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BRIEF

CCS AND CDR IN THE UNFCCC: KEY POLICY ENTRY POINTS

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JUNE 2026

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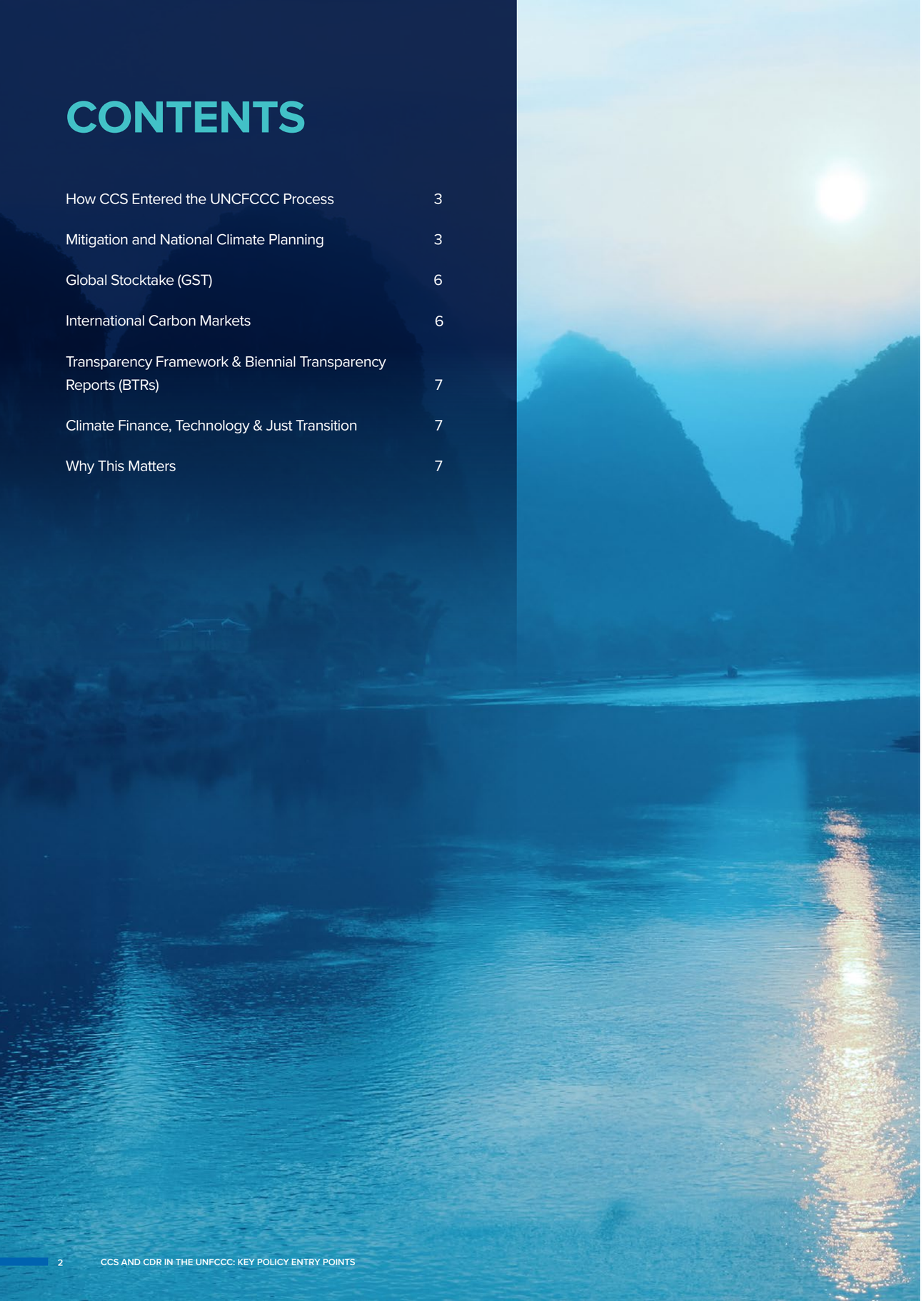


Under the United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement, Parties pursue climate mitigation in line with different national circumstances, development priorities, and technology pathways. As countries increasingly focus on implementing net zero and long-term climate goals, Carbon Capture, Utilisation, and Storage (CCS/CCUS) which functions as an emissions reduction and abatement tool, and Carbon Dioxide Removal (CDR) which actively removes carbon dioxide from the atmosphere, intersect with discussions on mitigation, transparency, technology, finance, and decarbonisation across sectors.

In this publication, “carbon management” is used as an umbrella term for CCS/CCUS and CDR.

HOW CCS ENTERED THE UNFCCC PROCESS

CCS has been recognised in international climate science and policy discussions for more than two decades. Beginning with the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report (AR3) in 2001 and beyond, the IPCC has identified CCS as an important mitigation option, particularly for emissions-intensive industries and fossil fuel use. The 2005 IPCC Special Report on Carbon Dioxide Capture and Storage established the technical feasibility of CCS, providing the foundation for its inclusion in future climate policy discussions.

Over time, CCS and later CDR became integrated into UNFCCC processes through the development of greenhouse gas inventory methodologies, technology discussions, and modelling long-term mitigation pathways. CCS became more formally embedded within the UNFCCC process through the development of accounting methodologies for captured and stored CO_2 within national greenhouse gas inventories. Around a decade later, CDR became more prominent in climate discussions as integrated assessment models (IAMs) and net zero pathways indicated that large-scale carbon removals would likely be needed alongside deep emissions reductions to limit warming to well below 2°C.

While successive IPCC assessment reports also highlighted challenges, limitations, and uncertainties related to large-scale CCS deployment, the IPCC’s most recent Sixth Assessment Report (AR6) identifies CCS as an important mitigation option for hard-to-abate sectors and indicates that CDR will be necessary to counterbalance residual emissions in pathways consistent with the goals of the Paris Agreement.

This reflects a broader shift within the UNFCCC process, from whether CCS and CDR could play a role in climate mitigation towards how these technologies can be governed, accounted for, financed, and implemented. Within UNFCCC discussions, CCS has most commonly been referenced in relation to hard-to-abate sectors, while perspectives continue to vary regarding its potential role in the power sector.

Today, CCS and CDR are reflected across UNFCCC processes and mechanisms, including national climate plans, carbon markets, transparency frameworks, the Global Stocktake, and climate finance and technology discussions. Together, these provide pathways for countries to incorporate carbon management into climate strategies, support implementation and investment, and align industrial decarbonisation with long-term climate goals under the Paris Agreement.

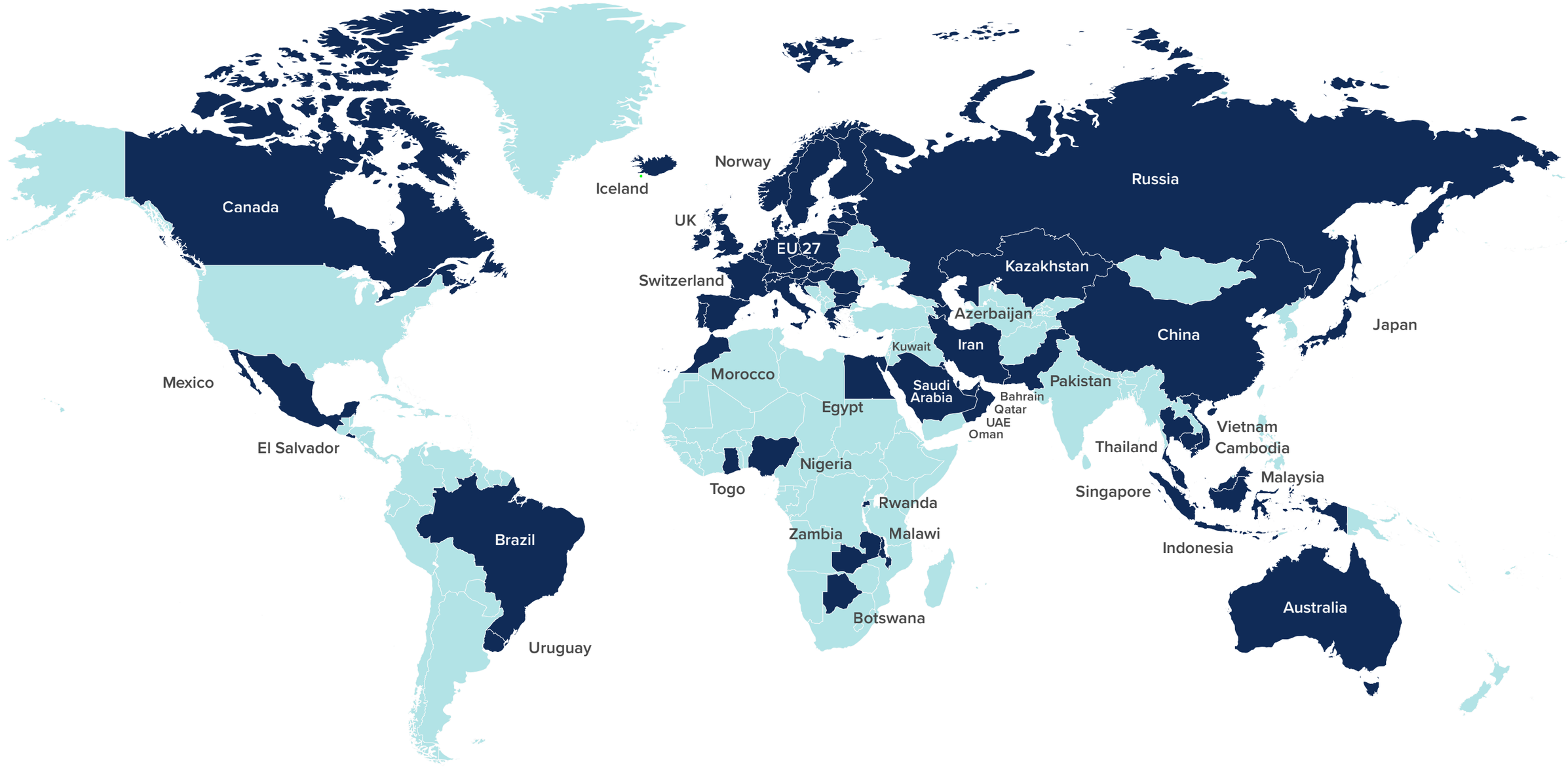
MITIGATION AND NATIONAL CLIMATE PLANNING

Paris Agreement Article 4

Under Article 4 of the Paris Agreement, Parties communicate *Nationally Determined Contributions (NDCs)* and *long-term low greenhouse gas emission development strategies (LT-LEDS).* An increasing number of countries now reference carbon management in climate plans, particularly in relation to industrial decarbonisation, hydrogen production, and net zero targets. Through Article 4, the *Mitigation Work Programme,* established at COP26 and enhanced in COP28, aims to facilitate the scaling of ambition this decade, including investment and technology needs relevant to CCS deployment.

More than 60 countries now reference CCS, CCUS, or CDR within NDCs in various ways, with references ranging from high-level recognition of carbon management to more detailed deployment targets, sectoral strategies, and policy measures (Figure 1). *Existing analysis* also suggests that NDCs do not always fully reflect ongoing national policy, investment, and deployment developments related to carbon management.

Figure 1. Carbon management in global NDCs as of Dec 15, 2025

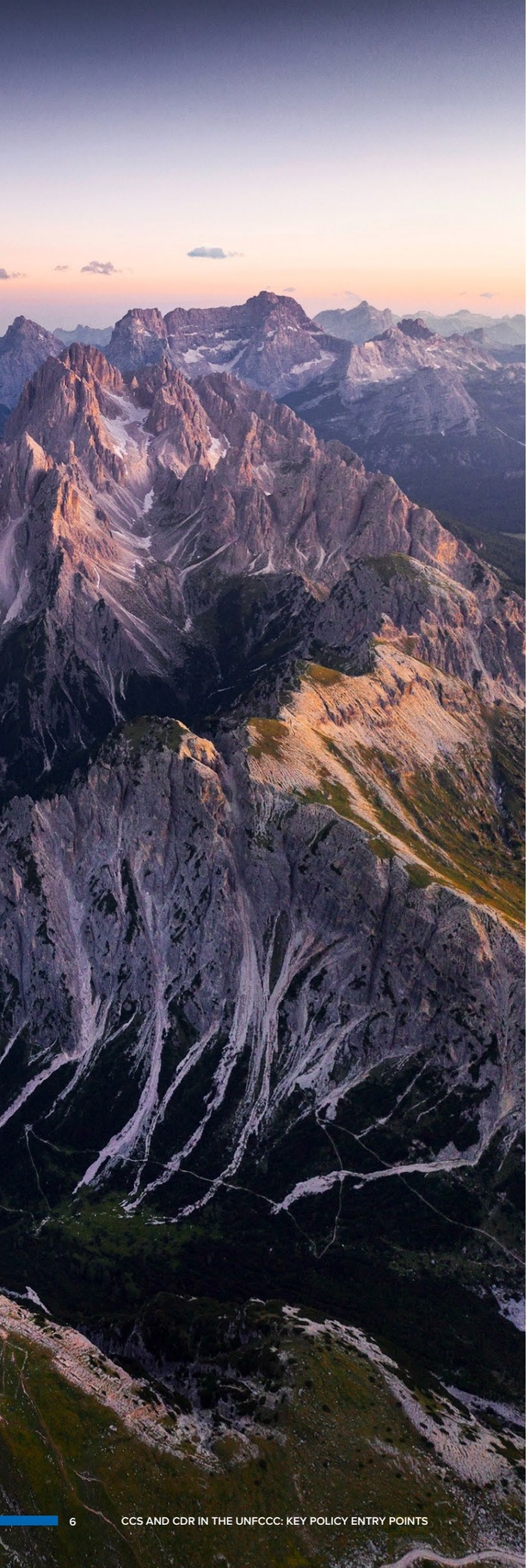


CCS AND CDR IN THE THIRD NDC CYCLE

The *2025 NDC Synthesis Report* provides the first quantitative tracking by the UNFCCC Secretariat of carbon capture and engineered removals targets within national climate commitments:

- 8% of Parties communicated quantitative targets for increasing annual carbon capture capacity by 2035, totalling 39 $MtCO_2$ per year.
- 9% of Parties identified specific measures for Direct Air Carbon Capture and Storage (DACCS).
- 3% of Parties included measures related to Bioenergy with Carbon Capture and Storage (BECCS).

CCS deployment is already underway at commercial scale. According to the Global CCS Institute's *Global Status of CCS 2025 report,* operational CCS facilities currently represent around 64 $MtCO_2$ of annual capture capacity globally. Separately, Imperial College London's *London Register of Subsurface CO_2 Storage* reports that more than 383 $MtCO_2$ have been permanently stored underground cumulatively since 1996.



GLOBAL STOCKTAKE (GST)

Paris Agreement Article 14

The Global Stocktake assesses collective progress towards achieving the goals of the Paris Agreement.

The COP28 UAE Consensus marked an important policy development by recognising "abatement and removal technologies" in *Paragraph 28*, specifically referencing "CCUS, particularly in hard-to-abate sectors." This represented one of the clearest negotiated references to CCS technologies within a UNFCCC outcome.The GST has helped shift discussions in recent years towards implementation, financing and industrial transition pathways.

INTERNATIONAL CARBON MARKETS

Paris Agreement Article 6

Article 6 establishes frameworks for international carbon markets and cooperative approaches. Discussions under Article 6 consider carbon management approaches, including CCS and CDR, particularly in relation to removals methodologies, permanence, accounting, and environmental integrity.

CCS and CDR projects may be included within cooperative approaches under Article 6.2 where Parties agree on accounting rules and corresponding adjustments. Meanwhile, discussions on the further operationalisation of Article 6.4 continue to examine methodologies and accounting approaches for CCS and CDR activities, particularly engineered removals, while ensuring robust monitoring, reporting, and verification (MRV).

Key policy issues include:

- permanence of stored carbon,
- lifecycle emissions accounting,
- avoidance of double counting, and
- ensuring removals complement deep emissions reductions.

TRANSPARENCY FRAMEWORK & BIENNIAL TRANSPARENCY REPORTS (BTRS)

Paris Agreement Article 13

The *Enhanced Transparency Framework (ETF)* establishes reporting requirements under the Paris Agreement. As countries incorporate CCS and CDR into mitigation pathways, robust accounting methodologies for captured, transported, stored, and removed CO_2 are becoming more important.

The IPCC is currently developing the *2027 Methodology Report on Carbon Dioxide Removal Technologies, Carbon Capture, Utilization and Storage for National Greenhouse Gas Inventories,* which aims to provide additional methodological guidance for:

- CDR technologies,
- CO_2 capture, transport, storage, and utilisation, and
- removals accounting.

Updated methodologies could help standardise accounting for CCS and CDR, supporting transparency, strengthening confidence in climate reporting and carbon markets, and helping unlock finance for industrial transition and emissions reduction projects, particularly in developing economies.

The methodology update is expected to become an important reference point for future UNFCCC reporting and carbon market approaches.

CLIMATE FINANCE, TECHNOLOGY & JUST TRANSITION

Developing countries frequently identify technology access, capacity building, and finance as prerequisites for industrial decarbonisation and low-carbon development pathways. For these economies, access to carbon management technologies is framed as an issue of equity and economic growth.

Institutions and mechanisms under the Convention and Paris Agreement, including the *Technology Mechanism*, *Technology Executive Committee (TEC)*, *Climate Technology Centre and Network (CTCN)*, and *Green Climate Fund (GCF)*, may support enabling environments, knowledge sharing, and project development relevant to CCS and carbon removal technologies.

At the same time, discussions under *response measures* and the *Just Transition Work Programme* intersect with industrial transition and economic diversification challenges. CCS and CDR are being considered within these discussions as potential tools for supporting emissions reductions in hard-to-abate sectors while maintaining industrial activity and supporting workforce transition.

WHY THIS MATTERS

For governments, energy producers, heavy industry, technology providers, transport and storage operators, financial institutions, and research organisations, UNFCCC processes influence how CCS and CDR are recognised within climate strategies, industrial transition pathways, and international cooperation frameworks.

Stakeholders can engage by:

- contributing to national climate planning and NDC development,
- participating in Article 6 and carbon market discussions,
- supporting development of MRV and transparency frameworks,
- engaging with implementation-focused initiatives such as the *Marrakech Partnership for Global Climate Action* and the *Carbon Management Challenge*, and
- sharing practical deployment experience through UNFCCC technical discussions, workshops, and side events.

As the focus of climate negotiations increasingly shifts towards implementation, engagement in these processes can help shape the enabling conditions for large-scale carbon management deployment globally.

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