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MAKING CARBON CAPTURE WORK
A FRAMEWORK TO FACILITATE HIGH-VALUE USES IN EUROPE

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Executive summary

After a lost decade, the conversation on carbon capture and storage (CCS) or use (CCU) has reignited in the EU. These technologies provide abatement options for certain industrial emissions and, perhaps most importantly, could enable “negative emissions”. A policy framework, based on a robust set of guiding principles and safeguards, is needed to facilitate the deployment of high-value carbon capture at scale by 2030.

Deployment should prioritise high-value applications, while also implementing guardrails to prevent misuse. These are necessary to overcome concerns that CCS and CCU could enable the continued, unabated use of fossil fuels.

The EU can enshrine robust safeguards and principles, via a value hierarchy, in a carbon capture strategy. This framework should provide conceptual clarity and focus on facilitating storage availability rather than on setting CO_2 capture targets. The EU must also act on joint infrastructure planning, improve the business case for projects, and establish monitoring, standards, and certification mechanisms. Member states have a complementary part to play, especially in enabling project development and in addressing social acceptance issues.

Moreover, industrial emitters themselves must take a central role in progressing the carbon capture landscape. They have to contribute their fair share to the costs of CCS to ensure that the public sector does not face undue financial burdens for infrastructure development. Lastly, the polluter-pays principle must be at the heart of the deployment of carbon capture projects.

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Context: growing momentum for carbon capture in the EU

The current overhaul of EU climate legislation and the strengthening of decarbonisation objectives have reignited the European conversation on carbon capture and storage (CCS) and carbon capture and use (CCU).[1] There are now some 65 projects under development across 15 different European countries, even though no large-scale installation is yet operational.[2] These projects are mainly situated in industrial clusters where CO_2 emissions sources are concentrated and storage hubs are accessible through joint infrastructure. Examples include the Porthos, Northern Lights, and C4 projects.

CCS, CCU, and CCUS

The CCS Directive defines **CCS** as "capture of carbon dioxide (CO_2) from industrial installations, its transport to a storage site and its injection into a suitable underground geological formation for the purposes of permanent storage".[3] In **CCU** applications, captured CO_2 is used to make products such as synthetic fuels, plastics, and chemicals. While adequate regulation can ensure that CCS leads to the permanent sequestration of the captured carbon, the emissions reduction contribution of CCU is often less clear. CCU must ensure that captured CO_2 used in products is **permanently chemically bound** so that the carbon dioxide does not enter the atmosphere during the lifecycle of products' normal use and disposal.

CCUS is an often-used combination of the two acronyms. **Clarity in definitions matters**, not just in the context of this briefing, but also in devising a common EU approach to carbon capture deployment. For precision, this paper mostly discusses CCS – when also referring to CCU, this is clearly indicated. Although CCUS may be a useful overarching umbrella term for carbon capture technologies, as CCS and CCU have different impacts concerning capture permanence and overall sustainability, they should be considered separately. **The term CCUS should thus be avoided** in policy contexts moving forward.

[1] N.B. Although this briefing's focus is on the EU, its outlook and recommendations extend to European partners, including EFTA states.
[2] CATF, 2022, **Europe Carbon Capture Activity and Project Map**.
[3] **Directive 2009/31/EC of the European Parliament and of the Council**.

The renewed momentum for CCS in the EU is also evident in recent policy and regulatory developments such as the financing of new projects through the Innovation Fund,[4] the European Commission's Communication on Sustainable Carbon Cycles,[5] the TEN-E revision to expand eligibility for Projects of Common Interest (PCI),[6] the revision of state aid guidelines to enable up to 100% public support for CCS and CCU projects,[7] the inclusion of CO_2 transport and storage in the EU Taxonomy,[8] and the creation of the CCUS Forum.[9] Such developments have been viewed as a cause for both optimism and concern.

Carbon capture is critical for achieving deep decarbonisation.

Most credible scenarios for reaching net zero greenhouse gas (GHG) emissions by 2050 involve the large-scale deployment of CCS.[10] IPCC estimates range from 3.5 to 16 Gt CO_2 needing to be captured globally each year by 2050.[11] IEA models indicate a global capture rate of 7.6 Gt CO_2 per annum, with 95% of that being permanently stored in geological formations.[12]

Reaching climate neutrality by 2050 and net-negative emissions in the second half of the century also requires removing CO_2 that has already been released into the atmosphere.[13] IRENA estimates that at least 26% of global industrial emissions would need to be reduced through CCS or compensated for using carbon dioxide removal (CDR) measures.[14] The European Commission's 1.5 °C scenarios rely on 500–600 Mt of removals per year in the EU, partly achieved through BECCS.[15]

[4] European Commission, 2021, **First call for large-scale projects: List of proposals pre-selected for a grant**.
[5] European Commission, 2021, **Communication on Sustainable Carbon Cycles**.
[6] Council of the European Union, 2021, **Final compromise text on the Proposal for a regulation on guidelines for trans-European energy infrastructure**.
[7] European Commission, 2021, **Approval of the content of a draft for a Communication from the Commission on the Guidelines on State aid for climate, environmental protection and energy 2022**.
[8] European Commission, 2021, **Implementing and delegated acts for Regulation (EU) 2020/852 (Taxonomy) on the establishment of a framework to facilitate sustainable investment**.
[9] European Commission, 2022, **Carbon Capture, Utilisation and Storage Forum**.
[10] Elkerbout and Bryhn, 2019, **An enabling framework for carbon capture and storage (CCS) in Europe: An overview of key issues**.
[11] IPCC, 2018, **Special Report on Global Warming of 1.5 degrees Celsius**.
[12] IEA, 2021, **Net Zero by 2050: A Roadmap for the Global Energy SectorNet Zero by 2050: A Roadmap for the Global Energy Sector**.
[13] IPCC scenarios that limit global warming to 1.5 °C with limited or no overshoot rely on 100–1000 Gt of carbon dioxide removals throughout the 21st century. See IPCC, 2018, **Global Warming of 1.5 °C**.
[14] IRENA, 2020, **Reaching Zero with Renewables**.
[15] European Commission, 2018, **In-depth analysis accompanying the Communication**.

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CDR and CCS

Discussions concerning carbon dioxide removal (CDR) should **be treated separately** from that of CCS (and CCU). **CDR** is the process of permanently removing CO_2 from the atmosphere and storing it to produce a net CO_2 reduction. It has its own distinct set of challenges and trade-offs, which should not be conflated with those of CCS (and CCU). CDR will only enable economy-wide negative emissions once the vast majority of emissions **have already been abated** – the hardest to abate emissions are those already emitted.

Importantly, **not all CCS constitutes CDR** as the source of the captured carbon needs to be the atmosphere rather than the combustion of fossil fuels that previously stored carbon underground. **BECCS** is a form of both CCS and CDR comprising capturing carbon from biomass that absorbed CO_2 from the atmosphere during its lifetime. Estimating lifecycle emissions of bioenergy remains a contested topic and sustainable biomass availability is limited. If not managed properly, excessive demand for biomass could have **negative impacts** on natural carbon sinks, biodiversity, and air quality.

Carbon capture deployment has been dogged by an underwhelming track-record to date

There have been several unsuccessful attempts to support carbon capture initiatives in Europe over the past 15 years. Issues have included a general lack of functional financing streams, regulatory hurdles, and low public acceptance, resulting in projects failing to materialise or gain their social license to operate.[16]

Many climate NGOs remain understandably wary of CCS as a genuine solution for delivering emission reductions. Some deem CCS as a "costly distraction" that enables the continued use of fossil fuels despite the urgency of the climate crisis.[17] Other concerns include the risk of fossil-fuel lock-in and stranded assets, unlocking "unburnable carbon",[18] and crowding out investments in other

[16] Both the European Energy Programme for Recovery with a budget of €1.6 billion (Regulation (EC) No 663/2009) and the New Entrants' Reserve (NER300) worth €2.1 billion (Commission Decision 2010/670/EU), were designed to help CCS and renewable projects advance towards commercial deployment. Neither successfully supported the completion of a single CCS project. For such reasons, 2010–2020 can be considered a lost decade for CCS in the EU.

[17] Greenpeace, 2015, **Carbon Capture SCAM (CCS): How a False Climate Solution Bolsters Big Oil**.

[18] This refers to the possibility that CCS could enable the extraction and use of fossil fuel reserves that cannot be exploited without exceeding the carbon budget. See Budinis et al., 2017, **Can Carbon Capture and Storage Unlock 'Unburnable Carbon'?**

decarbonisation solutions that can deliver superior emissions reductions, such as renewable energy technologies. These fears have been exacerbated following the Russian invasion of Ukraine which brought to the fore the strategic vulnerability posed by the continued use of hydrocarbons. The long-standing criticism of carbon capture for its use in enhanced oil recovery[19] has once again gained prominence following the passage of the Inflation Reduction Act in the United States.[20]

Timing is key, and the time is now

One way or another, it seems clear that CCS (and CCU) and the politics surrounding their deployment are likely to play a key role in the next phase of the European Green Deal's implementation. According to the impact assessment for the Fit for 55 package,[21] it is critical to deploy and test carbon capture at industrial scale by the end of the decade to quickly determine whether CCS abatement options are credible in reality – not just in models – to keep the EU on track with decarbonisation objectives. Another lost decade[22] may result in emissions overshoots and lower chances of achieving climate neutrality by 2050.

Recent developments suggest that policy makers are starting to address barriers to carbon capture. They must now accelerate the pace, identify the policy guardrails needed to ensure that the deployment of CCS (and CCU) is compatible with climate neutrality, and ensure that the aforementioned concerns are adequately mitigated. Timing is key, and the time is now: if CCS cannot deliver concrete emissions reductions in the EU within the next decade, then political focus will likely have to shift towards other potential alternatives, including, for example, material substitution.

Guiding principles for carbon capture deployment

We propose a set of overarching principles to help mitigate the risks and concerns associated with CCS (and CCU) that can form the foundations of a carbon capture strategy for the EU.

[19] Energy Transitions Commission, 2022, **Carbon Capture, Utilisation & Storage in the Energy Transition: Vital but Limited**.
[20] The New York Times, 2022, **Every Dollar Spent on This Climate Technology Is a Waste**.
[21] European Commission, 2020, **Stepping up Europe's 2030 climate ambition: Investing in a climate-neutral future for the benefit of our people**.
[22] A previous E3G paper explains the EU's failure on CCS over this "lost decade". See Dutton et al., 2020, **European CCS: Learning from failure or failing to learn?**.

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1. Focus explicitly on delivering climate neutrality

The development of carbon capture technologies can only be pursued as a means to reach our climate goals, rather than representing an end in itself through being supply-driven. CCS cannot be used as a distraction from the need to eliminate the unabated use of fossil fuels, including upstream, and to reduce emissions to the maximum extent possible. According to the European Commission's long-term vision, reaching climate neutrality requires a reduction of fossil fuel energy consumption by 95%. Future CCS uptake needs to support rather than undermine this pathway.

2. Consider CCS only after other decarbonisation options, not as a default

CCS should not be considered the default emissions reduction option, especially if there are credible alternatives for completely eliminating emissions. For example, the need for carbon capture depends on developments concerning renewable technologies – further cost reduction of renewables could erode the value of CCS.[23] Existing core elements of the EU's climate and environmental framework, including the waste hierarchy[24] and "energy efficiency first principle",[25] can help ensure reductions in fossil fuel use and waste creation to further prioritise where CCS is needed. Ultimately, some industrial processes have few alternatives for decarbonisation, other than material substitution.[26]

3. Target support where it will provide the most added value

While the **theoretical** availability of CO_2 storage sites is substantial, **in practice** there are many factors that could constrain the pace and scale of actual storage development.[27] Access to storage will depend on availability of appropriate geological formations and potentially costly infrastructure. The rollout of CO_2 infrastructure, especially cross-border or EU-wide, will likely require substantial public support. To navigate these constraints and avoid the public sector – at both EU and national levels – bearing an undue burden, support for CCS should be targeted to applications that provide the most added value in terms of emissions reductions that cannot be achieved through other means.

[23] Grant, N. et al., 2021, **Cost reductions in renewables can substantially erode the value of carbon capture and storage in mitigation pathways**.

[24] European Commission, 2022, **Waste Framework Directive**.

[25] European Commission, 2021, **Energy Efficiency First: from principles to practice**.

[26] One such example is cement production, where two-thirds of CO_2 emissions are process, and only one-third stem from fossil fuel combustion for producing high-temperature heat for cement kilns. See Jones, C. and Piebalgs, A., 2021, **CCUS is necessary to reach climate neutrality**.

[27] Lane et. al., 2021, **Uncertain storage prospects create a conundrum for carbon capture and storage ambitions**.

The case for a CCS ladder

A hierarchy, or ladder, that ranks various applications from most to least desirable can visualise how to prioritise the use of carbon capture. Ranking criteria would need to go well beyond the potential to reduce emissions and include, for example, the availability of alternative solutions, the feasibility of applying carbon capture technologies and achieving high capture rates, as well as the risk of fossil-fuel lock-in and other environmental impacts.

Such a value hierarchy or ladder would rank CCS for industrial activities with process emissions, such as cement clinker production, higher than CCS applied to a steel blast furnace-basic oxygen furnace. This is due to the availability of a wider range of decarbonisation options for the latter than the former. CCS for gas-fired power generation would therefore, in turn, rank lower than either of these. In short, it is pivotal that CCS be viewed as a category with the climate credentials of the technology's deployment dependent on its contextual application across different fields, business models, and products.

The Clean Hydrogen Ladder[28] is a good example of a model that could be replicated for CCS. E3G is collaborating with partners to develop a methodology for such a ladder. The **first iteration will be published** by the end of 2022.

The principles above can help stakeholders prioritise high-value CCS applications. However, the perceived societal value that applications deliver in the locations where they are installed will ultimately determine, in part, the value-add case of CCS. This is especially the case for individual CCS projects, whose success will depend on:

> Their contribution to the energy system as a whole. CCS will be more attractive where it can provide services that cannot be easily provided by other means (for instance, as an alternative to electrification of industrial processes where insufficient renewable electricity is available).

> The extent to which they create and/or maintain employment by retaining certain industrial activities, which could both decrease the social impact of the transition and increase the social acceptability of such projects.

[28] Liebreich Associates, 2021, **The Clean Hydrogen Ladder**.

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- Their contribution to the creation of new economic value. For example, new opportunities in the supply and development of infrastructure and technology, the provision of services and finance, or the production of low-carbon products.
- Cost-effectiveness, including their ability to re-use existing (fossil fuel) infrastructure.

The role of the EU

The EU needs to learn from past mistakes and take action to advance the deployment of CCS within this decade. It can do this by garnering political momentum, seeking inter-state cooperation, and providing a coordinated approach to regulation and development of the business models required for cross-border transport and storage. Ultimately, the EU can increase predictability for investors while balancing the complex set of trade-offs associated with carbon capture. Furthermore, given the EU's clout in setting international standards, its certification choices can have widespread impacts beyond its borders. EU action is therefore key in four main areas.

1. High-level strategic leadership

The European Commission is uniquely placed to facilitate high-level conversations between EU officials, governments, industry, academia, and civil society. The principles guiding CCS (and CCU) deployment should be formally established through a **comprehensive EU strategy**. Inspiration should be taken from the EU's strategies for hydrogen, energy system integration, and offshore wind. To signal political will and commitment for building Europe's CCS capacity, it is critical that the EU outline both its overarching vision and upcoming legislative outlook. The carbon capture strategy should:

- Establish clear definitions for CCS, CCU, and CDR to avoid conflation of the concepts and their associated trade-offs.
- Pursue CCS, CCU, and CDR within the overall decarbonisation context so that the technologies are a means to an end – that is, delivering on climate aims rather than carbon capture deployment being an end in itself.
- Avoid setting targets for captured CO_2. Given the increasing availability of alternative solutions in many industries, estimating how much CO_2 should be captured could be particularly challenging and imprecise. Instead, EU focus should be on milestones for available storage capacity, sized in line with quantitative assessments of how much permanent storage will be needed.

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Such milestones could be designed and regularly updated in accordance with climate science, to address the need for fair access to storage infrastructure across EU geographies.

> Not overestimate the need for transport infrastructure. Given the theoretical availability of potential storage sites across Europe, very long-distance transport of CO_2 is unlikely to be widespread. It is currently unclear to what extent such infrastructure will be desirable or whether the development of carbon capture will be primarily regionally bound. The EU should therefore outline a roadmap without creating unrealistic expectations regarding the necessity for EU-wide CO_2 transport infrastructure.

2. Coordination on infrastructure development and network planning

The EU level is the ideal platform for the cross-border cooperation necessary to ensure the development of open-access CO_2 infrastructure and network planning that considers the unequal availability of CO_2 geological storage. Network planning at EU-level can decrease inefficiencies and avoid a patchwork of potentially redundant national infrastructure investments. It could, at least partly, overcome the often-mentioned chicken and egg problem.[29] A focus on infrastructure would also allow the separation of the economic model for carbon capture [30] – mainly the responsibility of emitters – from that of transport and storage, which are common goods. Joint EU infrastructure planning should:

> Prioritise industrial clusters where large volumes of CO_2 are concentrated. This will justify large transport and storage investments that can be shared among emitters. While the open, transparent, and non-discriminatory access to infrastructure for potential users is already established by EU legislation, concrete measures are needed to address the uneven geographical distribution of geological storage capacities. The EU could identify and develop strategically placed storage locations.

> Focus on all transport modes of CO_2, especially shipping. Truck and rail transport are likely necessary but should be treated as last-mile solutions due to their unsuitability for scaling over long distances. Funding for cross-border transportation of CO_2 should therefore be targeted at projects that can carry the greatest volume of CO_2 per mile.

[29] Sufficient transport and storage capacity cannot be developed in the absence of credible sources of demand. In turn, lack of access to permanent storage can be a bottleneck for the development of carbon capture projects.
[30] CATF, 2022, **A European Strategy for Carbon Capture and Storage**.

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> Avoid extending the lifetime of fossil infrastructure beyond what is desirable from a climate and environmental perspective. Infrastructure planning must consider the potential unwanted consequences of incentivising the reuse of existing oil and gas infrastructure for CO_2, as well as the challenges of preventing decommissioning of infrastructure considered likely to be required in the future. Importantly, fossil fuel infrastructure should not turn into a driver for CCS demand.

> Engage bilaterally with third countries for cross-border coordination, shared regulatory standards, and best practice exchanges. Cooperation with countries such as Norway and the UK may be essential for EU carbon capture projects.

3. Supporting the business case of projects

Market conditions are still unfavourable for the commercial deployment of CCS in the EU. Similar to other capital-intensive technologies in earlier deployment phases, access to finance is difficult due to perceived investment risks. The EU should:

> Expose industrial emitters to the full carbon price by phasing out ETS free allocation in sectors where the Carbon Border Adjustment Mechanism (CBAM) is introduced. The cost paid by industrial producers for CO_2 emissions should thereby better reflect the polluter-pays principle.

> Enable funding for high-value projects throughout the value chain, especially by increasing the size and scope of the Innovation Fund and using it as a financing mechanism for EU-wide carbon contracts for difference (CCfDs).[31] Infrastructure projects can be funded through the Connecting Europe Facility.

4. Regulations, standards, and certification mechanisms

The EU has strong regulatory capabilities that are indispensable for ensuring both the safety and climate credentials of CO_2 capture, transport, storage, and use.[32] The EU can develop certification mechanisms that are crucial for ensuring the environmental and financial sustainability of carbon capture deployment. The EU should:

[31] CCfDs are an innovative financing tool which can stabilise revenue streams and mitigate risks for investors by eliminating the volatility and uncertainty regarding the carbon price by pre-agreeing CO_2 strike-prices with developers.

[32] Directive 2009/31/EC on the geological storage of carbon dioxide already establishes permitting requirements, obligations for operators, and third-party access to transport and storage infrastructure.

> Revise the CCS Directive to bring it in line with the EU's higher climate ambitions and the renewed role envisioned for CCS in a net zero economy. Given the need for interoperability, the directive should better establish quality standards for both the utilisation and transport of CO_2, including standards on density, pressure, and ongoing monitoring of flows and pipeline safety.[33]

> Introduce rigorous standards, monitoring and certification mechanisms for permanence of storage, as well as clear liability provisions for stored carbon that is released into the atmosphere. The Commission has announced its intention to improve monitoring and verification of both the quantity and origin of utilised or stored CO_2.[34] This should allow differentiation between permanently and temporarily removed carbon dioxide that does not create a net CO_2 decrease in the atmosphere. Moreover, the interchangeable trading of emissions reductions and carbon removals permits (on a tonne-for-tonne equivalent) should be avoided. Demand for offsets should not be created at the expense of incentives to reduce emissions to the greatest extent possible.

> Require high capture rates in installations deploying carbon capture to ensure they deliver **meaningful** emissions reductions. Only projects with high capture rates should be considered as potentially contributing to climate change mitigation.

The role of member states

EU-level action alone is not sufficient to enable deployment of CCS (and CCU) as viable decarbonisation options. Complementary national policies are necessary, but the level of political buy-in and appetite for CCS policy varies widely across countries. Larger member states such as Germany, France, and Spain have been largely ambivalent so far. The legislative framework and funding opportunities remain prohibitive for CCS deployment in most Central and Eastern European countries.[35] More positively, the Netherlands is increasingly portraying itself as a CCS champion. It has established a CCS policy framework through a combination of support instruments (SDE++), publicly owned infrastructure for transport and storage, and higher carbon taxes. CCS is also seen as crucial in Belgium,

[33] CCUS Set-Plan, 2021, **CCUS Roadmap to 2030**.
[34] By 2028, an accounting system will be established for reporting the fossil, biogenic or atmospheric origin of every tonne of CO_2 captured, transported, used, or stored by industry. European Commission, 2021, **Communication on Sustainable Carbon Cycles**.
[35] Miu et al.,2022, **Current context and opportunities for CCU and CCS in Central and Eastern Europe**.

especially for the industrial cluster around the port of Antwerp. While acknowledging differences in national preferences, member states could:

> Clearly establish the strategic role and desirability of CCS as part of national decarbonisation efforts through National Energy and Climate Plans (NECPs), long-term strategies, and other industrial initiatives. 14 member states have already included research and development activities on CCS in their NECP, while five have stated the desire to develop CCS strategies and large-scale projects before 2030.[36]

> Design state aid schemes in the form of tax breaks, direct funding, or other de-risking instruments for high-value CCS investments, including through EU ETS revenues. CCfDs could be a particularly suitable tool.[37]

> Address social acceptability concerns relating to projects, especially among local communities and particularly for onshore CO_2 storage facilities by emphasising the potential contributions of CCS for delivering climate goals in a publicly safe manner. Besides directly engaging and cooperating with communities during development, trust in such projects could also be solidified through demonstration projects and tests proving the technical safety of the installations.

> Map the geological CO_2 storage potential and test the technical properties of suitable formations, with oil and gas companies bearing the costs of auditing possible storage sites. The potential for storing CO_2 is still understudied, particularly in Central and Eastern Europe, giving an incomplete picture of the feasibility of large-scale permanent CO_2 storage in many European regions.[38]

The role of companies

The final part of this briefing is dedicated to industrial emitters who have a critical role in the deployment of carbon capture applications and their scale-up. Private–public coordination is especially crucial in infrastructure development. However, companies need to take responsibility for funding their own CCS projects in line with the polluter-pays principle, while ensuring that the use of

[36] CCUS Set-Plan, 2021, **CCUS Roadmap to 2030**.
[37] Examples can be found in Germany and the Netherlands. Particularly interesting is the Dutch SDE++ scheme, which functions through a feed-in contractual subsidy mechanism for industry. The scheme limits CCS support to a maximum of 7.2 $MtCO_2$/year, to avoid crowding out other competing technologies. For more details see: Bellona, 2021, **The Industrial CCS Support Framework in the Netherlands**.
[38] Miu et al.,2022, **Current context and opportunities for CCU and CCS in Central and Eastern Europe**.

carbon capture technologies does not lead to higher scope 2 emissions. Companies should:

> Align their activities to facilitate permanent storage of captured CO_2 from industrial installations, leading to concrete emissions reductions. The use of carbon sinks for storing CO_2 is only temporary and, thus, risks turning into a form of greenwashing that must be avoided. Such an approach will help increase wider acceptance of CCS use within both public and stakeholder communities.

> Take responsibility for their liabilities when outlining the business case for carbon capture projects. Public authorities at national and European levels should not bear the **sole responsibility** for liabilities regarding the long-term storage of captured CO_2. Public liabilities can be determined on a project-by-project basis and only adopted where private companies are unable to bear the responsibility themselves, in instances where a lack of public sector liability threatens project viability.

> Demonstrate the greatest degree of sustainable corporate due diligence when conducting CCS activities throughout the entire value chain. For example, potential leakages of CO_2 post-capture – in both transport and storage phases – must be minimised through robust safeguards such as durable leak detection systems and systematic monitoring plans. These safeguards must be routinely maintained as the credibility of CCS as a long-term emissions reduction tool depends on ensuring the continuity of installations and permanence of CO_2 storage facilities.

About E3G

E3G is an independent climate change think tank with a global outlook. We work on the frontier of the climate landscape, tackling the barriers and advancing the solutions to a safe climate. Our goal is to translate climate politics, economics and policies into action.

E3G builds broad-based coalitions to deliver a safe climate, working closely with like-minded partners in government, politics, civil society, science, the media, public interest foundations and elsewhere to leverage change.

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