



Achieving Carbon Neutrality with Carbon Capture, Use and Storage Technology

Day 1

23 November 2020



Housekeeping rules



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Vladimir Budinský

Acting Chair, Group of Experts on Cleaner Electricity Systems

Moderator:

Janos Pasztor

Executive Director of the Carnegie Climate Governance Initiative, Switzerland



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Panelists:

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Chief Executive Officer, Gassnova, Norway

Claude Loréa

Executive Director, Global Cement and Concrete Association, United Kingdom

Jarad Daniels

Director of Planning and Environmental Analysis, Department of Energy, United States

Jacek Podkanski

Senior Engineer, Energy Security Division, European Investment Bank

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Senior Fellow, German Institute for International and Security Affairs, Germany

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- *Executive Director, Global Cement and Concrete Association, United Kingdom*



Global Cement and Concrete
Association

GCCA Climate Ambition

Towards carbon neutral concrete

CARBONEUTRAL

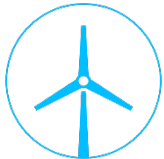
How can carbon neutral concrete be achieved?

We believe in the coming decades, we can provide society with carbon neutral concrete. We are already working to achieve this and recognise the need to accelerate our actions today.

In the coming years we can achieve carbon neutral concrete by:



- **Eliminating our direct energy-related emissions and maximising the co-processing of waste** from other industries, which substitutes the use of fossil fuels involved in cement manufacture.



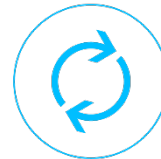
- **Reducing and eliminating indirect energy emissions** through renewable electricity sources where available.



- **Reducing process emissions** through new technologies and deployment of carbon capture at scale.



- **Reducing the content of both clinker in cement and cement in concrete**, as well as more efficient use of concrete in buildings and infrastructure.



- **Reprocessing concrete from construction and demolition waste** to produce recycled aggregates to be used in concrete manufacturing.



- **Quantifying and enhancing the level of CO₂ uptake** of concrete through recarbonation and enhanced recarbonation in a circular economy, whole life context.

GCCA's policy framework for action on cement and concrete

This includes measures which:

- Promote investment in state-of-the-art technology for new and retrofit plants.
- Facilitate increased use of waste and by-products as alternative fuels and raw materials; enable governments and industry to work together to implement circular economy strategies and promote waste avoidance, collection and sorting, pre-treatment, recovery, recycling and co-processing.
- Support the research and development of breakthrough technologies as well as the acceleration and scaling-up of proven efficient low carbon technologies, with a particular focus on CCUS and new and alternative binders. Policies should help mitigate the risk through investment mechanisms.
- Promote cooperation between government and industry to develop CO₂ transport and storage infrastructure.
- Drive the demand for sustainable building materials by helping to stimulate market demand for innovative products by construction contractors and customers.
- Support life-cycle assessment-based methodologies, tools and databases to enable a whole-life based approach to procurement. Appropriate sustainability assessment methods using life cycle analysis are to be preferred in public and private tendering.
- Recognise at national level the uptake of CO₂ by existing concrete in the built environment.
- Energy performance of buildings calculation methods should be sophisticated enough to take account of thermal mass.
- Electricity systems should facilitate demand response, i.e. interaction between the grid and households, where the consumer enjoys a share of the cost savings.
- Enable revision of building codes and regulations to facilitate the adoption of innovations without jeopardising safety and durability and recognising the increased need for resilience in the built environment.
- Establish the means of recognising that the resilience of the built environment can contribute to favourable social and economic benefits for society.
- Establish the means of recognising that concrete can contribute to favourable emission benefits in other sectors of the economy.
- Access to recycled concrete for utilisation for recarbonation.

Jarad Daniels

- *Director of Planning and Environmental Analysis, Department of Energy, United States*

CCUS: positive energy – but we must keep the wheel turning!

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EMERGING POLICY and AMBITIONS

- 30+ countries with “net-zero” ambitions by ~2050!
- EU: 2050 net-zero target; CEF, Innovation Fund etc.
- NOR: Gov. investment in Longship & Northern Lights
- UK: GBP800m fund & business models
- NL: SDE++ and EUR100m EU support
- US: 45Q tax credits
- China: 2060 net zero target
- JP: Commercialise CCUS by 2030
- UAE: ADNOC to ramp up CCUS by 500% by 2030
- ...

RESETTING STRATEGIC NARRATIVE

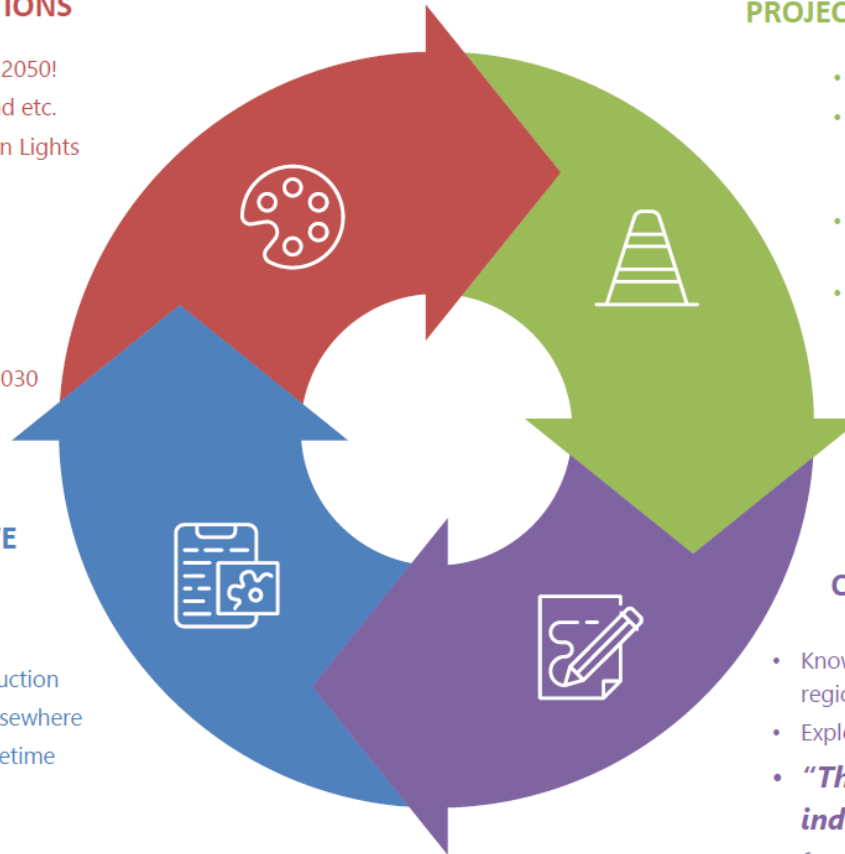
- From “burden” to “opportunity”
- Decarbonise hard-to-abate industry sectors
- CCUS as partner in low-carbon hydrogen production
- CO2 removal & CCUS as offset for emissions elsewhere
- Decarbonise existing power assets with long lifetime

PROJECT DEVELOPMENT SPEEDS UP

- 20 projects today
- 30 new projects announced since 2017: US, Europe, Middle East, Korea, China, Australia, New Zealand etc.
- 16 projects closest to implementation (FID in 12 months) represent USD27bn in investment
- Joint infrastructure → hubs are the way forward, with common transport and storage infra for a multitude of capture facilities

COLLABORATION REMAINS CRITICAL

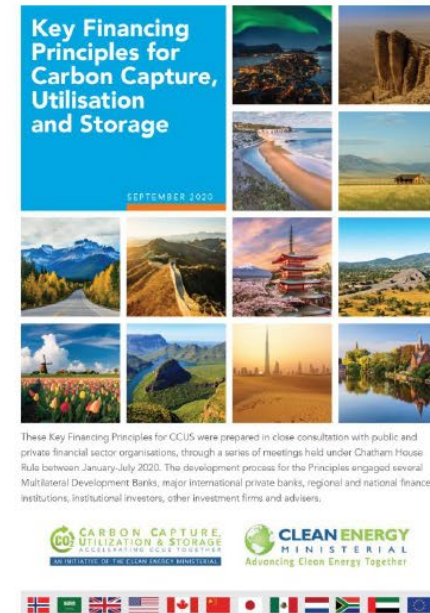
- Knowledge-sharing between projects, countries and regions
- Exploiting regional synergies, strategies and investment
- **“Three-legged stool”**: *government, industry, finance sector all have their role to play*





Key Financing Principles for CCUS

- **Objective:** to support the establishment of a business case for CCUS and to facilitate financing;
- **Target groups:** governments, industry and the financing sector who each have a unique and essential role to play;
- **Global coverage:** both developed and developing countries, taking into account differences in countries' circumstances;
- **Developed in close consultation with public and private financial sector organisations.**



DOCUMENT AVAILABLE AT:
<https://www.cleanenergyministerial.org/initiatives>



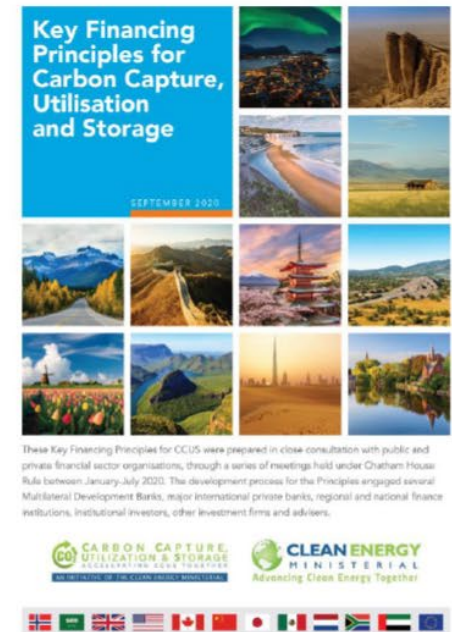
Key Financing Principles for CCUS

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Key Financing Principles for CCUS (1)

- 1** Industry, governments and the financial sector should communicate the *importance of CCUS*. 
- 2** Government policies should establish a *revenue stream* for CCUS to facilitate private sector investment. 
- 3** The financial sector, industry and government should work together to facilitate CCUS investment and help *mitigate the risks* of CCUS deployment. 
- 4** Industry, the financial sector and governments should work together to establish a *pipeline of CCUS projects*. 
- 5** The financial sector should ensure CCUS is part of their *climate change strategies* and is eligible for sustainable finance. 



Key Financing Principles for CCUS

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Key Financing Principles for CCUS (2)

6

The financial sector should strive to accelerate the development of *novel financing approaches* to CCUS



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Governments should consider CCUS as part of their *Nationally Determined Contributions* (NDC) under the Paris Agreement.



8

Governments should utilize existing development and climate institutions to advance CCUS in *developing countries*.



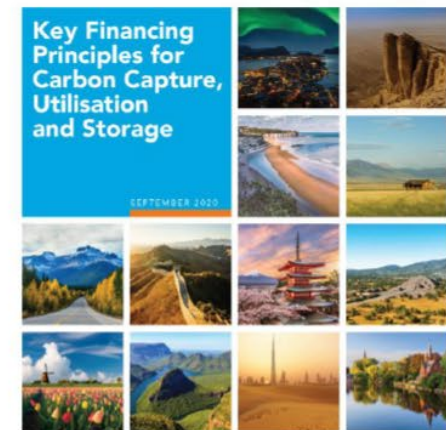
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Governments should consider CCUS investment as a means of creating and preserving sustainable jobs and providing a *low-carbon stimulus* to the economy.



10

Industry, governments and the financial sector should consider CCUS investment as a means of driving *innovation* and supporting broader *industrial development*.



These Key Financing Principles for CCUS were prepared in close consultation with public and private financial sector organisations, through a series of meetings held under Chatham House Rules between January-July 2020. The development process for the Principles engaged several Multilateral Development Banks, major international private banks, regional and national finance institutions, institutional investors, other investment firms and advisers.

CO₂ CARBON CAPTURE, UTILIZATION & STORAGE LEADERSHIP GROUP REPORT

CLEAN ENERGY MINISTERIAL Advancing Clean Energy Together



Jacek Podkanski

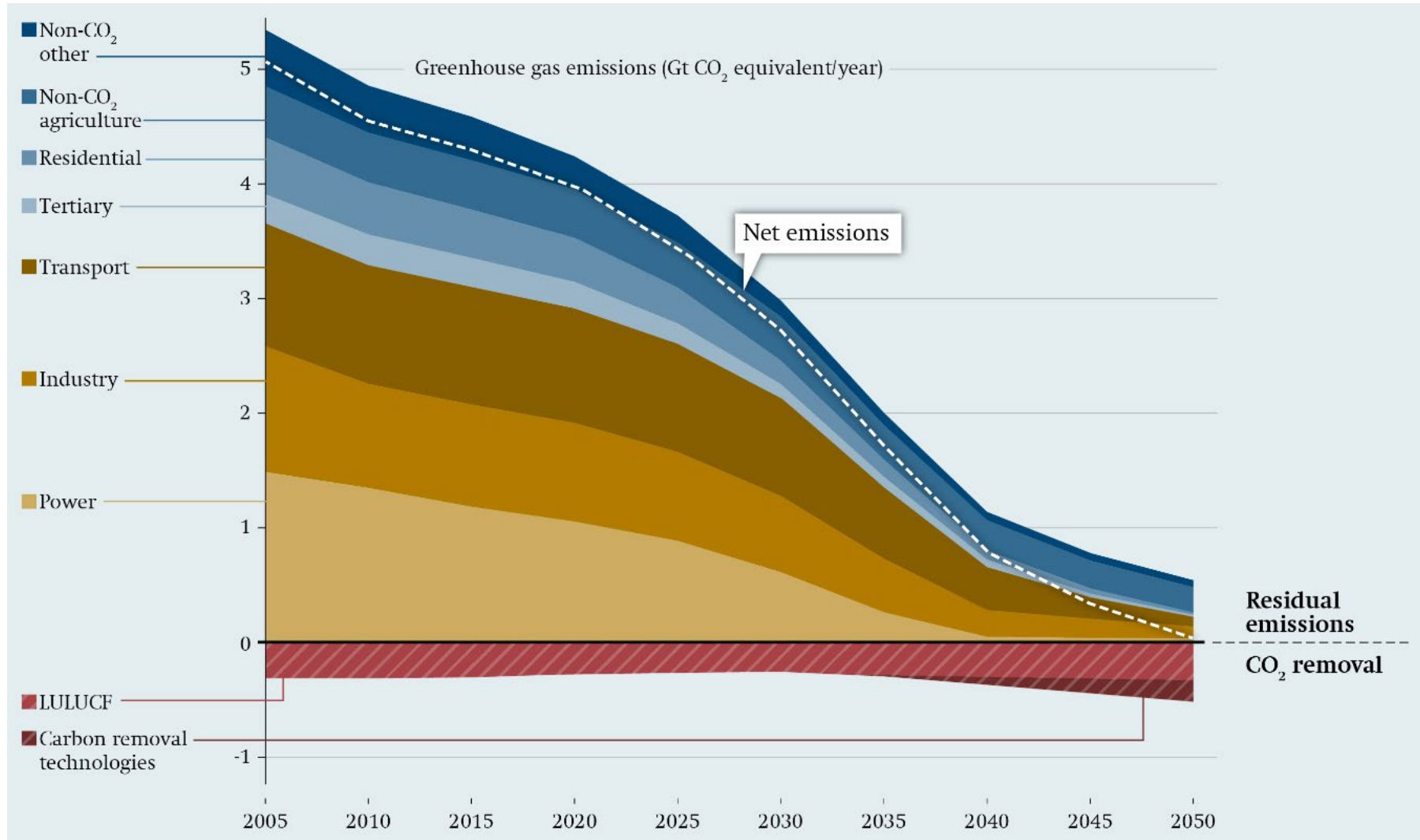
- *Senior Engineer, Energy Security Division,
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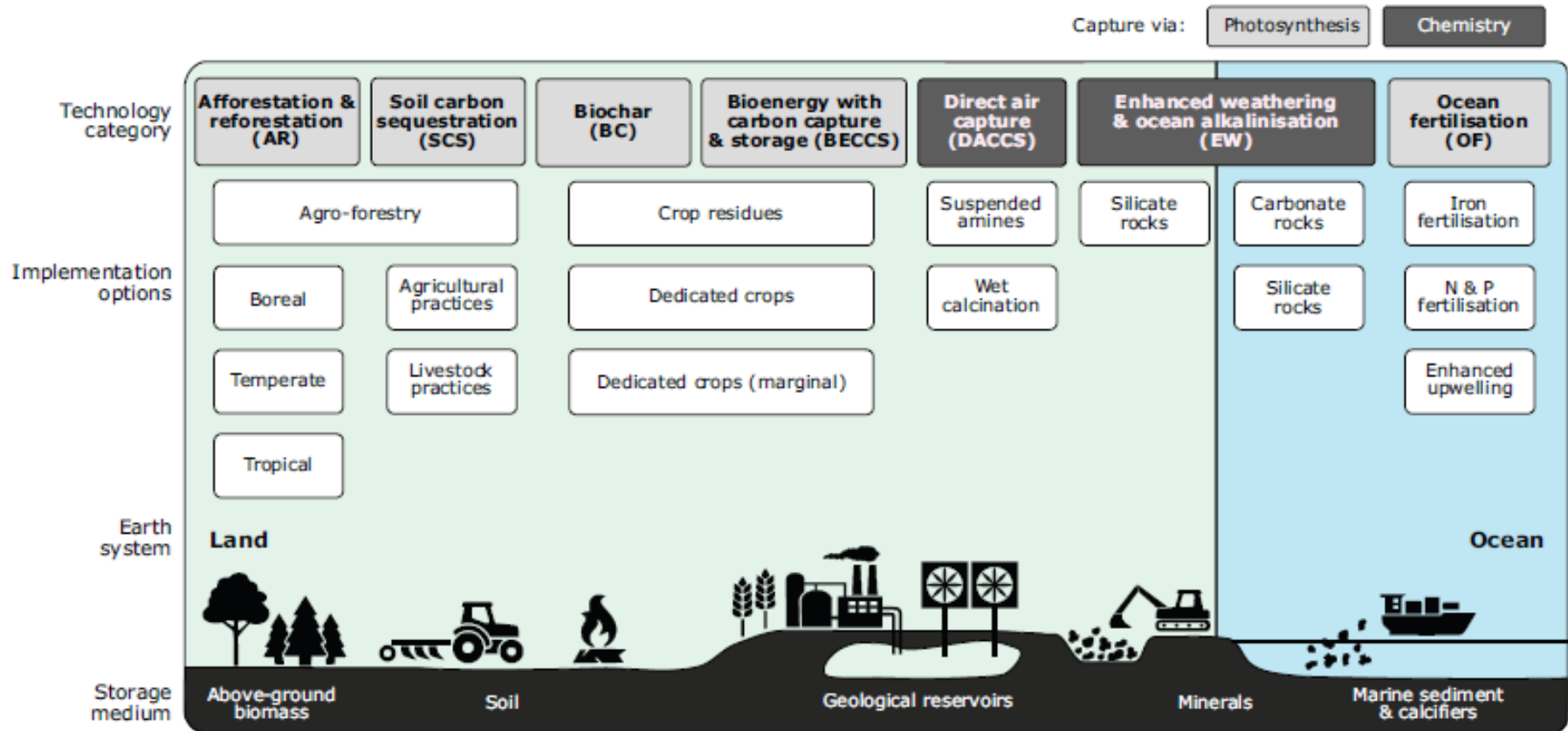
Use of CDR in Net Zero Modelling

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Carbon Dioxide Removal Landscape

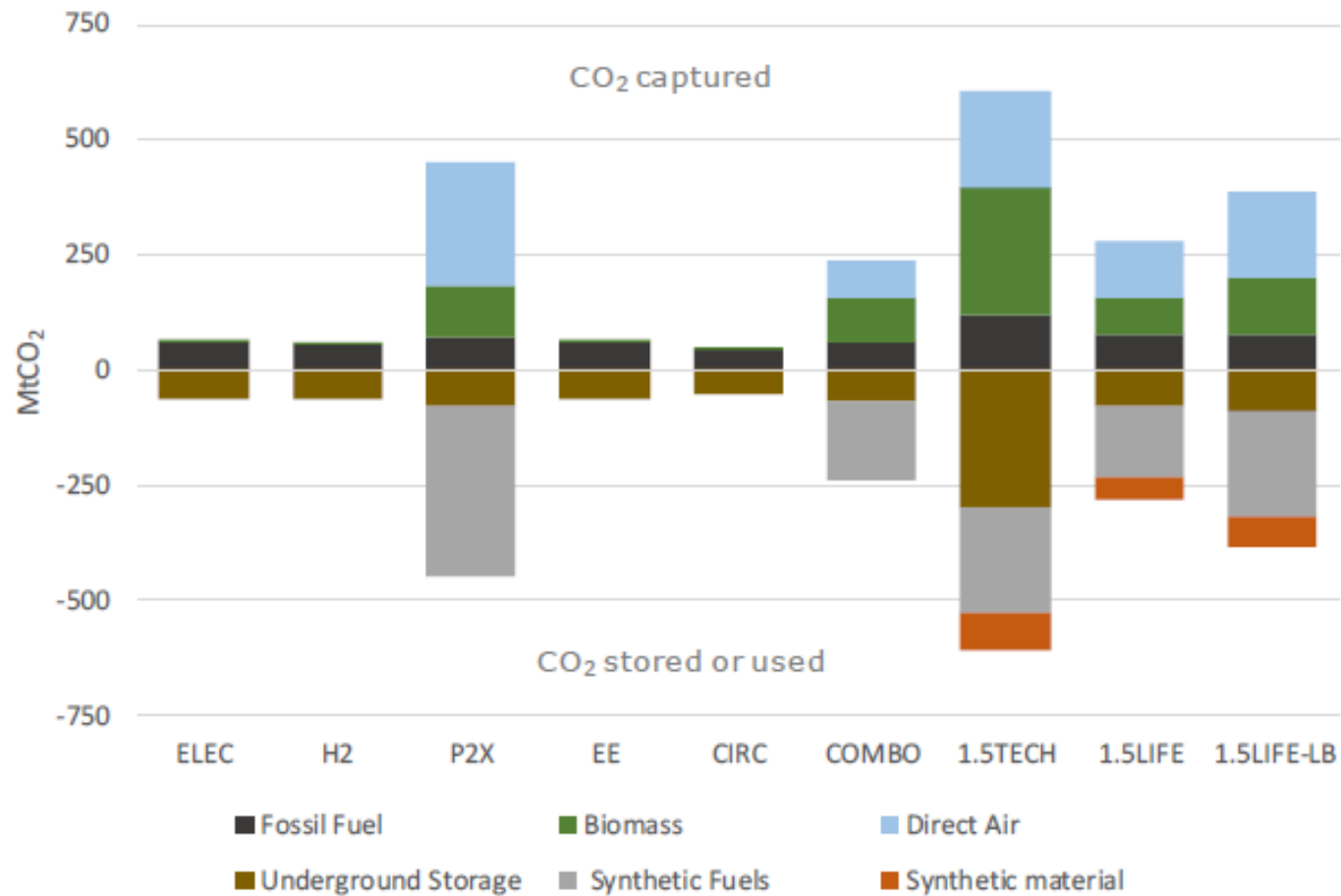
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Minx et al, Negative Emissions – Part 1 (2018)

CO₂-Storage and Utilization 2050

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In-Depth Analysis in support of COM(2018) 773 final



Panel Discussion



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Questions & Answers

Discussion with Audience



UNECE



Sustainable Energy Division

UNECE

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