Commercialization of Captured $\text{CO}_2$

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The National Coal Council provides advice and recommendations to the Secretary of Energy on general policy matters relating to coal and the coal industry.


Members
Appointed are by the Secretary of Energy representing a broad spectrum of coal interests.
TWO DECADES OF ENGAGEMENT ON CARBON MANAGEMENT
PRESENTATION FOCUS

❖ CO₂ Building Blocks: Assessing CO₂ Utilization Options

❖ Coal in a New Carbon Age: Powering a Wave of Innovation in Advanced Products & Manufacturing
CO2 BUILDING BLOCKS

❖ CO2 Utilization Applications

➢ Geologic
  ▪ EOR/ROZ
  ▪ ECBM
  ▪ EWR
  ▪ Geothermal Energy Storage

➢ Non-Geologic
  ▪ Food & Beverage
  ▪ Chemicals
  ▪ Plastics & Polymers
  ▪ Fuels
  ▪ Fertilizers
CO₂ BUILDING BLOCKS

KEY FINDINGS

• Geological CO₂ utilization options have the greatest potential to advance CCUS by creating market demand for anthropogenic CO₂.

• Non-geological CO₂ utilization options are unlikely to significantly incentivize CCUS in the near- to intermediate-term because of technical, GHG LCA considerations, and lack of scalability.

• Non-geologic technologies that can “fix” CO₂ molecules intact hold the most promise and are worthy of continuing evaluation – i.e., inorganic carbonates/bicarbonates, plastics/polymers, organic/specialty chemicals and agricultural fertilizers.

RECOMMENDATIONS

• Policymakers should continue to focus on advancing geological storage options through support for RD&D and adoption of incentives.

• Additional technical and economic research should be directed towards the following non-geologic utilization products and pathways: (1) inorganic carbonates and bicarbonates; (2) plastics and polymers; (3) organic and specialty chemicals; and (4) agricultural fertilizers.
COAL IN A NEW CARBON AGE

CORE & PERFORMANCE

Metallurgical Coal
Chemistry Refinement
Activated Carbon
Rare Earth Elements

Coal Preparation & Beneficiation
Ash Chemicals
Graphene & Life Sciences
Carbon Black

Large Scale Coal Conversion
Extractive Metallurgy
Building Products CCR & Coal Composite Construction Materials

Fuels & Chemicals
Carbon Fibers
Soil Amendment

Traditional
NINE BLOCK ANALYSIS

Market Attractiveness
- Market size
- Market Growth Rate
- Attributes

Competitive Strength
- Relative market share
- Ability to compete on price & quality
- Competitive strengths & weaknesses
VALUE OF COAL-TO-PRODUCTS
COAL IN A NEW CARBON AGE
RECOMMENDATIONS

**Strategic Recommendations**

- Establish a focused R&D program on coal-to-products.
- Accelerate research-to-commercial deployment in coal-to-products market sectors.
- Incentivize private sector investment in coal-to-products production and manufacturing sectors.

**Tactics**

- Establish a national R&D program for advanced carbon products and manufacturing within DOE.
- Establish an Office of Carbon Products tasked with building Carbon Advanced Material, Manufacturing & Production (CAMP) centers to accelerate research-to-commercial deployment.
- Provide tax and policy incentives.
- Provide DOE financial support for pre-FEED and FEED projects.