

## **Position Paper on the Importance of Carbon Capture and Storage (CCS) for the European Union (EU)**

European Enterprise Alliance and the Union of Entrepreneurs and Employers (ZPP) present our position on the Vital Role of Carbon Capture and Storage (CCS) in the European Union's Pursuit of Sustainable decarbonization. We, the European Enterprise Alliance, are committed to advancing a sustainable and environmentally responsible energy future for Europe. As a collective alliance of businesses deeply entrenched in the energy sector, we extend our support to the crucial role of Carbon Capture and Storage (CCS) in achieving the European Union's ambitious emission reduction goals and fostering economic stability.

### ***Background***

Carbon Capture and Storage (CCS) technology has been in existence since the 1970s, primarily employed in the oil & gas industry in the exploitation intensification processes. However, its broader application to address emissions from large coal and gas power plants gained attention over the last decade. The adoption of CCS in the EU is crucial to align with the EU's goal of achieving a carbon-neutral status, which is unattainable without CCS technology.

Several energy-intensive sectors in the EU, including conventional power plants, cement factories, chemical and metallurgical plants, the steel industry, and long-distance transportation, are facing significant challenges in reducing their emissions. For many of these industries, emissions arise from industrial processes that are difficult to replace with low-emission alternatives. For instance, cement production relies on calcination, which emits CO<sub>2</sub>, and metallurgical processes require blast furnaces, which are energy-intensive. Long-distance transportation, particularly by ships and planes, heavily relies on hydrocarbon fuels, making it hard to decarbonize.

### ***Carbon Capture and Storage (CCS) in the European Union***

The European Commission defines CCS as the "carbon dioxide (CO<sub>2</sub>) capture from industrial installations, its transportation to a storage site, and its injection into an appropriate geological formation for permanent storage." CCS distinguishes itself from carbon capture and utilization (CCU), where captured CO<sub>2</sub> is repurposed, while in CCS, it is permanently stored underground. Both CCS and CCU have their merits, with CCU offering the possibility of converting CO<sub>2</sub> into valuable products like synthetic fuels and plastics. Across the EU, CCS has started to gain recognition as a potential solution to address CO<sub>2</sub> emissions, especially in sectors where emissions are challenging to reduce. The development of CCS facilities for hard-to-decarbonize sectors can significantly contribute to achieving emission reduction targets.

For instance, in Poland, a feasibility study for an integrated CCS system for the cement industry has been conducted. This analysis explored CO<sub>2</sub> capture technologies like monoethanolamine (MEA) and calcium looping (CaL) for reference cement plants. The estimated cost of a CO<sub>2</sub> capture installation for a cement production line is approximately PLN 500 million for MEA technology and around PLN 1.5 billion for CaL. The study also identified potential CO<sub>2</sub> storage locations, which could serve multiple industries<sup>1</sup>.

### ***Challenges and Regulatory Considerations***

Implementing CCS projects comes with its own set of challenges. Ensuring the safety of storage and transport processes is paramount, considering the potential risks of CO<sub>2</sub> leakage. Additionally, resource and logistical challenges must be addressed, as CCS may significantly increase energy demand for energy-intensive industries. The concentration of CO<sub>2</sub> emitters in certain regions, far from the sea, poses a logistical challenge for developing a CO<sub>2</sub> transport network. Regulatory barriers have historically hindered CCS development in the EU. However, recent amendments to geological and mining laws aimed to enable CO<sub>2</sub> storage in various geological formations and reduce the barriers to investment. Legal and regulatory frameworks at the European level must continue to evolve to facilitate CCS project development.

### ***Conclusions and Recommendations***

The importance of CCS technology in the European Union's journey toward decarbonization cannot be overstated. As hard-to-decarbonize sectors continue to play a vital role in the EU's economy, the implementation of CCS projects is essential to meet emission reduction targets and preserve industrial sectors.

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<sup>1</sup> Strojny, Magdalena, et al. "Comparative Analysis of CO<sub>2</sub> Capture Technologies Using Amine Absorption and Calcium Looping Integrated with Natural Gas Combined Cycle Power Plant." *Energy*, vol. 284, 2023, article 128599. ISSN 0360-5442.

*In conclusion, we recommend the following actions:*

### ***Accelerated Legislative Efforts:***

We urge for a swift and decisive legislative process to create an environment that fosters investment in CCS technology. This involves the development of clear and supportive regulatory frameworks across the European Union. By streamlining the legislative process and ensuring that regulations are conducive to CCS investments, we can catalyze the development and deployment of this crucial technology. Imagine a regulatory landscape where businesses have the confidence and clarity to invest in CCS projects, knowing that their efforts align with government policies aimed at reducing emissions and promoting sustainability.

### ***Resource Assessment:***

Continuing the exploration and assessment of potential CO<sub>2</sub> storage sites is paramount for the success of CCS initiatives. This should include a comprehensive evaluation of onshore locations, recognizing that suitable geological formations may exist inland as well as offshore. To facilitate CCS installations, we propose the removal of minimum performance thresholds that could act as impediments. By doing so, we open the door to a broader range of viable CCS projects and ensure that CCS technology reaches its full potential. Picture a scenario where every feasible location, whether onshore or offshore, is thoroughly assessed, removing barriers to entry and encouraging greater adoption of CCS.

### ***Financial Guarantees:***

Determining financial guarantees at a level acceptable to investors is crucial for securing funding for CCS projects as well as the expenses related to geological research and the essential infrastructure for CCS deployment ought to be supported by state funds. These guarantees should align with the requirements of the EU CCS Directive while providing the necessary confidence to private and institutional investors. In essence, it's about creating a financial environment where the risk-reward ratio for CCS investments becomes attractive. By ensuring that financial backing meets investor expectations, we can mobilize the necessary capital to drive CCS technology forward. Imagine a scenario where investors see CCS projects as stable and promising investments, leading to an influx of funding and accelerated CCS development.

### ***International Engagement:***

Internationally, we need to address issues related to CCS, such as compliance with agreements like the London Protocol. Engaging in international collaborations is essential to harmonize CCS policies and standards across borders which involves diplomatic efforts and

cooperation to promote CCS as a global solution to combat climate change. By actively resolving international issues and fostering collaboration, we can create a more cohesive global approach to CCS adoption. Envision a world where countries work together, sharing knowledge and resources to advance CCS technology on a global scale, ultimately accelerating its implementation.

The European Enterprises Alliance and the Union of Entrepreneurs and Employers (ZPP) envision an energy sector characterized by stability, resilience, and sustainability. In the face of climate change, CCS stands as a critical technology for the EU to achieve its emission reduction goals while preserving essential industrial sectors. As we move forward, the lessons learned from this crisis and the evolving legal reality stand as guideposts, illuminating the path toward a resilient and competitive energy sector that aligns with Europe's economic and environmental aspirations. It is imperative that the EU and its member states act decisively to foster CCS development and secure a sustainable, low-carbon future.

## ***BIBLIOGRAPHY***

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