

# JUST TRANSITION AT THE HEART OF CCS DEPLOYMENT IN EUROPE

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Major societal transformations, such as the industrial or digital revolutions of the past, have resulted in both economic winners and losers. The same will occur in any transition without appropriate public intervention and support, including also the green transition. Given short timelines and the scale of transformation that needs to be undertaken to achieve net-zero emissions by 2050, certain regions are at risk of experiencing resulting negative impacts, unless they receive targeted support to facilitate a swift adjustment to a decarbonising landscape. This is particularly true for regions heavily dependent on harder-to-abate industrial activities. Carbon Capture and Storage (CCS) will play a crucial role in ensuring a Just Transition for all in such regions.

The focus on a Just Transition for all came onto the European Commission's agenda with full force in 2019, as climate change became top priority<sup>i</sup>. Within the European context, it aims to address any potential negative social impacts of a rapid shift to a net-zero economy<sup>iii</sup>.

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– International Labour Organisation (ILO) (iii)

Since the industrial revolution, economic growth has been closely linked with the use of fossil fuels and increasing CO<sub>2</sub> emissions. While this phenomenon has created inequalities<sup>iii</sup> and global disparities in political and economic power<sup>iv</sup>, it also manifested in economic development, an increase of employment, as well as a rise in living standards – at the expense of the



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<sup>1</sup> The European Commission established the Just Transition Platform, of which the WG Cement focuses, among other topics, on recommendations for a governance structure for an EU-wide CO<sub>2</sub> infrastructure with special focus on Just Transition Territories.

environment and the climate and by extension the well-being of future generations<sup>v.vi</sup>. Achieving rapid emission reductions to limit global warming is likely to reproduce already existing inequalities<sup>vii</sup> while undermining these socioeconomic advances might prove to be socially and politically unfeasible<sup>viii</sup>. By conscientiously addressing socioeconomic implications of the green transition, we can ensure a just and equitable green transition, helping Europe meet the target of staying below 1.5°C.

Therefore, the social aspect of the green transition should be given due consideration in the form of targeted funding, enabling regulatory environments, re- and upskilling opportunities, and other appropriate measures to avoid reproducing or exacerbating existing social inequities, or the creation of new ones, on the road to net-zero. This would not only be socially just and morally right but is indispensable for our long-term goal of combatting climate change and creating a sustainable economy.

## JUST TRANSITION: AN ARGUMENT FOR RAPID CCS DEPLOYMENT

Harder-to-abate industries play a pivotal role in the process of decarbonizing our economies and advancing Europe toward a net-zero target and beyond. These are industrial activities that are particularly challenging to decarbonise due to their “process emissions”: CO<sub>2</sub> emissions resulting from chemical processes rather than energy use. Consequently, CCS emerges as a critical technology for achieving full decarbonisation for harder-to-abate industries.<sup>ix</sup>

The industrial sector is responsible for producing the fundamental building blocks of our society such as cement, steel, and chemicals.<sup>x</sup> These materials are essential for constructing renewable energy infrastructure, providing the raw materials for our

near zero-energy homes, and contributing to local and national economies across Europe providing important welfare-carrying jobs in regions where they are active.

Demand for these essential building materials is expected to persist, also in a net-zero world. For these industries to play their role in helping Europe reach its climate targets, we must ensure proper and swift deployment of already available and market-ready CCS technologies, ensuring they remain competitive in a landscape of rising ETS prices and the phase-out of free allowances. This can ensure the retention of approximately 1.5 million jobs in the cement<sup>xi</sup>, steel<sup>xii</sup>, and chemical<sup>xiii</sup> industries in Europe as well as many others in the waste to energy industry and thereby can help safeguard local and national economies reliant on pillar industries and up- and downstream sectors (such as construction and mining).

In the EU, harder-to-abate industries play a substantial role in job creation and economic stability. The cement industry, for example, employs 35,176 (2020)<sup>xiv</sup>, and its job creation extends far beyond, with a multiplier factor of 2.9 (recorded in 2012)<sup>xv</sup>. This means that every job within the cement industry results in the creation of 2.9 additional jobs in both upstream and downstream sectors. Steel, a cornerstone industry, with approximately 254 000 employees (2021) in the EU<sup>xvi</sup>, has an even more significant multiplier effect of 7.9<sup>xvii</sup>, given its widespread connections to a range of sectors, from business services to trade, energy, and secondary raw materials<sup>xviii</sup>. The chemical industry, the largest employer among harder-to-abate industries, with 1,239,000 employees (2021)<sup>xix</sup>, has a web of interconnections, directly impacting industries such as automotive, food products, and electrical equipment. The spillover effects of these industries are substantial, underlining the urgency of their rapid decarbonisation. CCS emerges as a pivotal technology as Europe transitions towards sustainability, demonstrating that the ramifications of these industries extend far beyond mere job statistics. They are integral to the economic fabric of Europe.

Decarbonising these industrial sectors not only

helps preserve vital jobs that underpin societal well-being but also leads to the creation of numerous new ones<sup>xx</sup>. There is a pressing need for an extensive CO<sub>2</sub> transport and storage infrastructure network at a large scale to be established in Europe. This would imply countless new jobs created to establish a CCS infrastructure from capture to permanent storage, as well as their operation and maintenance<sup>xxi</sup>. Achieving this necessitates (up)skilling and fostering stronger collaboration among government bodies, universities, and industry.

Furthermore, there are valuable skills existing in traditionally oil and gas industries that can be utilised in the emerging CCS industry, specifically related to the CO<sub>2</sub> storage element of the value chain. This is particularly relevant considering Europe's need to develop 300 million tons of CO<sub>2</sub> storage capacity by 2040 in order to meet its climate targets.<sup>xxii</sup>

This underscores the importance of implementing the necessary support mechanisms to establish a robust CCS market, including establishing an enabling regulatory framework and ensuring access to sufficient funding and financing opportunities to create a robust business case for CCS. Targeted support for cross-border, open-access, multimodal CO<sub>2</sub> infrastructure deployment is necessary to encourage and de-risk investment into capture installations. Lowering the risks of investment into every element of the CCS value chain can also be supported by regulation through creating an obligation for the oil and gas sector to develop sufficient CO<sub>2</sub> storage capacity, as proposed in the recently tabled Net-Zero Industry Act (NZIA)<sup>xxiii</sup>.

This obligation would not only ensure a level of contribution to facilitate Europe's decarbonisation from a sector with historical responsibilities (linked to the climate impacts of CO<sub>2</sub> emissions associated with the burning of fossil fuels) but also foster a transition in the workforce towards forward-looking, low-carbon technologies. Such a shift would help empower those working in traditional high-emitting sectors to play a role in shaping a sustainable future.

## THE INTERACTION BETWEEN JUST TRANSITION, PUBLIC PERCEPTION, AND CCS DEPLOYMENT

As the available carbon budget to avert catastrophic climate change shrinks and harder-to-abate industries sound the alarm about the pressing need for cross-border CO<sub>2</sub> transport and storage infrastructure to facilitate industrial decarbonization, the issue of public perception of CCS becomes ever more prominent.

Concerns regarding the technology's readiness, safety, cost, and purpose start to appear in public discourse, often without a clear factual basis. It is crucial for the public and the communities where CO<sub>2</sub> infrastructure is planned to receive accurate and comprehensive information about the short- and long-term risks, challenges and opportunities associated with the technology. Impacted communities should be informed of the strategies in place to mitigate and manage potential risks, address challenges and ensure opportunities result in benefits over time. Effective community engagement plays a pivotal role in the success of such projects, particularly as the technology is seen as relatively new, this could amplify worries about perceived risks.

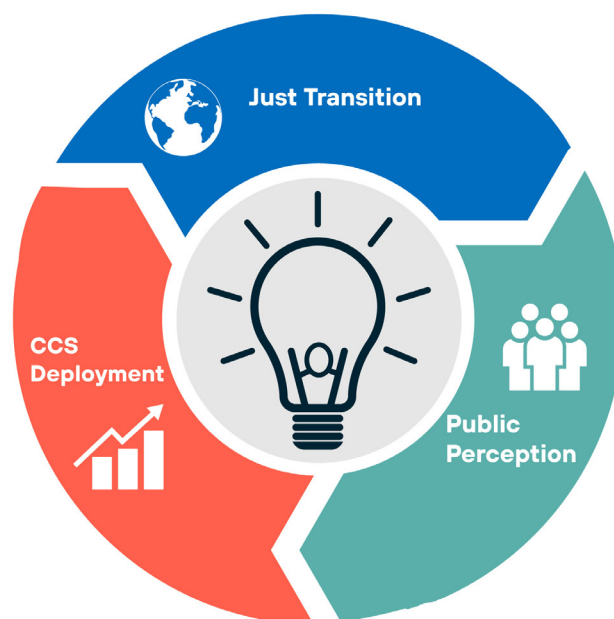
It's important to note that there is a general lack of awareness about CCS technology across Europe, particularly as we move from the North-West to the South-East of the continent<sup>xxiv,xxv</sup>. This situation while challenging, it also presents an opportunity to inform the public about risks, challenges and opportunities associated with the technology in a coordinated approach.

CO<sub>2</sub> storage is considered a safe<sup>xxvi,xxvii</sup> and well-established technology for mitigating carbon emissions<sup>xxviii</sup>. In the US, Norway, and Canada, CCS technologies have demonstrated a high degree of maturity and reliability and have proven the

feasibility and safety of storing Carbon Dioxide underground<sup>xxix</sup>. In the EU the CO<sub>2</sub> Storage Directive establishes rigorous safety standards for geological storage in Europe.<sup>xxx</sup>

Providing accurate and transparent information about the technology's associated risks, which are often perceived as higher than they in fact are (particularly related to the geological storage of CO<sub>2</sub>)<sup>xxxi</sup>, and simultaneously highlighting the potential for economic benefits and job retention through its role in industrial decarbonisation, can contribute to a more factual and in fact positive public perception of the technologies. Such positive perceptions, with a scientific basis, are instrumental to facilitating large-scale and rapid deployment, and correctly assessing both risks and challenges associated with projects.

Positive public perception of the technology is crucial to cultivate public support for CCS deployment and can create social climate that promotes regulatory advancements facilitating its rapid deployment. And finally, the implementation of this technology enabled by public support catalyses a just transition by decarbonising economic activities, preserving jobs, and sustaining the economic benefits associated with it.



## ENDNOTES

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- ii Ibid.
- iii Amir Rubin, Dan Segal, The effects of economic growth on income inequality in the US, Journal of Macroeconomics, Volume 45, 2015, Pages 258-273, ISSN 0164-0704, <https://doi.org/10.1016/j.jmacro.2015.05.007>.
- iv Skov, Arlie M.. "National Health, Wealth, and Energy Use." J Pet Technol 51 (1999): 48–60. doi: <https://doi.org/10.2118/56011-JPT>
- v [Carbon dioxide \(CO2\) emissions and economic growth: A systematic review of two decades of research from 1995 to 2017 - ScienceDirect](#)
- vi [3-Human-Prosperity-final.pdf \(climatechangereconsidered.org\)](#)
- vii Büchs, M., Bardsley, N., & Duwe, S. (2011). Who bears the brunt? Distributional effects of climate change mitigation policies. Critical Social Policy, 31(2), 285–307. <https://doi.org/10.1177/0261018310396036>
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- ix [Carbon Capture And Storage: A Crucial Piece Of The Puzzle In Industry's Path To Net-Zero - Bellona.org](#)
- x Read more about how CCS can contribute to decarbonising the harder-to-abate industries in our CCS Explainer: [Bellona-Europa-CCS-Explainer-2023-9-1.pdf](#)
- xi [2021-activity-report.pdf \(cembureau.eu\)](#)
- xii [Steel industry employment in EU-27 countries | Statista](#)
- xiii [EU chemical industry: number of employees | Statista](#)
- xiv [2021-activity-report.pdf \(cembureau.eu\)](#)
- xv [Cement and Concrete Industry: Multiplier Effect on the Economy and their Contribution to a Low Carbon Economy - Concrete Europe \(theconcreteinitiative.eu\)](#)
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- xviii [Multiplier effect of steel production \(steeltimesint.com\)](#)
- xix [EU chemical industry: number of employees | Statista](#)
- xx [Global Status of CCS 2021 - Global CCS Institute](#)
- xxi Ibid.
- xxii <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0161#document2>
- xxiii [Bellona Europa Consultation Response: Position on Net Zero Industry Act - Bellona.org](#)
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- xxvii Anne-Kari Furre, Ola Eiken, Håvard Alnes, Jonas Nesland Vevatne, Anders Fredrik Kiær, 20 Years of Monitoring CO2-injection at Sleipner, Energy Procedia, Volume 114, 2017, Pages 3916–3926, ISSN 1876-6102, <https://doi.org/10.1016/j.egypro.2017.03.1523>.
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