



COP26 and Outcomes for CCUS

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Who are we?

Our internationally recognised name is the IEA Greenhouse Gas R&D Programme (IEAGHG). We are a Technology Collaboration Programme (TCP) and are a part of the International Energy Agency's (IEA's) Energy Technology Network.

Disclaimer

The IEA Greenhouse Gas R&D Programme (IEAGHG) is organised under the auspices of the International Energy Agency (IEA) but is functionally and legally autonomous. Views, findings and publications of the IEA Greenhouse Gas R&D Programme do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.

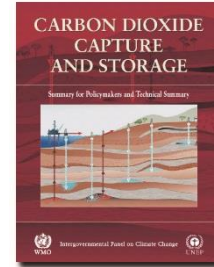
UNFCCC (United Nations Framework Convention on Climate Change) (1992) 197 Parties

- COP – Conference of the Parties to the UNFCCC – COP1 Berlin 1995 to COP26 Glasgow
- Kyoto Protocol (1997)
 - 2008 - 2012 (KP 1st Period). 2013 - 2020 (KP 2nd Period)
 - Developed country emission commitments
 - Clean Development Mechanism (CDM) – Policy mechanism for rewarding CO₂ reduction in developing countries. Project-based carbon credits. > 7,500 projects, 1,500 CERs (Mt CO₂e)
- Paris Agreement (2015)
- IEAGHG's role – providing information on CCUS

CCS in UNFCCC



United Nations
Framework Convention on
Climate Change



- Negotiations
- **2005 - IPCC SR on CCS**
 - 2005– 2011 CCS in CDM?
 - 2011 – CCS CDM Abu Dhabi workshop
 - **2011 - COP-17 CCS in CDM**



Awareness Raising (with BEG UT)

- 2014 - ADP TEM on CCS – project focussed
- 2014 - COP-20 – CCS projects Side Event
- 2015 - COP-21 – CCS projects Side Event
- 2016 – COP-22 – CCS in Africa Side Event
- 2017 – COP-23 – CCS, Oceans and SIDS
- 2018 – COP-24 - Decarbonise industry (IPCC)
- 2019 – COP-25 – CRR for South America and oceans (IPCC)



Attitudes on Carbon Capture and Storage (CCS) as a Mitigation Technology within the UNFCCC.
Romanak, K.; Fridahl, M.; Dixon, T. C. *Energies* 2021, 14, 629. <https://doi.org/10.3390/en14030629>

- **UNFCCC Paris Agreement**
- **COP21 (2015)**

- *"Well below 2C"*
- *"Pursue 1.5C"*
- *Net-zero - "in second half of century"*

- Nationally Determined Contributions - to be updated every 5 years, to *"represent a progression"*, first update in 2020 for COP26



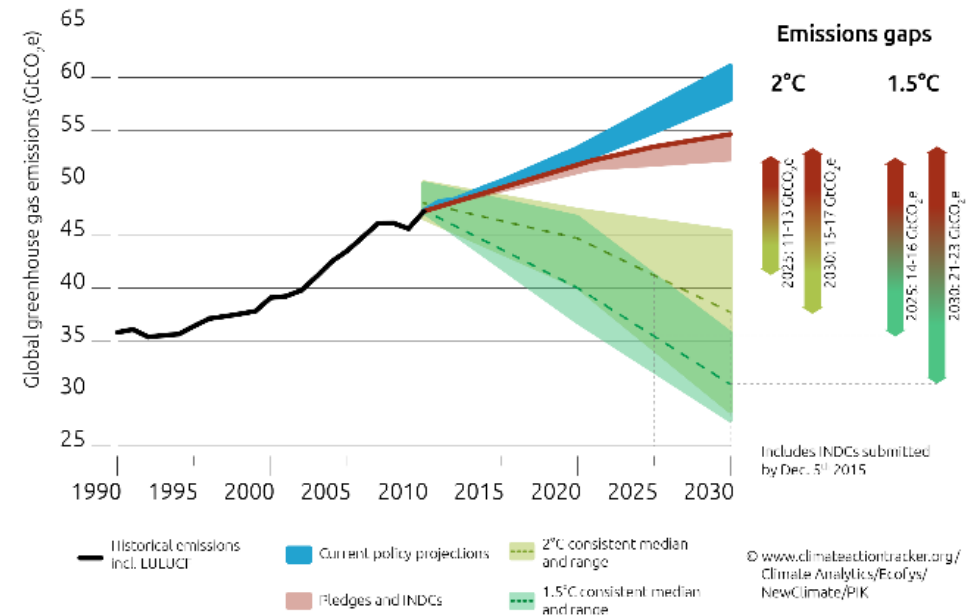
Paris Agreement Intended Nationally Determined Contributions (INDCs) in 2015



- 187 INDCs submitted for Paris
- 94% global emissions
- New trajectory to ~ 2.7C
- ~ 3.6C from existing policies

CAT Emissions Gaps

7th December 2015

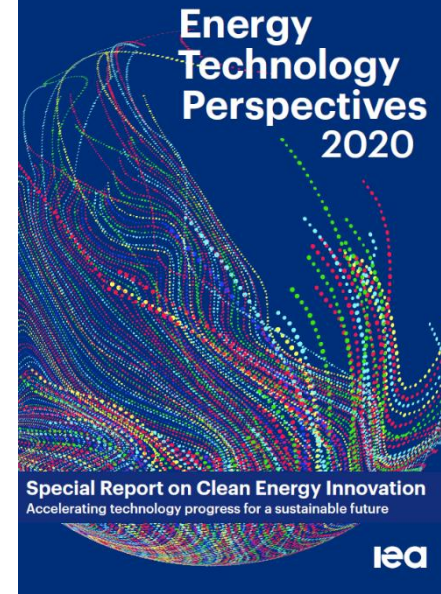
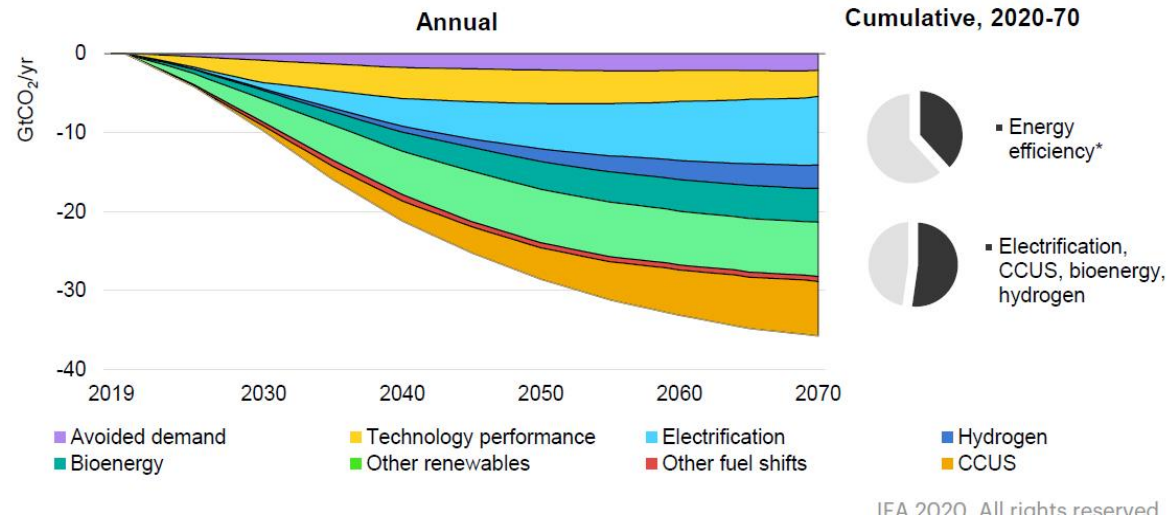


Climate Action Tracker

<http://climateactiontracker.org/global/173/CAT-Emissions-Gaps.html>

IEA ETP2020

Figure 2.2 Global energy sector CO₂ emissions reductions by measure in the Sustainable Development Scenario relative to the Stated Policies Scenario, 2019-70



- CCUS role is 25% in Faster Innovation Case (net zero by 2050)

IEA Special Report on CCUS

- Tackling emissions from existing energy assets;
- A solution for the most challenging emissions in sectors such as heavy industry & aviation;
- A platform for low-carbon hydrogen production;
- Removing carbon from the atmosphere

(IEA SR on CCUS 2020)



IEA Net Zero by 2050 Roadmap

**Net Zero
by 2050**
A Roadmap for the
Global Energy
Sector

Figure 4.1 ▶ Selected global milestones for policies, infrastructure and technology deployment in the NZE

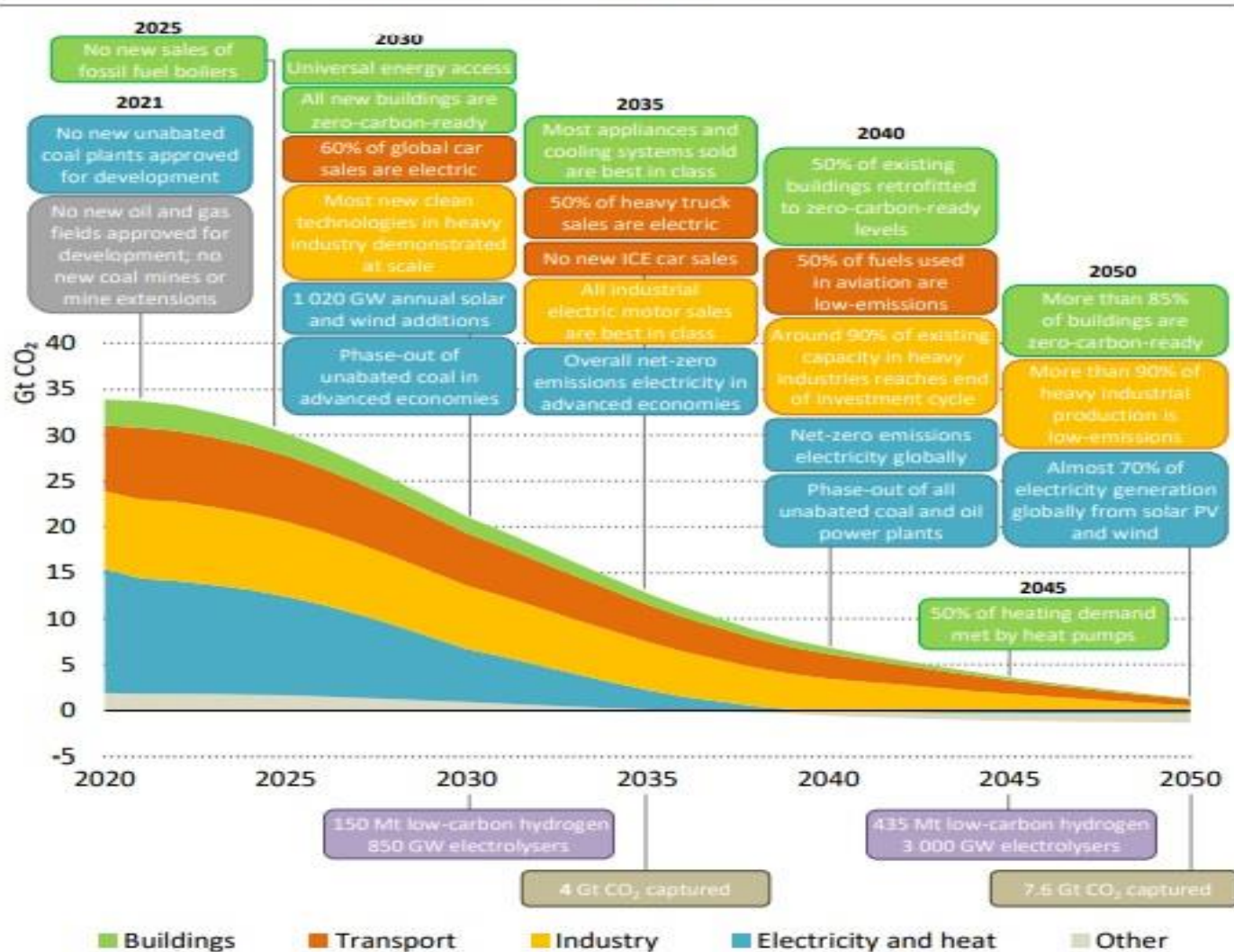


Fig 4.1. IEA NZE 2021



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UK 2021

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COP26



United Nations
Framework Convention on
Climate Change

COP26 hosted by the UK (with Italy) in Glasgow, 31 Oct to 12 Nov 2021

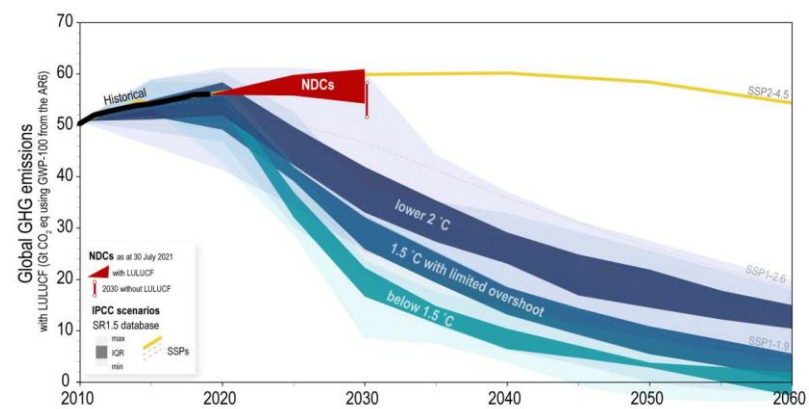
UK Presidency Goals:

- Secure global net-zero by 2050 and keep 1.5 within reach
- Adaptation – including resilient infrastructure
- Mobilise climate finance - \$100bn pa
- Finalise Paris Rulebook (ie Article 6) and increase collaboration
 - Article 6
 - International cooperation among countries in the achievement of their NDCs
 - 6.2 - Cooperative Approaches using Internationally Transferrable Mitigation Outcomes (ITMOs and OIMP) (between countries)
 - 6.4 - Mechanism to encourage GHG mitigation (project-based, like CDM)
 - 6.8 – Non-market approaches



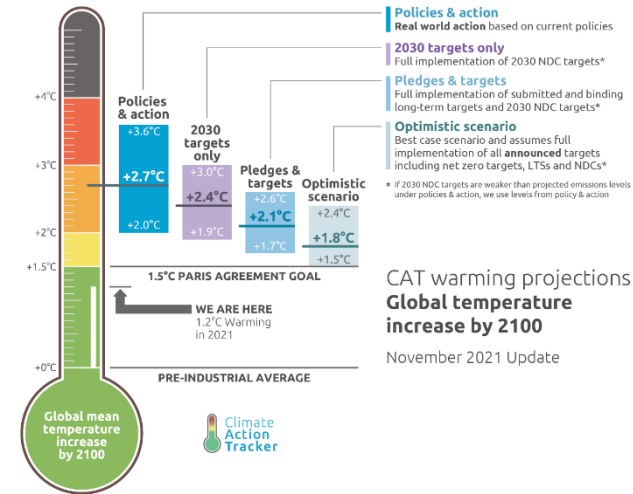
Nationally Determined Contributions (NDCs) as of 30 July 2021 (UNFCCC) 2.7C

Figure 9, UNFCCC/PA/CMA/2021/8



Climate Action Tracker based on latest NDCs **2.7C** now **2.4C**

IEA based on net zero pledges - **2.1C** now **1.8C**



NDC updates: As of 9 November 2021, **123** submitted, and just **16** include CCS (Norway, UAE, Australia, Iceland, USA, Canada, Malawi, Qatar, Tunisia, Pakistan, Kuwait, Togo, Bahrain, Saudi Arabia, China, Mongolia) and **3** that implicitly include CCS (UK, EU, Indonesia)

Long-term GHG strategies (mid-century): As of 9 November 2021, **43** countries have submitted these, and **33** contain CCS as a mitigation activity

COP26 Glasgow Climate Pact



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- Science and Urgency
- “welcoming” the IPCC’s Working Group I report on the science of climate change
- Mitigation
- NDCs, which were required to be updated every five years (ie 2020, 2025, 2030) will now have to be updated again by the end of 2022 (still with the target year of 2030).
- Clean energy technologies:
- *36. Calls upon Parties to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition;”*

COP26 Glasgow Climate Pact



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- Implementation - Article 6 – International Cooperation
- Article 6.2 relates to emissions trading between countries (ITMOs and OIMPs)
- Article 6.4 creates a new project-orientated crediting mechanism (like a new CDM).
- **Both Decisions were finalised**, with provisions to ensure their integrity such as ‘corresponding adjustments’ to ensure no double-counting should take place. These set up frameworks for carbon markets to work in support of the Paris Agreement, will assist both countries and companies to achieve higher ambitions, and should be beneficial for multinational CCS projects.
- **Both are overall technology neutral, implicitly including CCS, explicitly including “removals”**.
- To note one ambiguity for CCS in 6.4, “taking a conservative approach that avoids locking in levels of emissions, technologies or carbon-intensive practices”, could include many activities which are carbon intensive but actually have very low emissions, such as CCS on fossil fuel use. Interpretation will be key.
- In both in 6.2 and 6.4 Decisions, they ask Supervisory Body and SBSTA to produce further recommendations, for example around emissions avoidance, and on removals, so work is not finished yet.

COP26 UT & IEAGHG organised Side-events and activities



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United Nations
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Climate Change



CCS – Decarbonisation of Industries (UNFCCC Side-event) (UT and IEAGHG, CCSA, International CCS Knowledge Centre, Bellona)

- Tim Dixon, IEAGHG – Moderator and **Scene-setting**
- Dr Jennifer Wilcox, Acting Assistant Secretary, **Office of Fossil Energy and Carbon Management at DOE, US DOE**
- Dr Katherine Romanak, UT – **Demonstrating storage and assistance for developing countries**
- Dr Victor Richard Osu, Nigeria Office of the Vice President – **Nigeria’s strategy on CCUS**
- Eivind Berstad, Bellona – **Need for CCS Infrastructure**
- Beth Valiaho / Niall McDowell, International CCS Knowledge Centre – **Decarbonising Cement**



CCS in Emerging Economies (UT and IEAGHG, Bellona Pavilion)

- Tim Dixon, IEAGHG – Moderator and **Scene-setting**
- Dr Katherine Romanak, University of Texas – **CCS Technology Transfer**
- Dr Victor Richard Osu, Nigeria Office of the Vice President – **Nigeria’s strategy on CCS**
- Professor Raffie Hosein, University of the West Indies – **CCS progress in Trinidad and Tobago**
- Dr Rachmat Sule, Institute Technology Bandung, Indonesia – **CCS progress in Indonesia**
- Dr Vaibhav Chaturvedi, Council on Energy, Environment and Water, New Delhi – **CCS and India**

Link to recordings on [CCUS-related events at COP26 \(ieaghg.org\)](https://www.ieaghg.org)

- **UNFCCC virtual Exhibit on CCUS (UT with IEAGHG, CCSA, International CCS Knowledge Centre)**

Civil Society protests



FOSSIL OF THE DAY

LEADERBOARD

01 November	  
02 November	  
02 Nov Ray of the Day:	  
03 November	  
04 November	  
05 November	  
08 November	  
09 November	  
10 November	  
11 November	  
12 November	  

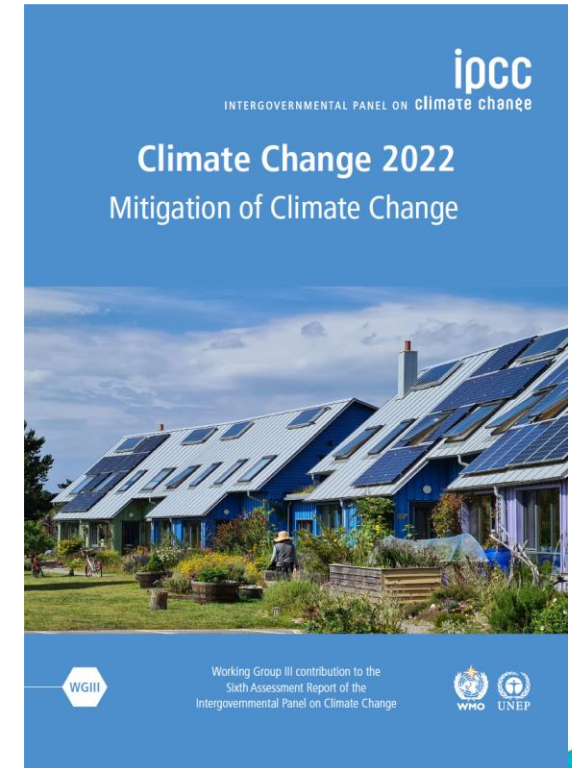
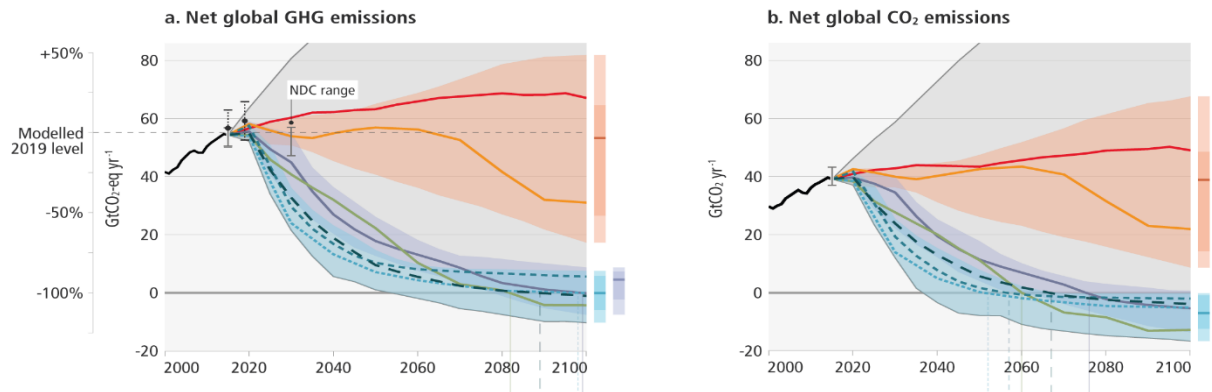


IPCC AR6 reports



- WGI – Science of Climate Change (Aug 2021)
- WGII – Impacts of Climate Change and Adaptation (Feb 2022)
- WGIII – Mitigation of Climate Change (Apr 2022)

Modelled mitigation pathways that limit warming to 1.5°C, and 2°C, involve deep, rapid and sustained emissions reductions.

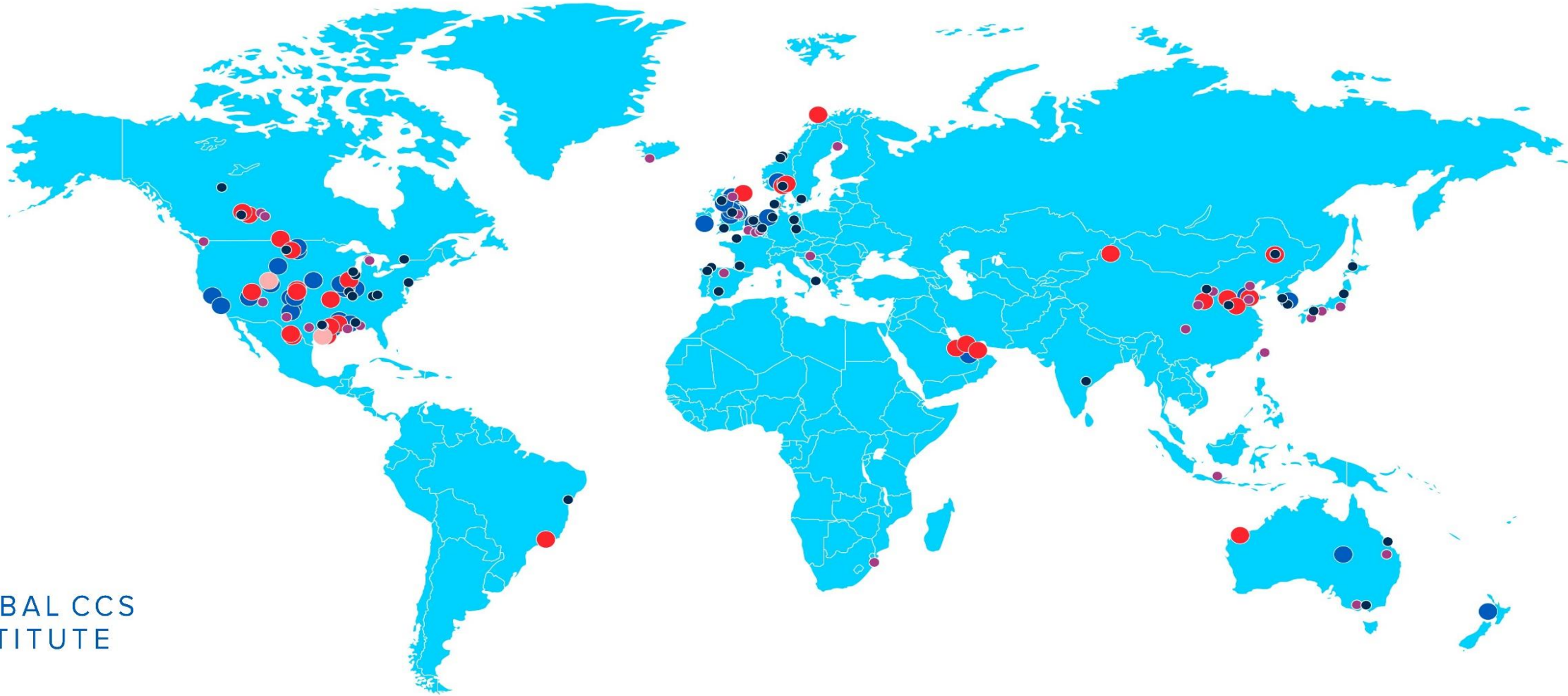


- Synthesis Report – due Sep 2022

What next and gaps



- Article 6
 - further work by SBSTA
 - Supervisory Body to be established
- Countries revising their NDCs by end 2022
- IPCC AR6 published in time for COP27 (Egypt)
- IPCC GHG Inventory Guidelines
 - DAC is not included



GLOBAL CCS
INSTITUTE

2020

- | | |
|--|---|
| ● COMMERCIAL CCS FACILITIES IN OPERATION & CONSTRUCTION | ● PILOT & DEMONSTRATION FACILITIES IN OPERATION & DEVELOPMENT |
| ● COMMERCIAL CCS FACILITIES IN DEVELOPMENT | ● PILOT & DEMONSTRATION FACILITIES COMPLETED |
| ● OPERATION SUSPENDED | |