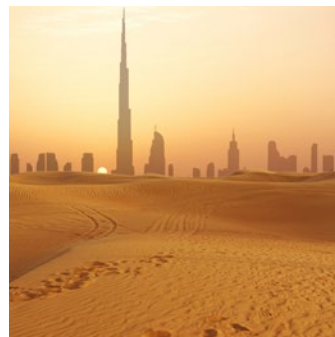
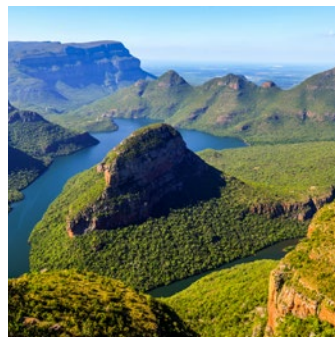
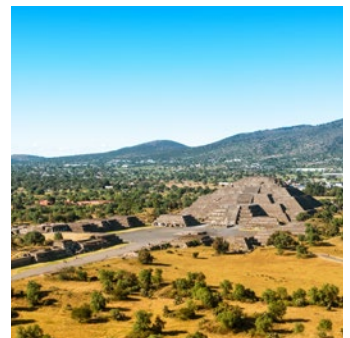


Key Financing Principles for Carbon Management

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UPDATED EDITION



This is a new, edited version of the Key Financing Principles for Carbon Management, prepared for the 14th Clean Energy Ministerial meeting in July 2023. The initial 2020 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 Rule 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.



Key Financing Principles for Carbon Management

Climate change mitigation is one of the defining challenges of our time. The financial sector is integral to meeting global climate change goals and are committed to playing their part. CO₂ capture, utilization and storage (CCUS) is one of the few technologies available that can decarbonize both power generation and industrial sectors such as cement, steel and chemical production with verifiable emissions reductions. CCUS is also one of the most viable options for CO₂ removal, or CDR, through the capture and storage of CO₂ from biofuel use – bioenergy with CCS (BECCS) – or directly from the air – direct air capture with storage (DACs). Together, CCUS and CDR are more and more often referred to as “Carbon Management”, comprising various point-source carbon capture opportunities, CO₂ removal from the atmosphere, infrastructure and hubs development, and even carbon conversion to products. CCUS is proven, with 37 large-scale commercial projects in operation today. In addition, 20 further facilities are under construction. However, CCUS deployment today is still well below where it needs to be, despite CCUS costs being comparable with many CO₂ mitigation technologies widely deployed today.

The Finance Sector Lead Group for CCUS, established under the auspices of the Clean Energy Ministerial (CEM) CCUS Initiative, brings together banks and other finance sector organisations to explore the barriers to large-scale investment in CCUS, including how to establish a revenue stream from CCUS projects. The Key Financing Principles for Carbon Management detailed in this document comprise principles and recommendations to support the establishment of a business case for CCUS and to kick-start the financing of CCUS projects globally. These principles and recommendations are for consideration by governments, industry and the financing sector, who each have a unique and essential role to play in the development of a CCUS industry – no single stakeholder can realise CCUS alone. The Key Financing Principles for Carbon Management apply to both developed and developing countries. However, differences in countries’ circumstances, including priorities, challenges and constraints, need to be taken into account when considering these principles and recommendations at a national level. The Key Financing Principles for Carbon Management build on the extensive work that has been done by governments, industry and the financial sector to develop financing options for CCUS.

Key Financing Principles for Carbon Management

- 1. Industry, governments, the financial sector and other key organisations should continue efforts to communicate the importance of CCUS.** According to the IPCC, meeting climate change mitigation targets will be significantly harder and more expensive without CCUS. CCUS is therefore fully aligned with sustainable, green, low-carbon taxonomies and its role as a decarbonisation tool is more and more widely recognised. However, the importance of CCUS needs to be continuously communicated by governments, industry and the financial sector through policy and strategic decisions and directly to their constituents, customers, shareholders, environmental organisations, and to the broader public.
- 2. Government policies should be accelerated, as appropriate, to establish a revenue stream for CCUS and to facilitate private sector investment.** In the recent years, several governments have established significant incentives to drive large-scale CCUS projects¹. Governments should apply lessons learned from successful CCUS projects and policies globally as well as from analogous technology policy to establish a business case for CCUS projects and de-risk private sector investment. Renewable energy policies such as grants, feed-in-tariffs, tax incentives, mandates, etc., have successfully established revenue streams, driven investment, and reduced the costs of

¹ Major multi-billion USD CCUS deployment incentives have been established e.g. by Canada, Denmark, the Netherlands, Norway, the UK and the US. Many other countries have also accelerated their policy development.

the targeted technologies. Features of these policies can be replicated and tailored to achieve parallel results with carbon management.

- 3. The financial sector, industry and governments should accelerate their collaboration to facilitate CCUS investment and help mitigate the risks of CCUS deployment.** No single stakeholder can provide the investment necessary and accept all risks associated with establishing a carbon management sector. Most of the CCUS projects in operation today are public-private partnerships with investment shared and risks assumed by the appropriate risk owner. As the sector is being established, high levels of government support may be required, however the private sector need to play their part. The role of the private sector will increase over time as the sector matures.
- 4. Industry, the financial sector and governments should work together to enlarge the pipeline of CCUS projects.** Support mechanisms should shift focus from individual projects to the establishment of a CCUS industry. Government policies and incentives should be repeatable and support a portfolio of projects. Industry and the financial sector should continue to identify prospective projects and determine the interventions and support required to bring them to operation. Pre-commercial investment is required to characterise and confirm viable storage locations globally.
- 5. The financial sector should ensure that carbon management is part of their climate change strategies and is eligible for sustainable finance.** More and more shareholders are demanding the financial sector invests sustainably, in line with environmental, social and governance (ESG) standards and goals. CCUS can achieve significant and verifiable CO₂ emissions reductions, as demonstrated by numerous operational projects, and supports the production of low-emission materials. Financial institutions should include carbon management in their climate change strategies and ensure the eligibility of CCUS activities in sustainable investment policies and mechanisms.
- 6. The financial sector should strive to accelerate the development of novel financing approaches to CCUS.** The finance sector is actively looking for new financial mechanisms and business models for CCUS projects. These efforts, in partnership with governments and industry, should continue and expand to find ways of addressing the specific investment requirements and characteristics of CCUS projects.
- 7. Governments should consider CCUS as part of their Nationally Determined Contributions (NDC) and long-term low greenhouse gas emission development strategies under the Paris Agreement.** CCUS is necessary to meet Paris Agreement targets and therefore governments should consider including it in their current and future NDCs and long-term low greenhouse gas emission development strategies. Furthermore, collaboration and cooperation on CCUS deployment should be aided via mechanisms enacted under Article 6 of the agreement. Including CCUS under Article 6 will encourage novel CCUS financial and cost-sharing mechanisms that benefit both developed and developing countries, helping to meet their NDCs.
- 8. Governments should enable existing development and climate institutions to advance CCUS in developing countries.** Governments should work with the multilateral development banks (MDBs) and climate change funds to help developing countries to identify and advance low-cost CCUS investment opportunities. For example, after the closure of the Asian Development Bank's CCS Trust Fund in 2023, and the imminent closure of the World Bank CCS Trust Fund in 2024, there will no longer be dedicated instruments in these two MDBs to support carbon management development in emerging economies.
- 9. Governments should consider CCUS investment as a means of creating and preserving sustainable jobs and providing a low-emission stimulus to the economy.** CCUS investment benefits broad segments of the economy including industrial sectors such as cement and steel as

well as power generation and can provide regional low-emission stimulus through investment in CCUS hubs and clusters. Jobs created and preserved through CCUS investment are for the long-term, forming part of sustainable growth trajectory and a decarbonized future.

10. Industry, governments and the financial sector should consider CCUS investment as a means of driving innovation and supporting broader industrial development. Investment in CCUS research, development and demonstration leads to spill over benefits across industry and the broader economy including, but not limited to catalysis, material science, process engineering and energy efficiency. Investment in CCUS performance improvement and cost reduction has already led to the deployment of innovative low-carbon technologies and processes in industrial activities and power generation.

Carbon Management Fact Sheet

- **Carbon management is critical to meeting climate change goals.** According to the IPCC 6th Assessment Report (AR6), most global modelled mitigation pathways reaching net zero CO₂ and GHG emissions include transitioning from fossil fuels without carbon capture and storage (CCS) to very low- or zero-carbon energy sources, such as renewables or fossil fuels with CCS, demand-side measures and improving efficiency, reducing non-CO₂ GHG emissions, and CDR. The International Energy Agency (IEA) Net Zero Emission (NZE) Scenario for limiting temperature rises below 1.5°C requires 1.2 Gigatonnes (Gt) of CO₂ to be captured and permanently stored per year by 2030 – approximately 30 times the volume of CO₂ stored annually today.
- **CCUS technology is proven today.** 37 large-scale CCUS projects are in operation today, securely storing around 45 Mt of CO₂ per year. A further 20 large facilities are under construction. Large-scale CCUS projects have been successfully and safely operating since 1996 for climate change purposes, and since the 1970's in association with oil production.
- **Investment in CCUS is well below other CO₂ mitigation technologies.** According to the IEA's latest World Energy Outlook and World Energy Investment Report, between 2017-2022, all global clean energy investment averaged USD 1.2 trillion per year. During the same period, annual investment in CCUS averaged ca. USD 1.5 billion, i.e. 0.13%. In 2022, CCUS investment amounted to ca. USD 3 billion, and could rise up to USD 15 billion in 2023 if all projects proceed to plan.
- **CCUS costs are competitive with mitigation technologies that are widely incentivised and deployed today.** CCUS can be deployed today from as low as USD 20/tCO₂, in specific industrial sectors such as natural gas production and processing.
- **CCUS is critical to industrial decarbonization.** According to the IEA, CO₂ emissions from industry represents approximately one quarter of total global emissions and can be some of the hardest emissions to mitigate. CCUS is one of the most cost-effective, and in some cases only, solutions available to achieve significant emissions reductions in many industrial sectors such as cement, steel and chemical production.
- **CCUS can remove CO₂ from the atmosphere leading to negative emissions.** CCUS can generate negative emissions by capturing and storing CO₂ from the combustion of sustainable biofuels (BECCS) or directly from the air (DACs). The IPCC considers such CO₂ removal (CDR) technologies as a potential means of offsetting hard or expensive to reduce CO₂ emissions elsewhere in the economy which is especially critical in scenarios that overshoot global atmospheric CO₂ concentration targets.
- **Policy mechanisms are available with demonstrated success in generating CCUS investment and driving CCUS deployment.** Both economy-wide and specific incentive policies are driving CCUS project development today, for example: Federal Investment Tax Credits and governments' direct investments underpinned by carbon credit markets in Canada, the Contract-for-Difference (CfD) based "SDE++" subsidy in the Netherlands, the CfD-based scheme in Denmark, the CO₂ tax on offshore emissions in Norway as well as direct government funding of the Longship project, the 45Q tax credit under the Inflation Reduction Act and funding under the Bipartisan Infrastructure Law in the United States.