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Status of CCS in Poland

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Executive Summary

Poland has strong foundations for large-scale carbon capture and storage (CCS) deployment. In 2024, industrial sites emitted 42 MtCO₂, with emissions concentrated in sectors with significant process emissions. Poland also has an estimated 10–15 Gt of prospective geological CO₂ storage resource (*Polish Geological Institute*).¹ CCS is likely to be critical in safeguarding industrial competitiveness and employment while enabling the country to contribute to the EU’s 2050 carbon neutrality target and reach the climate targets outlined in the National Energy and Climate Plan (NECP, *Ministry of Energy, 2026*).

Momentum behind CCS in Poland is growing. To date, CCS projects in Poland have been awarded more than €250 million in EU funding, and alongside the recent designation of 18 CO₂ storage exploration areas, this provides important foundations. The next phase will depend on translating these foundations into commercial-scale deployment. Comprehensive frameworks for CO₂ transport, dedicated financial support mechanisms and coordinated planning across the CCS value chain would help support this transition. Addressing these priorities will be key to developing an operational CCS market in Poland.

Acronyms

BECCS	Bioenergy with Carbon Capture and Storage	Gt	Gigatonnes
CCfD	Carbon Contract for Difference	Mt	Million tonnes
CCS	Carbon Capture and Storage	Mtpa	Million tonnes per annum
CCUS	Carbon Capture, Utilisation and Storage	NECP	National Energy Climate Plan
CEF	Connecting Europe Facility	NZIA	Net-Zero Industrial Act
CO₂	Carbon dioxide	PCI	Projects of Common Interest (EU)
ETS	Emissions Trading System	PGiG	Geological and Mining Law
EU	European Union	tpa	tonnes per annum
FID	Final Investment Decision	US	The United States of America

ACKNOWLEDGEMENTS & STAKEHOLDER INSIGHTS

The Institute extends its gratitude to **CCUS Poland Association** and the **Polish Geological Institute** for their special contribution to this paper. This paper also incorporates insights from Polish CCS stakeholders gathered during a meeting convened by the Institute and the CCUS Poland Association in June 2026.

¹Estimates made by the Polish Geological Institute as part of “Assessment of formations and structures suitable for safe CO₂ geological storage including monitoring plans” (2008-2012). Minor revision was made in 2021 (Wójcicki et al., 2013, 2021).

1.0 Current CCS landscape

1.1 Polish emission sources

Whilst the power sector is currently Poland's largest source of CO₂ emissions, contributing 113 MtCO₂ in 2024², the country's CCS ambitions, outlined in the newly adopted NECP, are directed primarily at industrial sectors with significant process emissions (NECP, *Ministry of Energy, 2026*). Against this backdrop, this paper focuses on the current state of CCS deployment within Poland's industrial sector.

Poland's industrial sector is currently a major source of CO₂ emissions, accounting for 42.2 million tonnes of CO₂ (MtCO₂) in 2024.² Figure 1 identifies that these industrial emissions are concentrated within a relatively small number of sectors where residual emissions are likely to remain even after decarbonisation techniques such as electrification or fuel switching have been implemented.³

Addressing these residual emissions will be critical if Poland is to maintain, and grow, its industrial base and the jobs it supports whilst simultaneously contributing to the EU's legally binding objective of achieving climate neutrality by 2050 (*EC, n.d.*). In this context, CCS is likely to play a key role in enabling industrial decarbonisation while preserving Poland's industrial competitiveness.

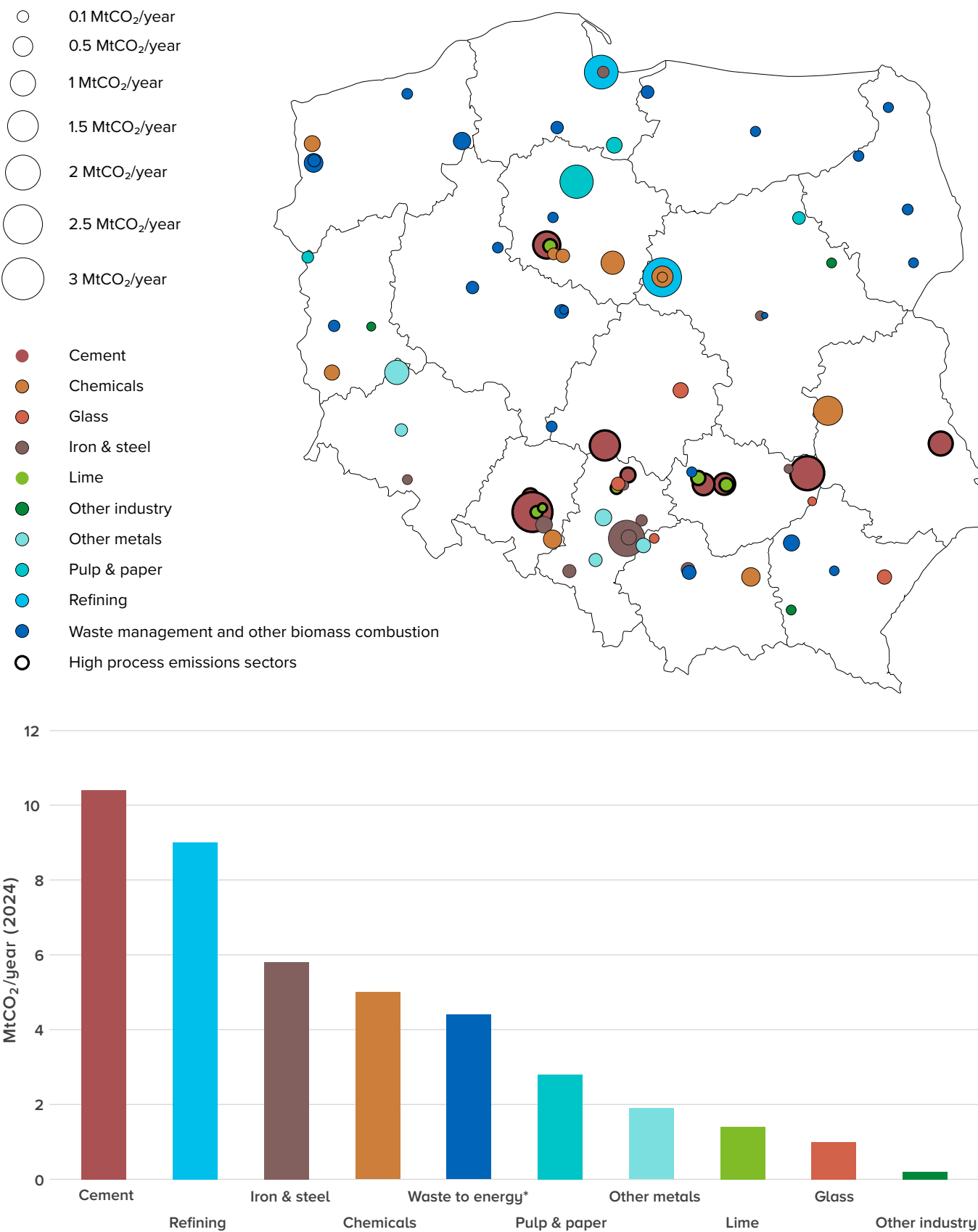
1.2 Early movers

As Europe's third largest cement producer, Poland's cement industry supports 24,000 jobs and contributes an estimated 3 billion złoty (€0.7 billion) annually to the country's budget through taxes (*Polski Cement, 2026*). The cement industry is particularly engaged in Poland's CCS development, as cement production generates significant process emissions that cannot be fully addressed through other decarbonisation pathways, making CCS a critical mitigation option. The sector has already been involved in European CCS demonstration initiatives such as the ACCSESS project, which involved a pilot-scale carbon capture testing at Heidelberg Materials' cement plant in GóraŹdŹe (*Heidelberg Materials, 2021*). Building on this experience, commercial scale deployment is advancing through projects such as Go4ECOPlanet and HuCCSar, which are being developed by Holcim Polska and Heidelberg Materials respectively (*EC, n.d.*).

Alongside the cement sector, ORLEN, Poland's largest oil and gas company, is also supporting early development of CCS in Poland. The company leads the ECO2CEE project which aims to build CO₂ transport infrastructure to integrate Poland into the wider European CCS network (*ORLEN, 2023*). ORLEN also represents two of the 44 obligated entities under Article 23 of the EU's NZIA (*EC, 2025*). Collectively, ORLEN's entities are required to contribute 4.26 Mtpa⁴ towards the EU's target of 50 Mtpa of CO₂ injection capacity by 2030.

Beyond the sectors with high process emissions that are leading early CCS developments in Poland, industries such as waste-to-energy and pulp & paper represent important opportunities for future CCS expansion. In July 2026, the European Commission published its proposal for the latest EU ETS review, which includes a proposed mechanism to support carbon removals from BioCCS (*European Commission, 2026*). This could create new opportunities for Poland's biogenic CO₂ sources to deliver net negative emissions. Such removals will be important in supporting Poland's, and the EU's, climate targets. In addition, CO₂ capture on biomass power generation facilities could provide captured CO₂ volumes that complement those from industry, helping support the development of shared CCS infrastructure. However, despite Poland's considerable biomass power generation potential, government concerns over opportunity costs have created uncertainty around future expansion (*Polish Sejm, 2025*).

Figure 1: 2024 CO₂ emissions from Polish industrial sites.



* Waste to energy and other biomass combustion
Source: Data is based on 2024 emissions reported by Polish entities through the ETS and E-PRTR regulations.

² Data is from a comprehensive database of emitters (>100 ktpa) from both E-PRTR and ETS reporting that disaggregates at a site level where CO₂ is emitted as part of the industrial process (42.2 MtCO₂ in 2024) and where it is emitted for power (113 MtCO₂ in 2024).

³ Typical process emissions for these sectors account for: ~60% for cement (*GCCSI, 2026*), ~70% for lime (*European Lime Association, 2022*)

⁴ ORLEN S.A. is required to contribute 4.1 Mtpa and B8 Sp. z o.o. BALTIC Sp. k. a. (now ORLEN Petrolbaltic) is required to contribute 0.16 Mtpa.

1.3 Current CCS initiatives in Poland



Artist's impression

HuCCSar (Heidelberg Materials)

The HuCCSar project was awarded an Innovation Fund grant of €26.5 million in November 2025. As part of the project, Heidelberg Materials is validating the CO₂ storage potential in Central Poland to develop and implement the country's first onshore CCS value chain with a capacity of over 51,000 tons of CO₂ over the project lifetime. The project is expected to become operational in late 2028.



Image supplied by Holcim

Go4ECOPlanet (Holcim)

The Go4ECOPlanet project at the Kujawy cement plant will install a dedicated facility to capture 100% of CO₂ emissions from clinker production using Air Liquide's Cryocap™ FG technology. The project aims to make Kujawy one of Europe's first net-zero cement plants in 2027, capturing around 1–1.2 million tonnes of CO₂ per year and enabling zero-emission cement production. It received €228 million in EU Innovation funding in 2022.



Image supplied by ORLEN

ECO2CEE (ORLEN)

The ECO2CEE project is an EU Project of Common Interest (PCI) led by ORLEN, in partnership with Holcim Polska, Air Liquide Polska and GAZ-SYSTEM. Its primary aim is to develop a CO₂ import–export infrastructure, using rail, pipelines and maritime transport to enable large-scale cross-border CO₂ transport and integrate the region into wider European networks. The project received €2.54 million in CEF funding in December 2023.

1.4 CO₂ storage

Poland has substantial prospective geological CO₂ storage potential (*SPE, 2017*). National static volumetric assessments estimate an effective storage resource of approximately 10-15 GtCO₂, predominantly in saline aquifers (90-93%) and depleted onshore hydrocarbon fields (7-10%), with some limited additional resource in coal beds (<1%) (*Polish Geological Institute*).⁵ Similarly, the Global CCS Institute's own independent global basin-scale probabilistic storage resource assessment indicates a storage resource of ~20GtCO₂ in Poland.⁶

However, regulatory barriers are currently impeding the development of Poland's CO₂ storage resource. Recent legislative reforms have sought to address some of these barriers and have begun to create the regulatory foundations needed for the development of commercial-scale CO₂ storage in Poland. These include:

- The 2023 Geological and Mining Law (PGiG) amendments removed the restrictions that had previously limited CO₂ storage to demonstration projects (*Ministry of Climate and Environment, 2023*).
- In June 2026, the Ministry of Climate and Environment designated 18 areas for CO₂ storage exploration. 17 of these areas are located onshore and one (already identified) area is located offshore within Poland's Exclusive Economic Zone (*Ministry of Climate and Environment, 2026*).

Nevertheless, significant challenges remain. Most notably, under the PGiG, CO₂ storage operators are required to maintain a financial guarantee covering monitoring, decommissioning, safety and compensation, as well as corrective measures, and emissions liabilities if leakage were to occur prior to the transfer of responsibility. While the financial guarantee is returned if no leakage occurs, the funds must nevertheless be committed upfront. Storage operators are also required to contribute to a separate financial security mechanism covering costs that may arise after responsibility passes to the state. The combination of these requirements could rise over €300 million for a 1 Mtpa project, creating significant investment barriers (*Ministry of Climate and the Environment, 2015*).

In addition, the legal status of offshore CO₂ storage in Poland remains uncertain. Poland is party to the Helsinki Convention, which seeks to protect the Baltic Sea from marine pollution. The Helsinki Convention aims to protect the marine environment in the Baltic Sea and does not expressly prohibit geological CO₂ storage. Its application to CO₂ storage depends, in part, on the definition of waste and whether CO₂ is included or excluded from that definition. In the absence of an explicit prohibition, the legal status of CCS under the Helsinki Convention remains open to interpretation.

In parallel, the 2009 London Protocol amendment has not yet been fully ratified, meaning that cross-border transport of CO₂ for offshore storage currently depends on the 2019 provisional requirements agreed by the Parties (*IEAGHG, 2021*). Whilst Poland is party to the London Convention (1972), it is not party to the more recent London Protocol (1996). Nevertheless, if CO₂ is stored offshore in a country which is party to the London Protocol, a bilateral agreement will be required between Poland and the relevant country. As a result, Poland currently faces legal constraints on access to offshore international storage options and interpretative constraints of domestic offshore storage capacity.

Furthermore, although Poland has now established a basic framework for the permanent storage of CO₂ through its transposition of the EU CCS Directive, further regulatory and administrative clarification is needed regarding monitoring requirements, long-term responsibility, and permitting timelines for storage sites.

While most of Poland's storage resources are currently classified at low Storage Readiness Levels⁷ (Figure 2), additional exploration and continued regulatory development are expected to improve the maturity of these resources over time.

⁵ Estimates made by the Polish Geological Institute as part of "Assessment of formations and structures suitable for safe CO₂ geological storage including monitoring plans" (2008-2012). Minor revision was made in 2021 (Wójcicki et al., 2013, 2021).

⁶ The Polish estimate uses static volumetric calculations for identified storage formations and structures. In contrast, the Global CCS Institute estimate is derived from a probabilistic, pressure-limited and depth-resolved basin-scale assessment covering screened sedimentary-basin areas, rather than only known structural traps. It reports a P50 value, representing the median of the modelled capacity distribution. Although the two estimates were generated using different methodologies and assumptions, they are broadly comparable in scale and collectively reinforce Poland's significant geological storage potential.

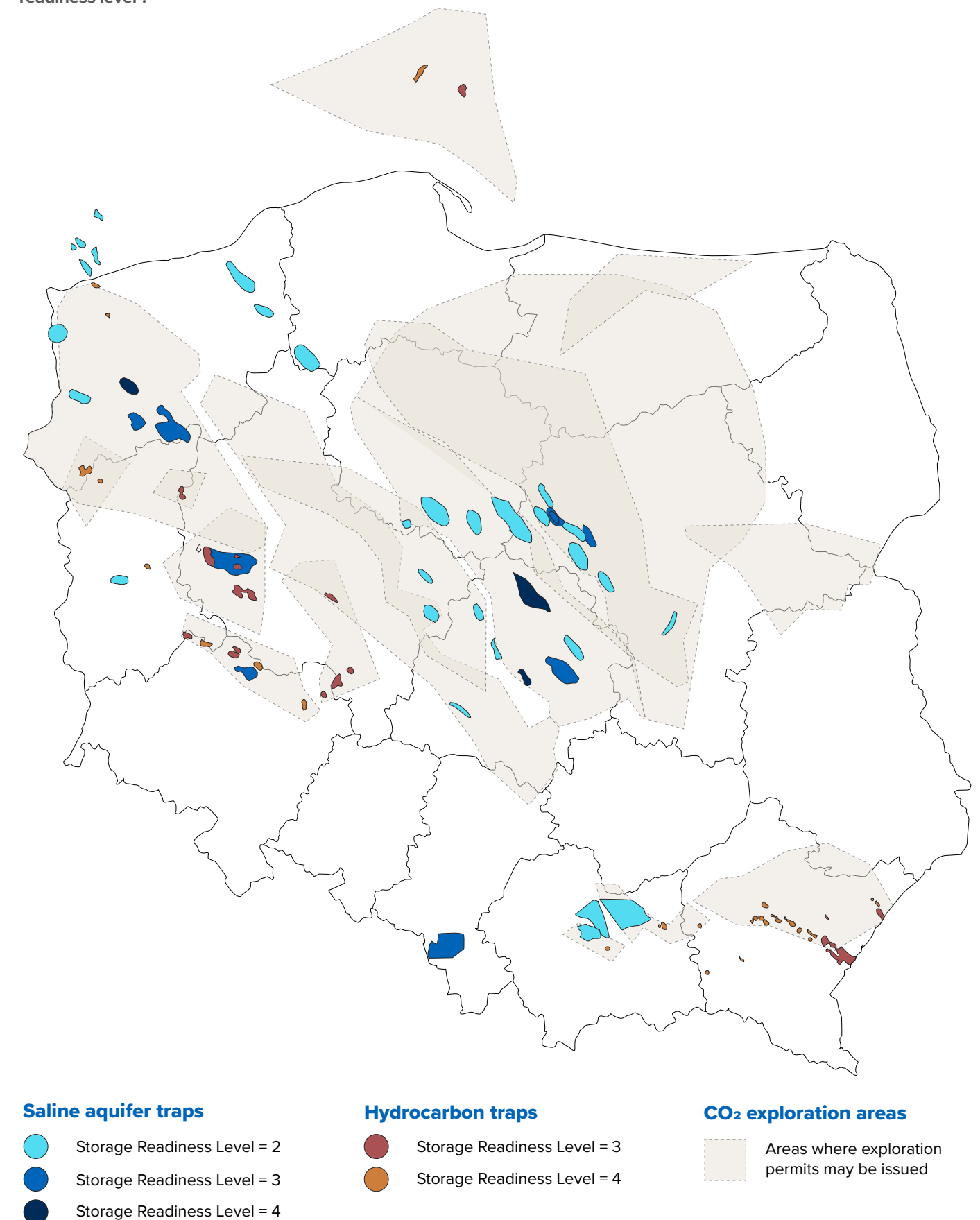
⁷ Storage Readiness Levels (SRLs) describe the maturity of CO₂ storage resource, from basin scale characterisation of resource (SRL 1) to a fully operational storage site (SRL 9). In Figure 2, traps which are SRL 2 are those where theoretical resource has been estimated. For SRL 3 traps, further evaluation and screening has been undertaken, and SRL 4 denotes traps that have undergone more detailed desktop analysis. See *Akhurst et al. (2021)* for more details on SRLs.



Polish stakeholders were unanimous that domestic onshore CO₂ storage is the most important storage option.

Views of Polish CCS stakeholders shared with the Institute in June 2026

Figure 2: Poland's designated CO₂ storage exploration areas and potential storage traps, coloured by their storage readiness level⁷.



Source: Polish Geological Institute.

⁷ Storage Readiness Levels (SRLs) describe the maturity of CO₂ storage resource, from basin scale characterisation of resource (SRL 1) to a fully operational storage site (SRL 9). In Figure 2, traps which are SRL 2 are those where theoretical resource has been estimated. For SRL 3 traps, further evaluation and screening has been undertaken, and SRL 4 denotes traps that have undergone more detailed desktop analysis. See [Akhurst et al. \(2021\)](#) for more details on SRLs.

2.0 Polish CCS market development

2.1 Economic factors

Across Europe, projects such as Netherlands’ Porthos CO₂ transport and storage network (*Porthos, n.d.*) and Sweden’s Stockholm Exergi BECCS facility (*Stockholm Exergi, n.d.*) have shown that targeted grant funding can help to reduce the burden of CCS’ high upfront costs on project developers. In Poland, over €250 million has been awarded from EU grant funding programmes such as the Innovation Fund and Connecting Europe Facility (CEF) to support key projects.

However, further financial support is likely to be needed to improve systemic bankability of CCS in Poland (*CATF, 2026*). Uncertainty over future EU-ETS carbon prices can make it difficult to determine the long-term value of emissions reductions, compared to the cost of delivering CCS (*European Commission, 2025*). Mechanisms designed to bridge the long-term cost between conventional and low-carbon production, such as tax incentives or Carbon Contracts for Difference (CCfDs), could help to accelerate CCS deployment in Poland.

Economic incentives will likely be a primary enabler of future CCS growth.

Views of Polish CCS stakeholders shared with the Institute in June 2026

In the US, tax incentives have been used to support CCS projects through the 45Q tax credit, which provides support for each tonne of CO₂ captured and permanently stored⁸ (*GCCSI, 2025*). However, tax incentives have, so far, not been the chosen option for European countries. Instead, CCfDs, which provide long-term revenue certainty by bridging the gap between the EU-ETS price and CCS deployment costs, have been the preferred method, with the European Commission identifying it as an important mechanism for supporting early CCS deployment (*European Commission, 2026*). France and the Netherlands are examples where CCfD-style support mechanisms are already being used to support first mover projects in the transition from early development into operation (*GCCSI, 2025*).

CCfDs and targeted grant funding are stakeholder’s preferred financial mechanisms to accelerate CCS deployment in Poland.

Views of Polish CCS stakeholders shared with the Institute in June 2026

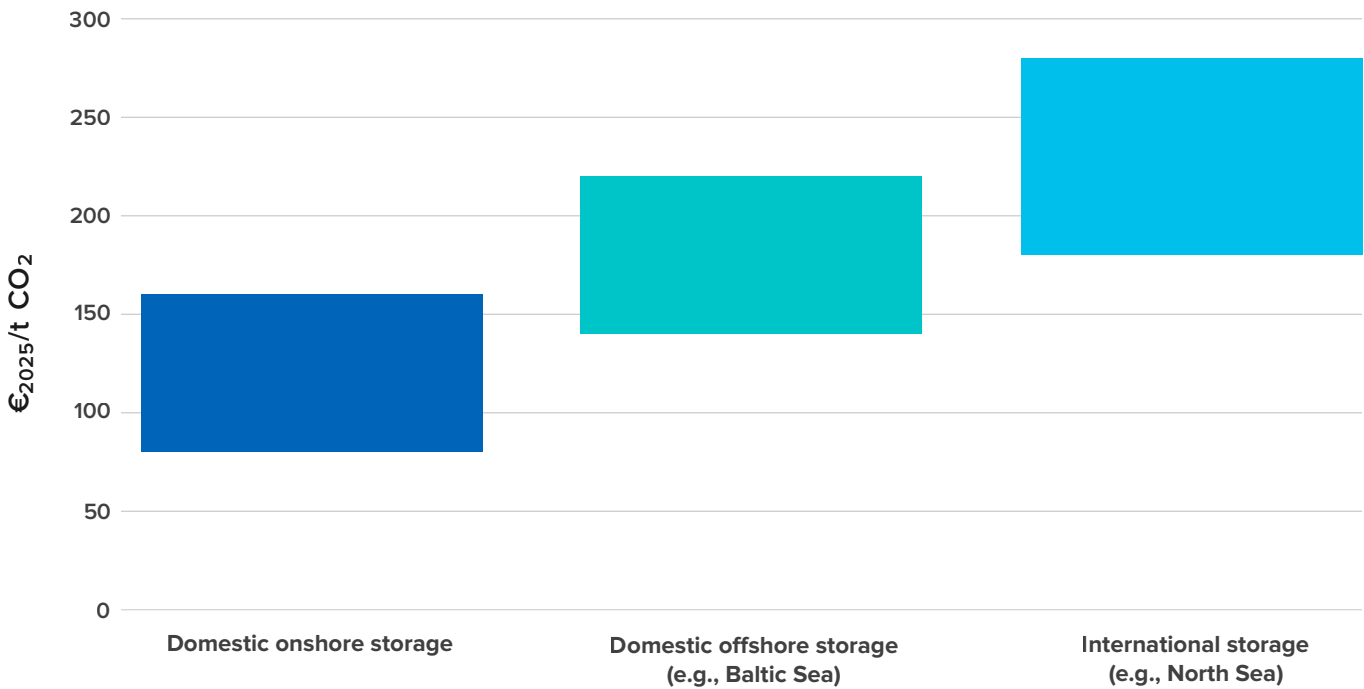
CCS cost estimates are often variable due to highly project and process-specific aspects, scope, differences in local conditions and limited publicly available cost data, especially at sector level disaggregation. Figure 3 shows the potential range of cost estimates of deploying the full CCS value chain in Poland. Depending on the storage scenario pursued, the total cost of deploying CCS in Poland could reach as high as €280/t CO₂ (*KPMG, 2025*), broadly aligning with the upper end of the Global CCS Institute’s own cost range estimates (*GCCSI, 2025*). By covering the difference between these costs and the prevailing carbon price, targeted financial support would help Polish CCS projects reach positive FIDs by significantly reducing the financial risk for investors.

Alongside these financial mechanisms, the development of shared CO₂ transport and storage infrastructure could further improve the economics of CCS in Poland by leveraging economies of scale. Whilst the extent of these savings will depend on how infrastructure costs and risks are allocated, the availability of CO₂ transport infrastructure can reduce investment risk to CO₂ capture projects by providing emitters with a clear route to storage and long term visibility of CO₂ offtake.

However, CO₂ transport infrastructure in Poland is currently at an early development phase. Although the 2023 Energy Law amendments introduced the general principle of equal access to the transport network (*ELI, 2023*), further regulatory and institutional development is required, including the establishment of connection procedures, technical standards and the appointment of transport network operators.



Figure 3: Full CCS value chain cost estimates in Poland.



Source: KPMG (2025).

⁸ Tax incentives narrow the gap between the cost of conventional and low-carbon production and reduce the cost of CCS investment by lowering a project developer’s tax burden.

3.0 Pathway to scaling CCS in Poland

Poland has made significant progress in establishing the foundations for large-scale CCS deployment through recent legislative reforms and growing industry engagement. Building on this momentum, the next phase of CCS development in Poland should focus on addressing the remaining barriers needed to enable deployment at scale.

Most notably, work on developing a national CCS strategy started in 2021, though the CCUS.pl project (*Ministry of Economic Development, Labour and Technology, 2021*). However, as of September 2026, the national CCS strategy for Poland is still under development. Finalising a comprehensive national CCS strategy that lays out a clear deployment pathway along with CCS deployment targets should be a priority in the near term. Figure 4 presents a suggested CCS deployment pathway for Poland, combining key progress to date with future milestones required to establish a commercial CCS value chain.

In the short to medium term, efforts should also be taken to close remaining regulatory and financial gaps. While recent legislative reforms have improved access to CO₂ storage resources, further work is needed to develop CO₂ transport regulations, particularly with regards to network codes. Implementing dedicated financial support mechanisms, such as CCfDs and targeted grant funding, alongside legislative reform should further support CCS projects in reaching FID and establish the enabling framework needed for CCS to deploy at large-scale.

In addition, the importance of public acceptance of CCS should not be overlooked. Public concerns regarding the safety of CO₂ storage and the risk of leakage have previously contributed to opposition towards CCS projects in Poland (*WiseEuropa, 2026*). A 2026 survey found that up to 66% of Polish citizens are unaware or do not fully understand the technology (*SW Research, 2026*). As the CCS industry develops and public awareness of CCS grows in Poland, concerted efforts will be needed to ensure information is accurately communicated and the benefits of CCS are clearly articulated. As the CCS industry develops in Poland, clear communication of its benefits will be critical to building public trust and securing long-term social acceptance, particularly as domestic onshore CO₂ storage, the lowest-cost option is likely to be developed (KPMG, 2025).

The establishment of a comprehensive CO₂ storage framework will be key for unlocking CCS deployment.

Views of Polish CCS stakeholders shared with the Institute in June 2026

Overall, CCS will be important for Poland to maintain a competitive industrial economy while contributing to the EU's 2050 carbon neutrality target. With substantial geological storage resources and increasing political support, Poland is well positioned to develop a domestic CCS sector. By addressing the remaining strategic, regulatory, financial, and social barriers, Poland can translate its considerable CCS potential into large-scale deployment to support widespread industrial decarbonisation and maintenance of Poland's industrial competitiveness.

Figure 4: Progress to date and suggested timeline for commercial CCS deployment in Poland.



4.0 Poland's CCS framework: Readiness and next steps

The table below summarises the key technical, economic, policy and regulatory enablers required to accelerate CCS deployment in Poland. It assesses the current level of readiness for each enabler and identifies recommended next steps.

Key enablers	Market readiness	Recommended next steps
CO ₂ transport infrastructure development	Limited progress No nationwide CO₂ transport planning beyond individual projects	- Develop a network code - Appoint a CO₂ transport operator - Clarify connection third-party access rules, including tariffs
CO ₂ storage availability	Progressing well Indicative capacity identified and exploration areas allocated	- Streamline administrative procedures for permitting in line with NZIA regulation - Develop bilateral agreements as necessary under the 2019 resolution framework of the London Protocol - Modify the financial guarantee and security requirements to ensure they are proportionate to the scale and risk profile of the project.
Economic incentives	Limited progress No dedicated financial support mechanism. Projects rely on time-limited support from EU Innovation Fund and Connecting Europe Facility	Development of long-term revenue support system to bridge the gap between ETS price and CCS deployment (e.g. CCfDs, tax breaks)
Public perception	Moderate progress Individual projects are engaging with the local public, particularly around onshore CO₂ storage	- Develop a national public engagement and communication framework for CCS, including clear messaging on safety, permanence and role - Establish transparent procedures for community consultation and participation in storage permit decisions

Shared infrastructure is considered a high priority for Poland's future CCS deployment.

Views of Polish CCS stakeholders shared with the Institute in June 2026



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