past year, **Russia has started to put pressure on the natural gas market**. Since the start of the Russian invasion of Ukraine, **Russian state-owned Gazprom has been stepping up this pressure**, taking advantage of the dependency that some EU Member States, including Czechia, find themselves in. One of the key players in this **commodity war** and price and revenue optimisation from Russia's perspective is Germany. **However,** another **target of this pressure is us - ordinary consumers**.
- So far, the EU has responded not only with the REPowerEU strategy, which aims to fully **move away from Russian fossil fuels**, but also with a new proposal for a directive on gas demand reduction and EU solidarity. The aim is **to reduce Member States' gas demand by at least 15%**.
- In addition to **increasing existing supplies** from countries such as the US, Norway, Azerbaijan or Algeria, the EU is also trying to secure the looming gas shortage **by signing up new suppliers** such as Senegal, Angola or Congo.
- Another **key step to bridge this and future winters will be energy savings** across all sectors of the economy. **Prices are extreme and savings are the natural response of businesses and households**.*

Recent developments

-80%
Reduction of Russian gas supplies to the EU.

Up to +900%
Increase in the price of the natural gas contracts on the EU energy exchange.

Up to +900%
Increase in the price of the electricity contracts on the EU energy exchange.

* Current and average electricity consumption in Czechia is presented on page 11.

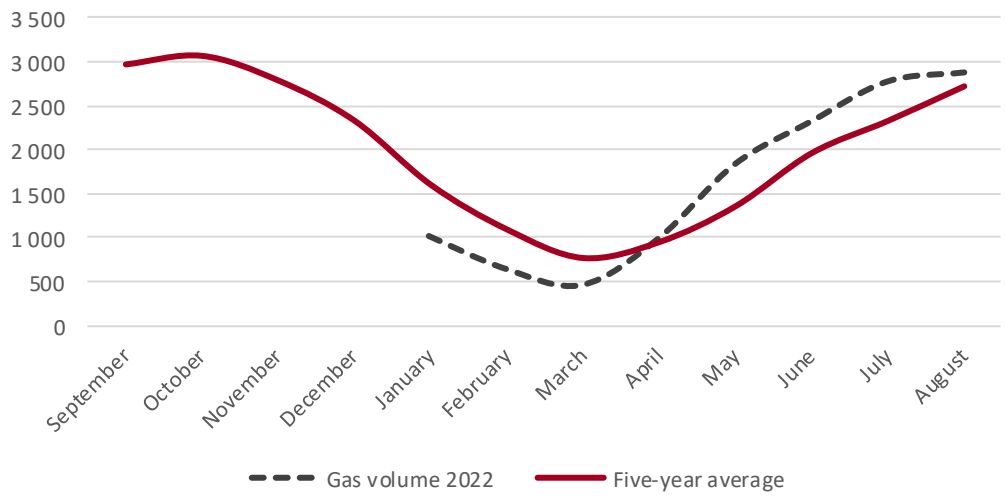
Why is the issue of natural gas consumption crucial for Czechia?

We produce about 2% of our annual consumption ourselves, and the remaining **98% is imported**. Out of that almost **100% depends on Russian gas supplies**, even though it comes to us from different sources and different traders. The **gas infrastructure and storage facilities are controlled by private companies**. Gas is purchased by traders and the government owns only a minimal amount of it. The currently agreed purchases (LNG) will then significantly reduce dependence on Russia, starting this winter.

What is our natural gas supply?

Czech gas storage facilities have a **maximum capacity of 3.5 billion m³**. They are currently **filled from more than 82%.** The amendment to the Czech decree on gas emergency newly sets the **obligation to fill the storage capacity to 90% by the end of October** – to a level higher than **3.1 billion m³**. This is slightly higher than the five-year average of gas in storage to the date. Currently, the rate of filling is slowing, physical availability is lower and the market price is high.

Filling of storage capacity in Czechia (million of m³)



Source: ERÚ, annual and quarterly reports 2016-2022, GIE ASGI, storage data.
The graph shows gas in storage at the end of the respective months.

Over the last 5 years, **the average consumption has been 8.6 billion m³ of natural gas per year***. In the specified "savings period" (August to March) we have **consumed an average of 6.8 billion m³**. These eight months account for **80% of annual consumption, with the remaining 20% consumed in the four spring and summer months. The proposed 15% reduction in consumption during the savings period** therefore means a de facto **reduction of 12% in the average yearly consumption.** See table on page 8 for more details.

How much do we need to save relative to our average consumption?

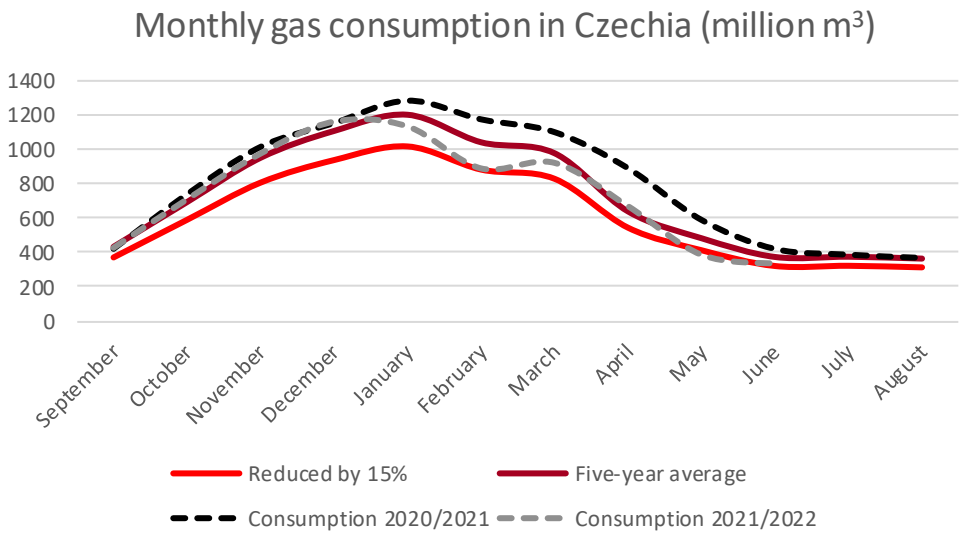
The Czech government, through its energy utility ČEZ, has negotiated capacity at an LNG terminal in the Netherlands that would theoretically **provide annual capacity of up to 3 billion m³** of natural gas, or **1/3 of Czechia's annual consumption**. The LNG itself must first be purchased through traders on world markets. Further investments in LNG terminals may be negotiated with German or Polish partners.

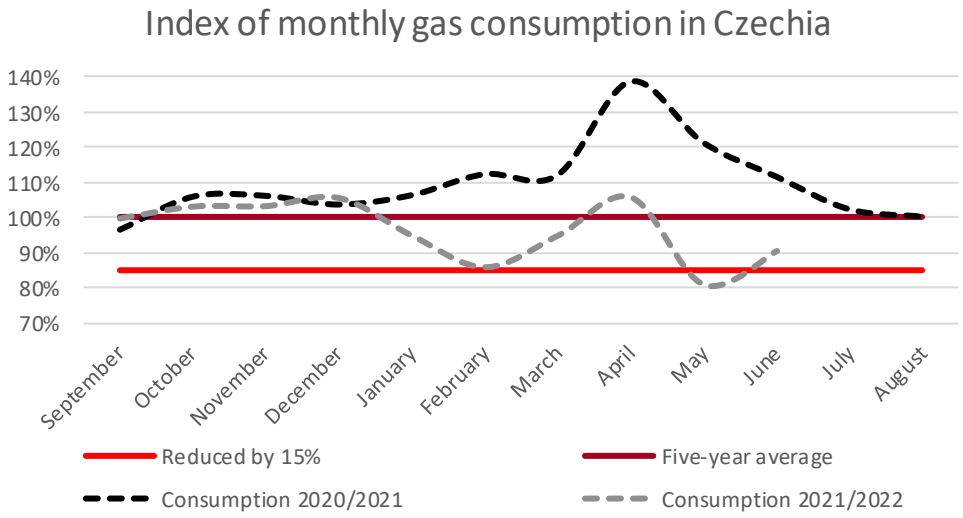
Where to get new capacity?

The already invested terminal will be **fully operational from the following months. The opening** of the terminal and **the first LNG tanker** sailing towards the Netherlands are already in the news. Today, an average LNG tanker can have a capacity of **150,000 m³ of liquefied gas**, which after regasification represents up to **0.09 billion m³ of natural gas** - a theoretical **100 tankers would thus cover Czechia's annual consumption.**

How much LNG would cover our entire consumption?

*In this analysis, consumption is not adjusted for weather.



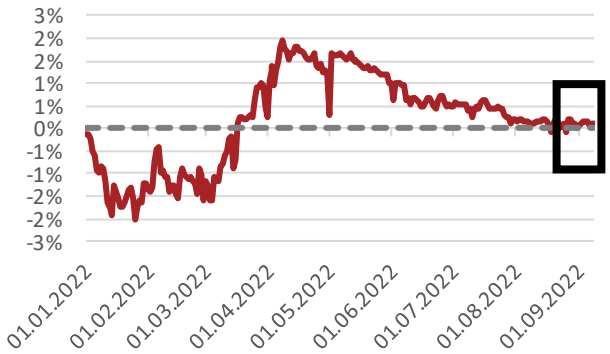


Source: ERÚ, annual and quarterly reports 2016-2022, own calculation

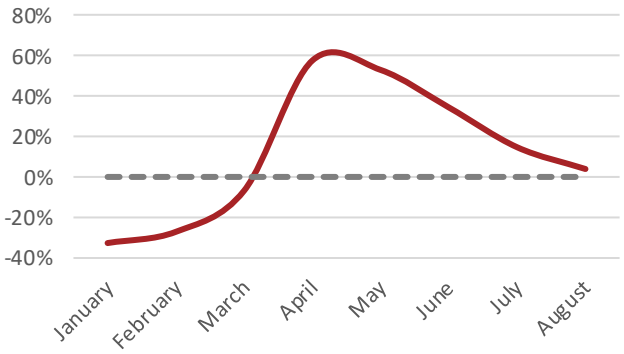
Gas consumption can be monitored according to the statistics of the gas system operation prepared by ERÚ. The graphs above show the **average monthly gas consumption** (not adjusted for weather), simply presented by a solid line. The first graph shows the total consumption by month for the selected periods, accompanied by an illustration of what a **five-year average consumption reduced by 15%** would look like. In the graph below, from the same data, we track the **percentage deviation** from the five-year average to find out in **which months we are approaching the targeted 15% reduction in average consumption.**

In the first half of 2022, average monthly consumption reached or overreached the declared 15% reduction during two months. Based on ERÚ data, **natural gas consumption in the first half of 2022 is roughly 8% lower than the five-year average** for the first half year. The **year-on-year comparison with 2020-2021 is not relevant,** as it was an above average period in terms of consumption.

Daily percentage increments of gas in storage

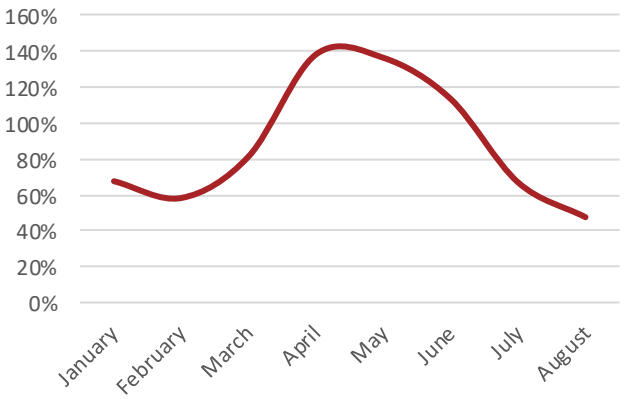


Monthly percentage increments of gas in storage, 2022



Daily gas import index

Monthly gas import index, 2022



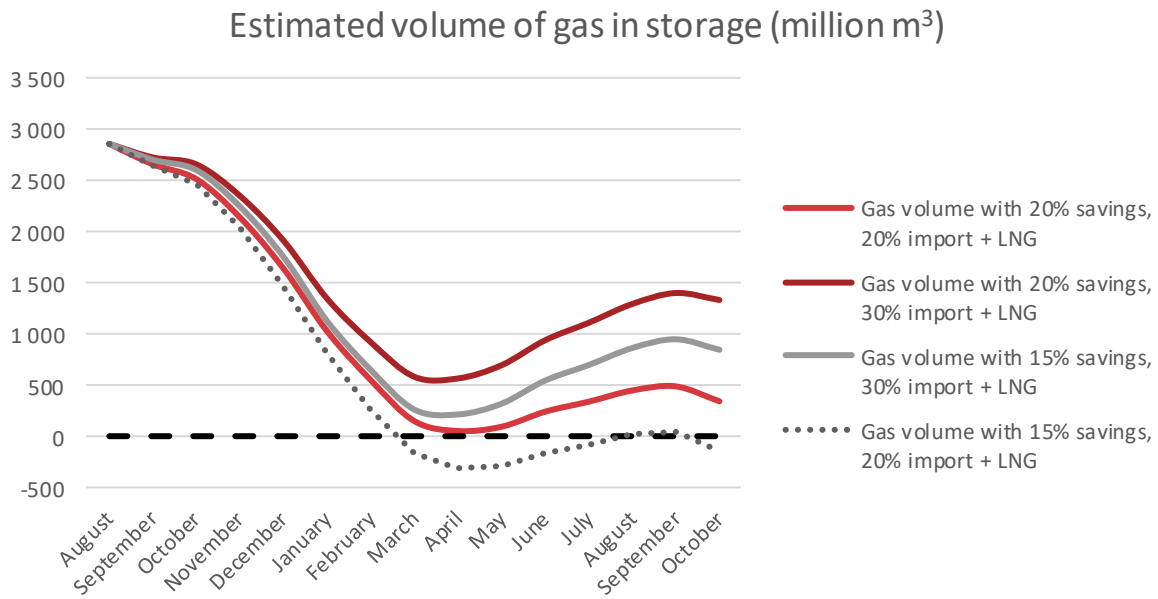
Source: ENTSOG, aggregated entry, GIE ASGI, storage data, own calculation.

Daily percentage additions of gas in storage are gradually but predictably **approaching zero**. Slowly, Czechia is reaching a situation where **more gas** is being **drawn from storage than stored**. Two such days have already occurred at the end of August. It is not that certain that storage will be filled to the expected **90%** of capacity by the end of October. Even this **90% of gas in storage would still only cover about 3 months of average gas consumption** (e.g. November, December and January).

On 31 August, the suspension of gas supplies through Nord Stream 1 **reduced gas imports from Germany to Czechia** and at one point touched the limit of **20% of average daily imports over the last 12 months**. In the last week under review (5-9 September) **it rose back to around 30%.** Incidentally, we have been importing all our gas from Germany for some time now (although it is Russian gas). Now, **the mix of gas imported is based more and more on, for example, Norwegian gas.**

Let us consider a situation where the average **net gas imports drop by 70% or 80%**, the average **daily imports of 8 million m³** of gas will start due to LNG supplies in October and domestic production will stay at average levels. All things being equal, **the gas savings would have to be at a higher level than 15%**, as illustrated in the graph below. Even if **savings of over 20%** were achieved, we would have **problems with sufficient gas for next winter**. Therefore, we need to **increase or double the currently booked LNG capacity** so that even with a **15% savings**, we will reach **80% of full storage capacity** again during **September 2023**.

90% of the storage capacity covers only the average November, December and January



Savings period (August-March) in Czechia	Gas consumption from August to March (million m³)	Change from previous period
2016-2017	6 933	
2017-2018	6 809	-2%
2018-2019	6 507	-4%
2019-2020	6 616	2%
2020-2021	7 227	9%
2021-2022	6 589	-9%
Average 5 years	6 750	
2022-2023*	**5 737**	**-13%**

Source: ERÚ, annual and quarterly reports 2016-2022, own calculation

*Consumption in the savings period if we reduced the five-year average consumption by 15%.

A change of -13% tells us how much we should reduce consumption compared to the previous period.

Final gas consumption **is dominated by industry**, which **consumed nearly 40% of natural gas** on average between 2016 and 2020. **Households account for slightly less, at over 35%, with trade and commercial services**, such as office and shopping centres, historic and public or government buildings, and others, consuming above **20%.** Among industry, the **non-metallic minerals sector (glass, cement, lime and others**) is **the main consumer with a 25% share**. The **food industry** also consumes a significant proportion, almost **15% of industrial consumption** annually. See table below for more details.

Industrial need for gas is significant, and not very flexible

Average natural gas consumption 2016-2020			
From final consumption:		From the final consumption of the industry:	
Industry	39%	Non-metallic minerals	25%
Households	36%	Food, beverages, tobacco	14%
Commercial premises and services	21%	Engineering	12%
Transport	2%	Chemical and petrochemical	11%
Other	2%	Steel and iron	9%

Source: MPO, 2021

Many households are dependent on gas

According to the Czech Statistical Office, **2.7 million out of 4.3 million** Czech households used natural gas in 2015. **27% of all households relied on gas as their only source of heating, 24% for water heating and 17% for cooking.** In 2020, **more than 25% of the** energy **consumed by** households was **from natural gas** (not including the share of gas in purchased heat and electricity). Roughly the same proportion (**25%**) was **gas used for domestic heating**, **over 33%** for **water heating** and **almost 50% for cooking** (not including the share of gas in purchased heat and power). **Between 2015 and 2020,** Czech households spent on **average 11% of their annual consumption expenditure** on energy (not only gas but also electricity and other sources). Thus, the state offers support to consumers (of all energies) in the form of a so-called savings tariff, and households can calculate how much of a contribution they can sign up for.

According to ERÚ, during the savings period (August-March), Czech **households are responsible for approximately 30% of the total gas consumption of 6.8 billion m³** – i.e. a higher percentage than in summer, when businesses consume the most. In the recently ended "savings period", **households consumed 1.9 billion m³** of gas. So on average, **households use just under 8 million m³ per day during this period**. The **average consumption for the whole of Czechia during this period is roughly 27 million m³ per day**.

Although **households are protected consumers**, they too can do a lot to reduce gas demand, the ministry advises how and offers advisory services. A recent STEM survey shows that **up to 80% of consumers expressed a willingness to save gas –** already forced to do so in some cases by high prices. Further STEM research shows that almost **45% of consumers have already had to resort to energy savings in the past.**

Consumption during the savings period - billion m^3 for households only

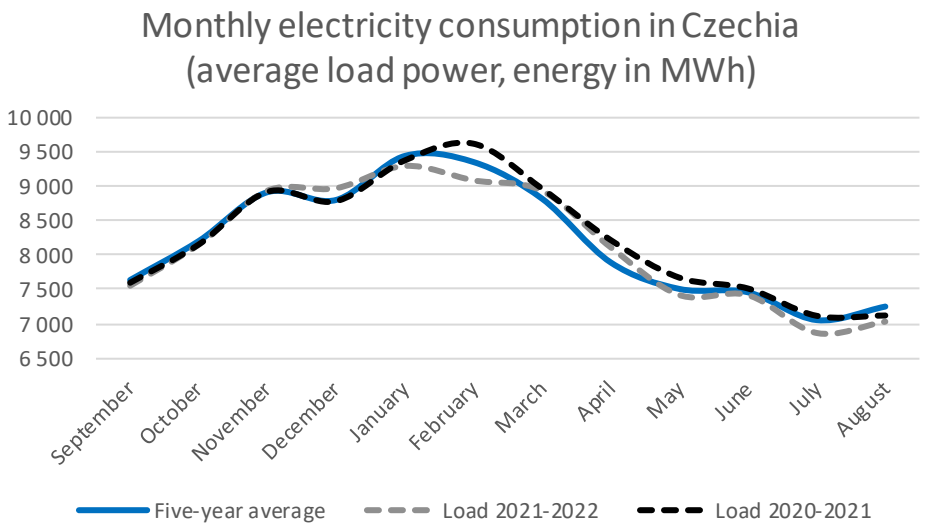
Consumers - savings under pressure of high prices

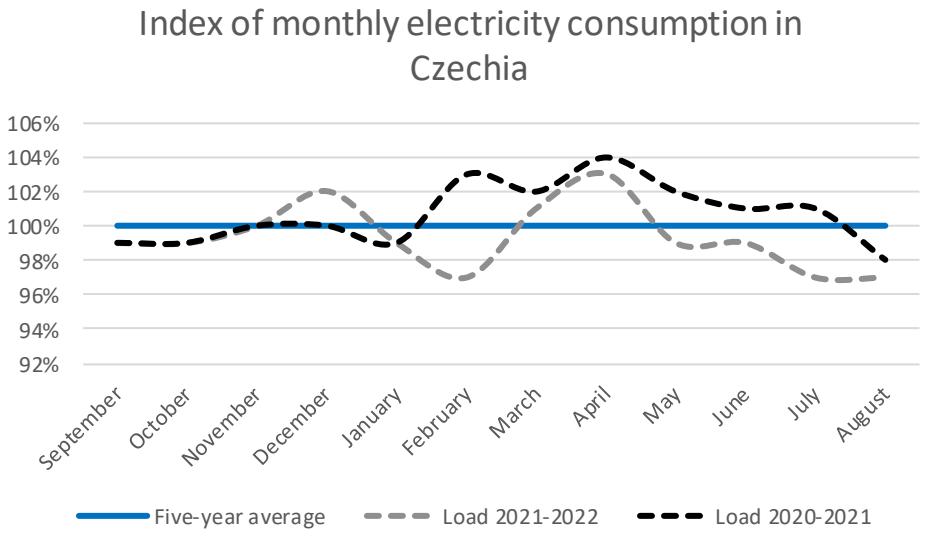
Savings, savings, savings

If Member States are **consistent** in applying savings or **increase gas savings above the agreed 15%, we will survive this heating season.** Several institutions have proposed **steps to reduce consumption**. Examples are given below – the solutions apply to households, industry and commercial sector. In addition, the forthcoming presentation of the Commission's **proposals to address high energy prices**, including for gas and electricity, will send a **positive signal to the markets**, as will the average European gas storage fill above **83%** on 9 September. The complex budgetary issue of **the energy price cap is also being addressed by EU governments at national level**.

- International Energy Agency and International Energy Agency (updated)
- European Commission or Ministry of Industry and Trade
- Bruegel or Ember, E3G, RAP, Bellona Europa

*Electricity consumption





Source: ČEPS, data on electricity system load, own calculation

Electricity consumption can be monitored according to load statistics from the Czech transmission system operator in Czechia, ČEPS. The graphs above show the monthly aggregated average load power (energy in MWh) on the transmission system, simply presented by a solid line. The first graph approximates the total consumption by month for the selected periods. In the graph below, we then use the same data to track the percentage deviation from the five-year average monthly consumption.
In the currently ended heating season of 2021-2022, it was possible to observe a decrease in the average monthly load power compared to the previous period, in selected months consumption fell below the five-year average. Thus, year-on-year, the load in the first half of 2022 decreased by a little more than 2%.

Gas in numbers

Last updated on 12 September 2022

Author

Ing. Michal Hrubý

EUROPEUM
Institute for European Policy

mhruby@europeum.org

+420 608 450 808

The material was produced in cooperation with České zájmy v EU.