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NECP Assessment

Carbon Capture & Storage in the National Energy and Climate Plan

Czechia

Criteria	Performance	Score
Implementation plan	Published its CCUS Action Plan with several measures and concrete timelines for establishing a policy and regulatory framework supportive to a CCS value chain.	
CO_2 capture	Reports on projections of volumes to be captured by sector from 2035 on. Identifies a capture volume of 7.1 Mtpa by 2050. .	
CO_2 storage	Reports to have a theoretical storage potential of up to 1.2 Gt. Aims to fund research for determining realistic storage capacity.	
CO_2 transport	Has concrete plans for establishing a cross-border CO_2 transport network, with ongoing research projects to that goal.	
National government funding	Does not foresee the allocation of national funding for CCS deployment.	
Other relevant initiatives	Plans to found National Platform for CCS, tasked with fostering social acceptance.	

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CCS IMPLEMENTATION PLAN

Czechia's National Energy and Climate Plan (NECP) references its national CCUS Action Plan, published in 2025 by the Ministry of Environment, as the central document guiding the country's approach to deploying Carbon Capture and Storage (CCS). The Action Plan outlines a series of political, regulatory, financial, scientific, and knowledge-sharing measures, each tied to specific deadlines between 2025 and 2027.

One key measure is the establishment of a dedicated national platform for CCS, scheduled for 2025. This Platform will function as an advisory body to the government and shall include representatives from the Czech Geological Survey, Ministry of Environment, Ministry of Industry and Trade, gas transmission company NET4GAS, the CO_2 Czech Solution Group Platform, industry associations, and non-governmental organisations. The Platform's core tasks will involve forming specialised working groups tasked with addressing specific topics and practical implementation challenges. It will conduct a comprehensive analysis of existing legislation, identifying areas requiring amendment to enable effective CCS deployment. This review process will integrate insights and lessons learned from other countries' CCS regulatory experiences.

Czechia also intends to integrate CCS development into broader national strategic frameworks and policy documents. Furthermore, the country explicitly commits to active participation in European legislative initiatives related to CCS, such as standard-setting or cross-border CCS collaboration.

CO_2 CAPTURE

Czechia's NECP references the use of CCS for applications in both industry and power generation. It particularly highlights the potential role CCS could play if limitations in electricity grid infrastructure slow down further expansion of renewable energy sources. Unabated fossil fuel use in primary energy consumption shall be reduced to 50% by 2030 and down to 0% by 2050.

The Plan includes projections for captured CO_2 volumes from 2035 to 2050, taking additional climate measures into account, developed by the Centre for Environmental Issues at Charles University. However, the Action Plan makes clear that these figures are solely based on modelling exercises rather than representing a firm governmental commitment.

According to the presented model, captured volumes are set to rise from approximately 2.9 Mt CO_2 per year in 2035 to around 7 Mtpa by 2050. The majority of these emissions are anticipated to originate from cement, lime, biomass, and natural gas combustion processes. Additionally, residual emissions from the steel industry contribute marginally to the total volume, although the NECP notes considerable uncertainty regarding the industry's future in Czechia.

Capture volumes (in Mtpa)	2035	2040	2045	2050
Cement	1	2.5	2.5	2.5
Lime	0.7	0.7	0.7	0.8
Biomass	0	0	1.2	2.2
Natural Gas	1.2	1.4	1.4	1.5
Steel	0.03	0.03	0.03	0.03
Total	**2.9**	**4.6**	**5.9**	**7.1**

Notably, the chemical sector was not included in the primary modelling scenarios due to insufficient data availability. The Czech Chemical Industry Association independently estimates a need for CO_2 capture in their sector ranging between 3.3 and 8.7 Mtpa by 2050. This adds up to another 2 Mtpa of residual emissions that would require compensation through other measures.

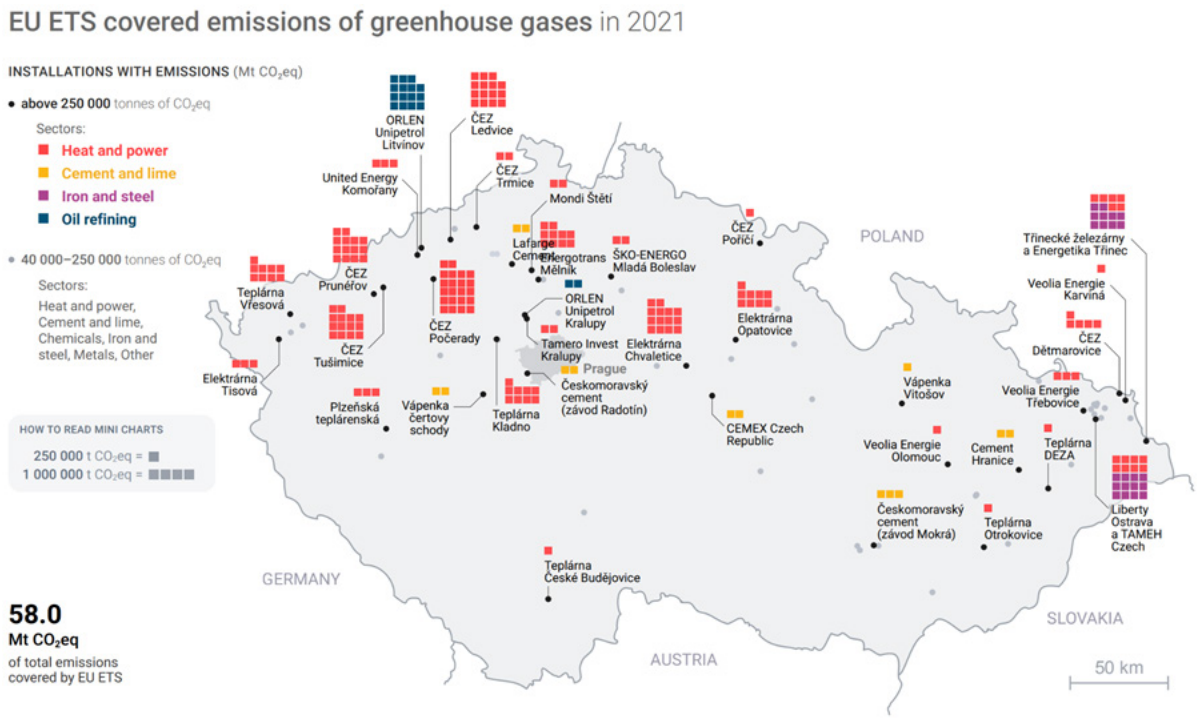

Figure 1: Emissions from industry and power generation
Source: Fakta o Klimatu, www.ccs4cee.eu

The CCS Moravia project of oil and gas company MND and cement producer Heidelberg Materials represents Czechia's first full value chain CCS initiative. It encompasses CO_2 capture at the Mokrá cement plant, followed by pipeline transport and geological storage in the southeastern Morava aquifers. The project, which has applied for funding from the Innovation Fund, aims to store up to 800 ktpa CO_2 starting from 2034, with a total projected capacity of 20 Mt. No similar project is planned before 2030.

CO_2 TRANSPORT

Czechia envisions becoming an important transit hub for CO_2, linking Central and Eastern Europe with storage sites in Northern Europe. Existing gas pipeline infrastructure is planned to be preserved and repurposed to enable CO_2 transport. Initial plans identify storage opportunities predominantly in the North Sea, with the Baltic Sea mentioned as another possibility.

Czechia intends to collaborate closely with neighbouring countries on the development of cross-border CO_2 transport infrastructure. This cooperation would include actively engaging in diplomatic dialogues aimed at establishing strategic CO_2 transport networks and possibly utilising storage sites outside Czech borders. To formalise this collaboration, a joint study with neighbouring states is planned, with a target completion year set for 2026. While pipeline-based transport is actively being developed, the

Czech strategy expresses reservations regarding road and rail solutions, primarily due to environmental risks associated with potential transport accidents.

The Czech gas transmission operator NET4GAS is already engaging in discussions regarding cross-border CO_2 transport with neighbouring countries' transport system operators. These include Germany's OGE, Slovakia's eustream, and Austria's GCA. The outcomes from these consultations, combined with developments in neighbouring countries, will feed into the future design of Czechia's CO_2 transport network. They may also influence the development of potential applications for Projects of Common Interest involving Czechia.

Figure 2: Map of Gas Transmission System
Source: NET4GAS, https://www.net4gas.cz/en/transmission-system/

Additionally, Czechia intends to map out industrial CO_2 emission clusters by 2027. This mapping aims to facilitate coherent planning for transport infrastructure and helps identify decarbonisation priorities. A detailed feasibility study examining the necessary capacity for CO_2 transport routes, along with an environmental impact assessment, is scheduled for completion within the same timeframe.

CO_2 STORAGE

The Czech Geological Survey estimates a theoretical domestic CO_2 storage potential of approximately 1.2 Gt, 95% of which in saline aquifers. Despite this estimate, Czechia maintains that domestic commercial storage capacity will remain limited, making it necessary to export captured CO_2 for storage abroad. At present, no active licenses, pilot projects, or demonstration sites for CO_2 storage exist in Czechia. The Action Plan explicitly addresses the need to establish financial security requirements for prospective applicants seeking storage licenses. Furthermore, the Czech government is exploring options to establish a suitable support mechanism to facilitate targeted geological surveys for determining realistic storage capacity.

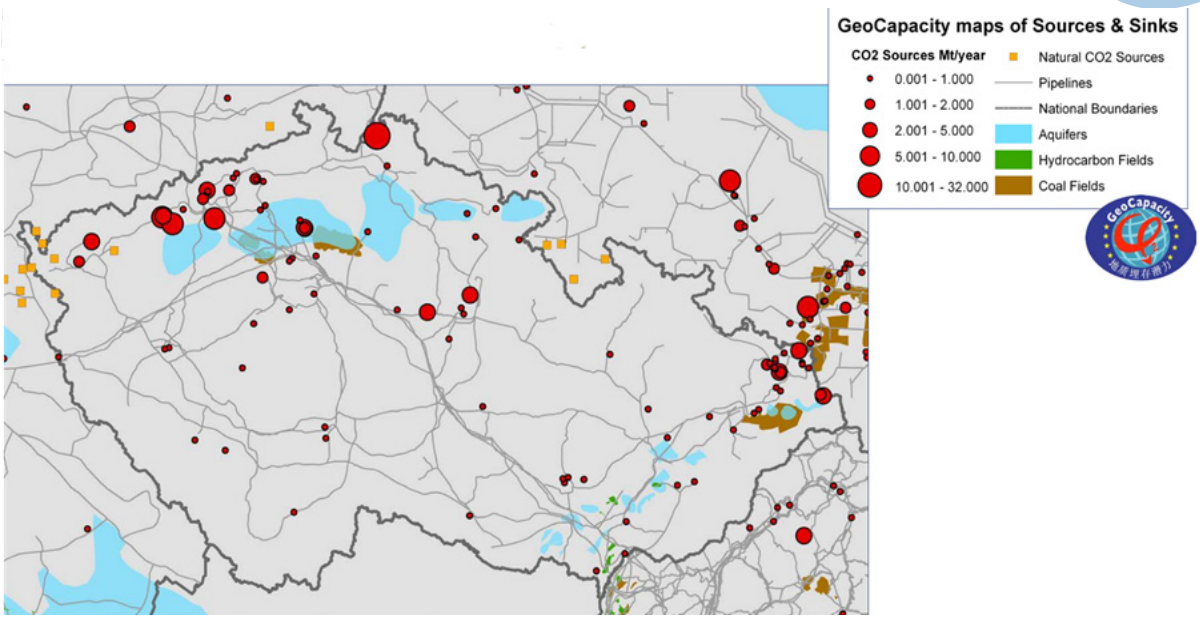

Figure 3: Map of Emitters and potential CO_2 storage sites
Source: CO2-SPICER, based on EU GeoCapacity EU-FP6 project,

https://co2-spicer.geology.cz/sites/default/files/2022-02/pdf3-konf-BeePartner.pdf

An important related initiative is the CO2-SPICER research exercise, which examined the Zar-3 oil and gas reservoir near Hodonín in South Moravia for CO_2 storage suitability.[1] This project investigated injecting 70kt of CO_2 into the reservoir. With an overall estimated capacity of around 1 Mt however, this reservoir is inadequate for large-scale commercial storage. CO2-SPICER received funding of €2.32 million under the KAPPA programme, co-financed by th-e Norway Grants and the Technology Agency of the Czech Republic. The project consortium comprised of the Czech Geological Survey, MND, the College of Mining at the Technical University of Ostrava, the Geophysical Institute of the Academy of Sciences of the Czech Republic, and the Norwegian research centre NORCE. Initially, the CO2-SPICER project aimed to pave the way for a subsequent pilot scheme titled CCS Moravia. However, plans for a pilot-scale injection remain unresolved, mainly due to the current absence of available sources of captured CO_2.

NATIONAL GOVERNMENT FUNDING

Czechia relies on EU funding sources to support CCS deployment. The country plans to utilise its share of the Modernisation Fund. Czechia identifies the I+ Innovative and Comprehensive Projects programme as an possible option to promote CCS projects that were not selected through the Innovation Fund but makes no clear commitment.

Additionally, Czechia is considering modifying the scope of its SMARTNET programme, originally meant to modernise energy systems, so that it covers support for CO_2 transport infrastructure development.

Despite expressing interest in the financial instrument of Carbon Contracts for Difference, the Czech government has not indicated any plans to allocate additional national funding specifically for the deployment of CCS technologies beyond available EU funding.

1 CO2-SPICER - CO2 Storage Pilot in a Carbonate Reservoir. https://co2-spicer.geology.cz/en

OTHER RELEVANT INITIATIVES

As part of the Czech CCS strategy, the Action Plan foresees for the national Platform to enhance social acceptance. Recognising the necessity of public support, the strategy includes collaboration with regional and local governments as well as non-governmental organisations to inform and engage communities directly impacted by CCS projects. Further actions encompass providing expert information and educational resources, informing about successful examples and economic benefits, and openly communicating about potential risks and environmental impacts.

One significant initiative is the planned establishment of a CO_2 hub in Southeastern Moravia and transport backbone network. This project is part of the COREu project, which is funded by Horizon Europe.[2] Key participants in this initiative include the Czech Geological Service, MND, and UNIGEO. This hub is intended to become a central point in the emerging CO_2 backbone network within Czechia.

RECOMMENDATIONS

Czechia has made notable progress in its final NECP compared to the draft, particularly in clarifying how and to what extent CCS will contribute to the country's decarbonisation strategy. The government has put considerably more effort into outlining its approach through the CCUS Action Plan, identifying CO_2 capture needs, and exploring potential transport routes for a future cross-border CO_2 network. However, key gaps remain in identifying commercially viable CO_2 storage capacity in Czechia and in establishing the support mechanisms needed to enable timely deployment of CCS technologies. These steps are essential to decarbonise hard-to-abate industries at the pace required.

Against this backdrop, Bellona Europa recommends the Czech government to:

1. Develop appropriate support mechanism and prioritise public funding for high-climate-value CCS applications with no or fewer scalable alternatives and where CCS offers a higher mitigation potential and therefore the highest climate value.[3] Targeted policy instruments and support mechanisms need to be developed to incentivise CCS deployment, specifically addressing cross-chain risks inherent to CO_2 transport and storage and offer sufficient derisking potential to drive private investment.

2. Ensure the environmental integrity and climate benefits of BECCS/bio-CCS: As the Action Plan foresees a potentially high share of BECCS deployment, Czechia should develop and adhere to robust accounting rules, certification standards, liability frameworks, and sustainability requirements for BECCS/ Bio-CCS to guarantee its environmental integrity and net climate benefits. This includes comprehensive Monitoring, Reporting, and Verification (MRV) systems that account for all greenhouse gas emissions— both direct and indirect—across the entire value chain, domestically and internationally where applicable. These systems should employ conservative estimation methods and ensure that biomass sourcing prioritises sustainability, minimises lifecycle emissions, and achieves a net-negative balance.

2 Horizon Europe. COREu EU Project. https://coreu.eu/
3 CCS Ladder, Bellona & E3G. CCSL_briefing.pdf

3 Conduct detailed assessments of the Czech Republic's CO_2 storage capacity, not only to determine the overall potential, but also to identify how much can be made operational and by which year.

FURTHER RESOURCES

Juraj, Francu et al. 2024. CO2-SPICER - CO2 Storage Pilot In a CarbonatE Reservoir: Technical Report for period 1/1/2023 – 31/12/2023. https://zenodo.org/records/10822843

Ministry of Environment, 2025. Action Plan for the Development of Technologies for the Capture, Use and Storage of Carbon Dioxide in the Czech Republic. https://mzp.gov.cz/sites/mzp.cz/files/tiskove-zpravy/Akcni_plan_rozvoje_CCUS.pdf

Building momentum for the long-term CCS deployment in the CEE region. CCS National Roadmap – Czechia., www.ccs4cee.eu

Building momentum for the long-term CCS deployment in the CEE region. Assessment of current state, past experiences and potential for CCS deployment in the CEE region – Czechia., www.ccs-4cee.eu

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