CCUS under Article 6 of the Paris Agreement

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Roundtable on
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Importance of CCS

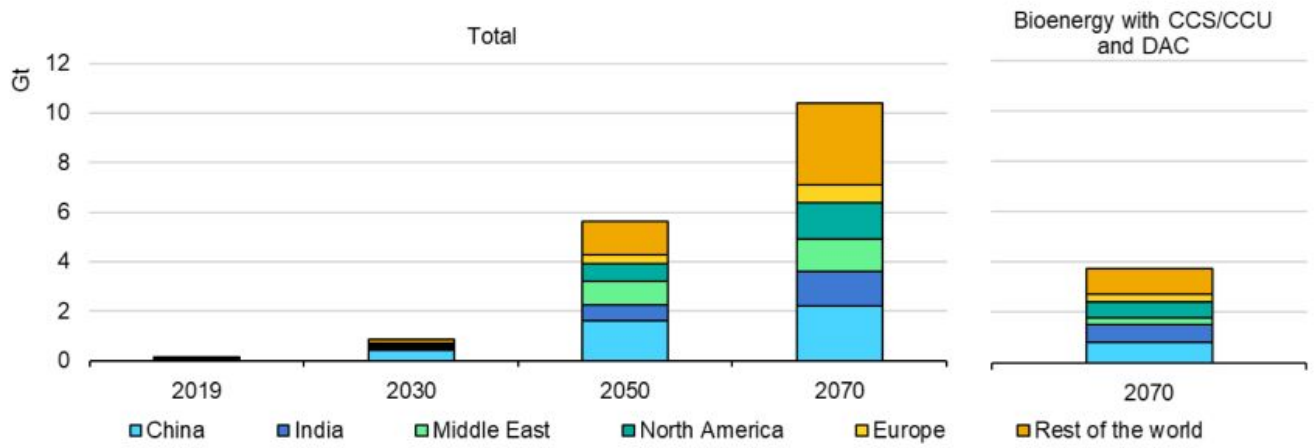
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- **Paris Agreement has two goals**
  - Temperature goal (close to 1.5 C)
  - Global net neutrality by second half of century
- **Carbon capture and storage will be critical**
  - To reach carbon neutrality – where ? Scope of use of CCUS is for NOW an open question
    - In areas where emissions cannot be abated
    - To provide an additional option to reach carbon neutrality based on economics

The role of CCUS in meeting the Paris Agreement's warming limitation goals

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Figure 4.1 Captured CO_2 emissions by country/region in the Sustainable Development Scenario



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China accounts for around one-quarter of all the CO_2 captured worldwide cumulatively to 2070 in the Sustainable Development Scenario, driven mainly by retrofits to existing power stations and industrial plants.

Source: IEA ETP 2020

- Most analysis (IEA; IPCC) shows that CCUS is needed in every region to meet Paris Agreement goals
- IEA variously estimates storage in the region 5.5-7.2 $GtCO_2$ in 2050, spread across Europe, North America, Middle East and Asia
- Variety of sources of CO_2: fossil, biogenic and scenarios including DACCS

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Issues facing CCUS – what issues are we seeking to address?

- Cost
- Price uncertainty
- Multi actors
- Regulatory barriers
- Public acceptance
- Infrastructure
- Components with different actors and different appetites

Incentives for CCUS

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- Several efforts to support CCUS through carbon pricing over the past 10-15 years (EU ETS; KP CDM)
- Some efforts are substituting the lack of carbon price signals (U.S. 45Q tax credits)
- Some efforts are being made to backfill weak and unstable carbon price signals (e.g. CCfD)

Apart from the USA 45Q system, the others have proven ineffective in deploying any projects.

UK (and now EU) are talking about with CCfDs, but none have yet been signed off.

- The Paris Agreement offers an opportunity, through Article 6, to consider new forms of international cooperation and mechanism(s) that focus on the geological storage of CO_2. This could:
  - Complement, supplement or replace short-term or misfunctioning measures
  - Provide systematic and enduring policy support for the geological storage of carbon, and therein drive a physical CO_2 market need to sustain a gigaton scale industry aligned with the Paris goals

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Paris Agreement & Article 6

Article 6 of the Paris Agreement

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- Paris Agreement is built on national commitments - Nationally Determined Contributions (NDC)
  - NDCs are what countries ca contribute to the PA - how they are expressed is nationally determined
    - CO_2 reductions
    - % of RE
    - Amount of stored CO_2
- Has 3 components on international cooperation under the Paris Agreement:
  - 2 provide the framework for markets (6.2 & 6.4)
  - 1 addresses non market approaches

Article 6.2

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- Art 6.2 addresses

  - Transfers of mitigation outcomes (reductions) that can be used towards NDCs between countries
  - Governance is bilateral/plurilateral between countries involved
  - Mitigation outcomes(reductions/absorption) are created under this governance
  - UN framework creates the accounting framework ensuring the avoidance of double counting, credibility and transparency

Art 6.4 creates mitigation outcomes

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- Article 6.4
  - Is under tight UNFCCC governance – Supervisory Board (SB)
  - Mitigation outcomes created are under rules approved by the SB
  - Each activity (project) is approved by the SB
  - CDM experience provides experience of
    - high uncertainty,
    - opposition to CCUS,
    - long delay,
    - politicized process

What does Article 6 provide?

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- Assurance of international recognition of transfers
- Acceptance of the use of transfers towards NDCs – with emissions/extraction in different areas of the globe from storage availability
- Ability to for countries or groups of countries to cooperate as they choose under Art 6 .2 as long as accounting rules are observed

Art 6.2 vs. 6.4

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- Art 6.4 would provide
  - UNFCCC stamp for anything that gets transferred between countries for use towards NDCs
  - …….however, choosing to use Art 6.4 complex, uncertain and politicized
- Art 6.2 – Parties will
  - Transfer and recognize what they agree on among themselves for use towards their NDC.
  - Little interference from UNFCCC

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A new mechanism based on carbon storage (CSUs)

Concepts: CSO, CSU and relation with Article 6

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- CSO (carbon storage obligation): obligation to geo-sequester a percentage of carbon embedded in a product (extracted or distributed hydrocarbons)
- CSO obligation can be put for hydrocarbons at:
  - Point of production/extraction
  - Point of distribution
- CSU (carbon storage unit): 1 ton of CO_2 that is geo-sequestered and the only unit good for use to meet CSO obligations
- Article 6 of the Paris Agreement (Art 6.2) provides for the international recognition of transfers of CSUs between jurisdictions that have storage capacity and those that have CSO obligations

CSU basic market concept

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CSU Demand

- **Target metric**:
  - Balancing mass of carbon (tCO_2) *embodied* in produced hydrocarbons with mass tCO_2 stored = net zero account in the geosphere
  - Target ratchets over time, starting small, and rising predictably towards 100%. Provides predictability on the demand for storage
  - Attaining a 100% balance = "net zero" hydrocarbons (decarbonized on the supply-side)
- **Target setting**:
  - Voluntary (corporate pledges)
  - Regulated (top-down storage targets in e.g. NDCs; carbon storage obligations)

CSU supply

Operators of geological storage sites:

- Issued CSUs for certified geological carbon storage (for each tCO_2 stored)

Governance:

- Central agency verifies storage, issues CSUs, and operates registry for tracking and cancellations
- Standards for certifying storage drawn from existing rulebooks (IPCC 2006; ISO; CDM; national laws and regulations)
- Governance will depend on target setting approach

Points of departure

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- **Stakeholder acceptance.** Low maturity of the concept**:**
  - Polluter/emitter pays principle and emissions-based regulation and accounting is pervasive. Focus today is largely on “removals” rather than “storage”
  - Supply-side climate action often presented as only blunt instruments (fossil fuel phase-outs, moratoria etc)
  - CSUs can be a critical enabler for a wider group of CO_2 removal technologies (e.g. BECCS, DACCS)
  - Overtly bakes-in fossil fuels to the energy supply mix (likely to be unacceptable for many NGOs)
- **Corporate buy-in:**
  - More nuancing of what “net-zero” means for fossil fuel producing countries and companies (for management, investors, shareholders, etc)
  - Small group of independent producers will make a marginal difference. Will not be able to easily pass-through costs in hydrocarbon prices
- **Government buy-in:**
  - Limited acknowledgement of CCUS by countries in NDCs (a few more starting to appear in Mid-Century Strategies / Long-Term Low Emissions Development Strategies; LT-LEDS))
  - Are countries willing to pool significant finance for a few CCS projects under RBF?
  - Are there first movers ready to pilot national level CSO systems (Netherlands, UK, Norway)?