EACO2
Energy Advance Center

The Need for CCUS

The benefits of Carbon Capture Utilization and Storage (CCUS) are two-fold including: 1) environmental protection and 2) energy security.

Environmental Performance

CCUS is a necessary technology

Currently, CCUS is the most effective approach to achieve significant decarbonization of the power sector and other important industrial processes. Even with the expanding use of renewables globally, and increased energy efficiencies, fossil-fuel use is expected to comprise more than 75% of total energy consumed globally in 2040,[1] with total energy demand forecast to increase by nearly 30%.[2] This means deploying CCUS will be a necessary mitigation tool if CO_2 emissions are to be reduced moving forward. Other decarbonization pathways are estimated to cost as much as 138% more if CCUS is not included in a low-carbon energy strategy.[3] The technology has broad applications in other industrial processes such as cement manufacturing, refining, steel-making, and biofuels production.

CCUS decarbonizes energy production, use, and goods manufacturing

CCUS supports the continued use of fossil fuels and the continued development of fossil-fuel resources in a manner compatible with the aggressive targets for CO_2 emission reductions over the coming decades. The technology addresses the interests of governments at all levels, corporate shareholders, and the public in achieving greenhouse gas ("GHG") reductions. Despite CO_2 reduction aspirations, as reflected in the Paris Agreement[3] or otherwise, growing populations, urbanization, and prosperity across the developing world place energy systems on track to use more fossil fuels 30 years from now than are being used today. We note the critical fact that 194 countries plus the European Union have signed the Paris Agreement. To meet growing global energy demand and international emission reduction goals, the world must vastly ramp up investment in CCUS technologies. Climate change also is a factor that private companies around the world consider in their decision making. Many corporations incorporate policies to address GHG emissions in their business plans and social responsibility programs. Producers of electricity, other forms of energy, and goods and services that depend on fossil fuels are actively adjusting their strategies to address carbon emissions. It is critical that CCUS technology is available for use.

---

[1] *See* INTERNATIONAL ENERGY OUTLOOK 2017, 19 (U.S. Energy Information Administration, Sept. 14, 2017), reference case scenario, p. 19.
[2] *Id*. at 9.
[3] *IPCC Climate Charge 2014 Synthesis Report*, 2014.
[5] The December 2015 Paris Agreement aims to strengthen the global response to the threat of climate change by holding global average temperature increase to well below 2 degrees Celsius, and to achieve net-zero emissions in the second half of this century.

CCUS supports energy diversity

CCUS can significantly reduce CO_2 emissions from a diverse suite of fossil-fuel combustion facilities and facilitates cleaner production of energy from reliable base-load energy sources. It also allows for the continued use of existing U.S. energy infrastructure while still meeting environmental goals. In addition, it promotes the continued use of existing natural resources in the U.S. such as coal, oil, and natural gas. CCUS can also reduce emissions associated with fossil fuel production by reinjecting the co-produced CO_2 into secure geologic formations. CCUS improves the emissions profile of diverse energy and manufacturing sources across the value chains from production through end-use.

Energy and Economic Security

CCUS creates a valuable commodity and supports the economy and jobs

With CCUS, CO_2 can also be used to expand the production of chemicals and materials that provide benefits including economic value, enhanced energy security, increased competitiveness, all with enhanced environmental performance. CO_2 is used in a wide range of products such as the development of plastics and polymers, algae production, and with chemicals in agricultural applications.

On the front end, carbon capture technologies are used to separate CO_2 from emission sources or fuels. Once captured CO_2 can be 1) injected and permanently stored in deep saline formations, 2) utilized for enhanced oil recovery (CO_2-EOR) resulting in associated storage of CO_2, or 3) utilized to produce every day societal commodities.

The primary demand for CO_2 is currently for CO_2-EOR which enables increased energy production and bolsters national energy security. There are over 130 CO_2-EOR projects in the United States where CO_2 is injected into oil formations to assist oil production. There are areas of the country and around the world that would like to deploy CO_2-EOR to produce oil but are hampered by limited availability of large volumes of CO_2. CCUS can provide a long-term dependable source of CO_2 for EOR into the future. Since EOR results in the associated long-term secure storage of CO_2, this provides an added benefit of producing low-carbon oil. The U.S. is by far the world's leader in EOR and this production is a big part of our economy and supports energy independence in the U.S.

The United States must act now to maintain energy technology leadership

The U.S. has always been a pioneer and world leader in energy and technology development. We can maintain this leadership by supporting CCUS and with the benefits of exporting U.S. developed technologies to other countries. We are at risk of relinquishing this role to other countries, such as China, that are investing heavily in CCUS. The world now faces the dual challenge of providing energy, while also reducing emissions. CCUS provides a critical set of technologies to accomplish both tasks.

CCUS will be a critical element in reducing CO_2 emissions; is important to U.S. leadership in energy production and in enhancing and maintaining U.S. energy security and supply; promotes U.S. competitiveness in key markets including for new, cutting-edge energy technologies; and enhances the U.S. economy with job growth.