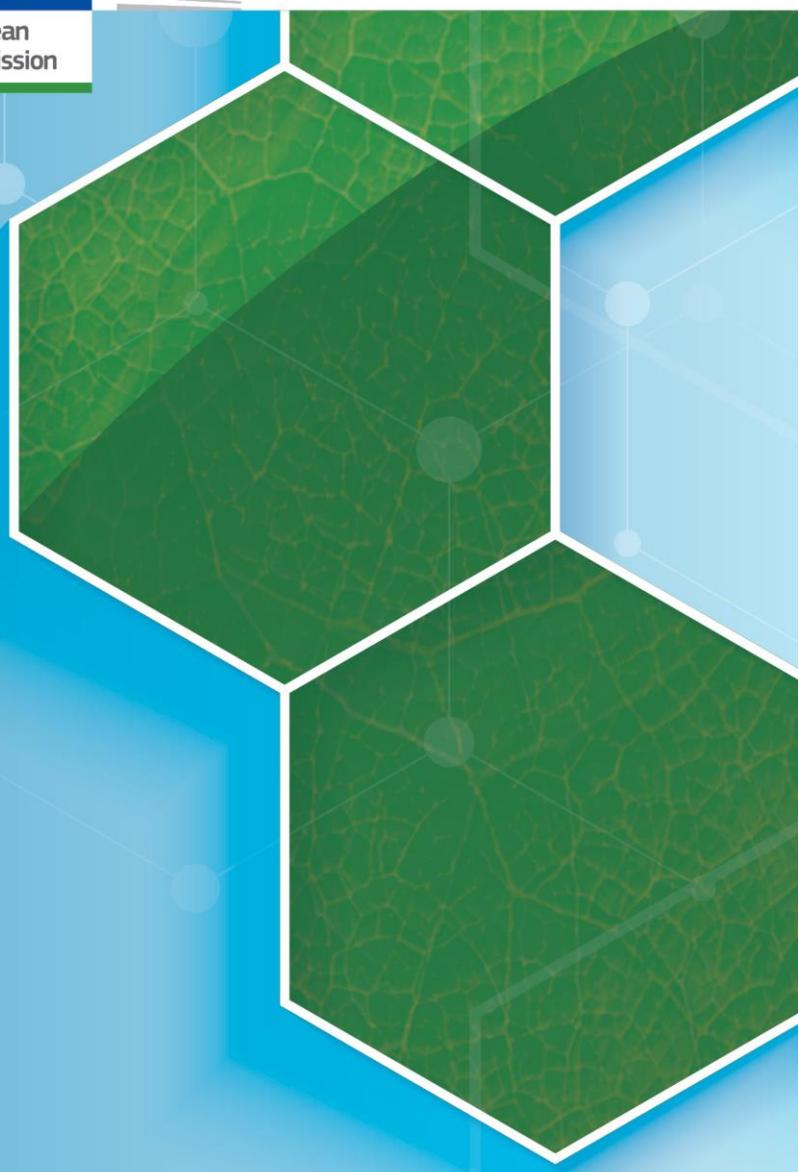
European Commission



Just Transition Platform Working Groups

Action 14: Strategy paper for the governance of a CO_2 infrastructure in the context of a just transition of the cement sector

December 2023

Regional and Urban Policy

Action 14: Strategy paper for the governance of a CO_2 infrastructure in the context of a just transition of the cement sector

Action leader: *Danish Ministry of Climate, Energy and Utilities*

Action contributors: *Akmenė District Municipality, Bellona Europa, CEMBUREAU, Holcim, NRW.Energy4Climate, OFICEMEN*

Category: *Cement*

The **Just Transition Platform (JTP) Working Groups (WGs)**, established in November 2021, bring together all stakeholders from across Europe with a common concern for the people and places affected by the transition to a climate-neutral economy. The WGs for **Steel, Cement and Chemicals** each have a focus on a specific carbon-intensive sector that is heavily impacted by the transition, while a fourth WG focuses on **Horizontal Stakeholder Strategy**.

After finalising their Scoping Papers, outlining the focus areas and objectives of their WG, the WG members developed a common Implementation Plan, which sets out their 17 actions. This plan was finalised and published in April 2023. Throughout the rest of the year, the Action leaders, together other WG members contributing to the Action, have been implementing their respective Action.

This document presents the final output of Action 14 'Strategy paper for the governance of a CO_2 infrastructure in the context of a just transition of the cement sector'.

Introduction

Challenges addressed by Action 14

Carbon Capture and Use or Storage (CCU/CCS, or collectively CCUS) represents a promising and potentially cost-effective pathway for the transition of the cement industry and for other CO_2 emitters like municipal solid waste incineration plants. Current assessments emphasise that the feasibility of CCU/CCS relies on a cost-efficient, open-access, cross-border and multimodal CO_2 transport and storage infrastructure.

One possible vision is a transport network of CO_2 pipelines supplemented by other modes of transportation that would connect multiple emitters from various sectors with geological onshore CO_2 storage sites, shipping terminals for offshore CO_2 storage sites and Power-To-X facilities or other utilisation facilities. Open-access CO_2 transport and storage networks could very well one day be part of a public supply family of infrastructures next to electricity, gas and water.

Solving the problem for the cement industry could lay the foundation for the green transition of the energy sector with renewable solutions such as wind turbines and solar photovoltaics largely requiring cement for their construction. At the same time, reducing the emissions of the cement industry offers vulnerable regions and industries an opportunity to lead the transition, while also encouraging the return of industries from abroad.

From the ongoing developments across Europe of local CCU/CCS clusters, it is indicated that existing gas transmission operators – like Evida (Denmark), Nordion (Sweden), Fluxys (Belgium), OpenGridEurope (Germany), FGSZ (Hungary), GAZ-SYTEM (Poland), Transgaz (Romania), Enagás (Spain) and Eustream (Slovakia) – shipping companies and railway operators are able and interested in developing open-access CO_2 transport infrastructures to support current market developments for storage and use.

However, maps of projects in the fields of carbon capture, transportation, storage and utilisation (i.e. Zero Emissions Platform, NRW.Energy4Climate) show that projects and planned actions take place mainly in highly industrialised, economically strong countries and regions, in particular in northwest Europe. This development is reasonable because of the opportunity of investment on the one hand and the close connection to industrial clusters, big ports and storage opportunities. However, focusing on these maritime regions to the neglect of landlocked regions is contrary to the spirit of the European Union and a just transition.

Additionally, current provisions regarding crediting opportunities in the revised EU Emissions Trading System (ETS) of CO_2 utilisation suggest that only permanently chemically bound CO_2 from cement plants could be eligible. At this point, it is not clear to which extent CCU in the cement sector can count as CO_2 emission reduction under the ETS and other pertinent EU regulations. This could limit the CCU options from an economic perspective. This strengthens the necessity of connecting landlocked regions to CO_2 storage facilities and to provide a level playing field and equal opportunities. However, it is currently unclear who may own and operate CO_2 transport grids locally and nationally and what models and regulatory frameworks should apply to CO_2 infrastructure networks. CO_2 pipelines are currently treated differently from power and gas in national legislation,

for example with respect to legislation enabling expropriation of land for pipelines. How may national and EU legislation and policy strategies best facilitate these developments?

To avoid sub-optimal infrastructure investments, a dedicated governance and systems approach is warranted that incentivises public-private partnerships and collaborations in developing open-access CO_2 transport and storage networks. This point is for example discussed in the EU CCUS Forum.

Regarding a just transition, the European Commission should support a governance approach, which ensures that all regions in the EU with industrial activities get connected to a CO_2-transport infrastructure with connections to utilisation and storage options. Otherwise, the poorest regions of the EU will be hit the hardest. Cement plants in these regions may end up having to pay a lot for CO_2 allowances and cannot become economically climate neutral without CCU/CCS. The lack of available open-access CO_2 infrastructure may lead to several cement facilities ceasing operation due to the high cost of ETS allowances leading to reduced economic competitiveness with no viable option to decarbonise production processes. This threatens the economies of regions that rely heavily on these industries for welfare-carrying jobs.

Because of the higher costs of transporting CO_2 from landlocked plants to storage facilities, the governance approach must include finance support to ensure a level playing field for regions further away from storage opportunities.

Objectives of Action 14

1. Facilitate dialogue among governance and cement industry stakeholders across just transition regions.
2. Observe and evaluate their state of knowledge of carbon management and obstacles for a just transition.
3. Identify just-transition-related governance options to support a progressive policy strategy that aims at bringing back industrial production from abroad enabled by CCUS.

Stakeholders targeted by Action 14

1. Governance actors and industry stakeholders: local and regional governance actors as well as local cement industry representatives from just transition regions were invited to participate in an online dialogue roundtable. Together with the European Commission, they are the main target group of the governance recommendations.
2. Specialists from the WG and the WG Secretariat that were responsible for the preparation and implementation of the roundtable meeting and communication, including these activities:
    a. early engagement with governance and industry stakeholders, identifying roundtable participants;
    b. preparation of roundtable, including agenda and brief presentation covering carbon management perspectives;
    c. preparation of interview and dialogue guidelines with explorative questions intended to engage and facilitate stakeholder positions and evaluate requirements for their participation in the carbon economy.

How this Action was implemented

The main output of the Action is a strategy paper with recommendations for the governance of a CO_2 infrastructure in the context of a just transition of the cement sector. A twofold approach was followed for the implementation of the Action:

1. Qualitative interviews were conducted with stakeholders from cement plants as well as local and regional authorities in Just Transition Fund (JTF) regions. They were structured through interview guides with questions on the focus topics of just transition, decarbonisation strategies, networks and public-private partnerships.
2. A roundtable dialogue was organised that brought together private and public stakeholders from the cement industry in JTF regions and on the European level. The guiding question of the dialogue was: 'how should a future governance system of CO_2 infrastructure for cement and other industries be designed from the perspective of a just transition?'

The interviews and the roundtable dialogue were analysed regarding central challenges and recommendations for the governance of a CO_2 infrastructure from a just transition perspective. Main findings were summarised in a policy-oriented strategy paper.

Strategy paper for the governance of a CO_2 infrastructure in the context of a just transition of the cement sector

Based on explorative interviews and a group discussion, this strategy paper explores the intricate challenges faced by the cement industry in implementing carbon capture technologies and fostering a just transition amid the broader goal of achieving net-zero emissions by 2050. By examining financial, logistical, and regulatory hurdles, the paper not only identifies obstacles but also presents practical recommendations to facilitate a successful and economically viable transition in the European cement sector.

Making CCS accessible to all cement plants

The interviews showed that the cement industry faces a major challenge in securing financing for carbon capture, as it often needs to build a complete CCUS value chain as part of its decarbonisation project. However, the industry, as an individual market player, cannot independently implement the required infrastructure for CCS[1] because it falls outside of their expertise to develop transport networks and storage sites. Thus, a significant current bottleneck lies in the lack of availability of CO_2 infrastructure for transporting the captured CO_2 to storage sites for permanent storage.[2]

With the anticipated complete phasing out of free allowances by 2034, it is imperative that CO_2 infrastructure becomes readily available in due time to avoid the cement industry incurring ETS costs while not being able to abate its emissions with CCS.

Ideally, to maintain the cost-effectiveness of CCS, storage sites and transport infrastructure for CO_2 should be situated in relatively close proximity to cement plants. In instances where cement plants are part of industrial hubs, the establishment of the transport and storage elements of the CCS value chain can be more easily done through collaborative efforts with other emitters in the area. However, cement plants situated in just transition territories are in many cases not part of such hubs and therefore cannot bear the capital cost that such a full value chain project would require. In addition, they are often far away from the major ports, which makes it difficult to create the necessary transport infrastructure. Furthermore, not every country where cement is produced in just transition territories can store CO_2, either due to insufficient/lack of geological storage capacity or national bans on CO_2 storage. This aspect further highlights the importance of government intervention and cross-border collaboration among CCS stakeholders, such as Transmission System Operators and port operators.

The financial burden of the ETS and capital-intensive CCS investments, coupled with the need for proximity of transport and storage infrastructures, emphasise the importance of addressing these challenges for effective decarbonisation while maintaining economic competitiveness.

[1] This is primarily because a CO_2 transport and storage infrastructure – as a type of waste disposal system – aligns most efficiently with the 'public good' model, serving multiple emitters beyond the cement industry.
[2] Permanence is crucial as this is the only way CO_2 can be considered as ‘reduced’ according to the EU Emission Trading System. By ensuring the captured CO_2 is permanently stored, cement producers can avoid surrendering ETS allowances.

Recommendations

1. Increase funding for CCS through financial incentives, grants or subsidies to encourage private sector involvement and alleviate the economic burden on the cement sector, especially in just transition regions facing geographical competitive disadvantages.
2. Establish public procurement regulations that create a lead market to compensate for higher production costs by providers of low-carbon cement produced with CCS.
3. Ensure accessibility to the necessary CO_2 transport and storage infrastructure to all cement plants, particularly in instances where cement plants are not part of industrial hubs and are geographically remote, making it challenging to bear the full cost of a CCS value chain project. The goal is to create a level playing field among cement producers across the EU.
4. Establish an enabling regulatory environment that incentivises CCS deployment through clear regulations, standards, and guidelines, providing regulatory certainty.
5. Accelerate the permitting process for CCS projects through collaboration between local and national governments, ensuring that projects can move forward without unnecessary delays, provided they meet environmental and safety standards.
6. Interviewees expressed that it would be valuable for countries with current bans on CO_2 storage to consider lifting these restrictions to at least enable research efforts on the onshore potential for CO_2 storage to contribute to informed decision-making.

Alliances and partnerships for a joint implementation of a just transition

Decarbonising local economies presents challenges for many local authorities. A desirable goal is for regions with commonalities in the cement and heavy industry to join efforts in order to develop and implement joint initiatives and exploit synergies and economies of scale. This interregional approach should be complemented by a high degree of local involvement, with the workforce, technical solutions, infrastructure, equipment and services being sourced mainly from local companies, research institutes and universities.

Recommendations

1. Utilise existing platforms like the EU JTP and the Committee of Regions to identify and support regions facing similar challenges and opportunities, advocating for policies and support mechanisms for joint regional just transition initiatives.
2. National governments should play an important role as coordinators, facilitators, and risk mitigators while the EU's role is crucial in aligning national efforts with the overarching EU climate target, creating a harmonised approach to CO_2 infrastructure deployment across Member States.
3. In the case of some countries with a legal ban or restrictions on CO_2 storage, regional and local administrations could advocate for a revision of national legislation to remove storage bans where and when appropriate, and for bilateral agreements with other countries to enable cross-border transport of CO_2.
4. Support capacity-building initiatives, such as training programmes and knowledge transfer, that can enhance the expertise within the industry, relevant agencies and local governments ensuring that stakeholders are well-equipped to contribute effectively to CCS projects.

5. Active involvement of local authorities in the administrative oversight of CCS projects in coordination with the relevant national authorities to ensure compliance with environmental and safety standards, conduct risk assessments and site inspections, and ensure monitoring/reporting.
6. Utilise existing or establish new local platforms for mapping, creating local opportunities and leveraging local knowledge and businesses to contribute to the evolving CCS ecosystem.

Empowering local stakeholders for a just transition

The following recommendations aim to contribute to a well-informed local community, including local/regional authorities that are able to co-create solutions for a just transition of carbon-intensive regions. The aim is to enable local and regional authorities to develop effective decarbonisation strategies and Territorial Just Transition Plans (TJTPs), including the integration of CCS into local industry, infrastructure and spatial planning, and carbon infrastructure governance, in collaboration with national governments, industry partners and other stakeholders.

Recommendations

1. Organise capacity-building activities for local authorities and implement awareness-raising and educational as well as public consultation campaigns for local communities.
2. Support and set up education and training programmes that enhance the local workforce's skills and knowledge focusing on competencies supporting industrial decarbonisation and just transition initiatives. This can contribute to job retention and the creation of green jobs ensuring a skilled workforce to support the industry's just transition.
3. Involve trade unions and employees in the process of creating these programmes.
4. Leverage independent scientific and technical expertise to prepare feasibility studies and communicate the benefits and risks associated with CCS, including ways to manage and mitigate them.
5. Set up new academic programmes in collaboration with local education institutions specifically tailored to the requirements of the cement sector with guaranteed hiring initiatives, and/or setting up dual education programmes combining theoretical learning with practical, on-the-job training.

Supporting CCS initiatives in TJTPs

Cement companies and local authorities often struggle with limited resources and funding, which hinders CCS projects in their regions. To address this challenge, the recommendation is to leverage just transition funding strategically. The aim is twofold: to build CCS-related expertise within local public administration bodies and to provide crucial financial support for the industrial deployment of CCS technologies. We recommend including CCS-associated activities in TJTPs. This comprehensive approach spans feasibility studies, workforce up- and reskilling, capacity-building and funding for pilot projects. By integrating these initiatives into the funding framework connected with TJTPs, a pathway can be created that reconciles environmental sustainability and economic prosperity in transition regions.

Conclusion

This strategy paper envisages basic principles of a robust CCS governance framework tailored to just transition territories. This framework depends on conducive conditions that attract investment in CCS while promoting competent and well-resourced regional and local authorities. These authorities play a central role in understanding the intricacies of just transition, industrial decarbonisation and CCS, thereby developing adept decarbonisation strategies and TJTPs. Moreover, they contribute to national policies with localised perspectives, gained through inclusive collaboration platforms and partnerships. Simultaneously, these authorities expedite CCS deployment within the framework of environmental and safety regulations. Their involvement extends to co-creating governance rules for CO_2 infrastructure and leveraging public procurement to stimulate demand for construction materials with a lower carbon footprint.

Active participation in partnerships with other regions and relevant local stakeholders becomes a cornerstone, ensuring the regions secure funding for its just transition initiatives. This collaborative effort spans coordination with both national and EU institutions, reflecting a collective commitment to realising a vision of regions where professional education aligns seamlessly with the demands of a sustainable and decarbonised future. This holistic approach stands as a blueprint for regions aiming not only to adapt to but actively shape the trajectory of a green and just transition.