GLOBAL CCS INSTITUTE

Briefing

Road to COP30: CCS Developments in International Climate Change Policy

Global CCS Institute

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1. About

As countries approach the Thirtieth Conference of the Parties (COP30) in Belém, Brazil, carbon capture and storage (CCS) continues momentum within an increasingly fragmented international climate regime through scientific assessment, operational projects, and diplomatic coalitions. Countries increasingly view CCS through multiple strategic lenses, from maintaining industrial competitiveness to creating new revenue streams, with each nation's approach reflecting unique economic structures and political constraints rather than universal climate imperatives. On the Road to COP30, the June 2025 Bonn Climate Change Conference, and other recent international developments, reveal both the potential opportunities and limitations for CCS.

Note to Reader: This document discusses negotiation dynamics and country party groupings. For a comprehensive list of these groupings including the Like-Minded Developing Countries, G77 & China, AILAC, and others, please see here.

2. Introduction

2.1 Global developments

As the international community approaches the Thirtieth Conference of the Parties (COP30) in Belém, Brazil, carbon capture and storage (CCS) continues to gain momentum in global climate politics. The June 2025 Bonn Climate Change Conference served as a mid-year checkpoint, revealing how CCS is finding legitimate space within an increasingly fragmented international climate regime. Against a backdrop of strained geopolitical relations - with the United States absent from climate negotiations entirely - others have stepped forward to advocate for carbon management through existing coalitions of the willing. The Carbon Management Challenge (CMC) with 23 participating governments is currently the primary vehicle for international cooperation on carbon management technologies alongside the formal UN process, the Clean Energy Ministerial Carbon Capture Utilisation and Storage (CEM CCUS) Initiative, Mission Innovation Carbon Dioxide Removal (MI CDR) and its "Gigaton by 2030 Campaign". The CMC and the Campaign's collective ambition to advance projects managing 1 gigatonne (Gt) of CO_2 annually by 2030 offer a concrete framework for cooperation that has the possibility to sidestep traditional diplomatic complexities.

At the Bonn Climate Conference in June, a revealing moment came in the two-day delay caused by what negotiators call an "agenda fight." Bolivia, speaking for the Like-Minded Developing Countries (LMDC), including China, India, and Saudi Arabia, proposed adding formal discussions on climate finance obligations and on unilateral trade measures like the European Union's carbon border adjustment mechanism (CBAM). This dispute wasn't just about agenda items - it was about who pays for the global energy transition and who gets to set the rules. But buried within finance discussions, later in the week, were significant developments for CCS. Saudi Arabia's intervention during consultations noting that more CCS funding is needed for developing countries may mark a shift in climate finance mobilisation

conversations that tend towards being technology neutral, positioning CCS as a potential explicit recipient of climate finance flows within the upcoming Baku to Belém Roadmap to 1.3T.

Other critical developments have strengthened CCS prospects ahead of COP30. The IPCC's 2024 work on a dedicated Methodology Report on Carbon Dioxide Removal Technologies and CCUS in its Seventh Assessment cycle provides authoritative scientific validation. A Norway-Switzerland bilateral agreement under Article 6.2 demonstrates how cross-border CCS value chains can operate within the Paris Agreement framework, establishing a template for similar partnerships. Meanwhile, ongoing negotiations around the Climate Technology Centre and Network (CTCN)'s renewal create opportunities for enhanced CCS capacity building in developing countries.

2.2 Brazil's Balancing Act

Brazil's COP30 presidency emphasizes pragmatic implementation alongside targeted negotiations on climate finance scale-up, enhanced nationally determined contribution (NDC) ambition, and forest protection mechanisms. Hosted in Belém, located adjacent to the Amazon rainforest, Brazil intends to launch the Tropical Forest Forever Facility, a $125 billion blended-finance investment fund that aims to reward forest conservation in tropical countries. Outcomes are also expected on the Baku to Belém Roadmap to 1.3T to scale international climate finance from $300 billion to $1.3 trillion by 2035[1]. The conference will be guided by Brazil's concept of "global mutirão" - a Portuguese term meaning collective effort for a shared goal - aimed at mobilising unprecedented global cooperation to move from climate pledges to concrete implementation. Brazil has established Leadership Circles including a Circle of Presidencies, Circle of Indigenous Leadership, Finance Ministers' Circle, and conduct a Global Ethical Stocktake jointly led by President Lula and UN Secretary-General António Guterres. The presidency aims to create a "Granary of Solutions" connecting climate ambition with development opportunities, with particular emphasis on implementing the first global stocktake (GST) outcomes and aligning NDCs with the 1.5°C target.

The COP30 Action Agenda will focus on six key axes: transitioning energy, industry and transport; protecting biodiversity; transforming food systems; building urban resilience; advancing human development; and mobilising finance and technology[2]. Central to this agenda is accelerating decarbonization across these interconnected themes through both technological and nature-based solutions. The COP30 Presidency has also recently established Activation Groups, "light-touch convening spaces for existing voluntary initiatives and coalitions, to align climate action with the outcomes of the first GST". These groups coordinate deliverables through meetings, the Global Climate Action Portal (NAZCA), and

[1] The aspirational $1.3 trillion climate finance target creates opportunities for carbon management financing through "all public and private sources." The Baku to Belém roadmap was launched in a bid to address concerns with the NCQG outcome, coordinated by Azerbaijan and Brazil to produce a final roadmap document by October 2025.

[2] COP30 Presidency, "Fourth Letter from the Presidency" (2025) https://cop30.br/en/brazilian-presidency/letters-from-the-presidency/fourth-letter-from-the-presidency

Plans to Accelerate Solutions.

Brazil has the largest CCS project in the world. Petrobras has significant experience with CO_2 injection for enhanced oil recovery, reinjecting a record 14.2 million tonnes in 2024, while Brazil simultaneously pursues zero deforestation by 2030. This dual focus positions Brazil uniquely to explore how industrial carbon management can complement forest conservation. As countries increasingly view CCS as a tool for reducing emissions, supporting industry, and tapping into carbon markets, Brazil's experience shows both the potential and the challenge of balancing environmental goals with economic development.

2.3 Multilateral Momentum Beyond the United Nations

Canada's Group of 7 (G7) presidency in 2025 brings particular significance to CCS development. The federal government has committed over CAD 9 billion to carbon capture by 2030 through investment tax credits covering more than 50% of capital costs, primarily for fossil fuel sector projects. The Canada Growth Fund, the government's CAD 15 billion public investment vehicle, has also signalled CCS as a priority area for blended finance investments, potentially mobilising additional private capital for large-scale deployment projects.

South Africa's Group of 20 (G2) presidency adds another dimension to multilateral CCS cooperation. South Africa's emphasis on energy security and just energy transitions across the continent creates opportunities for discussions on CCS applications in heavy industry and power generation. The country's World Bank-supported CCS program, initiated in 2009 through the CCS Trust Fund with US$1.35 million in funding, included regulatory framework development, techno-economic analysis, and public engagement planning for a Pilot CO_2 Storage Project designed to store 10,000-50,000 tonnes of CO_2[3] . More recently, in 2024, South Africa launched its first CCUS research site in Leandra, Mpumalanga, following completion of geological characterization studies with World Bank support[4]. The G20's focus on sustainable development and energy access aligns with growing recognition that carbon management technologies could support industrial development in emerging economies while reducing emissions.

The recent Brazil, Russia, India, China, South Africa (BRICS) expansion also creates new geopolitical dynamics for carbon management technology cooperation. At the 17th BRICS Summit in Rio de Janeiro, Indonesia formally joined as the 10th full member. The bloc now represents 56% of the global population and 44% of GDP. With this increased influence, BRICS is positioning itself as a counterweight to G7-led frameworks. Academic research[5]

[3] World Bank, (2017) "World Bank CCS Program Activities in South Africa: Results and Lessons Learned". https://openknowledge.worldbank.org/entities/publication/27311a9c-8680-5a05-ac78-d007ff0338da

[4] ESI-Africa, (2024) "South Africa launches its first CCUS research site." https://www.esi-africa.com/news/south-africa-launches-its-first-ccus-research-site/

[5] Energy Strategy Reviews, (2023) "BRICS or G7? Current and future assessment of energy and environment performance using multi-criteria and time series analyses" https://www.sciencedirect.com/science/article/pii/S2211467X23001141

suggests that for BRICS nations to achieve their climate goals, a balanced energy transition will be essential, relying on natural gas as a transitional fuel, increasing renewable energy investments and advancing technologies such as carbon capture, electric vehicles, and hydrogen. Yet BRICS members reflect a wide range of national priorities: Russia continues to depend on hydrocarbon exports, China is scaling its clean-tech manufacturing, India balances energy access with decarbonization and Brazil focuses on bioenergy and land-use strategies. Meanwhile, the current G7 agenda emphasises inclusive economic growth, the regulation of emerging technologies, and combatting the growing negative effects of climate change. Ensuring meaningful progress will depend on the ability to bridge diverse policy approaches, including those of the G7, BRICS, and G20, through practical cooperation and shared standards where possible.

The CMC becomes particularly important in this context. Since its inception in 2023, the CMC has grown to include 23 participating governments and has established working groups on financing for developing countries, project deployment and strategic communication. With Brazil, Canada, Indonesia, Japan, Saudi Arabia and the United Kingdom all holding leadership positions within the initiative, the CMC serves as a mechanism for aligning different multilateral approaches, bridging traditional G7 frameworks with emerging BRICS and G20 priorities through practical cooperation on technology deployment and financing mechanisms.

3. Bonn Climate Change Conference, June 2025

3.1 Article 6: Bilateral Success, Multilateral Challenges

The Norway-Switzerland bilateral agreement represents the most significant development in Article 6.2 implementation for CCS technologies. Building on a Declaration of Intent signed in May 2024, the two countries formalized a comprehensive agreement in June 2025 that establishes a legal framework for cross-border transport and permanent storage of CO_2, as well as for the transfer of mitigation outcomes between the countries. This marks the first agreement between two industrialized countries to govern the mutual transfer of mitigation outcomes (ITMOs) relating to carbon dioxide removal, with provisions for use both toward their own NDCs and for other international mitigation purposes. Norway's more than 27 years of experience with safe and permanent CO_2 storage positions it as a service provider to European partners, while Switzerland aims to remove 5 $MtCO_2$ per year abroad by 2050 to complement its domestic 2 $MtCO_2$ annual target. The agreement has already facilitated commercial pilot activities, with private entities from both countries announcing the world's first commercial deals on transfers of carbon dioxide removals under Article 6 of the Paris Agreement. This pioneering framework demonstrates how Article 6.2 can enable cross-border CCS value chains while maintaining environmental integrity and creating mutual economic benefits for participating countries.

Article 6.4 has made significant progress in 2025 toward operationalising the Paris Agreement Crediting Mechanism. In August 2025, the Article 6.4 Supervisory Body focused on refining operational procedures, enhancing financial integrity measures, and addressing

technical issues such as suppressed demand in baseline-setting. While these steps contribute to strengthening the overall framework of the Paris Agreement Crediting Mechanism, there was no specific progress on carbon capture and storage projects, which remain absent from the current portfolio. The groundwork laid is important for future inclusion, but meaningful deployment of CCS under Article 6.4 will require continued attention and further action. At its 15th meeting in February 2025 in Bhutan, the Supervisory Body accredited the first Designated Operational Entity "Carbon Check (India) Private Limited" and approved the first CDM transition project, the "Clean Energy Program Supported by Republic of Korea", marking crucial milestones for the mechanism's full operation. The transition process enables existing CDM projects from the Kyoto Protocol to migrate to the new Article 6.4 framework, while adopting updated standards and methodologies. However, the transition process raises significant quality concerns that could undermine carbon market integrity, including for future CCS projects. Carbon Market Watch analysis[6] reveals that PoA 10415, a clean cookstove project in Myanmar that became the first CDM project to successfully transition to Article 6.4, is poised to issue 26 times more credits than scientifically justified based on peer-reviewed literature. This problematic precedent is compounded by the scale of pending transitions: as of April 2025, 1,388 CDM projects and 119 programmes of activities[7] have submitted transition requests to Article 6.4, potentially introducing the nascent market with nearly 1 billion questionable credits.

CDM projects can continue using outdated methodologies until December 31, 2025, before being required to adopt more stringent Paris Agreement Crediting Mechanism (PACM) methodologies, creating a critical window where legacy quality problems could undermine the mechanism's credibility. The integrity challenges revealed in early project approvals underscore the importance of robust methodological standards for CCS projects seeking Article 6.4 crediting. Success will depend on whether the Supervisory Body can learn from CDM failures and establish credible standards for carbon capture and storage projects, particularly as the mechanism moves beyond the transition period into full operation with new, more stringent methodologies.

Significantly, the transitioning project portfolio consists primarily of renewable energy, waste management, and cookstove initiatives, with no carbon capture and storage projects among them. This absence reflects the broader historical pattern within the CDM itself, where CCS projects remained largely theoretical despite extensive policy development. Although the UNFCCC adopted modalities and procedures for carbon dioxide capture and geological storage as CDM project activities in December 2011 at COP17 and the CDM Executive Board established guidelines for CCS project approval in 2014, actual implementation proved elusive. With early support from countries like Japan, Saudi Arabia, Canada, and Norway for including CCS in the CDM, complex issues around long-term monitoring, liability for potential CO_2 leakage, and the substantial upfront costs deterred project developers, have progressed through regulatory advances and project experience in multiple jurisdictions. However, of the

[6] Carbon Market Watch, (April 2025) “First wave of Article 6 carbon credits misfire spectacularly” https://carbonmarketwatch.org/2025/04/10/first-wave-of-article-6-carbon-credits-misfire-spectacularly/
[7] UNEP-CCC “Article 6 Pipeline” https://unepccc.org/article-6-pipeline/

7,832 registered CDM project activities CDM during the mechanism's operational period from 2005-2020, none involved carbon capture and storage technologies[8].

Unlike the CDM's complete absence of CCS projects, the European Union's Emissions Trading System (ETS) demonstrates how carbon market design can shape technology deployment. Since 2021, captured and stored CO_2 is considered 'not emitted' under the EU ETS, providing economic incentives that help offset CCS deployment costs[9]. However, despite this favourable framework, CCS uptake in Europe has been slower than predicted over the Directive's 15-year existence due to fluctuating ETS allowance prices. While the EU ETS's direct integration of CCS and higher carbon prices (reaching over €100/tonne in 2022) have begun driving investment, the slow progress underscores that even well-designed carbon markets require predictable economic signals to deploy capital-intensive climate technologies like CCS.

3.2 Response Measures: The Industrial Competitiveness Framework

Perhaps the most significant development for CCS at Bonn was the evolution of discussions around response measures, loosely defined as policies and actions countries take in response to climate change and their economic impacts on other nations. Response measures have long been championed by oil-producing countries as a mechanism to address economic disruptions from climate policies, and have evolved into a far larger agenda, touching on employment needs in Africa and, more recently, the EU's Carbon Border Adjustment Mechanism (CBAM).

The four-year work plan on response measures, agreed at COP29 in Baku and running through 2030, now includes explicit focus on "cross-border impacts" of climate mitigation actions. This development gained particular significance when "unilateral trade measures" (a reference to policies like CBAM) became part of discussions. CBAM, which will impose tariffs on carbon-intensive imports starting in 2026, has become a lightning rod for broader tensions about trade and climate policy. Developing countries, led by China, view it as protectionism disguised as environmental policy. The EU argues it's necessary to prevent "carbon leakage", the risk that European climate policies simply shift production to countries with weaker environmental standards.

The response measures framework is particularly relevant for CCS because it addresses exactly the kind of economic disruptions that carbon management can help mitigate. When countries implement carbon pricing or emissions standards, industries face additional costs that can affect their competitiveness relative to producers in countries with weaker climate policies. CCS offers a way for industrial facilities to comply with these requirements while maintaining production levels and employment. However, this requires robust governance

[8] UNEP-CCC "The CDM pipeline, including activities transitioning to the Paris Agreement Crediting Mechanism (Article 6.4)" https://unepccc.org/cdm-ji-pipeline/

[9] The Journal of World Energy Law & Business, Vol. 17, No. 5, 2024 "Carbon capture and utilization under EU law: impermanent storage of CO_2 in products and pre-combustion carbon capture," https://academic.oup.com/jwelb/article/17/5/295/7667860?login=false

frameworks to be effective and safe. Proper regulatory frameworks, long-term monitoring systems, and storage oversight need to be in place before large-scale implementation begins.

The response measures discussions also highlighted growing recognition that climate policies need to consider their effects on workers and communities dependent on carbon-intensive industries. The just transition work programme made substantial progress in Bonn, with negotiators agreeing to language stating that "a just transition needs to be added in climate plans" and that "climate finance needs to also be made available for covering some of the social justice aspects of the transition." However, the role of CCS within just transition frameworks remains contentious. While industry and some governments view carbon capture as enabling continued industrial operation during the transition to net-zero technologies, many environmental justice advocates and labour organisations remain skeptical, preferring approaches that prioritise rapid deployment of renewable energy. For CCS deployment, this tension creates both an opportunity and a challenge: while response measures and just transition discussions provide policy frameworks that could support carbon management technologies, the technology must demonstrate that it genuinely serves workers and communities rather than simply prolonging dependence on fossil fuel infrastructure.

3.3 Global Stocktake (GST): Transition Politics Get Complicated

The GST discussions at Bonn exposed the growing tension between the ambitious language agreed at COP28 in Dubai and the practical realities of implementing that vision. The GST, established under the Paris Agreement as a mechanism to assess collective progress toward climate goals every five years, concluded in December 2023 with a landmark call for "transitioning away from fossil fuels in energy systems". But implementing this commitment through the UAE dialogue has become a battleground over what this transition actually means and how technologies like CCS fit within it.

Broadly speaking, developed countries, Least Developed Countries (LDCs), The Alliance of Small Island States (AOSIS), and the Independent Alliance of Latin America and the Caribbean (AILAC) want to see more focus on some of the "mitigation" outcomes from the GST, including the transition away from fossil fuels. Some developing countries, particularly the LMDCs, would rather the dialogue focus exclusively on finance. This divergence in perspective and priorities results in fundamentally different views about CCS's role in energy transition. Countries supporting rapid fossil fuel phase-out worry that emphasis on carbon capture could undermine renewable energy deployment. Countries with significant or growing fossil fuel industries see CCS as essential for any realistic transition timeline.

The Brazilian COP30 presidency has emphasised the importance of implementing the GST outcomes and ensuring that countries submit enhanced climate commitments aligned with the 1.5°C goal. Divisions seen at Bonn were not new and suggest the challenges ahead for reaching consensus on how to operationalise the Dubai commitments. The final text that emerged from Bonn reflects the deadlock. Rather than reaching consensus, negotiators simply combined two separate documents representing these divergent views to carry forward to COP30. The document explicitly states that it "includes divergent views, has not

been agreed upon, does not reflect consensus, is not exhaustive, has no formal status and is open to revision." There is no direct reference to "transitioning away" from fossil fuels, but an allusion survives in one of the iterations. In bracketed text, meaning it has not been agreed, the document makes a reference to "decid[ing] that the UAE dialogue will...consider collective progress and identify opportunities for implementing the elements that do not have an institutional home, including collective calls on energy transition". The absence of United States climate leadership makes it harder to bridge these divides, as one of the world's largest emitters, leader in CCS and a diplomatic force in climate negotiations.

3.4 The Mitigation Work Programme: The Limits of Voluntary Ambition

The Mitigation Work Programme (MWP) discussions revealed both the potential and limitations of formal UN processes for advancing carbon management technologies. Established at COP26 and further developed at COP27 to "urgently scale up mitigation ambition and implementation in this critical decade," the programme has operated through a series of global dialogues designed to identify barriers to emissions reductions and share solutions. The heated consultations on 18 June exposed fundamental disagreements about the programme's purpose. AOSIS and AILAC argued that the MWP was failing to deliver on its mandate to "scale up mitigation ambition and implementation." They pointed to the absence of concrete partnerships or funded projects emerging from the five global dialogues held so far.

These disagreements reflect deeper tensions about whether the MWP should remain a forum for technical exchanges and knowledge sharing, as some developed countries prefer, or evolve into a mechanism that generates binding commitments and concrete financial outcomes, as many developing nations demand. AOSIS and ILAC specifically criticised the programme for its lack of substantive progress, with AOSIS expressing being "deeply disappointed and concerned" after five rounds of discussions produced little in terms of actual emissions reductions or new funding streams. This frustration highlights a broader challenge in multilateral climate processes: bridging the gap between technical discussions and implementation that delivers measurable climate impact.

Much of the negotiation time in Bonn centred on a proposal by Brazil to establish a digital platform to connect mitigation projects with potential finance. While the platform’s technical feasibility was not disputed, the deeper debate concerned its implications for the Mitigation Work Programme (MWP). The LMDCs, African Group, China, India, and others insisted the MWP remain a “safe space” for voluntary, non-prescriptive dialogue, resisting any shift toward formalised accountability. The EU, UK, and Canada took a similar position, cautioning against duplication and calling for a review of existing initiatives before creating new ones. In contrast, AOSIS and AILAC expressed frustration that five global dialogues had yet to yield any funded partnerships or tangible mitigation outcomes.

For the CCS community, this paralysis represents both missed opportunity and important insight. The MWP's technical discussions have been quite useful for carbon management, with CCS/CCUS featured as one of four focus areas in the global dialogue at Bonn SB58 in 2023, alongside conversations on energy transition, transport, and urban systems where

CCS can play a role in emissions reduction. But the programme's inability to produce funding or partnerships means these discussions currently do not translate into technology deployment. Consider the Green Climate Fund (GCF), which, 13 years after having CCS as part of its governing instrument, only funded its first CCS project last year in Trinidad and Tobago, setting an important precedent while displaying the slow movement of the current UN climate apparatus when it comes to CCS. The GCF has committed over USD 16.6 billion across 297 projects in 133 countries since 2015, with an additional USD 62.7 billion in co-financing for a variety of renewable energy, energy efficiency, and nature-based solutions[10].

The final informal note produced at 2pm on the last day contained little difference from previous versions beyond an additional reference to "global dialogues" and "investment-focused events". This signals the programme will continue in its current form, but without a clear strategy or mandate for delivering implementation outcomes.

3.5 Building Scientific and Technical Credibility

A significant long-term development emerged in 2024 with confirmation that the IPCC Seventh Assessment cycle will include a dedicated Methodology Report on Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage for National Greenhouse Gas Inventories (Additional Guidance). The Intergovernmental Panel on Climate Change, established in 1988 to provide scientific assessments for policymakers, issued a seminal report on CCS in 2005: IPCC Special Report on Carbon Dioxide Capture and Storage[11]. Since then, it has consistently included CCS in reports as part of broader mitigation scenarios. In 2006, IPCC issued Guidelines for National Greenhouse Gas Inventories that included accounting methodologies for CCS[12]. A new methodology report expanded to include carbon removals represents ongoing recognition by the world's most globally accepted climate science body, that CCS and CDR are widely applicable, climate solutions rather than backup options or niche applications.

The IPCC formally structured its Seventh Assessment cycle at its January 2024 Istanbul meeting, with the Synthesis Report of the Seventh Assessment Report scheduled for release by late 2029. However, timeline tensions have intensified significantly. At the February 2025 Hangzhou meeting (IPCC-62), delegates reached consensus on Working Group report outlines but were unable to reach agreement on delivery timelines despite discussions extending more than 30 hours after the scheduled conclusion. The deadlock reflects competing priorities between countries emphasising "the importance of timely completion to maintain policy relevance by informing the Global Stocktake under the UNFCCC" and others raising "concerns that a compressed timeline could affect participation, particularly from

[10] Green Climate Fund, (March 2025) "Accelerating climate action to communities: seven new projects set for implementation" https://www.greenclimate.fund/news/accelerating-climate-action-communities-seven-new-projects-set-implementation."

[11] IPCC Special Report on Carbon Capture and Storage (2005) https://www.ipcc.ch/report/carbon-dioxide-capture-and-storage/

[12] IPCC Guidelines for National Greenhouse Gas Inventories (2006) Microsoft Word - V2_Ch5_CCS_Final.doc

developing countries[13].

The CDR and CCUS methodology report has progressed through key milestones, with expert group meetings taking place in July 2024, followed by a scoping meeting in October 2024 where experts shortlisted specific CDR technologies requiring methodological development. The methodology report itself is expected to be finalised by the end of 2027, representing the first comprehensive international framework for measuring and reporting carbon removal technologies. This development occurs amid growing recognition from the previous assessment cycle that "the deployment of carbon dioxide removal to counterbalance hard-to-abate residual emissions is unavoidable if net zero CO_2 or GHG emissions are to be achieved"[14], elevating these technologies from supplementary options to essential components of climate strategy.

Meanwhile, CTCN, established under the UNFCCC to facilitate technology transfer to developing countries, is operating under its Third Programme of Work through 2027 with continued strong support from Global South participants. Technology remains a high priority for the G77 and China group heading into COP30, emphasising the need to "enable developing countries to access climate technology for the implementation of their NDCs"[15]. This creates opportunities for enhanced CCS capacity building programs that require sustained, specialised assistance – from geological assessment and regulatory framework development to financing mechanism design and monitoring system establishment.

For the CCS community, the combination of long-standing IPCC scientific validation and enhanced technology transfer mechanisms are a foundation for more credible and effective international deployment.

[13] Earth Negotiations Bulletin, "Summary Report 24–28 February 2025: Sixty-second Session of the Intergovernmental Panel on Climate Change (IPCC-62)." International Institute for Sustainable Development (IISD) (February 2025) https://enb.iisd.org/intergovernmental-panel-climate-change-ipcc-62-summary

[14] IPCC Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2002) https://www.ipcc.ch/report/ar6/wg3/

[15] Statement on behalf of the Group of 77 and China by the delegation of Iraq at the informal meeting of the UN General Assembly on the priorities and preparations for the 2025 United Nations Climate Change Conference (COP30) (New York, 5 March 2025) https://www.g77.org/statement/getstatement.php?id=250305

4. Reading the Room: What CCS Means Around the World

The global response to carbon capture and storage reveals distinct strategic calculations across different countries. Each group's approach reflects their unique economic interests, political constraints, and development priorities.

Europe: Defensive Industrial Strategy

For European governments and industry, CCS is not just a climate mitigation technology but also survival insurance for strategic sectors facing intensifying global competition. The UK, which is planning a competitive CCS market by 2035, is committing up to £21.7 billion to carbon capture and CCUS-enabled hydrogen projects over 25 years, plus an additional £9.4 billion over the spending review period (up to 2030), which includes £200 million for Scotland's Acorn project. Norway leads regional European CCS deployment with the Northern Lights project, the world's first cross-border CO_2 transport and storage facility, while implementing a carbon tax projected to reach $220 per tonne by 2030. CCS offers European heavy industry a pathway to preserve manufacturing capacity while meeting increasingly stringent emissions standards that would otherwise drive production offshore.

The EU's CBAM imposes a uniform carbon price on both EU and imported products, which is at odds with the principle of common but differentiated responsibilities (CBDR established in international climate agreements, with developing countries arguing it places disproportionate economic pressure on them). For European manufacturers, the calculation is stark: invest in carbon capture technology or lose market share to competitors under weaker environmental regulations. CBAM-covered products most directly relevant to CCS are cement, iron and steel, and fertilizers (ammonia/nitric acid), where CCS is considered essential for decarbonisation since process emissions cannot be eliminated through fuel switching alone. CBAM's methodology states that "the geological storage of fossil CO_2 counts as non-emitted CO_2," meaning operators with CCS require fewer expensive CBAM certificates, creating a direct financial incentive for CCS deployment in these sectors.

China: Industrial Sovereignty Meets Climate Pragmatism

China's CCS approach reflects the world's largest industrial economy managing a careful balancing act. Climate policy can be seen as an instrument of economic and technological development, integrating carbon management into broader industrial strategies that serve national modernisation goals while meeting international expectations. As the world's largest producer of steel, cement, chemicals, and aluminium, precisely the sectors where CCS is most relevant, carbon management technologies could determine the future competitiveness of the Chinese industrial base. Having dominated solar panel and battery production, the country's substantial but quiet investments in domestic CCS research, including projects in coal plants and industrial facilities, may reflect a desire for technological dependence.

Gulf States: Hedging Long-Term Bets

The Gulf states embrace of carbon management mechanisms and promotion of CCS in climate financing has allowed them to pioneer strategies to decarbonise fossil fuel while showcasing cutting-edge industrial capabilities, establish themselves as climate technology

leaders and innovators, and create potential revenue streams that could strengthen economic resilience and diversify their hydrocarbon-based economies. As both a major oil producer and clean energy investor, the UAE's hosting of COP28 and the delivery of the UAE Consensus, demonstrates how oil-rich nations can maintain global relevance while managing the energy transition and its uncertainties. Saudi Arabia has adopted a similar approach through the Saudi Green Initiative (SGI) and Middle East Green Initiative (MEGI) and Circular Carbon Economy (CCE) approach. However, some critics express concern that this multipurpose use of CCS might delay broader efforts to reduce fossil fuel dependence.

Small Island States: Pragmatic Environmentalism

Small island developing states facing existential climate threats take increasingly pragmatic approaches to CCS technology. While AOSIS collectively advocates for aggressive fossil fuel phase-outs, individual SIDS demonstrate varied positions shaped by their specific industrial contexts. Trinidad & Tobago exemplifies this pragmatism, driven by its mature oil and gas economy with over a century in petroleum production and ammonia facilities ideal for CCS deployment. The GCF is supporting its first CCS project in Trinidad and Tobago where it will support a storage resource assessment and create a national CO_2 storage atlas. Singapore similarly pursues CCS as essential for hard-to-decarbonize sectors, with its S-Hub consortium aiming to capture and store 2.5 million tonnes of CO_2 annually by 2030, despite its focus on renewable energy expansion. The lack of explicit CCS opposition in recent SIDS statements, compared to their vocal advocacy for fossil fuel phase-outs, may suggest they're avoiding technology-specific fights and focusing on outcomes. This strategic silence allows individual SIDS countries like Trinidad & Tobago and Singapore to pursue CCS pragmatically while AOSIS maintains collective pressure for ambitious overall targets.

Emerging Economies: Development Through Climate Technology

Emerging economies across continents, from Indonesia and Malaysia in Southeast Asia to Brazil in South America, and South Africa to Kenya in Africa, increasingly view CCS as strategic technology for building modern industrial capacity while managing emissions from existing infrastructure and supporting existing production. Indonesia plans to cut carbon emissions by 29% by 2030 and reach net zero emissions by 2050, with 15 CCUS projects set to begin by 2026, while Brazil enacted Federal Law No. 14,993/2024 in October 2024, the first Brazilian framework to address CCS. South Africa's commitment to CCS is driven by its significant coal reserves and the need to balance economic growth with environmental sustainability, with the Council for Geoscience working in partnership with the World Bank to implement CCUS in Mpumalanga Province. Malaysia is positioning itself as regional CCS hub, partnering with Japan through PETRONAS agreements to capture CO_2 from industrial facilities in the Tokyo Bay area and store it in Malaysian offshore sites, targeting three million tonnes annually by 2030. Developing nations increasingly view carbon removal as a growth opportunity. Kenya is emerging as a hub for direct air capture (DAC) in Africa. Homegrown pioneer Octavia Carbon is deploying Kenyan-designed DAC systems using local geothermal energy and basalt geology to capture and store CO_2.

Advanced Economies: Competitive Positioning

Japan, Canada, and Australia approach CCS as competitive positioning tools as well as a means to meet climate obligations. Japan views CCS as an export technology opportunity, with government-supported projects geared to ship captured CO_2 to Southeast Asia while developing domestic expertise for global markets. Canada's commitment of over CAD 9.1 billion in public funding to CCS, demonstrates a prioritisation of carbon management above other decarbonisation measures to protect its resource extraction industries' global competitiveness. Australia positions CCS as the foundation for new industrial hubs, particularly in hard-to-abate sectors like steel and cement manufacturing, creating cost advantages for existing infrastructure. All three countries recognise that in a carbon-constrained world, industrial competitiveness increasingly depends on demonstrable emissions management capabilities rather than traditional cost advantages alone. The United States presents a more complex picture. While the current administration signals retreat from international climate leadership, domestic CCS economics remain strong with the 45Q tax credit system surviving political transitions, suggesting that American CCS development may continue to be driven by industrial competitiveness.

5. Looking Ahead: Navigating Political and Ecological Realities

Carbon capture and storage is gaining a firmer place in the climate strategies of more governments that see few options left. The International Energy Agency (IEA) estimates that around eight percent of cumulative emissions reductions by 2050 in its latest net-zero scenarios will need to come from CCS[16]. The figure reflects not just technical assumptions but the difficulty of eliminating emissions from hard-to-abate sectors where alternatives are either too costly or unavailable.

With over 170 countries expected to submit updated Nationally Determined Contributions before COP30, including major emitters like Australia, China, the EU, India, and Saudi Arabia, there are significant opportunities to embed carbon management technologies into national climate strategies. The increasing focus on "investable NDCs" creates pathways for CCS to be included in bankable project pipelines. Notable examples include Botswana, which has integrated CCS into its power sector plans; Switzerland, committing to capture and store 13–14 million tonnes of CO_2 from hard-to-abate emissions; Uruguay, targeting CCS deployment in the cement sector; and the UK, pledging £21.7 billion over 25 years to support CCUS and hydrogen industries, plus £9.4 billion over the current spending review period.

The Bonn subsidiary body sessions in June 2025 reflected broader tensions around climate finance and trade policy. While developing countries used the platform to emphasise their

[16] IEA Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach (2023) https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach/executive-summary

need for enhanced financial support, the discussions revealed the persistent gap between climate commitments and political implementation. The agenda disputes that delayed proceedings by two days underscored how climate finance obligations and trade measures remain deeply contentious issues embedded in larger questions about global economic governance and who bears the costs of the energy transition and industrial emissions.

Although governments increasingly endorse carbon capture, the technology continues to face criticism. Many environmental groups see it as a strategy to delay the end of fossil fuel production. Communities living near proposed storage sites express concern about safety and industrial expansion. Others ask whether the billions needed for pipelines and storage infrastructure might be better spent on alternatives such as wind and solar. These are not new arguments, but they persist among some governments and within the environmental NGO community. Much of the support for CCS comes from oil and gas companies, where carbon capture allows them to maintain production while reducing emissions. While oil company CCS investments lend credibility to the technology and provide crucial financing that accelerates deployment, this has only fueled environmental groups concerned that carbon capture is intended to primarily extend fossil fuel production. The technology itself is also energy intensive. In many cases, adding carbon capture increases a facility's total energy use by 15 to 25%. Storage requires long-term monitoring and oversight. Despite successful projects outnumbering unsuccessful ones, critics point to 'failed' or underperforming facilities as evidence that the promise of CCS remains more theoretical than real. Even so, climate policy does not unfold in a vacuum. Industrial projects, political direction, and employment concerns can shape what happens. In this context, CCS appeals not just because it can help mitigate CO_2 emissions, but because it also does not fundamentally challenge current global energy and economic structures.

The phrase "particularly in hard-to-abate sectors" therefore becomes relevant in climate conversation, notably appearing in the UAE Consensus' first GST decision, right after calling for the acceleration of CCUS. It refers to industries such as cement, steel, and heavy transport, where emissions arise from processes that cannot be easily eliminated through renewables or efficiency improvements.

For the private sector, the challenge is that each country's approach to CCS reflects unique economic structures, resource endowments, and political constraints. There's no universal template for CCS advocacy because there's no universal motivation for CCS deployment (i.e. address climate change, avoid/reduce taxes, economic/market drivers through the diverse technological options for carbon capture), a complexity the CMC is actively working to address through its Workstream 3, Co-Led by Saudi Arabia and the United Kingdom. Ultimately, the widespread adoption of CCS will depend on aligning technological potential with the diverse political, social, ecological and economic realities on the ground.

This also raises how some CCS applications fit into broader environmental goals where it may compete for land, energy, and funding with nature-based solutions like forest protection and wetland restoration. For example, bioenergy with carbon capture and storage (BECCS) requires large amounts of biomass, which can lead to land-use conflicts with forests or

agricultural areas that are vital for biodiversity and food production[17][18]. In countries like Indonesia, expanding biomass plantations for BECCS could threaten important rainforest habitats[19]. Similarly, in the United States, proposed CCS projects near the Gulf Coast require extensive pipeline networks and storage sites[20], raising concerns about impacts on coastal wetlands and marine ecosystems. While CCS is often presented as part of a net-zero strategy, if it undermines biodiversity or delays conservation efforts, it risks creating new environmental problems even as it aims to solve climate change.

Recognising this, some governments are beginning to fold CCS into more integrated climate and environmental policies. The European Union's Green Deal includes frameworks to assess CCS projects not only for their emissions reductions but also for their ecological impacts, ensuring that deployment aligns with biodiversity protection goals. Norway's Longship project explicitly incorporates ecosystem monitoring alongside CO_2 storage to minimise any potential environmental harm. In the United States, environmental organisations like the National Wildlife Federation support carbon capture and storage as an important climate solution, recognizing that underground CO_2 storage can safely sequester emissions deep underground without them returning to the surface[21]. These emerging approaches reflect a growing recognition that successful climate action requires careful coordination across different mitigation strategies. The relationship between industrial-scale carbon management and ecosystem protection underscores the ongoing need for evaluation of trade-offs and monitoring of both climate and ecological outcomes. Whether CCS can realise its potential as part of a holistic climate approach that works with the natural world may ultimately depend on how well these priorities are balanced in practice.

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2025 Climate Diary

Sep 17, New York **UNFCCC NDC Synthesis Report**

The UNFCCC will publish its NDC Synthesis Report analysing all submitted NDCs before COP30 during the 80th session of the United Nations General Assembly (UNGA 80).

Sep 23–26, Johannesburg **G20 Ministerial Meeting on Energy**

Energy ministers will discuss decarbonization strategies, which historically has included CCS.

6-7 Nov, Belém **COP30 Heads of State Summit**

The Brazilian government is hosting a COP30 Heads of State Summit to precede the main conference sets the political tone.

10-21 Nov, Belém **COP30 UN Climate Change Conference**

UN climate negotiations and platform to deliver on the Paris Agreement via implementation-focused outcomes across mitigation, adaptation, finance and nature. Voluntary outcomes are also expected through the Action Agenda.

22-23 Nov, Johannesburg **G20 Summit**

The first G20 summit held in the African continent marks the last major platform to solidify global climate commitments, including CCS.