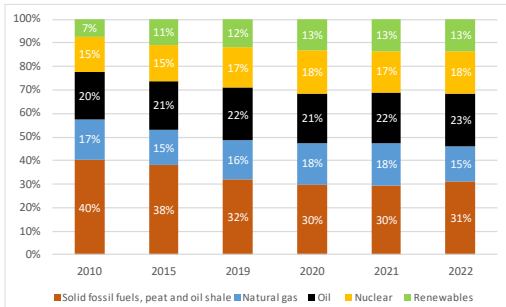




State of the Energy Union 2024: Czechia

Key energy figures

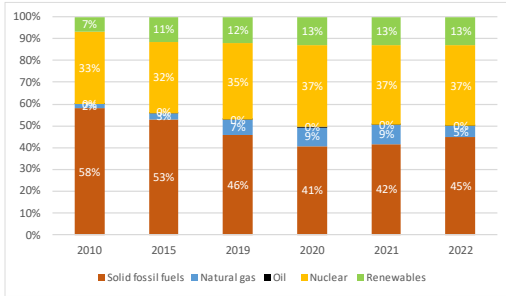
Graph 1: **Energy mix**



(1) The 2022 gross inland energy consumption was 1.8 million TJ. (3.2% of the total EU consumption).

Source: Eurostat

Graph 2: **Electricity mix**



(1) The 2022 gross electricity production was 83.9 TWh. (3% of the total EU production).

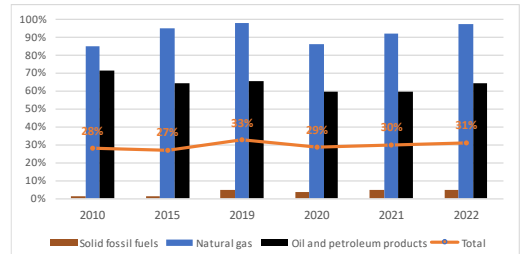
Source: Eurostat

- Fossil fuels account for more than two thirds (68.6%) of Czechia's **energy mix** (compared to 69% at EU level). The share of nuclear was 17.9% and renewables 13.5%.
- The **electricity mix** of Czechia is dominated by fossil fuels (49.9%) and nuclear energy (37%). Renewable energy accounts for 13% of the electricity mix (compared to 39.4% at EU level).

Security, solidarity and trust

1. DIVERSIFICATION OF ENERGY SOURCES AND REDUCTION OF IMPORT DEPENDENCY

Graph 3: **Import dependency on fossil fuels**



(1) The graph shows the Member States' import dependency on third countries by fuel type.

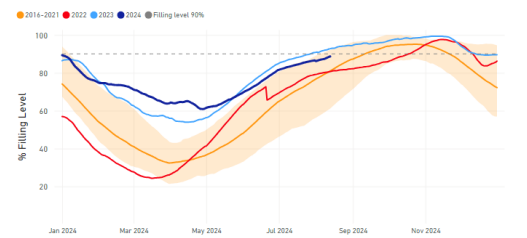
(2) Combustible renewables and electricity are excluded.

(3) The total amount takes into consideration the energy mix of the country.

Source: Eurostat

2. FLEXIBILITY OF THE ENERGY SYSTEM

Graph 4: **Storage levels in Czechia**



Source: JRC calculation based on AGSI+ Transparency Platform, 2024

- Czechia has **eight underground gas storage facilities** with a total capacity of **4.17 bcm**, representing a bit more than 50% of its annual gas consumption in 2022.
- On 17 August 2024, the country's storage capacity was filled to 89.84%.

3. NUCLEAR FUEL DIVERSIFICATION

- The nuclear fuel diversification process is progressing well. Czech utility ČEZ already signed two contracts with Westinghouse for alternative fuel supplies for the Temelin VVER-1000 nuclear power plant (NPP) and the Dukovany VVER-440 NPP. For the Temelin NPP, an alternative fuel contract was also signed with France's Framatome ⁽¹⁾. In July 2024, Korea Hydro & Nuclear Power (KHNP) was selected as a preferred supplier of new nuclear power plants in the Czech Republic.

Integrated internal energy market

1. ELECTRICITY INTERCONNECTIVITY

Table 1: Electricity interconnectivity

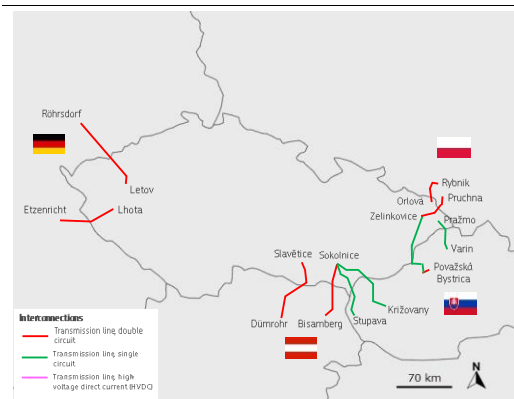
2024	2030 target
27.0 %	At least 15%

1) The electricity interconnectivity is a ratio of electricity import capacity of a given Member State (sum of net transfer capacities of interconnectors with neighbouring Member States) and its total power generation capacity. The 2030 level represents the general interconnectivity target of 15%.

Source: European Commission's own calculations based on the ENTSO-E Winter Outlook 2023-2024 data

2. ENERGY TRANSMISSION INFRASTRUCTURE

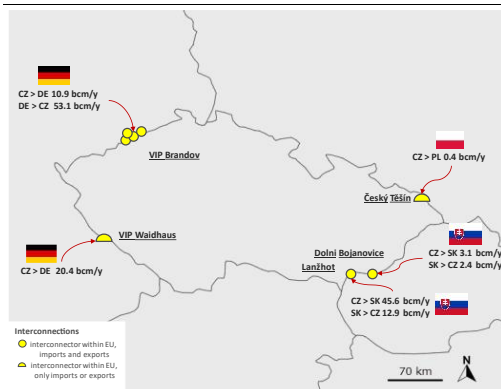
Map 1: Cross-border electricity infrastructure



Source: DG ENER map recreation (based on ENTSO-E)

⁽¹⁾ As stated by Framatome: *Following a dual track approach, in the short term, Framatome will fabricate fuel identical to the proven design currently used by the European VVER reactors. In parallel, Framatome is developing and qualifying European sovereign fuels of its own design for VVER 440 and 1000 reactors.* See link here: [Framatome to supply fuel to VVER reactors in Slovakia - Framatome](#)

Map 2: Cross-border gas infrastructure



(1) The capacities are based on ENTSO-G 2024 capacity dataset (as of 11 January 2024) and the ENTSO-G Transparency Platform. Source: DG ENER map recreation (based on ENTSO-G)

3. MARKET INTEGRATION

Rollout of electricity smart meters

- Czechia has a very limited electricity smart meter rollout, with only 3% of household consumers being equipped with smart meters in 2023. ⁽²⁾

Diversification of gas supplies

- In 2023, the Czech Republic had 2 natural gas supply sources, compared to 3 in 2021. Its two largest suppliers accounted for 100%, with Germany being the main supplier, holding a share of 98%. In 2021, Russia with 55% and Germany (38%) were the Czech Republic's biggest natural gas supply sources. ⁽³⁾

4. ENERGY POVERTY, SOCIAL CLIMATE PLAN AND JUST TRANSITION

Table 2: Energy poverty

Indicator	%		Evolution compared to	EU average
	2023	2021		
EED NEECs four main indicators				
Inability to keep home adequately warm	6.1	+3.9 pp	+3 pp	10.6
Arrears on utility bills	1.9	+0.4 pp	-0.2pp	6.9
Share of pop. With leak, damp or rot in dwelling	8.5	+1.7 pp	+0.5 pp	15.5
AROP (At risk of poverty)	9.8	+1.2 pp	+0.7 pp	16.2

Source: Eurostat

⁽²⁾ ACER, 2024 Retail Market Monitoring Report, Energy retail and decarbonisation (forthcoming).

⁽³⁾ ACER-CEER Annual Report Monitoring: the Internal Gas Market in 2022 and 2023.

Social Climate Plan

- Member States need to submit these plans to the European Commission by June 2025.
- Maximum financial allocation for Czechia: EUR 1 735 million or 2.40 % of total SCF.

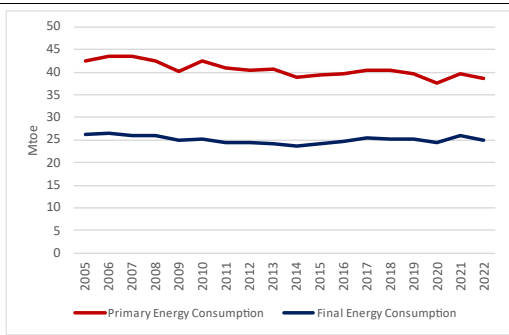
Just Transition Plan

- The Czech Just Transition Territorial Plan (JTPT) outlines the move away from coal for the three coal regions: the Ústí nad Labem, the Karlovy Vary and the Moravian-Silesian regions. The Just Transition Fund (JTF) Programme will provide Czechia with EUR 1.64 billion in EU grants to support the country's efforts to phase out coal-fired power by 2033.

Energy efficiency

1. ENERGY EFFICIENCY

Graph 5: Primary and final energy consumption

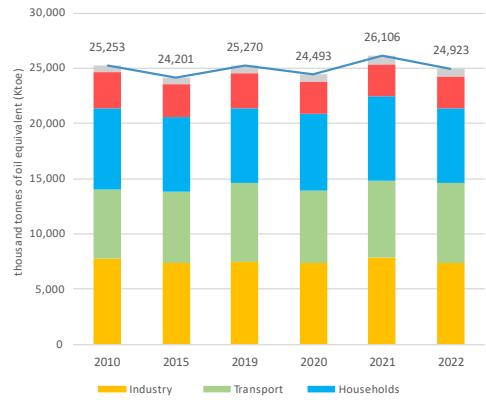


Source: Eurostat

- In 2022, Czechia's **Primary Energy Consumption (PEC)** amounted to 38.6 Mtoe, 2.3% lower than in 2021, while its **Final Energy Consumption (FEC)** amounted to 24.9 Mtoe, 4.5% lower than in 2021.

⁽⁴⁾ Following JRC's methodology (see for reference "Energy Consumption and Energy Efficiency trends in the EU, 2000 – 2020).

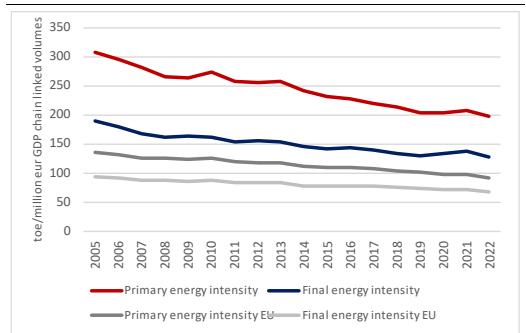
Graph 6: Final energy consumption by sector



(1) Final energy consumption excludes consumption of the energy sector (including transformation and distribution losses) and non-energy use of energy carriers.

Source: Eurostat

Graph 7: Primary and final energy intensity



Source: Eurostat

2. ENERGY PERFORMANCE OF BUILDINGS

- In 2022, Final Energy Consumption (FEC) in the Czech **residential sector** was **6.9 Mtoe**, representing a **reduction of 10.5%** compared to 2021. In the **services sector**, FEC was **2.9 Mtoe**, with an **2.9% decrease** compared to 2021. However, climate corrected data⁽⁴⁾ show a **residential FEC increase of 1.9%** from 2021 to 2022, indicating that the above reduction is mostly climate-related (e.g. milder winter) rather than linked with an improvement of the building stock.
- Heating and cooling account for around **85%** of the country's residential final energy consumption, with renewables supplying approximately **26%** of the gross final energy

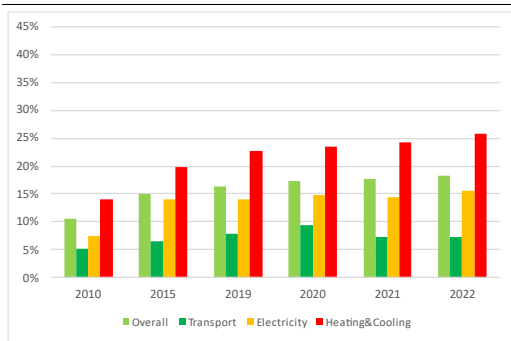
consumption for heating and cooling. Almost 56,000 heat pumps were sold in 2023, reaching a total stock of around 300,000 installed heat pumps, as per the European Heat Pump Association (EHPA).

- In 2023, **1.9%** of the total population was experiencing difficulties on paying their utility bills while **6.1%** was not able to keep their home adequately warm over the cold periods of the year (growing from 2021, when such figures were, respectively, 1.5% and 2.2%). This underlines the importance to increase rate and depth of building renovation, specifically of worst-performing buildings.

Decarbonisation and climate action

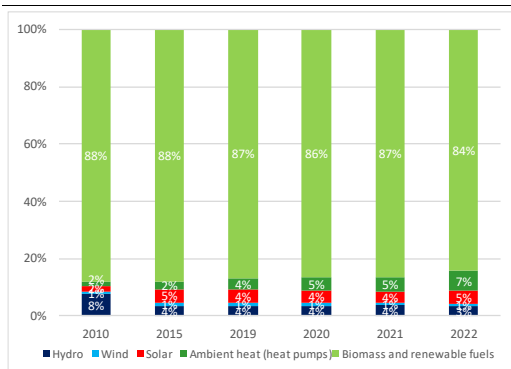
1. SECTORAL SHARE OF RENEWABLE ENERGY

Graph 8: Share of renewable energy sources



(1) In % of gross final consumption of energy.
Source: Eurostat

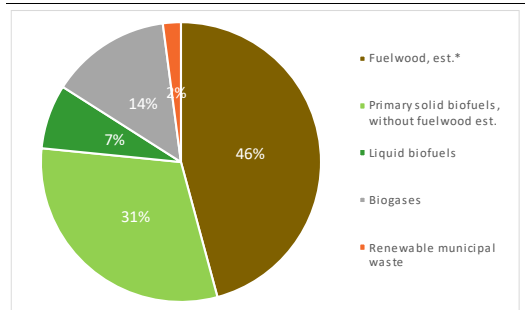
Graph 9: Renewable energy mix



(1) In % of gross final consumption of energy.
Source: Eurostat

2. BIOENERGY MIX

Graph 10: Bioenergy mix



(1) In % of gross final consumption of energy (2022).

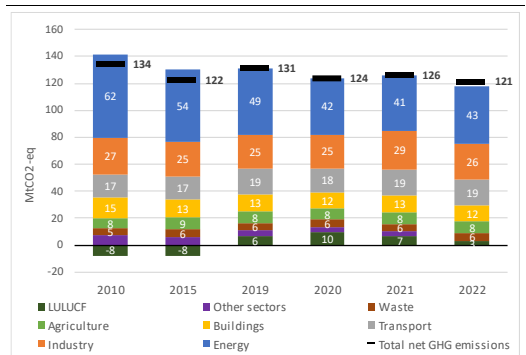
(2) * Fuelwood estimate, based on the Primary solid biofuels consumption in Other sectors, Eurostat and industry secondary data, DG ENER estimations.

Source: Eurostat and DG ENER

- For more information see the dedicated [website on biomethane country fiches](#).

3. GREENHOUSE GAS EMISSIONS

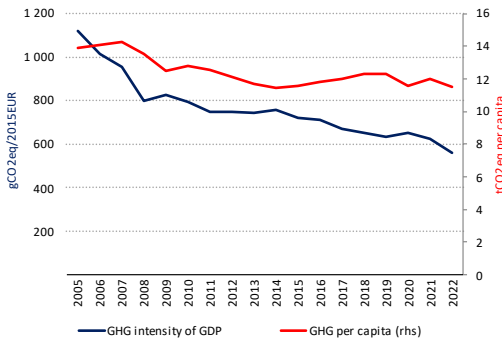
Graph 11: Greenhouse gas emissions by sector



Based on UNFCC GHG Inventory reporting as per the IPCC categories: (1) Energy sector refers to electricity and heat production and petroleum refining. (2) Industry includes fuel combustion in manufacturing and construction and emissions in industrial processes and product use. (3) Buildings include emissions from energy use in residential and tertiary buildings, and energy use in agriculture and fishery sectors. (4) Total net GHG emission including LULUCF and excluding international aviation.

Source: Greenhouse gas inventory 1990-2022 (EEA)

Graph 12: GHG per capita and GHG intensity of GDP



(1) Total greenhouse gas emissions, including LULUCF and excluding international aviation.

Source: Greenhouse gas inventory 1990-2022 (EEA). Real GDP in 2015-prices (AMECO, European Commission). Population (Eurostat).

- With 559 gCO₂eq/2015EUR, Czechia lies above the EU average in terms of GHG intensity of GDP.
- With 12 tonnes of CO₂ equivalent per capita, Czechia is above the EU average in terms of GHG emissions per capita.
- For more detailed information on country profiles see [Progress on climate action \(europa.eu\)](#).

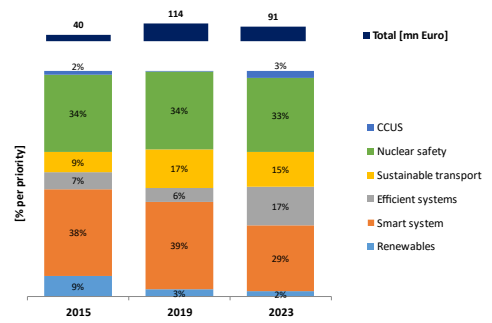
Research, innovation and competitiveness

1. INVESTMENT IN R&I

- Public investment in research and innovation (R&I) in Energy Union priorities⁽⁵⁾ increased from 0.024% in 2015 to 0.030% in 2023 (share of GDP).⁽⁶⁾

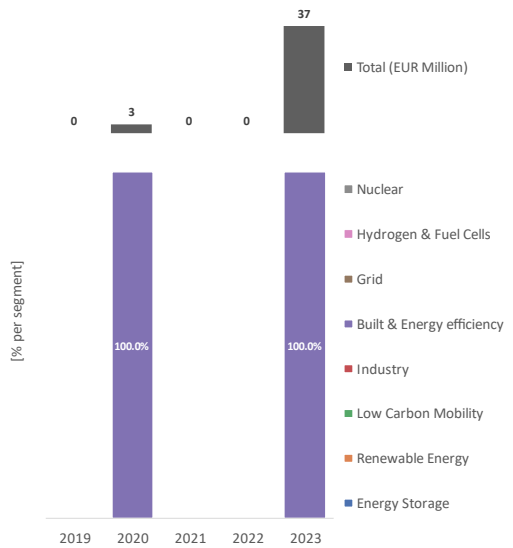
⁽⁵⁾ Renewables, smart system, efficient systems, sustainable transport, CCUS and nuclear safety, COM(2015) 80 final ('Energy Union Package').

Graph 13: Public investment in Energy Union R&I priorities



Source: JRC SETIS 2024

Graph 14: Venture capital investment in net-zero energy technology (start-ups and scale-ups)



(1) Firms typically use venture capital to expand, break into new markets, and grow faster. Venture capital is essential for the growth of innovative firms and it is key to foster the EU's competitiveness and to strengthen the EU's technology sovereignty in the net-zero energy sector.

Source: JRC elaboration based on PitchBook data (08/2024)

2. NET-ZERO ENERGY TECHNOLOGIES

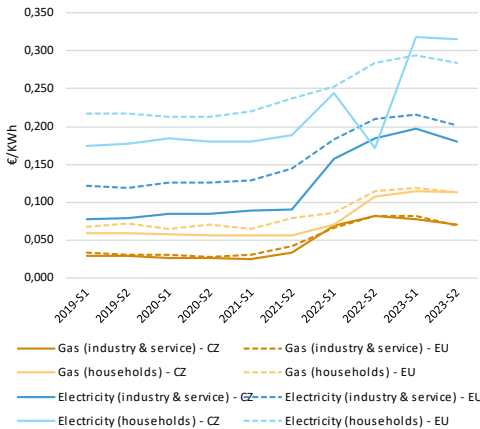
- Czechia remains highly dependent on non-EU countries for clean energy technologies, though it has demonstrated progress in battery manufacturing and has a foothold in the wind supply chain. For wind, Czechia has manufacturing facilities for onshore wind towers and the related machinery in Chrudim and Běrunice. Regarding battery facilities, the first lithium-ion battery manufacturing facility

⁽⁶⁾ Source: JRC SETIS 2024

was opened in Ostrava in 2017, and a second manufacturing plant opened in the Karvina region in 2020, with an annual production capacity of 1200 MWh. The envisaged largescale lithium mining project in Cínovec, home to one of the largest lithium deposits in Europe, could significantly bolster Czechia's battery manufacturing supply chain.

3. ENERGY PRICES DEVELOPMENT

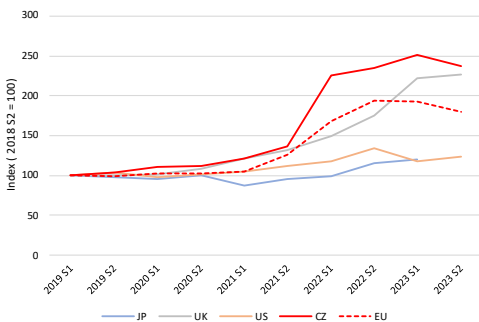
Graph 15: Czechia's energy retail prices for households and industry & service



- (1) For industry, consumption bands are I3 for gas and IC for electricity, which refer to medium-sized consumers and provide an insight into affordability.
- (2) For households, the consumption bands are D2 for gas and DC for electricity.
- (3) Industry prices are shown without VAT and other recoverable taxes/levies/fees as non-household consumers are usually able to recover VAT and some other taxes.

Source: Eurostat

Graph 16: Trends in electricity prices for non-household consumers (EU and foreign partners)



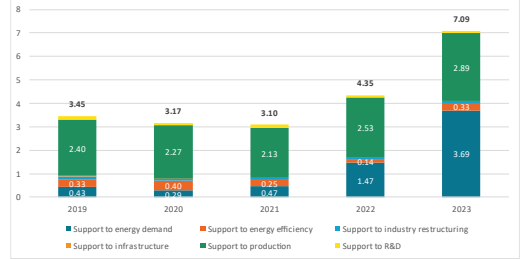
- (1) For Eurostat data (EU and CZ), the band consumption is ID referring to large-sized consumers with an annual consumption of between 2 000 MWh and 20 000 MWh, such as in electricity intensive manufacturing sectors, and gives an insight into international competitiveness.
- (2) JP = Japan

Source: Eurostat, IEA

(7) Council of the European Union 11695/24.

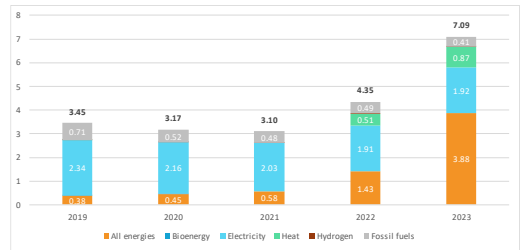
4. ENERGY SUBSIDIES

Graph 17: Energy subsidies by purpose



- (1) Subsidies in EUR 2023 billion
 - (2) Some 2023 data were not fully available or validated at the time the study was completed (August 2024). For missing 2023 values, 2022 data were taken as a basis for an estimate.
- Source: Enerdata. Inventory of energy subsidies in the EU27 – 2024 edition

Graph 18: Energy subsidies by carrier



- (1) Subsidies in EUR 2023 billion
 - (2) Some 2023 data were not fully available or validated at the time the study was completed (August 2024). For missing 2023 values, 2022 data were taken as a basis for an estimate.
- Source: Enerdata. Inventory of energy subsidies in the EU27 – 2024 edition

European Semester 2024

- **No Country Specific Recommendation for Energy⁽⁷⁾**
- For more information see the [2024 European Semester Country Report](#).

National Energy and Climate Plan (NECP)

- The **draft updated NECP** was submitted to the European Commission in October 2023.
- Member States were due to submit their **final updated NECP by 30 June 2024**, taking into account the Commission recommendations.
- **The final updated NECP** was not submitted yet to the European Commission.

- For documents and information see the dedicated [webpage of the European Commission on the NECPs](#).

EU Funds supporting energy related investments

Graph 20: **Energy-related investments across EU funds (in EUR million) (*)**



(*) European Regional Development Fund (ERDF) + Cohesion Fund (CF): comprise EU grants & national cofinancing; RRF: comprise grants & loans. Investment categories can also differ across funds.

Source: European Commission

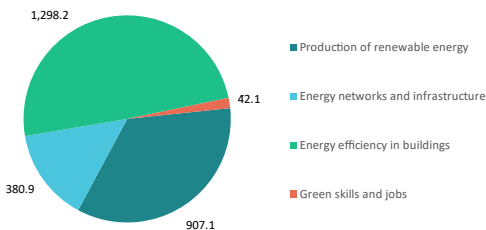
Recovery and Resilience Plan (RRP and REPowerEU chapter)

- The Czech RRP has a total allocation of EUR 8.4 billion in grants and EUR 0.8 billion in loans, with 43% of available funds supporting climate objectives.
- EUR 2.6 billion are allocated to energy-related measures**, with the largest amount for **energy efficiency in buildings** [EUR 1.3 billion]:
 - Renovation of at least 330 public and state buildings** with the aim at decreasing the primary energy consumption by 30%: including 293 pre-school childcare facilities, 100 social care facilities, the implementation of energy efficiency measures in railway station buildings and in public lighting systems, and the construction of energy efficient university facilities.
 - Measures to provide advisory services on energy efficient renovation projects**, build expertise and capacity in the area of energy efficiency and raise awareness with a focus on energy poverty. The New Green Savings 2030 programme is to be upgraded.
- The Commission disbursed the 2nd payment of EUR 702 million to Czechia on 2 April 2024.

- Innovation Fund: EUR 20.3 million.** For more information see the webpage [innovation-fund-projects-country_en](#).
- Modernisation Fund: EUR 4,343.5 million** (approved and/or confirmed Investments from 2021-2024). For more information see the webpage [modernisationfund.eu](#).
- CEF-Energy: EUR 45.1 million** (2.3% of total EU contribution, for 2021-2027). For more information see [CINEA's Project Portfolio dashboard](#).

Graph 19: **Energy-related investments in the RRP (in EUR million)**

CZ Energy-related investments EUR 2,628.3 mn



Source: European Commission