

# The Current Energy Crisis and the Czech Republic

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- Background
- Structural limits of Czech energy sector and policy
- Energy crisis?
- Czech reaction and readiness for winter crisis

# Background

Installed Capacity and Gross Electricity Production in the Czech Electricity Grid on December 31, 2020				
Type of Power Station	Installed Capacity (MWe)	Percentage (%)	Electricity Production (GWh)	Percentage (%)
Thermal	10,058.3	47.1	35,197.6	43.2
Gas Combined Cycle	1,363.5	6.4	6,041.3	7.4
Gas Fired	962.2	4.5	3,790.1	4.7
Hydropower	1,093.9	5.1	2,143.9	2.6
Pumped-storage Hydropower	1,171.5	5.5	1,293.1	1.6
Nuclear	4,290.0	20.1	30,043.3	36.9
Wind	339.4	1.6	699.1	0.9
Photovoltaic	2,071.3	9.7	2,235.1	2.7
Geothermal Power	0	0	0	0
Total	21,350.3	100	81,443.4 (gross) 76,126.2 (net)	100 93.5
Source: Energetický regulační úřad				

# Background

## Czech Tradition

- Backbone of Czech (elektricity) energy sector is based on coal, water and nuclear power plants



# Background

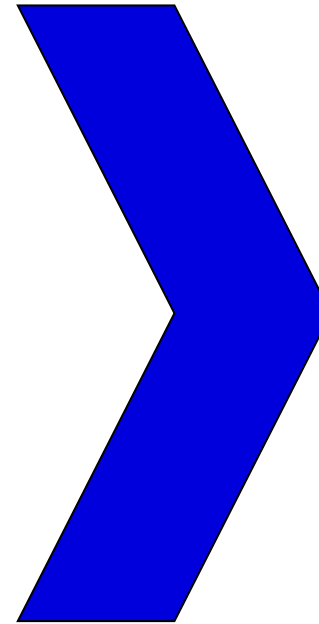
- nuclear power will gradually replace coal power as the main pillar of electricity generation
- general reduction of importance of liquid fuels and coal
- transition from lignite combustion to other fuels in the heating industry
- renewal, transformation and stabilization of heat supply systems based mainly on indigenous sources (nuclear, coal, RES, secondary sources) supplemented with natural gas
- two options with solution to the problem – nuclear and gas

<b>Indicative Corridors for Czech Republic's Energy Sector in 2040</b>			
<b>Structure of Brutto Electricity Generation</b>		<b>Structure of Energy Mix</b>	
<b>Nuclear</b>	46 – 58 %	<b>Nuclear</b>	25 – 33 %
<b>RES and secondary sources</b>	18 – 25 %	<b>RES and secondary sources</b>	17 – 22 %
<b>Natural Gas</b>	5 – 15 %	<b>Gaseous fuels</b>	18 – 25 %
<b>Coal</b>	11 – 21 %	<b>Solid fuels</b>	11 – 17 %
		<b>Liquid fuels</b>	14 – 17 %

Source: Ministerstvo průmyslu a obchodu, 2014, p. 44

# 2021-2022 reality

- Green Deal and Green Taxonomy
  - low emission or renewable gases from 2035
- Natural gas prices
  - low emission or renewable gases from 2035
  - high prices of natural gas – geopolitics
- Nuclear power plants
  - new nuclear with construction permit only until 2045
  - construction of deep underground repository until 2050
- Russian invasion to Ukraine
  - short term negative financial effects
  - acceleration of transition efforts



SEP plans not feasible  
Major revisions expected  
Change of minds

# Reasons for structural limits

## – Tradition

- century of usage of coal and hydro, later nuclear

## – Path dependence

- i.e., education of cadres (e.g., more than 80 % of ministers of industry have education or experience in traditional heavy energy/industry sector)
- generational issues, lack of imagination

## – Structural changes in 1990s

- privatization, economic reforms, EU accession, liberalization

## – Reality of available sources

- coal, uranium, water, limited potential for „standard“ renewables

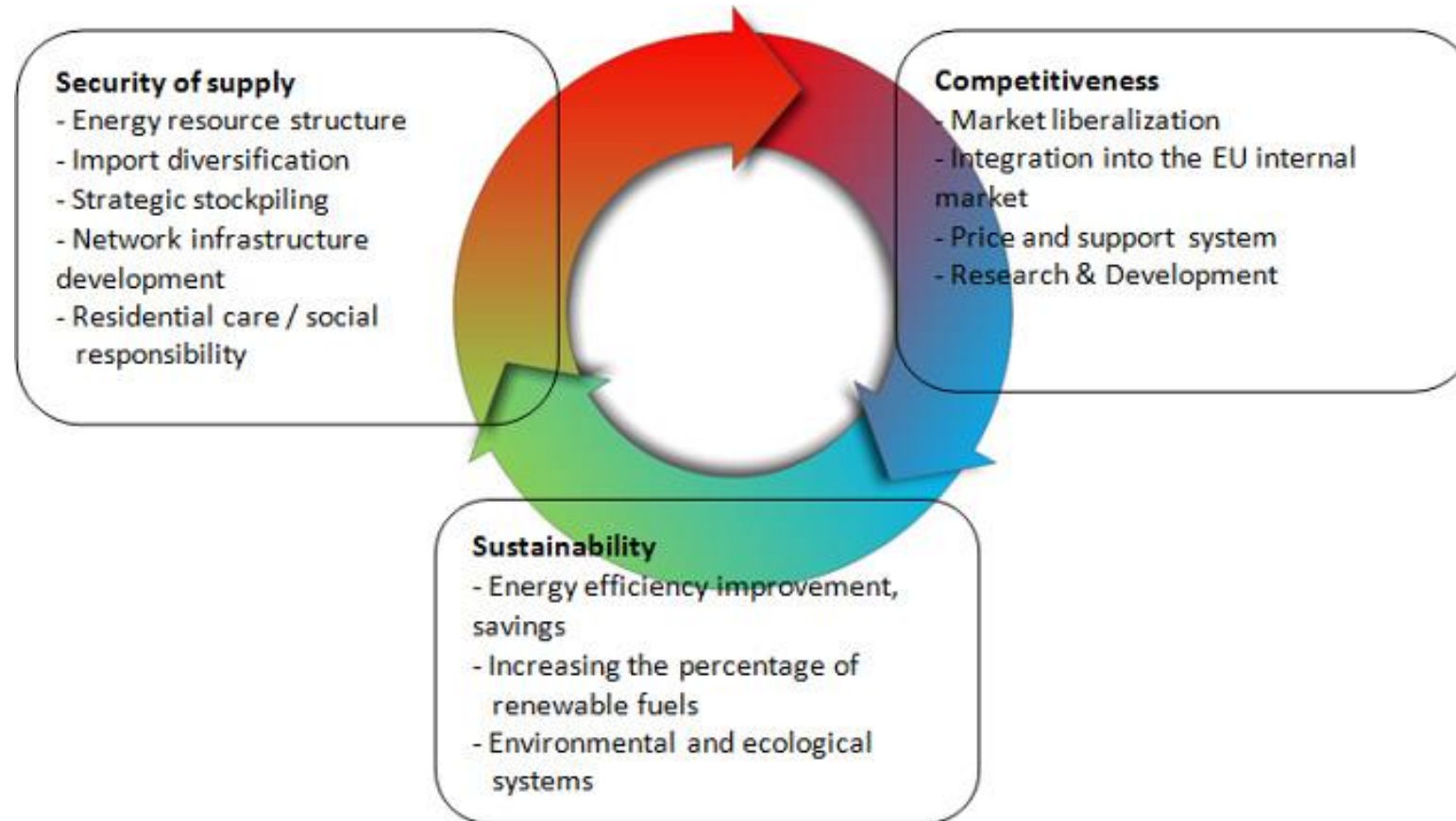


# Energy crisis 2022?





# What is happening with electricity?



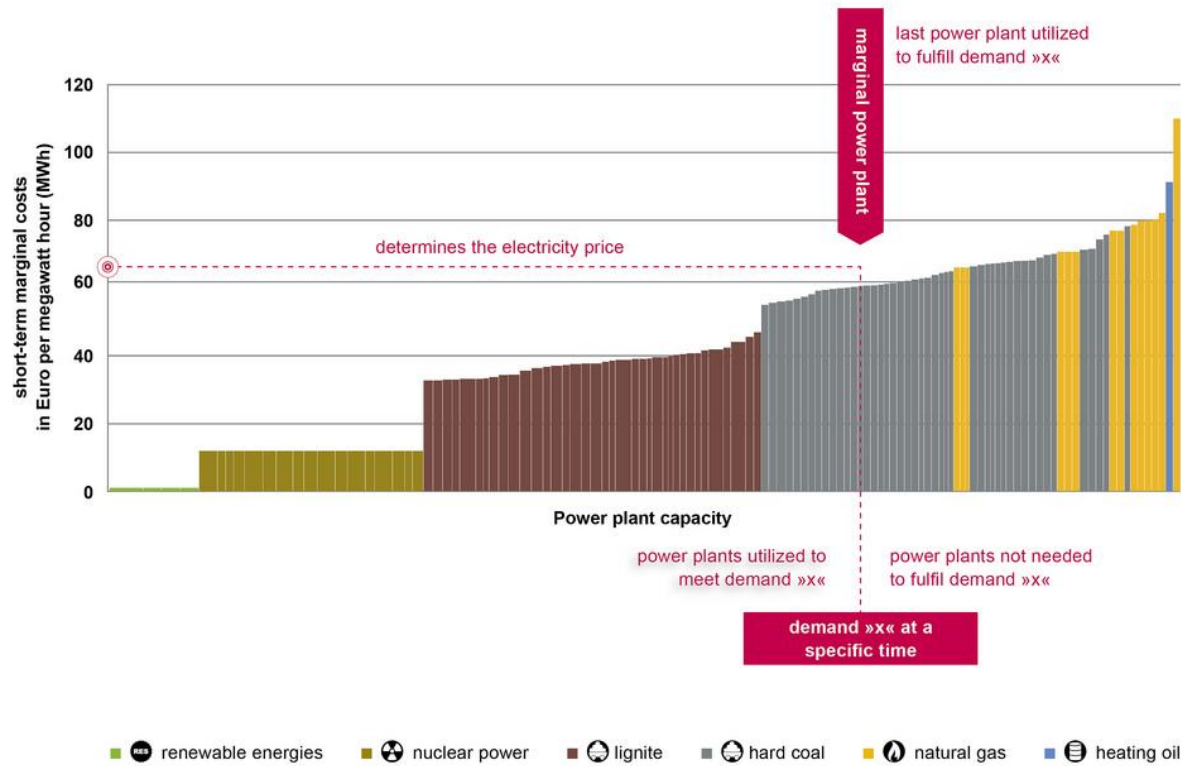
# Electricity trade

- **Direct bilateral contracts**
- **Electricity market**
  - **Energy-only Market (D, M, Q, CAL)**
  - **Balancing Market (H)**
  - **Capacity Market**
  
- Energy-only and balancing markets compensate power that has actually been produced
- Capacity market compensates the mere readiness, or capacity, for power production

# Merit Order Effect (MOE)

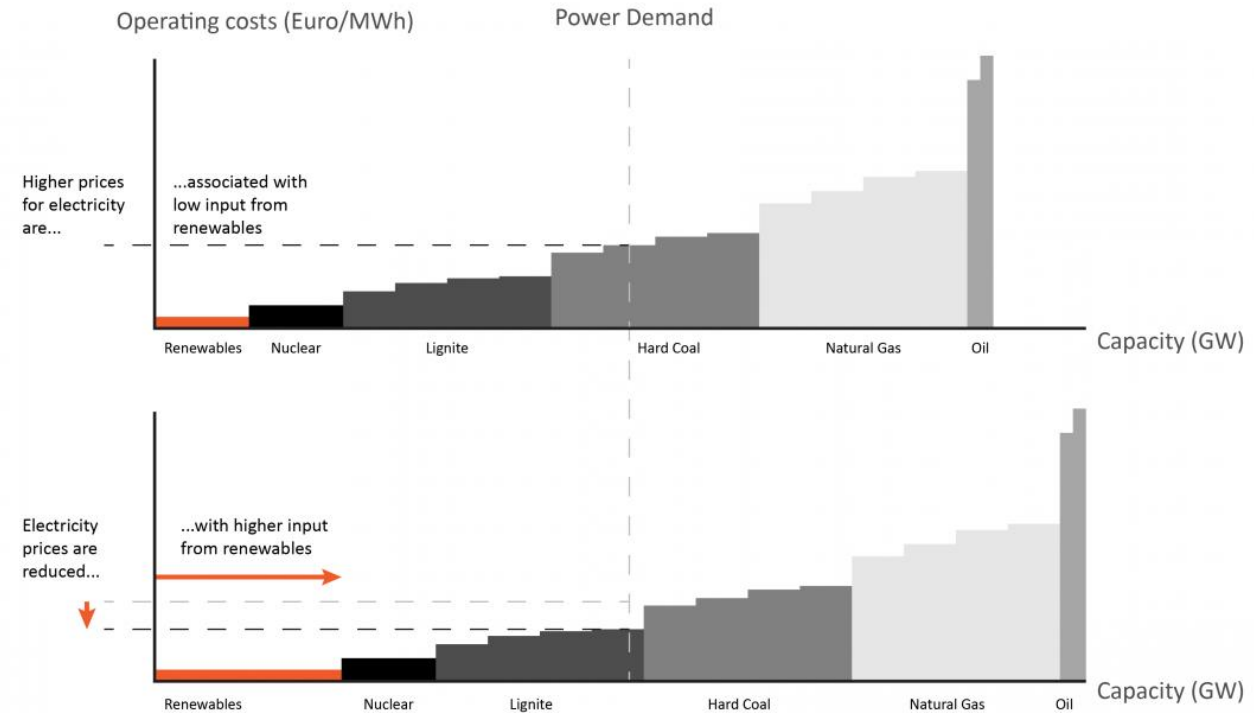
# Merit Order Effect (MOE)

How supply and demand determine electricity prices  
The merit order principle



SOURCE: OEKO-INSTITUT, 2013

Illustrating electricity price fluctuations due to the Merit Order Effect



# Czech preparations I

- Natural gas in storages (11/2022 = 99,5 %) <https://gass.ga/>
- The capacity of the Eemshaven floating terminal leased to the Czech Republic is 3 bcm (about 30 gas tankers)
- Savings (Ministry of Health regulation on reducing the minimum heat in public spaces, changing rooms, showers, corridors, offices, etc.)
  
- Coal mining extension to end of 2022, potentially to spring 2025
- Creation of a state energy trader (large suppliers obliged to supply energy at pre-agreed prices to protected customers) – questionable and unlikely at the moment
- Waiver of fees for RES support (from 01-10-2022 to 31-12-2023, CZK 495/MWh without VAT)
  
- Electricity market reform (long-term solution and questionable)
- Increasing the capacity of the TAL pipeline for a smooth end Russian oil supplies



# Czech preparations II

- Savings tariff (CZK 3,500 contribution for 10-12/2022 in tariff d02d, ends at the end of the year)
- Czech caps on electricity and gas prices from 1 January 2023 (maximum 6.05 CZK/kWh electricity, 3.025 CZK/kWh gas), caps for the commodity, not the final price of electricity (!)
- Council Regulation (EU) 2022/1854 of 6 October 2022
  - mandatory income caps at 180 EUR/MWh from water, solar, geothermal, biomass, waste, nuclear, brown coal, oil, peat
- levy from excess income from the sale of electricity for electricity producers (now in the Senate in the form of an amendment to the Energy Act), valid from 01-12-2022 to 31-12-2023
  - levy in the amount of 90% of the difference between the cap and the selling price
  - wind, solar, geothermal, water 180 EUR/MWh
  - biogas EUR 240
  - biomass EUR 210
  - waste 100 EUR
  - nuclear EUR 70
  - brown coal EUR 230 ( <140 MWe) and EUR 170 ( <140 MWe)
  - oil, peat EUR 180
  - no caps for natural gas and hard coal

# Czech preparations III

- **Windfall tax**
- now in the Senate in the form of an amendment to the VAT act
- the tax will be applied on the profit that is above 120% of the average profit in the last 4 years (2018-2021); if the producers generate profit over the 4-year average even with the EU cap, they will be taxed
- the tax is 60 %
- aimed at companies with windfall income of over 2 billion CZK
- aimed at following sectors: oil and gas production, coke production, oil refining, production, transport and distribution of electricity, production and distribution of natural gas, oil and gas trade, oil and gas pipeline transport, bank sector

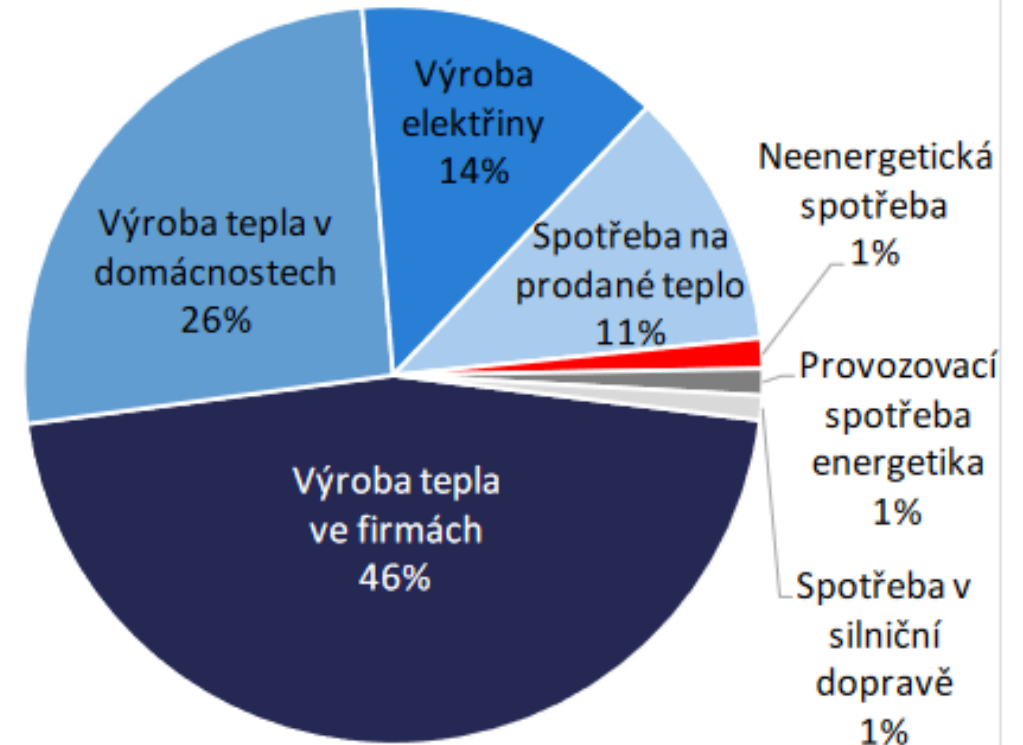


Source: AMO

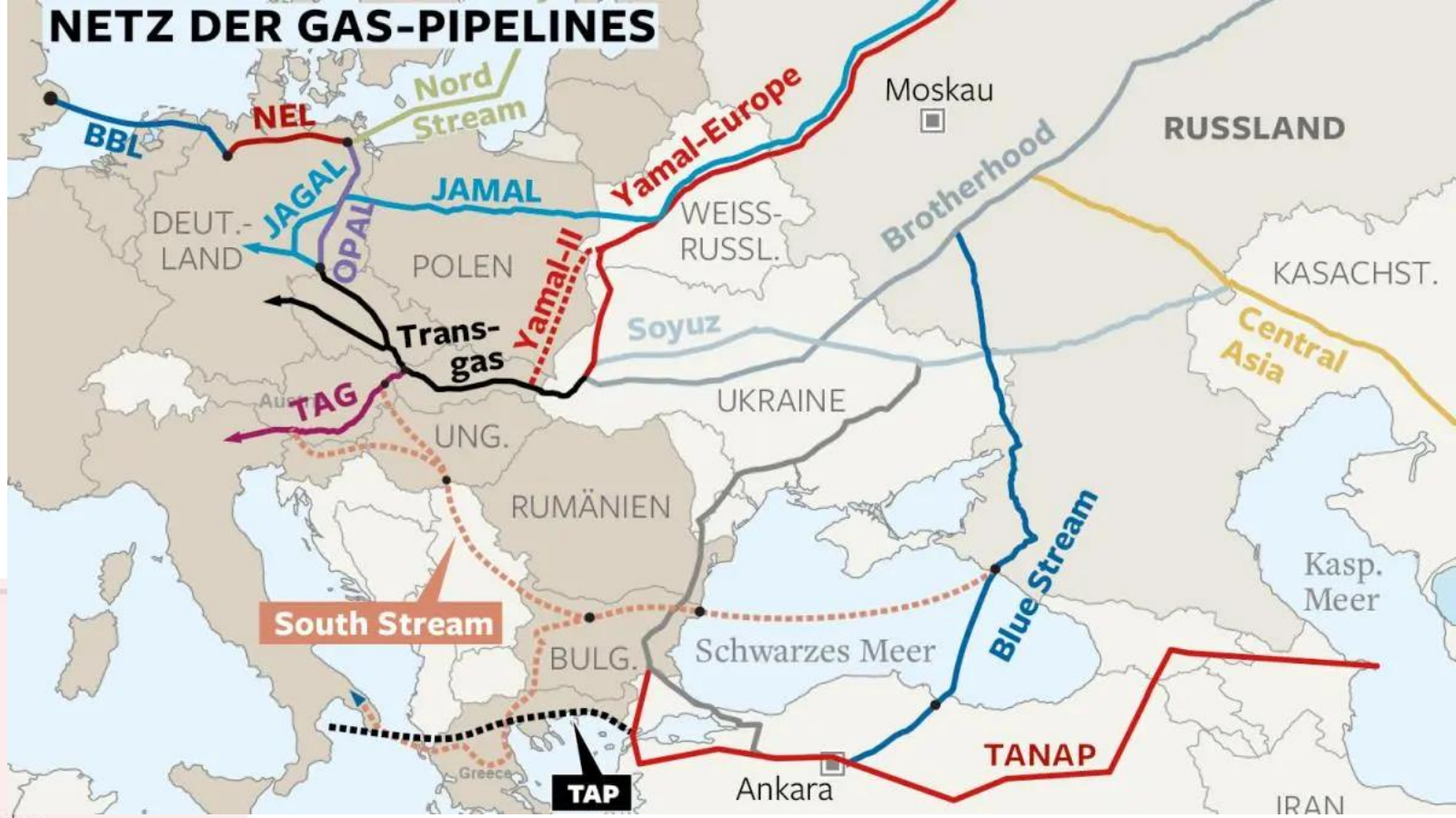
# Natural Gas

- Production 2020 = 0,138 bcm/y
- Import 2020 6,2 bcm/y, of which Russia 4,5 and Germany 1,7
- Import 2019 7,5 bcm/y, of which Russia 6,2 and Germany and other European countries 1,3

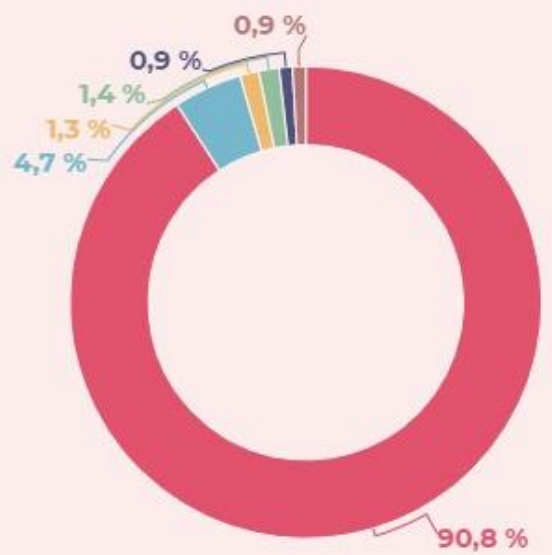
Spotřeba zemního plynu dle užití paliva  
r. 2020



# Natural Gas



1999 2009



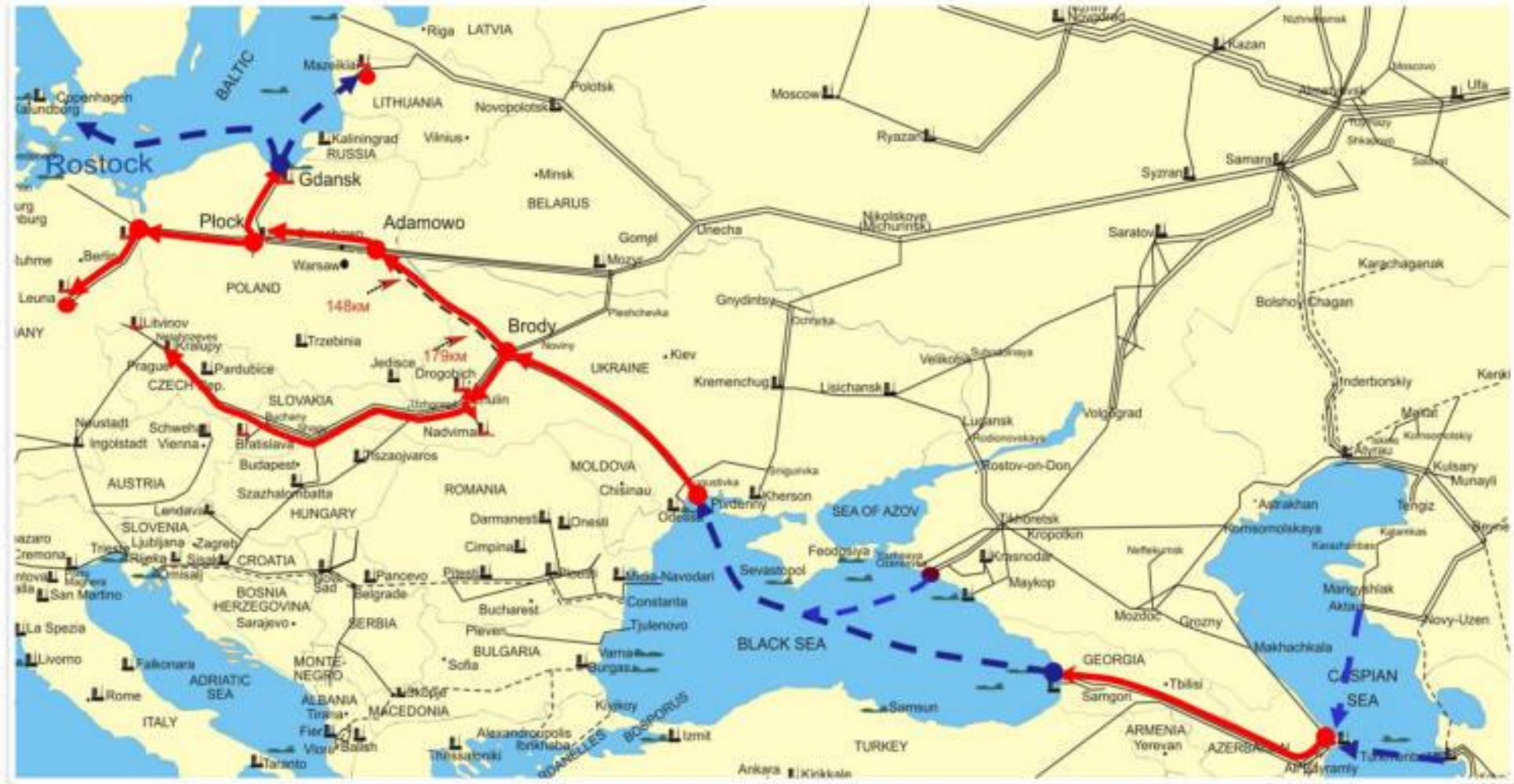
- Rusko
- Německo
- Polsko
- Země a území neuváděné
- Nizozemsko
- Ostatní








# Odessa-Brody-Adamowo-Płock-Gdańsk





A white circle is centered on a dark, textured background that resembles a close-up of a vinyl record or a similar material with concentric grooves. The circle is the focal point of the image.

**Thank you for your attention!**

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