

## THE BUILDING MOMENTUM FOR THE LONG-TERM CCS DEPLOYMENT IN THE CEE REGION

# Untapped potential: linking the CEE region to European CCS initiatives

An overview and assessment of European policy initiatives and stakeholder platforms

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## List of acronyms

BASRECCS	Baltic Sea Region CCS network
BECCS	Bioenergy Carbon Capture and Storage
CAs	Competent Authorities
CBAM	Carbon Border Adjustment Mechanism
CCS	Carbon Capture and Storage
CCS4CEE	Building momentum for the long-term CCS deployment in the CEE region (project's name)
CCU	Carbon Capture and Utilisation
CCUS	Carbon Capture, Utilisation and Storage
CCUS ZEN	Zero Emission Network to facilitate CCUS uptake in industry (project's name)
Ccfd	Carbon Contracts for Difference
CEE	Central and Eastern Europe
CEF	Connecting Europe Facility
CO <sub>2</sub>	Carbon dioxide
DACCS	Direct Air (Carbon) Capture and Storage
EC	European Commission
EEA	European Economic Area
EU	European Union
ECCSEL ERIC	European Research Infrastructure for CO <sub>2</sub> Capture, Utilisation, Transport and Storage - European Research Infrastructure Consortium
EERA	European Energy Research Alliance
EU ETS	European Union Emissions Trading System
EuLA	European Lime Association
ETIPs	European Technology and Innovation Platforms

GDs	Guidance Documents
GHG	Greenhouse gas
IMO	International Maritime Organisation
IOGP	International Association of Oil and Gas Producers
IWG9	Implementation Working Group 9
JRC	Joint Research Centre
JTP	Just Transition Platform
NECP	National Energy and Climate Plan
NGOs	Non-governmental Organisations
PCI	Projects of Common Interest
PMI	Projects of Mutual Interest
SETIS	Strategic Energy Technology Plan Information System
SET-Plan	Strategic Energy Technology Plan
UNFCCC	United Nations Framework Convention on Climate Change
TEN-E	Trans-European energy networks
TEN-T	Trans-European transport networks
WG	Working Group
ZEP	Zero Emissions Platform

# Executive Summary

The present report offers a systematic collection of European initiatives related to the continent-wide deployment of Carbon Capture and Storage (CCS) technologies. **The aim of this report is to offer CCS stakeholders across the Central and Eastern European (CEE) region a thorough overview of EU policy and regulatory initiatives that underpin CCS deployment as well as an outline of CCS-relevant platforms that feed into these initiatives.** The report provides insight for industry players, civil society, research institutions and academia, as well as government-level actors into opportunities for engagement 1) throughout the lifecycle of CCS project development from research and innovation (R&I) to project implementation, and 2) in the process of legislative and policy initiatives, from early-stage consultations to final stages of inter-institutional negotiations.

To begin, the report introduces **EU-level policy and regulatory initiatives** relevant to CCS from Directives and Communications to policies addressing a broader suite of technologies and regulatory aspects. The European Commission's (EC) **CCUS Vision initiative** brings together stakeholders from across the CCS and CCU value chains to construct a key strategic document that sets the tone and provides a direction for EU-level CCS policy development to ensure the timely deployment of the technologies.

A further policy initiative providing an opportunity to offer a regional perspective to policy development referred to in this report is the ongoing revision of the **CO<sub>2</sub> Storage Directive's Guidance Documents** in the framework of which the EC will consult CCS stakeholders on the draft list of gaps to be addressed during the revision and to further identify bottlenecks and guidance needs.

It is also clarified in this report that the CO<sub>2</sub> Storage Directive and the EU ETS Directive sufficiently address the legal requirements of cross-border CO<sub>2</sub> transport making additional bilateral agreements within the EU and the EEA region effectively redundant. This clarification is especially significant as CO<sub>2</sub> storage sites are not available in abundance in every Member State, necessitating **cross-border transportation and storage**. As part of the recently published Communication on **Sustainable Carbon Cycles**, the Commission sets out the target of permanently removing 5 million tonnes of CO<sub>2</sub> from the atmosphere every year by 2030. To support this ambition several measures are taken including the tailoring of the Horizon Europe programme and the Innovation Fund, as well as developing certification methodologies for carbon removals in order to accurately account for carbon flows. The revision of these measures provides opportunities for stakeholder to offer their input and regional perspectives.

Stakeholders will also be able to provide input during the revision of the ETS Directive on the concept of **Carbon Contracts for Difference (CCfD)**, a tool to guarantee a fixed price for CO<sub>2</sub> abatement, advocate for the recognition and support of multiple transport modalities of CO<sub>2</sub> during the revision of the **TEN-T Regulation**, which can accelerate CCS deployment in the absence of a CO<sub>2</sub> pipeline network, as well as benefit from additional capital flows for CCS project by demonstrating Sustainable Finance **Taxonomy** compliance.

In the second half of the report, we detail several **stakeholders' platforms** that provide a forum for CCS stakeholders to coordinate and cooperate and collectively provide input for EU level policy initiatives mentioned in the first part of the report. Their focus differs by topic, such as policy aspects, technical standards, business models, infrastructure planning coordination, as well as research and knowledge sharing.

The **CCUS Forum** is shaping up to become the most important EU platform regarding CCS as the input gathered through this platform will contribute towards the Commission's Communication on the EU's CCUS Vision, the EU's CCS regulatory framework, infrastructural aspects and industrial partnerships. Meanwhile the **Information Exchange Group**, recently revived by the Commission, offers a platform for national authorities to be informed about and discuss relevant regulatory topics directly with EU policymakers in charge of CCS, exchange best practices and facilitate cross border cooperation between the representatives of EU and EEA governments.

The EU's **Strategic Energy Technology Plan (SET-Plan)** provides platforms for coordinated national efforts focusing on R&I (amongst others) in CCS and CCU with the aim of boosting Europe's transition towards a climate-neutral energy system. The Implementation Working Group 9 (IWG9), in charge of CCS and CCU, is headed by the **Zero Emissions Platform** and provides the Commission with technical recommendations, which in return underpin policies related to CCS and CCU. The platform gathers stakeholders from across the CCS and CCU value chains and provides scientifically sound and stakeholder-vetted input on the rapid, large-scale, and continent-wide deployment of CCS technologies via drafting reports, position papers, and responses for relevant EU consultations. Meanwhile the research pillar of the SET-Plan, the **European Energy Research Alliance (EERA)**, operates a Joint Programme on CCS coordinating EU and national level research and innovation programmes to maximise synergies, facilitate knowledge sharing and deliver economies of scale to accelerate the development of CCS technologies.

Another platform focusing primarily on research is **ECCSEL ERIC**, the European Research Infrastructure for CO<sub>2</sub> Capture, Utilisation, Transport and Storage operated by a European Research Infrastructure Consortium. The platform covers research aspects associated with the technical elements of the CCS and CCU value chain. **CO<sub>2</sub>GeoNet** on the other hand is a research platform that focuses primarily on filling in the knowledge gaps in the area of geological CO<sub>2</sub> storage. It also provides scientifically sound advice to NGOs, policymakers, at both EU and national levels, and other CCS stakeholders.

Finally, the report introduces three additional platforms set up and/or funded by the European Commission. The **Expert Group on Carbon Removals**, currently being formed, will assist the Commission in the preparation of policy initiatives and legislative proposals related to carbon removals, including those ("industrial") technologies that rely on permanent storage of removed CO<sub>2</sub> and possibly on CO<sub>2</sub> transport infrastructure. Another one is the consortia-based network connecting **CCS hubs and clusters**, operated by CCUS ZEN, which will be forming a coordination and knowledge exchange platform for the integration of CCS in European industrial hubs and clusters with a particular focus on the Baltic and Mediterranean regions. Lastly, the **Just Transition Platform (JTP)** provides a tool for EU Member States and regions to unlock the support available through the Just Transition Mechanism, that uses targeted funding to ensure that the sustainable transition is achieved in a socially just way leaving no person and no region behind. As carbon-intensive industries are welfare-carrying it is important to prioritise their decarbonisation and CCS plays an essential part of the solution, particularly for the cement sector.

## Introduction

This report has been prepared for the *Building momentum for the long-term CCS deployment in the CEE region (CCS4CEE)* project, which aims to renew the discussion on the long-term deployment of Carbon Capture and Storage (CCS) technologies in Central Eastern Europe (CEE), leading to new policy developments and joint projects in this area.

Eleven countries (Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia, Slovenia and Ukraine) of the CEE region are covered by this project's scope. Over a period of three years (2020-2023), CCS4CEE aims to assess the current state of CCS and to develop national CCS implementation roadmaps. The intended outcomes of the project include improved stakeholder communication at both the national and regional level, concrete plans for national or regional CCS pilot projects and input to policymaking processes to accelerate the deployment of CCS projects in participating countries.

The aim of the report is to help stakeholders, and in particular those based in the CEE region, navigate the landscape of CCS initiatives and platforms at the EU level, and to connect them with the national CCS deployment roadmaps developed by the CCS4CEE project partners during Work Package 4 in the first half of 2022. Increased participation of CEE stakeholders in international CCS platforms was one of the recommendations in these CCS4CEE roadmaps. The report will also try to explain why these initiatives are relevant for CEE stakeholders.

Global and national initiatives, as well as emerging pilot CCS projects are not covered here. The scope includes initiatives that operate at the European level. This includes predominantly policy initiatives undertaken by the EU, as well as stakeholders' platforms which in some cases are based on a broader, i.e., beyond the EU, European membership. The report is not focusing on projects developed by individual companies or national governments. This report was written when most of the policy initiatives described below were still underway and the second annual meeting of the CCUS Forum was about to take place between the 27<sup>th</sup> and the 28<sup>th</sup> of October 2022, coinciding with the finalisation of present report.

## EU policy and regulatory initiatives

CCS has not been widely seen as a priority policy area in the EU, even within its climate policy, but **there are now multiple policy initiatives which recognise its critical role in the transition to climate neutrality and attempt to regulate and support accelerated deployment of these technologies**. They range from Directives (e.g., the CO<sub>2</sub> Storage Directive) and strategies focusing on CCS (such as the Communication on the CCUS Vision) to policies addressing a broader suite of technologies and regulatory aspects like the ETS Directive, or TEN-E and TEN-T regulations. This section provides an overview of the policies and regulations being currently developed at the EU level (see Table 1 with the expected timeline).

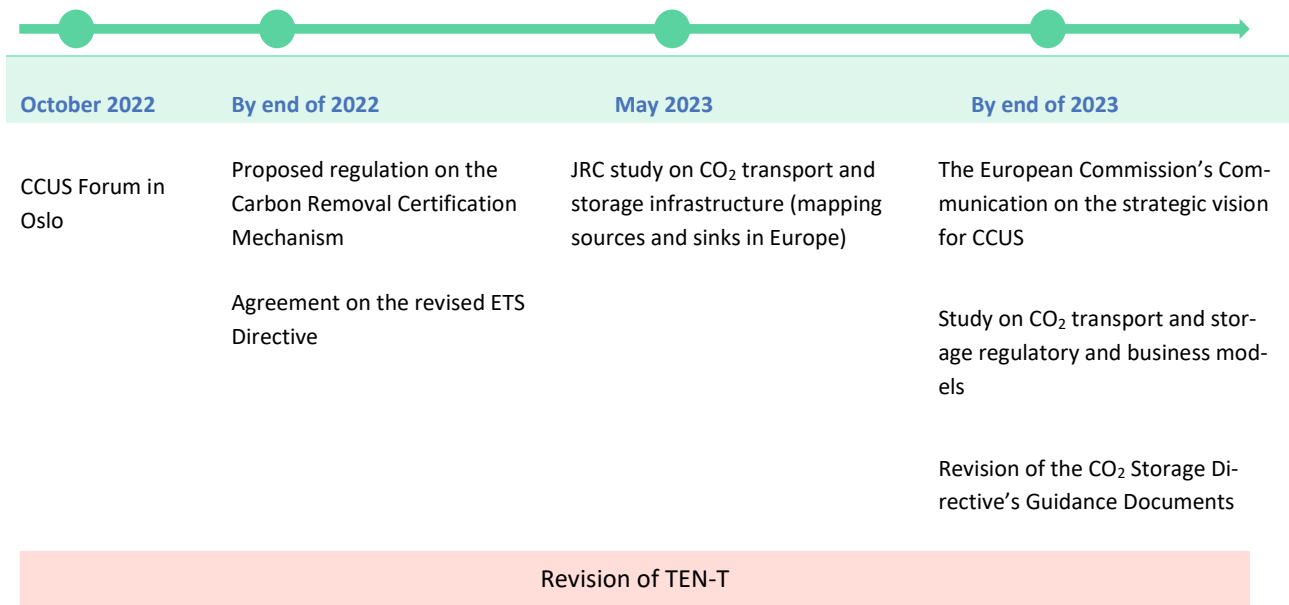


Table 1. Timeline of forthcoming EU policy initiatives relevant to CCS

## The European Commission's Communication on the CCUS Vision

The forthcoming official Communication of the European Commission on CCUS (also referred to as CCUS Vision or CCUS strategic vision paper) is currently the most prominent policy initiative relevant to CCS developed in the EU. It is led by the European Commission, who initiated the work in 2022 with an objective to publish the Communication in Q4 of 2023. **The Communication will frame the potential role of CCUS in EU climate action towards 2050, identifying key policy, regulatory and research gaps, as well as solutions.**<sup>1</sup>

The process was announced in April 2022,<sup>2</sup> and the preparatory work started in July 2022 with the formation of three Working Groups (WG) created by the EC as part of the CCUS Forum (see page 17). One of these groups, WG CCUS Vision, comprised of stakeholders representing various industrial sectors, national authorities, research and civil society actors, is currently preparing an issue paper that will serve as input for the Commission for its forthcoming EU Communication on CCUS Vision.<sup>3</sup>

<sup>1</sup> Information based on the presentations by the co-chairs of WG CCUS Vision meeting, 25 July 2022.

<sup>2</sup> This information was included in the email sent by the European Commission to the participants of the 2021 edition of the CCUS Forum.

<sup>3</sup> Information obtained through participation in the WGs. Bellona Europa has followed the work of the Groups both as co-chair of the WG CO<sub>2</sub> Infrastructure, and as member of the other WGs.



The draft issue paper currently developed by WG CCUS Vision available at the time of the writing of this report (the final version is still being developed) stresses the importance of CCS in achieving the EU's climate targets. It summarises the history of CCS deployment in the EU and the current policy framework and provides an overview of CCS and CCU applications. It also points out the essential role CO<sub>2</sub> storage will play in enabling technology-based carbon removals. It describes the challenges, such as limited carbon price signal, insufficient financial support, not strong enough regulatory incentives, and sparse political commitment at the national and EU levels that prevented CCS from being deployed at scale. Finally, **the issue paper of the WG CCUS Vision outlines a long-term (towards 2050) strategy and roadmap, with proposed targets and policy initiatives for a timely deployment of CCS.** The roadmap includes communication of the role, scope and requirements for CCS and CCU, consideration of those in the forthcoming legislative initiatives, coordination with Member States, especially in the development of the transport and storage infrastructure, alignment with EU energy and industrial strategies, provision of funding and regulatory drivers for CCS and CCU in both near- and long-term.<sup>4</sup>

In parallel, the EC has also launched two studies, which will support its work with analytical input related to CO<sub>2</sub> transport and storage infrastructure. One of these studies will be an update of an earlier Joint Research Centre (JRC) study: *The evolution of the extent and the investment requirements of a trans-European CO<sub>2</sub> transport network*,<sup>5</sup> mapping the CO<sub>2</sub> sources and sinks in Europe, and focusing on the economic and technical characteristics of a CO<sub>2</sub> pipeline infrastructure; optimised deployment of a European CO<sub>2</sub> transport network; and international transport of CO<sub>2</sub>. It is expected to be finalised in May 2023. The second study, to be developed by a consortium of consultants, will assess CO<sub>2</sub> infrastructure regulatory frameworks and business models.<sup>6</sup>

**The process of developing an EU CCUS Vision provides an opportunity for CEE stakeholders to communicate region-specific challenges, form recommendations, and stay up to date with the associated CCS policy actions as it is expected to remain the key CCS policy initiative at the EU level in the coming years.**

Understanding the direction of EU policy regarding CCS can help Member States' governments make better decisions on the role of CCS in their national energy, industry and climate strategies, including the upcoming updates of the National Energy and Climate Plans.

## Revision of the CO<sub>2</sub> Storage Directive's Guidance Documents

The EU Directive 2009/31/EC on the geological storage of CO<sub>2</sub>, also called CCS Directive (henceforth 'the Directive'), **establishes the legal framework for the environmentally safe and permanent geological storage of CO<sub>2</sub>** to contribute to the fight against climate

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<sup>4</sup> Draft issue paper distributed to the members of WG CCUS Vision on the 11<sup>th</sup> of October 2022.

<sup>5</sup> Joint Research Centre, Institute for Energy and Transport, Tzimas, E., Morbee, J., Serpa, J., *The evolution of the extent and the investment requirements of a trans-European CO<sub>2</sub> transport network*, Publications Office, 2010, <https://data.europa.eu/doi/10.2790/24331>

<sup>6</sup> Based on the information shared by the European Commission during the meetings of the WGs.

change.<sup>7</sup> Its related **four Guidance Documents (GDs)** can assist stakeholders with the implementation of the Directive to promote coherence throughout the EU (see Table 2).<sup>8</sup> These Documents are however not legally binding for Member States.<sup>9</sup>

Guidance Document 1	Guidance Document 2	Guidance Document 3	Guidance Document 4
<ul style="list-style-type: none"> <li>The lifecycle of geological CO<sub>2</sub> storage</li> <li>High-level approach to risk assessment and risk management</li> </ul>	<ul style="list-style-type: none"> <li>Site selection</li> <li>The composition of the CO<sub>2</sub> stream</li> <li>Site monitoring</li> <li>Corrective measures</li> </ul>	<ul style="list-style-type: none"> <li>Transfer of responsibility for all legal obligations from a site operator to the Competent Authority</li> </ul>	<ul style="list-style-type: none"> <li>Financial security related to CO<sub>2</sub> storage</li> <li>Financial mechanisms related to CO<sub>2</sub> storage</li> </ul>

**Table 2. Outline of the CO<sub>2</sub> Storage Directive's Guidance Documents**

Source: [Guidance Document 1](#), [Guidance Document 2](#), [Guidance Document 3](#), [Guidance Document 4](#)

Having published the Guidance Documents over a decade ago, **the European Commission currently seeks to update them as the CCS community gains more information through ongoing global research and development efforts.** Several gaps have been identified in the texts that need further specification and/or clarification, including issues related to the composition of the pre-injection streams, third party access to transportation networks and storage, and long-term liabilities.

**The Guidance Documents are currently planned to undergo revision by technical experts** through an open tendering procedure supported by DG CLIMA.<sup>10</sup> During Q1 of 2023 the Commission, with the help of the selected consultant, will **take stock of the current use of the GDs by Competent Authorities (CAs) and storage operators and will assess the needs and scope of the update to be undertaken.**<sup>11</sup> In June 2023 the EC will host a **public workshop to consult CCS stakeholders on the draft list and identify additional bottlenecks and guidance needs.**<sup>12</sup> **The revised GDs are foreseen to be adopted by the end of 2023.** During the beginning of 2024 the European Commission will host several capacity-building workshops for CAs of Member States and potential storage site operators.<sup>13</sup> The workshops will also focus on presenting remaining guidance needs and bottlenecks outside the scope of the revised GDs. The Final Report will be published during the summer of 2024 detailing recommendations for additional guidance.<sup>14</sup>

The revision of the GDs could potentially remove the uncertainties in the regulatory framework around CO<sub>2</sub> transport and storage that are currently considered to be one of the roadblocks for the deployment of CCS.

**It is therefore important for CEE stakeholders, national CAs and potential storage operators, in particular, to participate in the process of GDs revision to ensure that**

<sup>7</sup> [EUR-Lex - 02009L0031-20181224 - EN - EUR-Lex \(europa.eu\)](#)

<sup>8</sup> [Implementation of directive 2009/31/EC on the geological storage of carbon dioxide - Publications Office of the EU \(europa.eu\)](#)

<sup>9</sup> Ibid.

<sup>10</sup> [eTendering - Data \(europa.eu\)](#)

<sup>11</sup> [Information Exchange Group \(IEG\) under the CCS Directive \(Directive 2009/31/EC, Art. 27.2\) \(europa.eu\)](#)

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

**the national regulatory frameworks are fit for purpose and enable CO<sub>2</sub> storage in their countries in time for the first tonnes of captured CO<sub>2</sub> to be transported and stored safely and permanently.**

## EU legal framework for cross-border CO<sub>2</sub> transport

The capacity to store CO<sub>2</sub> and the level of maturity of storage development vary across European countries, and it seems that at least **in the short-term most of the continent will not be ready to store substantial volumes of CO<sub>2</sub>**. Consequently, many of the upcoming CCS projects must rely on storage in a country different from the country of capture, with the North Sea emerging as the main storage hub for European captured CO<sub>2</sub> emissions.

CCS projects involving two or more countries need to consider a legal framework that regulates the flow of CO<sub>2</sub> across national borders. This aspect has been covered by the London Protocol, an international framework on marine pollution, under the auspices of the International Maritime Organisation (IMO). According to the London Protocol, an amendment of its Article 6 which allows export of CO<sub>2</sub> for the sub-seabed geological formations, needs to be ratified by the majority of Parties to the Protocol. Alternatively, countries planning to be involved in a transboundary transport of CO<sub>2</sub> need to enter into bilateral agreements and notify them to the IMO. This is a process which involves cooperation at a governmental level, which provides an additional layer of burden on cross-border CCS projects. Not surprisingly, there have been few such notifications to date. But recent analysis by the EC might facilitate cross-border CO<sub>2</sub> transport for EU- and EEA-based projects.<sup>15</sup>

On the 30<sup>th</sup> of September 2022, the EC published a paper for the Information Exchange Group (see page 19) analysing the legal framework for cross-border CO<sub>2</sub> transport within the EEA.

The conclusion of this analysis is **that the CO<sub>2</sub> Storage Directive and the ETS Directive sufficiently address the legal requirements of cross-border CO<sub>2</sub> transport (for the purpose of storage) between EU and EEA countries, and no additional bilateral agreements between these countries under the London Protocol, or a ratification of its amendments, are necessary to “legalise” the cross-border flow of CO<sub>2</sub> for storage purposes within the EEA area**. In fact, any additional bilateral arrangements between EU and EEA countries should only concern issues that are not covered by the aforementioned Directives.<sup>16</sup>

Furthermore, the Commission proposed establishing a public repository with names and contact details of national competent authorities (in charge of CCS and ETS, and of UNFCCC inventories), of a Single Point of Contact for CO<sub>2</sub> export, and including references to national legislation transposing the relevant parts of the CO<sub>2</sub> storage and ETS Directives. The repository would also include information on London Protocol related declarations and agreements notified to the IMO.<sup>17</sup>

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<sup>15</sup> See the analysis paper here: [EU - London Protocol Analysis paper final 0930 | Climate Action \(europa.eu\)](#)

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

**This clarification by the European Commission is significant, as it removes what has been seen as a major obstacle and uncertainty for CCS projects needing transport of CO<sub>2</sub> across borders and sea due to limited or non-existent storage options, as is the case in some CEE countries.**

Such CCS projects can now plan for cross-border infrastructure within the EEA without the need for special bilateral agreements at governmental levels.

## EU carbon removals policy

In addition to tackling CO<sub>2</sub> emissions from industrial installations, the **technologies associated with capturing, transporting, and storing CO<sub>2</sub> can also help remove CO<sub>2</sub> from the atmosphere**. Carbon dioxide removals (CDR or carbon removals), also known as negative emissions, are now part of the EU climate neutrality ambition, and the EC has initiated a process to create a regulatory framework for this strand of climate action.

In December 2021, the EC published a *Communication on Sustainable Carbon Cycles*, offering a three-pronged vision of how to reduce reliance of carbon, how to shift away from fossil carbon, and how to increase the amount of carbon permanently removed from the atmosphere.<sup>18</sup>

The Communication broadly touches on natural ecosystems on the one hand and on industrial value chains on the other as the two main approaches of this vision. Chiefly for industrial CCS, the Commission sets itself a handful of long-term objectives and highlights some of its planned activities to develop an industrial sector which supports this vision, reliant on a European CO<sub>2</sub> transport and storage network.

The vision states that to meet the EU's 2050 climate neutrality objective, **between 300 and 500 million tonnes of CO<sub>2</sub> would need to be captured from industrial installations**, to use the CO<sub>2</sub> as a feedstock or to permanently store it. The Commission expects that **up to 200 million tonnes of CO<sub>2</sub> could be removed from the atmosphere and stored in geological formations by 2050**. Importantly, the Commission recognises that geological storage of CO<sub>2</sub> is an option to both mitigate industrial fossil CO<sub>2</sub> emissions and to remove CO<sub>2</sub> from the atmosphere via Direct Air Carbon Capture and Storage (DACCS) or the combustion/fermentation of biogenic CO<sub>2</sub> with CCS (BECCS<sup>19</sup>). In Europe, geological formations are stated to have the potential to store billions of tonnes of CO<sub>2</sub>.

In terms of existing policy, the Communication reaffirms the role of the CO<sub>2</sub> Storage Directive, which establishes a legal framework of geological CO<sub>2</sub> storage, and the role of the EU ETS in producing a price signal to incentivise the capture and storage of CO<sub>2</sub> from ETS installations. Furthermore, the Innovation Fund, financed by ETS revenues, is expected to be able to provide around €25 billion until 2030, some of which will be used to support CCS, CCU and carbon removal projects.

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<sup>18</sup> [Communication on the Sustainable Carbon Cycles.pdf \(europa.eu\)](#)

<sup>19</sup> There is also another term used for CCS applied with processes using biomass: BioCCS. In this report, we use 'BECCS' as the acronym for these processes, since it was used by the European Commission in its 'Sustainable Carbon Cycles' communication.

On research, the Commission points to the role of the previous Horizon 2020 programme in supporting research on CCS and the application of carbon capture for industrial facilities and industrial clusters. **The upcoming calls of the current Horizon Europe programme will include calls on CO<sub>2</sub> transport and storage networks, CCU, DACCS, and BECCS.**

The document lays out an 'Industrial Sustainable Carbon challenge' setting out three aspirational targets. Firstly, to be able to report and account for captured carbon by its origin (fossil, biogenic or atmospheric). Secondly, that 20% of carbon used in product should be of non-fossil origin by 2030. And thirdly, that **5 million tonnes of CO<sub>2</sub> should be annually removed from the atmosphere and permanently stored every year by 2030.**

Concretely, multiple actions are planned to support these aspirations. The Commission will focus on developing robust monitoring, reporting and verification methodologies to track the physical flows of carbons by origin and fate (use or storage) along with methodologies to quantify these flows. The Innovation Fund will be improved to better support carbon removal projects, as will the Horizon Europe programme. Importantly, the Commission announced its plans to launch a study on the development of a Europe-wide open-access CO<sub>2</sub> transport network and to update the guidance documents of the CO<sub>2</sub> storage Directive (see page 8). Finally, the Commission plans to organise an annual CCUS Forum (see page 17) to take stock of current progress and regularly engage with relevant stakeholders.

The European Commission has announced that it will propose a regulation on a Carbon Removal Certification Mechanism on the 30<sup>th</sup> of November 2022. **The regulation is expected to lay out an initial governance framework on how to develop certification methodologies, while also outlining the fundamental requirements of any potential carbon removal certificate. CCS-related removals, namely BECCS and DACCS, are likely to play a key role due to their ability to sequester carbon over geological timescales.**

**Understanding the role that CO<sub>2</sub> capture technology, as well as transport and storage infrastructure can play in enabling technology-based carbon removals is vital for CEE countries and their long-term climate strategies.**

Furthermore, **for those industry actors who have an interest in deploying DACCS and BECCS projects it will be important to follow the development of the regulatory framework on carbon removals.**

Regulations (including certification mechanisms) and methodologies that will govern the accounting of carbon removals, as well as the associated markets and funding instruments will have an influence on the viability of potential projects.

## Revision of the ETS Directive

The EU Emission Trading System (EU ETS) is the carbon pricing system set up by the EU to reduce GHG emissions from power generation, industry and aviation (altogether representing about 40% of EU GHG emissions) operating in the EU, Iceland, Liechtenstein and Norway. In July 2021, the Commission proposed a revision of the ETS Directive as part of 'Fit for 55' package of EU climate policy proposals.<sup>20</sup> Bellona's report 'Current state of CCS technologies and the EU policy framework' from 2021 provided a summary of CCS-relevant aspects of the ETS Directive.<sup>21</sup> The proposed 'Fit for 55' revisions, including those relevant to CCS, are at the time of the

<sup>20</sup> [Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision \(EU\) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation \(EU\) 2015/757](#)

<sup>21</sup> [Current state of CCS technologies and the EU policy framework - CCS4CEE.eu](#)

writing of this report being negotiated in the trialogue between the Commission, Member States and the European Parliament. Agreement on the final text is expected at the end of 2022.

The **proposed extension of CO<sub>2</sub> transport to other (non-pipeline) modalities in the list of ETS activities allows for broader recognition of CCS projects relying on non-pipeline modalities.** Some national authorities assumed that the EU ETS Directive relieves emitters from the duty of surrendering ETS allowances for CO<sub>2</sub> emissions abated via CCS only when pipelines are used as the mode of transport, which created uncertainty and hampered the deployment of CCS projects that would use e.g., ships for transporting CO<sub>2</sub> from source to sink. This proposal has not been contested by other co-legislators in the ongoing revision process.

The European Parliament proposed **further tightening of the rules concerning CCU.** So far, the Directive has allowed emissions captured and stored according to the CO<sub>2</sub> Storage Directive to be relieved from the obligation to surrender allowances for that CO<sub>2</sub>. In the proposed revision of the ETS Directive, the Commission has extended this to CO<sub>2</sub> captured and utilised in products (CCU) provided that CO<sub>2</sub> remains permanently bound to the product and does not enter the atmosphere under its “normal use”. **The Parliament, however, proposed that the disposal of the product should be included in that definition which determines when CO<sub>2</sub> can be considered permanently chemically bound in that product. Consequently, only CO<sub>2</sub> bound in CCU products which do not re-emit CO<sub>2</sub> during their life and at disposal (e.g., during their incineration as waste) can be considered as not emitted, thus relieving the installation generating this CO<sub>2</sub> from the obligation to surrender ETS allowances for that captured and utilised CO<sub>2</sub>.** Whether this proposal passes is still subject to negotiations.

The Parliament also proposed that the Commission examine the potential inclusion of GHG removals in EU ETS. If successfully implemented, **the inclusion of carbon removals could potentially allow DACCS and BECCS projects to sell removal certificates for the CO<sub>2</sub> they would capture and store (or utilise under aforementioned CCU eligibility criteria).**

The proposed **phase-out of free allowances for carbon intensive industries exposed to competition from non-EU countries, with a parallel phase-in of the Carbon Border Adjustment Mechanism (CBAM) will create an additional driver for emitters in the EU to accelerate investments in emission abatement technologies such as CCS** to avoid paying the cost of ETS allowances, which is expected to increase with time as the overall cap and availability of ETS allowances are being reduced.

Furthermore, as the CBAM is being phased in, significant revenues from free allowances that would have otherwise been allocated to the industry will be obtained through the auctioning of these allowances and added to the Innovation Fund, thus substantially increasing the source of EU funding for climate technologies, including CCS.

**Among the proposals relevant to CCS introduced in the revision is the concept of Carbon Contract for Difference (CCfD), conceived as a way to guarantee a fixed price for CO<sub>2</sub> abatement technologies above the current price levels in the EU ETS, through competitive tendering and funded by the Innovation Fund.** This could potentially be used as financial support for first-mover CCS projects that are otherwise uneconomic due to their costs exceeding the costs of emitting CO<sub>2</sub> under EU ETS.

Given the near-final stage of this initiative (i.e., trialogue negotiations), there is limited scope for new stakeholders to be involved in this process, but **the representatives of the CEE member states, and Members of the European Parliament from the CEE region can still weigh in during the negotiations to ensure that CCS-supportive proposals are approved.**

## TEN-E and TEN-T

Policy initiatives related to trans-European energy networks (TEN-E) and trans-European transport networks (TEN-T) regulate access to funding from the EU budget, through the Connecting Europe Facility (CEF),<sup>22</sup> for cross-border infrastructure projects. As such, they are relevant to CCS deployment, which is bound to rely on transport and storage networks spanning two or more countries. **Recent revision of the TEN-E opened CEF funding to CO<sub>2</sub> storage projects, whilst the ongoing revision of the TEN-T regulations offers an opportunity to classify new CO<sub>2</sub> transport-related elements of the transboundary CCS infrastructure as eligible for CEF funding as well.**<sup>23</sup>

### TEN-E

The TEN-E policy entered into effect in 2013 and focuses on upgrading and linking the energy infrastructure of EU countries through identified Projects of Common Interest (PCIs) and, when it comes to collaboration between EU Member States and third countries, Projects of Mutual Interest (PMIs).<sup>24</sup> Projects can apply to be awarded either a PCI or a PMI status by the European Commission and pre-selected regional groups comprised of relevant stakeholders across and outside the Union. Once awarded, **PCIs and PMIs can apply for funding from the Connecting Europe Facility, while also benefitting from accelerated planning and permitting, improved regulatory conditions, lower administrative costs, as well as increased visibility to investors.**<sup>25</sup>

The 5<sup>th</sup> list of the selected PCI projects announced in November 2021<sup>26</sup> already included a CCS project from the CEE region. The consortium of companies developing the **Poland – EU CCS Interconnector project**<sup>27</sup> **have successfully secured the PCI status and can now apply for EU funding to conduct feasibility studies and to improve the business case of their project. The project can also be accelerated thanks to reduced administrative hurdles and faster permitting procedures linked to the PCI status.** On the 18<sup>th</sup> of October, the European Commission opened a call for projects under all infrastructure categories to be submitted as candidates for the European Union list of PCIs and PMIs. The application period is open until the 15<sup>th</sup> of December 2022, and the final list is expected to be published in November 2023.<sup>28</sup>

The revised TEN-E regulation (in effect since June 2022) puts an emphasis on emission reduction objectives in the EU by promoting integration of renewables and clean energy technologies into the energy system.<sup>29</sup> **The revised regulation recognises CO<sub>2</sub> storage, the construction of CO<sub>2</sub> pipelines and fixed facilities that enable the transportation of CO<sub>2</sub>, so it can be expected that projects associated with these infrastructural elements might be included in the next PCI lists.** However, more conventional transport

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<sup>22</sup> The Connecting Europe Facility (CEF) is a key EU funding instrument implemented by the European Climate, Infrastructure and Environment Executive Agency (CINEA) to promote growth, jobs and competitiveness through targeted infrastructure investment at the European level. For more details, see: [About the Connecting Europe Facility \(europa.eu\)](https://europa.eu/about-the-connecting-europe-facility)

<sup>23</sup> [TEN-E/TEN-T Tuesday - Bellona.org](https://bellona.org/en/news/2022/09/2022-09-20-ten-e-ten-t-tuesday)

<sup>24</sup> [About the Connecting Europe Facility \(europa.eu\)](https://europa.eu/about-the-connecting-europe-facility)

<sup>25</sup> [European Commission publishes 4th list of Projects of Common Interest - Global CCS Institute](https://www.globalccsinstitute.com/news/2022-09-20-european-commission-publishes-4th-list-of-projects-of-common-interest/)

<sup>26</sup> [New list of Projects of Common Interest \(europa.eu\)](https://europa.eu/new-list-of-projects-of-common-interest)

<sup>27</sup> [Poland – EU CCS Interconnector \(emitters from the industrial cluster in the area around Gdansk, Poland with storage where available in the North Sea country territories\)](https://www.globalccsinstitute.com/news/2022-09-20-poland-eu-ccs-interconnector-emitters-from-the-industrial-cluster-in-the-area-around-gdansk-poland-with-storage-where-available-in-the-north-sea-country-territories/)

<sup>28</sup> [Call for applications for candidate projects in all categories under new energy infrastructure regulation](https://europa.eu/call-for-applications-for-candidate-projects-in-all-categories-under-new-energy-infrastructure-regulation)

<sup>29</sup> [Trans-European Networks for Energy](https://europa.eu/trans-european-networks-for-energy)

modalities of CO<sub>2</sub> are not currently recognised under the TEN-E and as a result, CCS stakeholders are not able to access CEF funding for the development of CO<sub>2</sub> transport by road, rail, or ships.

## TEN-T

Infrastructure projects related to more conventional transport modalities are generally covered by the TEN-T Regulation. The Regulation<sup>30</sup> operates with a budget of €25.81 billion. At this time, the TEN-T regulation also does not recognise multimodal transport of CO<sub>2</sub>, however, it is currently under revision. The revision process has moved to the Council of Ministers and the European Parliament where the two legislative bodies' respective positions are currently developed.

**Given that CCS stakeholders show interest in and advocate for their inclusion, multiple transport modalities of CO<sub>2</sub> could be recognised in the revised TEN-T regulation enabling stakeholders to tap into new streams of public funding for CCS projects.**

As nearly half of TEN-T-related funding, €11.29 billion, is earmarked for cohesion countries, many of which are Central-Eastern European countries, **it is particularly relevant for CCS project developers from the CEE region to advocate for the inclusion of multiple CO<sub>2</sub> transport modalities in the TEN-T Regulation.**

# Sustainable Finance Taxonomy

The European Union's Sustainable Finance Taxonomy is a classification system that establishes a list of environmentally sustainable activities based on specific criteria. It serves as a tool intended to upscale private investments into renewable and low-carbon technologies.<sup>31</sup> By reducing investors' risks resulting from unclear and varying definitions of contributions to sustainability, the Taxonomy has the power to redirect capital flows towards low-carbon solutions and thereby accelerate the green transition.<sup>32</sup>

The Taxonomy entered into effect in July 2020<sup>33</sup>, setting out four overarching conditions that economic activity must meet in order to qualify as economically sustainable: 1) making a substantial contribution to at least one environmental objective<sup>34</sup>; 2) doing no significant harm to any other environmental objective; 3) complying with minimum social safeguards; 4) complying with the technical screening criteria.<sup>35</sup> The technical screening criteria, which are developed in Delegated Acts, specify environmental performance requirements which ensure that the activity makes a substantial contribution to one environmental objective and at the same time does no significant harm to any of the other objectives. The technical screening criteria can be updated every 3-5 years based on the recommendations of the Platform on Sustainable Finance.

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<sup>30</sup> [Amended proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Union guidelines for the development of the trans-European transport network, amending Regulation \(EU\) 2021/1153 and Regulation \(EU\) No 913/2010 and repealing Regulation \(EU\) 1315/2013](#)

<sup>31</sup> [EU taxonomy for sustainable activities \(europa.eu\)](#)

<sup>32</sup> Ibid.

<sup>33</sup> Ibid.

<sup>34</sup> Environmental objectives: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, protection and restoration of biodiversity and ecosystems.

<sup>35</sup> [FAQ: What is the EU Taxonomy and how will it work in practice? \(europa.eu\)](#)



**As a low-carbon technology that enables the decarbonisation of harder-to-abate sectors, CCS is categorised as a sustainable economic activity.**<sup>36</sup> By labelling CCS as a technology that substantially contributes to climate change mitigation, the EU Taxonomy sends positive market signals. This increases the likelihood of CCS projects attracting private investment capital across the EU. Recognition in and of itself is important, and with a sustainability marking, when enabling other economic activities to reach their set thresholds, **the Taxonomy contributes not only with potential direct capital to CCS, but it also signals for public funding projects and certain EU streams mentioning and relying on the Taxonomy, that CCS should be prioritized on the path to net-zero by 2050.** Work is underway to develop guidelines for how to report on the Taxonomy, but when in place, investments into CCS within companies of a certain size and when contributing to reaching the emission criteria, for example on CCS, are eligible to be marked as sustainable. This will overall also enable companies, including those from the CEE region to access capital for such projects through bonds based on Taxonomy criteria and increase their sustainability rating under the Taxonomy by reducing emissions through investments in CCS.

## CCS stakeholder platforms

Multiple European stakeholder platforms are active in the CCS area (see Table 3). Some of them are embedded in the EU regulatory structures, whilst others function alongside the EU system but interact with it, nonetheless. Membership structures differ, as there are groups with specific membership scopes (e.g., national governments, or researchers) on the one hand, and multi-stakeholder networks on the other. Similarly, their focus includes different topics, such as policy aspects, technical standards, business models, infrastructure planning coordination, as well as research and knowledge sharing.

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<sup>36</sup> Article 10 of the Sustainable Finance Taxonomy Regulation 2020/852, [EUR-Lex - 32020R0852 - EN - EUR-Lex \(europa.eu\)](#)

Platform	Focus	Stakeholders				
		Civil Society	Government	Industry	Research	Other
<b>CCUS Forum</b>	Policy and regulatory issues, partnerships					
<b>Information Exchange Group</b>	Regulatory issues concerning CO <sub>2</sub> storage					
<b>SET-Plan IWG9</b>	Research and innovation					
<b>ZEP</b>	Policy, regulatory and technology aspects					
<b>EERA CCS</b>	Research and innovation					
<b>ECCSEL ERIC</b>	Research and innovation					
<b>CO<sub>2</sub>GeoNet</b>	Research and innovation focused on CO <sub>2</sub> storage					
<b>TEN-E regional and thematic groups</b>	Recognition and funding for CO <sub>2</sub> transport and storage infrastructure					
<b>Expert Group on Carbon Removals</b>	Regulatory aspects of carbon removals					
<b>Various CCS hubs and networks</b>	Research, networks					
<b>JTP (WG Cement)</b>	CO <sub>2</sub> infrastructure for just transition in the cement industry					

Table 3. Overview of CCS stakeholder platforms

## CCUS Forum

The CCUS Forum is shaping up to become the most important EU platform regarding CCS. The input gathered through this platform will contribute to the EC's work on the Communication regarding EU strategic vision policy for CCS deployment, its regulatory framework, infrastructural aspects, and industrial partnerships.

The first CCUS Forum was arranged by the EC as a virtual event on the 11<sup>th</sup> of October 2021. The event demonstrated a growing interest in CCS as it was attended by a wide range of stakeholders from EU institutions (featuring speeches by EU Commissioners

Kadri Simson and Frans Timmermans), national governments, energy and energy-intensive sectors, to researchers and NGOs, who gathered to discuss ways to facilitate the deployment of CCS and CCU.<sup>37</sup>

It was announced in December 2021 as part of the 'Sustainable Carbon Cycles Communication' that the Forum would be an annual occurrence.<sup>38</sup> Recognising the need for a continued stakeholders dialogue, the Commission has set up three working groups (WGs)<sup>39</sup> to provide input for the discussions at the recently held CCUS Forum 2022 on 27-28 October 2022 in Oslo:

- 1) **WG on CO<sub>2</sub> Infrastructure** - chaired by Bellona Europa, the International Association of Oil and Gas Producers (IOGP), and Zero Emissions Platform (ZEP), focusing on the development of CO<sub>2</sub> cross-border transport and storage, including **“experience from projects, Europe-wide CO<sub>2</sub> infrastructure design, the future regulatory environment for transport and storage of CO<sub>2</sub>, business models and financing.”**
- 2) **WG on Industrial Partnership** - chaired by the European Lime Association (EuLA), the association of European cement producers Cembureau, and the Zero Emissions Platform (ZEP), set up to **“explore if CCS and CCU need a support structure similar to Hydrogen Alliance where the industry and other interested stakeholders co-operate closely with the Commission to speed up commercial deployment of projects.”**
- 3) **WG on the CCUS vision paper** (later referred to as WG CCUS Vision) - chaired by Clean Air Task Force, the Danish Ministry of climate, energy and utilities and the Florence School of Regulation to discuss elements of a strategic vision paper on CCS and CCU that the Commission intends to publish in 2023.

The CCUS Forum Working Groups have, through a series of meetings over the period of July-October 2022 leading up to the plenary meeting, conducted preparatory work resulting in issue papers and materials to be discussed during the CCUS Forum plenary on the 27<sup>th</sup> and 28<sup>th</sup> of October 2022 in Oslo. As described by the European Commission, **the event “will try to wrap up the work of these groups and will discuss other key issues for the sector, setting priorities for next year and helping the European Commission in its policy work on CCS and CCU.”**<sup>40</sup>

**Given the strategic importance of these workstreams for CCS, and an opportunity to exchange knowledge and views with key European stakeholders, the CCUS Forum is highly relevant for CEE stakeholders.**

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<sup>37</sup> [Carbon capture, utilisation and storage forum | European Commission \(europa.eu\)](#)

<sup>38</sup> [Communication From The Commission To The European Parliament And The Council Sustainable Carbon Cycles](#)

<sup>39</sup> The scope of the WGs described below was communicated by the European Commission in its email from the 8<sup>th</sup> of April 2022 to the stakeholders who attended the 2021 edition of the CCUS Forum.

<sup>40</sup> [Carbon Capture, Utilisation and Storage Forum | European Commission \(europa.eu\)](#). As announced by the Commission, the conclusions of the Forum will be circulated shortly after the plenary meeting.

## Information Exchange Group

Information Exchange Group is a recently revived initiative, legally based on Article 27.2 of the CO<sub>2</sub> Storage Directive, **facilitated by the European Commission to exchange information with national competent authorities** concerning the implementation of said Directive. The topics discussed at the meeting attest to the relevance of this Group for CCS.

The Group met in July 2022 to discuss progress in the application of the CCS Directive and other topics related to CCS deployment. The European Commission gave an update on the EU climate policy context and EU support mechanisms for CCS (Innovation Fund, Projects of Common Interests) and stressed that an **open-access, cross-border CO<sub>2</sub> infrastructure remains an objective of EU-level actions in the area of CCS**. To this end, the Commission updated the national competent authorities on the planned revision of the CO<sub>2</sub> Storage Directive's Guidance Documents (see page 8), the CCUS Forum (see page 17), the studies on CO<sub>2</sub> transport and storage infrastructure and markets, and the legal framework for cross-border transport of CO<sub>2</sub> in the light of the London Protocol requirements (all these initiatives are also described in earlier sections of this report). National representatives (including from EEA) present at the meeting updated the EC on their CCS policies and projects. The upcoming revision of the NECPs was indicated as an opportunity to signal the need for CCS and thereby attracting new players to invest in these technologies.<sup>41</sup>

**The Information Exchange Group offers national authorities a unique opportunity to be informed about and discuss relevant regulatory topics directly with EU policy-makers in charge of CCS and to exchange best practices and facilitate cross border cooperation between the representatives of EU (and EEA) governments.**

It is therefore highly advisable for the representatives of the CEE competent authorities to actively participate in the Information Exchange Group meetings.

## SET-Plan Implementation Working Group 9

Established in 2007, the European Union's Strategic Energy Technology Plan (SET-Plan) aims to boost Europe's transition towards a climate-neutral energy system. This broader goal is achieved through developing low-carbon technologies in a fast and cost-competitive way. The **SET-Plan provides platforms for coordinated national efforts focusing on research and innovation**, thereby promoting cooperation among EU countries, companies, and research institutions.<sup>42</sup>

<sup>41</sup> More details about the meeting of this Group are available here: [HYPERLINK "https://climate.ec.europa.eu/system/files/2022-09/Report\\_CCS\\_IEG\\_20220706\\_final0922.pdf"](https://climate.ec.europa.eu/system/files/2022-09/Report_CCS_IEG_20220706_final0922.pdf) [Information Exchange Group \(IEG\) under the CCS Directive \(Directive 2009/31/EC, Art. 27.2\) \(europa.eu\)](#)

<sup>42</sup> [Strategic Energy Technology Plan \(europa.eu\)](#)

The SET-Plan consists of four groups, the SET-Plan Steering Group, the European Technology and Innovation Platforms (ETIPs), the European Energy and Research Alliance (EERA), and the SET Plan Information System (SETIS) plus 13 Implementation Working Groups (IWGs) covering 10 key action areas (See Table 4). Each of these actions has developed an Implementation Plan with ambitious targets and R&I activities needed to achieve them.<sup>43</sup> The progress of the Implementation Plan is monitored by Implementation Working Groups (IWG).<sup>44</sup>

<b>N°1 in Renewables</b>	<b>Integrating renewable technologies in the energy systems</b>
	<b>Reducing costs of technologies</b>
<b>Energy systems</b>	<b>New technologies and services for consumers</b>
	<b>Resilience and security of energy systems</b>
<b>Energy efficiency</b>	<b>New materials and technologies for buildings</b>
	<b>Energy efficiency for industry</b>
<b>Sustainable transport</b>	<b>Competitiveness for global battery sector and e-mobility</b>
	<b>Renewable fuels and bioenergy</b>
<b>CCS - CCU</b>	<b>Carbon Capture Utilisation and Storage</b>
<b>Nuclear safety</b>	<b>Nuclear Safety</b>

**Table 4. The SET Plan's 10 key action areas**

Source: [About SET-Plan - IMPACTS9 \(ccus-setplan.eu\)](https://ccus-setplan.eu)

During the annual SET-Plan conferences, the latest research and innovations in the field of energy systems and value chains are discussed, as well as the SET-Plan progress. The next SET-Plan conference, taking place on the 9<sup>th</sup> and 10<sup>th</sup> of November 2022, will focus on how current climate and geopolitical challenges affect research and innovation in the field of energy and how to increase the SET-Plan's activity to become aligned with increased energy and climate policy ambitions.<sup>40</sup>

<sup>43</sup> [About SET-Plan - IMPACTS9 \(ccus-setplan.eu\)](https://ccus-setplan.eu)

<sup>44</sup> Ibid.

The Implementation Working Group 9 (IWG9), one of the SET-Plan's key action areas (see Table 4), is co-chaired by Norway, the Netherlands and Zero Emissions Platform, and is composed of 11 SET-Plan countries (the Czech Republic, France, Germany, Hungary, Italy, Norway, the Netherlands, Turkey, Spain, Sweden and the UK), industrial stakeholders, non-governmental organisations and research institutions and **provides the European Commission with technical recommendations, which in return underpin policies related to CCS and CCU.**<sup>45</sup>

The IWG9 has established and oversees five sub-groups that coordinate and support the realisation of the R&I activities identified in the plan: (1) full scale projects, clusters and infrastructure, (2) CO<sub>2</sub> capture, (3) CO<sub>2</sub> storage, (4) CO<sub>2</sub> utilisation, and (5) CO<sub>2</sub> modelling.<sup>46</sup>

As a result of these sub-groups' work, funded by Horizon 2020 under the consortium IMPACTS9, there is now an extensive body of analytical material and recommendations (including a CCUS roadmap to 2030) published on the SET-Plan website, covering all elements of the CCUS value chain.<sup>47</sup>

Whilst until recently the two workstreams by the IWG9 and by Zero Emissions Platform (as ETIP) were supported by two separate grants, the two groups will now operate as one combined platform supported by a single grant for the forthcoming three years.<sup>48</sup>

Regrettably, the CEE countries are grossly underrepresented in this important platform, which sets the priorities for CCS innovation policy.

## Zero Emissions Platform (ZEP)

Zero Emissions Platform (ZEP) is the technical advisory group to the European Commission on the deployment of CCS and CCU technologies. It operates as **one of the European Technology and Innovation Platforms (ETIPs) supporting the implementation of the SET-Plan** (see previous section).<sup>49</sup>

Established in 2005, **the platform gathers stakeholders from across the CCS and CCU value chains, from the oil and gas industry, and carbon-intensive industries to civil society including several NGOs with a focus on CCS policy advocacy, as well as academia.**<sup>50</sup> ZEP's secretariat is provided by the CCSA, an international trade association representing the companies and organisations working on CCUS with offices in London and Brussels.<sup>51</sup> ZEP membership is based on a fee system, except for NGOs and research organisations, which can join ZEP without paying the fee. Participation in ZEP's Advisory Council and Networks (see below) meetings is open to non-members.<sup>52</sup>

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<sup>45</sup> [About SET-Plan - IMPACTS9 \(ccus-setplan.eu\)](https://ccus-setplan.eu)

<sup>46</sup> Ibid.

<sup>47</sup> [Resources - IMPACTS9 \(ccus-setplan.eu\)](https://ccus-setplan.eu)

<sup>48</sup> This was announced at the combined plenary meeting of ZEP's Advisory Council and IWG9. Source: ZEP newsletter 16 September 2022.

<sup>49</sup> There are also ETIPs working on wind, photovoltaics, ocean energy, geothermal energy, smart networks, renewable heating and cooling, bioenergy and nuclear energy. For more details see: HYPERLINK "[https://energy.ec.europa.eu/topics/research-and-technology/strategic-energy-technology-plan\\_en#european-technology-and-innovation-platforms](https://energy.ec.europa.eu/topics/research-and-technology/strategic-energy-technology-plan_en#european-technology-and-innovation-platforms)" [Strategic Energy Technology Plan \(europa.eu\)](https://energy.ec.europa.eu/topics/research-and-technology/strategic-energy-technology-plan_en#european-technology-and-innovation-platforms)

<sup>50</sup> [Members - Zero Emissions Platform](https://ccus-setplan.eu)

<sup>51</sup> [Who We Are - CCSA \(ccsassociation.org\)](https://ccsa.org)

<sup>52</sup> Information obtained from the ZEP secretariat, as of October 2022.

ZEP as an organisation **has the ability to shape EU-level policymaking on CCS via drafting reports<sup>53</sup> and position papers on key EU policy debates,<sup>54</sup> drafting responses to relevant EU consultations,<sup>55</sup> as well as maintaining regular contact with EC officials to offer scientifically sound and stakeholder-vetted input on the rapid and large-scale, continent-wide deployment of CCS technologies.** ZEP also keeps track of ongoing CCS projects across Europe and is in touch with those involved in the implementation of several ongoing projects.<sup>56</sup>

The organisation is made up of two functional networks (Network Policy & Economics, and Network Technology),<sup>57</sup> two representative groups (the Government Group, and the External Relations Group), and the Advisory Council. The Advisory Council is responsible for all decisions and guidance, setting ZEP's strategic direction and overseeing outputs of the functional networks and the External Relations Group, working in sync with the SET-Plan IWG9's Plenary under a combined structure.<sup>58</sup>

The functional networks via the work of several Temporary Working Groups (TWGs) have the role of producing written materials that are used to feed back into EU policymaking. The Network on Policy & Economics gathers all CCS and CCU stakeholders that are members of ZEP every 3 to 4 months. Its role is to closely follow ongoing policy developments in Europe, both at the European Commission and Member State levels and provide input to the Commission in the form of consultation responses and by issuing recommendations. Working closely with the Network on Technology they focus on the economics and business aspects associated with CCS deployment to provide hands-on knowledge to upcoming and planned CCS and CCU projects. The Network Policy & Economics is supported by the Temporary Working Group Policy and Funding.<sup>59</sup>

The Network Technology group meets every 4 months and focuses on the technological challenges, opportunities, risks and costs associated with the capture, transport, utilisation and storage of CO<sub>2</sub>. At the same time, the network also follows the developments in areas closely related to CCS, such as hydrogen production, clean flexible power generation and CDR. Its Temporary Working Groups deliver technical reports and executive summaries that are disseminated among relevant policymakers at the EU and national levels.<sup>60</sup>

Furthermore, through ZEP's Government Group, government representatives from over 20 countries can meet quarterly to mutually exchange on CCUS developments at the national and European Commission level. ZEP aims to ensure that CCS is considered as part of national climate and energy strategies, which in return has the potential to secure funding to support the development and scale up of CCS in Europe.<sup>61</sup>

ZEP's current priorities include on the one hand contributing to the three Working Groups of the CCUS Forum on the 27<sup>th</sup> and 28<sup>th</sup> of October 2022, in Oslo.<sup>62</sup> As a co-chair of the WG CO<sub>2</sub> infrastructure and WG Industrial Partnership, ZEP will be actively supporting the EU's upcoming strategy on CCUS.<sup>63</sup>

In addition to regular meetings of its working groups and external events, the ZEP bi-monthly newsletter allows stakeholders to keep up with ZEP's work and CCS and CCU news around Europe.<sup>64</sup> These activities as well as further communications and events activities

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<sup>53</sup> [Reports - Zero Emissions Platform](#)

<sup>54</sup> [Positions - Zero Emissions Platform](#)

<sup>55</sup> [Consultations - Zero Emissions Platform](#)

<sup>56</sup> [CCS/CCU projects - Zero Emissions Platform](#)

<sup>57</sup> A third functional network, Network Projects, is currently under consideration to be established.

<sup>58</sup> Information obtained from the ZEP secretariat, as of October 2022.

<sup>59</sup> Ibid.

<sup>60</sup> Ibid.

<sup>61</sup> Ibid.

<sup>62</sup> For more information on the CCUS Forum see page 17.

<sup>63</sup> Ibid.

<sup>64</sup> Subscription to the newsletter is available via ZEP website: [Home - Zero Emissions Platform](#)

are closely coordinated within ZEP's Communications working group, under the supervision of the External Relations Group. News and upcoming events are available on the ZEP social media platforms.<sup>65</sup>

**As part of ZEP, CEE industries, civil society and academia have the ability to contribute to ZEPs reports, position papers and consultation responses that directly feed into the Commission's work on CCS-related policy files. Under the umbrella of ZEP, CEE stakeholders gain a platform through which they can assist the Commission in considering unique regional circumstances and provide support to kickstart several CCS projects in the region.**

As part of a platform rather than a singular market player, CCS stakeholders can amplify each other's voices to increase their impact in helping to create a CCS-enabling EU and national-level regulatory environment.

## EERA CCS

The European Energy Research Alliance (**EERA**) is the research pillar of the SET-Plan consisting of over 50 thousand experts, and over 250 research organisations and universities from 30 countries.<sup>66</sup> As Europe's largest energy research community, **the mission of EERA is to catalyse European energy research for a climate-neutral society by 2050.**<sup>67</sup> As such EERA is an acknowledged advisor to EU institutions and provides strategic and technological advice.<sup>68</sup>

EERA functions through 18 Joint Programmes that are permanent structures each covering a clean energy solution, including CCS.<sup>69</sup> **EERA's Joint Programme on CCS coordinates EU and national level research and innovation programmes to maximise synergies, facilitate knowledge sharing and deliver economies of scale to accelerate the development of CCS technologies.**<sup>70</sup> Research outputs, often in collaboration with the work of Zero Emissions Platform (see page 21), are used to feed back into EU and national level policymaking with respect to CCS.<sup>71</sup>

The membership of EERA JP CCS mainly consists of research institutions and universities; however, membership is open to any entity or organisation actively involved in energy research in an EU member state, or candidate country.<sup>72</sup> **As a member of EERA JP CCS any such entity in the CEE gains access to top research capacities and possible collaborations as part of consortia in upcoming CCS research and innovation projects and can participate in setting the agenda for upcoming CCS research.**<sup>73</sup> EERA JP CCS can also

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<sup>65</sup> [LinkedIn available here](#); [Twitter available here](#)

<sup>66</sup> [EERA - What is EERA \(eera-set.eu\)](#)

<sup>67</sup> Ibid.

<sup>68</sup> [EERA - Impact \(eera-set.eu\)](#)

<sup>69</sup> Ibid.

<sup>70</sup> [EERA Joint Programme Carbon Capture and Storage - ABOUT \(eera-ccs.eu\)](#)

<sup>71</sup> [EERA - EERA \(eera-set.eu\)](#)

<sup>72</sup> As per the EERA CCS webpage, only two institutes from CEE are members of EERA CCS: the Oil and Gas Institute - National Research Institute (Poland) and the Czech Academy of Science. See: [MEMBERS - EERA Joint Programme Carbon Capture and Storage \(eera-ccs.eu\)](#)

<sup>73</sup> [EERA - Become a member \(eera-set.eu\)](#)



facilitate inter-organisational and inter-institutional collaboration, thereby providing access to an extensive network of partners at the EU institutional as well as national levels.<sup>74</sup>

## ECCSEL ERIC

**ECCSEL is the European Research Infrastructure for CO<sub>2</sub> Capture, Utilisation, Transport and Storage (CCUS).** Operated by a European Research Infrastructure Consortium (ERIC), headquartered in Oslo, ECCSEL ERIC is a full legal entity under EU law.<sup>75</sup>

The platform gathers 80 individual research facilities in 5 countries (France, Italy, the Netherlands, Norway, UK) operated by industry, research institutes and universities. **Its research scope covers such elements of the CCS and CCU technologies as: membranes, integrated CCUS systems, pressure/injection, migration, security/troubleshooting, CO<sub>2</sub> pipeline transport and integrity, shipping of CO<sub>2</sub>, smart integrations with carbon capture and re-use into valuable products.** It offers training services and funds access to its facilities and equipment (e.g., mobile test rigs) to industry, SMEs, universities, and research institutes.<sup>76</sup>

Unfortunately, **no CEE country participates in the ECCSEL ERIC,<sup>77</sup> which is a missed opportunity for the research institutes from the CEE region to be part of a platform where technical expertise and innovative solutions related to CCS are being developed.** This could also benefit CEE industries by providing them with access to regional research infrastructure that can draw from ECCSEL members' expertise and experience.

## CO<sub>2</sub>GeoNet

**CO<sub>2</sub>GeoNet is the European scientific body on CO<sub>2</sub> geological storage.<sup>78</sup>** A not-for-profit scientific association comprised of 27 research institutes from 21 European countries bringing together over 300 researchers.<sup>79</sup> Membership provides the opportunity for researchers and research institutions to contribute to the association's activities focusing on:

- facilitating strategic joint research to fill in knowledge gaps in the area of geological CO<sub>2</sub> storage;
- providing scientifically sound advice to NGOs, policymakers, at both EU and national levels, and other CCS stakeholders;
- building capacity by training scientists to be able to tackle all aspects of geological CO<sub>2</sub> storage;
- disseminating scientifically sound information and providing clear explanation on topics concerning geological CO<sub>2</sub> storage, thereby building trust around the topic.<sup>80</sup>

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<sup>74</sup> Ibid.

<sup>75</sup> [ECCSEL](#)

<sup>76</sup> Ibid.

<sup>77</sup> Ibid.

<sup>78</sup> [About Us \(CO2geonet.com\)](#)

<sup>79</sup> Ibid.

<sup>80</sup> [CO2Geonet](#)

By joining the Association, researchers can contribute to **valuable scientific research and provide an expert perspective on geological CO<sub>2</sub> storage providing inputs for public policy and regulations at the national and EU levels.**<sup>81</sup> While some CEE-based academic institutes are part of CO<sub>2</sub>GeoNet, **it is important that more CEE researchers become members of CO<sub>2</sub>GeoNet, as the more widespread the membership of the Association the more excellent, robust, multidisciplinary and pan-European their research outputs have the potential to be.**

## Regional and thematic groups under TEN-E

The regional and thematic Groups under the TEN-E (see page 14) in the case of projects for CO<sub>2</sub> networks, storage and electrolysers are comprised of representatives of Member States, project promoters concerned, and the European Commission. The groups, however, can invite relevant stakeholders such as TSOs, DSOs, EU based environmental NGOs, as well as suppliers and consumers. **The purpose of these groups is to assess and rank projects applying for PCI or PMI status.** The evaluation of the projects is done against the general and specific criteria described in Article 4 of the TEN-E regulation. While the evaluation of each project is done against strict criteria, project promoters that are invited to participate in these groups can provide input and highlight how their specific project meets each criterion. The Groups also **participate in monitoring the progress of the selected PCI and PMI projects, and if necessary, make recommendations to facilitate their implementation.**<sup>82</sup> Interested parties can apply to be included on the contact list of regional and thematic groups linked to this platform.<sup>83</sup>

**Participation in the TEN-E regional and thematic groups could provide CEE stakeholders with insights into the PCI criteria and selection processes, which could then help them in preparing their own CO<sub>2</sub> infrastructure project applications.**

## Expert Group on Carbon Removals

It is standard practice for the European Commission to gather external expertise to feed into its work on an EU policy or regulation via the so-called expert groups. **The expert group on carbon removals, which is currently being formed, will assist the European Commission in the preparation of policy initiatives and legislative proposals related to carbon removals, including those (“industrial”) technologies that rely on permanent storage of CO<sub>2</sub> and possibly on CO<sub>2</sub> transport infrastructure.**<sup>84</sup>

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<sup>81</sup> [About Us \(CO2geonet.com\)](#)

<sup>82</sup> [REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on guidelines for trans-European energy infrastructure and repealing Regulation \(EU\) No 347/2013](#)

<sup>83</sup> [EUSurvey - Survey \(europa.eu\)](#)

<sup>84</sup> [Frequently Asked Questions-Expert Group on Carbon Removals.pdf \(europa.eu\)](#)

While it is now too late to join this group, since the application process has been closed,<sup>85</sup> the work of the Expert Group will be publicly available (including web-streaming of meetings and online publications). It is also communicated that sub-groups might be formed to work on specific topics associated with carbon removals, such as permanent storage, which is likely to rely on CCS experts specialised in CO<sub>2</sub> storage.<sup>86</sup>

As already signalled in the section on the EU policy on carbon removals, this is a topic with high relevance for CCS and thus **it is recommended that CEE experts that have not joined the Group but are interested in the development of the EU carbon removal policy monitor the results of the work conducted by this platform.**

## CCS hubs, clusters and regional networks

Every year, Horizon Europe (as did its predecessor Horizon 2020) publishes calls for projects associated with CCS. Among funded projects are **consortia-based networks connecting CCS hubs and clusters.**<sup>87</sup>

The European CCS Demonstration Project Network and the CCUS Projects Network were examples of such platforms during 2009-2021.<sup>88</sup> In 2022, a new project network, CCUS ZEN (Zero Emission Network to facilitate CCUS uptake in industry) was selected through a tender to receive Horizon Europe funding (Cluster 5 – Sustainable, secure and competitive energy supply). CCUS ZEN is led by SINTEF, a leading CCS research centre based in Norway. With 13 other partners (including Tallinn University of Technology and the Polish Geological Institute – National Research Institute) academia, research institutes, industry associations, plus around 40 networking partners working in various parts of the CCUS value chain, **CCUS ZEN will form a coordination and knowledge exchange platform for the integration of CCS in European industrial hubs and clusters, with a particular focus on the Baltic and Mediterranean regions.** The project kicked off on the 28 September 2022 and is set to last for 30 months.<sup>89</sup>

A further project funded by Horizon2020, PilotSTRATEGY focuses on CO<sub>2</sub> storage research in selected industrial regions of Southern and Eastern Europe (including Upper Silesia in Poland),<sup>90</sup> building on its predecessor StrategyCCUS project.<sup>91</sup>

Horizon2020 funding has also enabled a consortium of 19 partners from seven countries (including two organisations from Romania) to work on the “CarbOn Neutral cluSters by Electricity-based iNnovations in Capture, Utilisation and Storage” (ConsenCUS).<sup>92</sup> The project focuses on technological innovations of CCUS and aims at demonstrating them at several industrial sites in Northwest and South-eastern Europe.<sup>93</sup>

<sup>85</sup> The call for experts was launched in July 2022 with a deadline for applications of the 15<sup>th</sup> of September 2022.

<sup>86</sup> idem

<sup>87</sup> In addition to projects supporting CCS hubs and networks, Horizon 2020 and Horizon Europe have also been funding projects focusing on technological innovation and implementation of CCS in industrial applications. Upcoming calls are expected to also cover carbon removal technologies DACCS and BECCS.

<sup>88</sup> [CCUSNetwork](#)

<sup>89</sup> [40 network partners from 16 countries will jointly reduce CO2 emissions from industry in Europe - SINTEF](#)

<sup>90</sup> [About the Project | PilotSTRATEGY](#)

<sup>91</sup> [Welcome to Strategy CCUS | Strategy CCUS](#)

<sup>92</sup> [ConsenCUS - Technological innovations in CCUS](#)

<sup>93</sup> [ConsenCUS - About Us](#)

Another example of a CCS network is BASRECCS, a network of CCS experts from academia, think-tanks, private sector and an NGO (including CEE organisations), promoting CCS in the countries of the Baltic Sea region. The network is funded by the Nordic Council of Ministers. It organises CCS-focused events, including an annual conference 'Baltic Carbon Forum'.<sup>94</sup>

**These platforms offers yet another way for CCS stakeholders from the CEE project to shape the emerging CCS landscape in Europe, via sharing knowledge and building expertise and connections between the different actors in the CCS value chain.**

## Just Transition Platform

The **Just Transition Platform (JTP)** is a tool that helps EU Member States and regions unlock the support available through the **Just Transition Mechanism, which aims to ensure through targeted funding that the green transition is achieved in a fair way, leaving no person and no region behind.** The Mechanism aims to aid people, businesses and regions in carbon-intensive industries by providing guidance, information and knowledge to support their transition to climate neutrality. This includes creating new job opportunities and reskilling opportunities, investment in research and innovation, as well as improving networks and infrastructure.<sup>95</sup>

The Just Transition Mechanism mobilises ca. €55 billion in the period 2021-2027 through providing grants via the Just Transition Fund, crowding in private investments through the InvestEU's dedicated Just Transition Scheme, and leveraging public financing through the European Investment Bank's public factor loan facility.<sup>96</sup> **These instruments aim to help regions, businesses and persons heavily reliant on fossil fuel production or GHG-intensive industrial activities and will need to phase out certain activities and restructure their industries.**<sup>97</sup>

The Just Transitions Platform consists of four Working Groups: WG Steel, WG Cement, WG Chemicals, and WG Horizontal. Knowledge and best practices are shared among members of the WGs through dedicated events, the creating of good practice examples, and the development of a network of experts and projects. WG Horizontal focuses on horizontal stakeholder strategy. This cross-cutting group identifies and assesses approaches and good practices to help engage all stakeholder groups in the transition process, helping to develop a common vision for the transition with stakeholders such as local and social partners, civil society, NGOs, industrial and economic actors, and academia.<sup>98</sup>

**One of the directions of future action proposed by the members of WG Cement is a reflection on the requirements for the governance of a CO<sub>2</sub> infrastructure in the context of a just transition of the cement sector.** WG Cement will, in the course of this year and the following year, decide on a specific output (e.g., a guidance document, a tool, or policy recommendations) to be developed by the group for dissemination through the Just Transition Platform website.<sup>99</sup>

<sup>94</sup> [BASRECCS | About us \(bcforum.net\)](#)

<sup>95</sup> [The Just Transition Platform - Publications Office of the EU \(europa.eu\)](#)

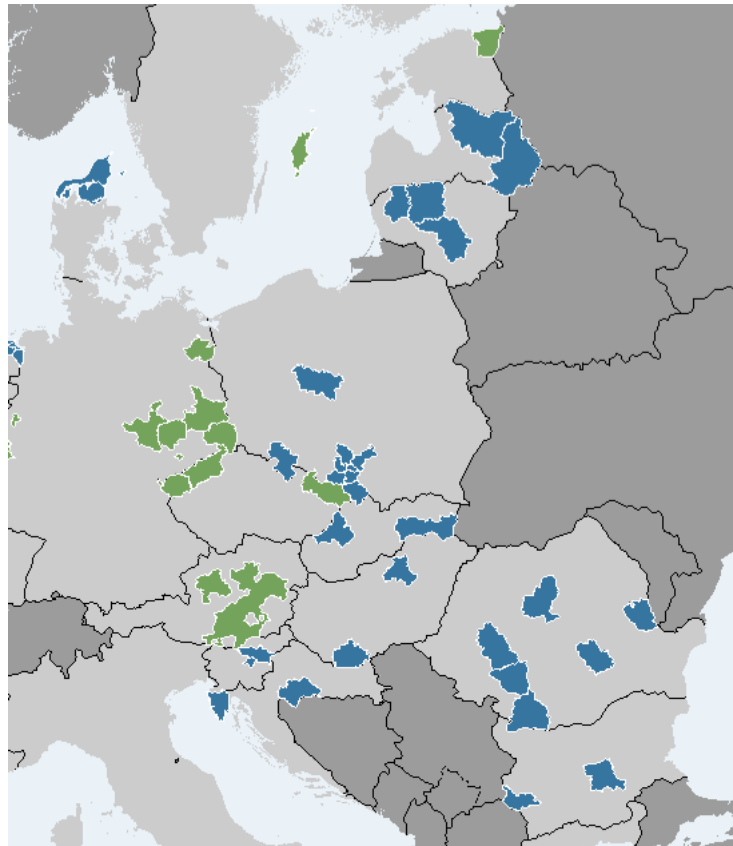
<sup>96</sup> Ibid.

<sup>97</sup> Ibid.

<sup>98</sup> [Regional Policy - European Commission \(europa.eu\)](#)

<sup>99</sup> [Just Transition Platform: Working Group on Cement - Scoping Paper \(europa.eu\)](#)

As many industrial regions in CEE are classified as Just Transition Fund Territories, it is important to raise awareness and build public support among the local stakeholders and communities about CCS as a potential pathway for the transition energy-intensive sectors operating in these areas.



**Figure 1. Map of Just Transition Fund territories in Central and Eastern Europe, proposed by European Commission (blue) and included in approved territorial just transition plans, as of October 2022. Additional territories have been proposed by some Member States and may be accepted as part of territorial just transition plans. Source: European Commission, - [Regional Policy - European Commission \(europa.eu\)](#)**

## Conclusions

The number of ongoing policy initiatives and stakeholders' platforms presented in this report reflect the **growing importance of CCS for the EU climate policy**. Ongoing efforts by the EC to develop a **Communication on the CCUS Vision is in itself a strong political signal of endorsement that will provide a much-needed confidence to national authorities and CCS project developers and will build awareness of and support for these technologies in a wider group of stakeholders**.

An increasing number of CCS project announcements necessitates an adequate regulatory framework. There is also growing realisation that **the full potential of CCS as a decarbonisation tool relies on cooperation beyond country borders**. Many future CCS projects will operate across two or more national jurisdictions, and thus **there is a need to develop and coordinate the governance of CCS at the EU-level, as well as at the international level** together with non-EU partner countries interested in joint CCS projects.

As EU policies relevant for CCS are being shaped, **stakeholders from the CEE region are recommended to participate more actively in these processes to prevent the region from lagging behind in the deployment of CCS**. The time to participate in relevant consultations and platforms to contribute to the creation of a European CCS regulatory framework is now and in the next 1-2 years, before it becomes a lost opportunity.

There is a variety of CCS platforms in the EU, where CEE stakeholders could bring in their perspectives. These platforms provide space **to exchange and develop best practices, explore collaboration opportunities and to gain knowledge in the many areas associated with CCS: technologies, value chains, regulatory framework, business models, and funding instruments**. Similarly, when first CCS projects in CEE start breaking ground, their developers could also share their experience and contribute to develop solutions applicable across the EU and globally. Regrettably, **the involvement of CEE stakeholders thus far, governments and industry actors in particular, in the European CCS initiatives and platform has been limited**. With few notable examples, there is a sense that the region could still do more to fully exploit its CCS potential and to participate in developing EU-wide frameworks and solutions. **By postponing active participation or choosing to stay on the side-lines, the region risks not fulfilling its climate targets, severely undermining its industrial competitiveness and thus its future prosperity**.

Based on the overview of the policy initiatives and stakeholders' platforms, the following actions are recommended to CEE stakeholders interested in accelerating CCS deployment in their region (see Table 5).

Action	Relevant stakeholders
Participate in the CCUS Forum, its Working Groups and the process of creating the Commission's Communication on the CCUS Vision	Mainly national authorities, industry, research institutes, civil society, and other stakeholders
Participate in the Information Exchange Group working on the revision of the CO <sub>2</sub> Storage Directive ('CCS Directive') Guidance Documents	National competent authorities, potential storage operators
Follow the EU carbon removal certification proposal and the work of the Expert Group on Carbon Removals	Mainly representatives of the national authorities in charge of climate policy; companies developing carbon removal technologies
Find partners and apply for PCI/PMI status for CO <sub>2</sub> transport and storage infrastructure projects	Companies interested in developing CO <sub>2</sub> transport and storage infrastructure

<b>Advocate at the national and EU level for granting PCI/PMI status to multiple modalities transporting CO<sub>2</sub> to storage in the TEN-T regulation currently under revision</b>	National authorities, companies interested in developing CO <sub>2</sub> transport and storage infrastructure
<b>Join SET-Plan IWG9 to understand and shape EU CCS research and innovation priorities</b>	National authorities, industry, research institutes, civil society, and other stakeholders
<b>Join Zero Emission Platform to follow and influence CCS-relevant policy developments</b>	Industry, research institutes, civil society, and other stakeholders
<b>Join EERA CCS, ECCSEL ERIC and CO<sub>2</sub>GeoNet to benefit from latest research and innovation developments</b>	Research institutes
<b>Join European and regional CCS networks or follow their work</b>	CCS project developers, research institutes, civil society, and other stakeholders
<b>Join Regional Groups under TEN-E</b>	National authorities, regulators, CCS project developers, research organisations

**Table 5. Recommended actions for CCS stakeholders in the CEE region**