Weekly Risk Tracker Report: Energy Transition

E*Comdty Research & Advisory

Near Term Outlook

Monday, Nov 6th, 2023

Focus: U.S. Carbon Capture Utilization & Storage's Crucial Role Ahead

Unlocking the Potential of CCUS

In the quest for a greener future, the United States is making significant strides through its evolving policy on Carbon Capture, Utilization, and Sequestration (CCUS). The latest initiatives underscore the efforts to reach a greenhouse gas (GHG)-neutral economy by 2050, a carbon-pollution-free power sector by 2035, and a 50% reduction from 2005 levels in economy-wide net GHG pollution by 2030. The foundation of these efforts lies in comprehensive, multi-pronged strategies for carbon management.

A Multi-Faceted Approach

The U.S. Department of Energy/National Energy Technology Laboratory's Point Source Carbon Capture Program is leading the charge by developing the next generation of advanced CO2 capture technologies. It covers a broad spectrum of CO2 emissions sources, including power, ethanol, ceramic, cement, and steel production facilities. The program spans the spectrum, from conceptual engineering to large-scale testing, all aimed at lowering both capital and operating costs and improving the economics of point source carbon capture.

Point Source Capture's Pivotal Role

So why is point source capture via solvents and sorbents gaining prominence in the nation's efforts to curb carbon emissions? It's because this approach offers significant advantages over other methods. Solvent-based CO2 capture involves the chemical or physical absorption of CO2 from gas into a liquid carrier, while sorbent-based capture entails the chemical or physical adsorption of CO2 from gas using a solid sorbent. Here's why these techniques stand out:

- Enhanced Efficiency and Scalability - Point source capture methods are highly efficient and scalable. By reducing capital and operating costs through energy and process efficiencies, they ensure that the adoption of carbon capture doesn't impose an undue burden on industries.
- Flexibility for Diverse Emission Sources - These methods can be applied to a wide array of emission sources, including power plants, hydrogen production facilities, cement, ceramic, and steel manufacturing plants. It's a versatile approach that contributes to deep decarbonization.
- Minimal Environmental Impact - Point source capture contributes to minimizing the environmental impact of fossil fuel-based power generation and aids in the decarbonization of existing infrastructure. By adopting advanced CO2 capture media and efficient techniques, it ensures environmental sustainability.
- Focusing on Carbon Storage and Utilization - The strategy doesn't stop at capturing carbon. It aligns with long-term carbon management goals, focusing on carbon storage and utilization/conversion into valuable, long-lasting products. This integrated approach holds the key to substantial progress in carbon reduction efforts.

Innovative technologies

It should be noted that solvent-based, and sorbent-based capture technologies are at the forefront of these advancements, as they offer several distinct advantages over alternative methods. For example, advanced solvents like water-lean solvents and phase-change solvents reduce the energy required for regeneration, making the process more cost-effective. Additionally, sorbents demonstrate high selectivity for CO2, ensuring minimal contamination. They can withstand multiple regeneration cycles without significant attrition, enhancing their sustainability. These developments go hand-in-hand with innovative reactor designs and enhanced process configurations, ensuring that the carbon capture process is both effective and eco-friendly.

Constructing Opportunities

These initiatives, combined with U.S. policy, reflect a commitment to addressing climate goals while promoting sustainable industry practices. *E*Comdty* believes that a sustainable and profitable future can be achieved by emphasizing a point source focus in CCUS efforts, tapping into innovative and efficient solution sets that reduce carbon footprints and mitigate CO2 output. With a proper balance between the private and public sectors, solutions based on climate capitalism will achieve outcomes faster than mandates alone. A cleaner and more prosperous future is attainable, and there is no reason why these goals have to be mutually exclusive terms.

For more information on this report, contact the ECRA Energy Team
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The Risk Tracker series is sent to ECRA clients to provide an integrated view of political, fundamental, market & environmental risks impacting the energy sector.

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Region	Market Impact	*Market Comments*
United States	Bearish	Navigator CO2 Ventures recently halted its Heartland Greenway project, a 1,300-mile pipeline for carbon capture and storage, due to regulatory uncertainties and opposition from landowners and environmental groups. Summit Carbon Solutions is considering acquiring Navigator's assets to expand its own pipeline, despite facing similar opposition and permit denials. These companies are driven by the Inflation Reduction Act's section 45Q tax credit, which offers up to $85 per metric ton of CO2 stored underground. Despite setbacks, the Biden administration continues to support CCS projects with federal funding. Developers are now focusing on increasing public support, navigating regulatory processes, and streamlining clean energy permitting. States like Georgia and New York are leading the way in efficient permitting, providing a model for others to follow.
Europe	Neutral	Germany's international climate envoy has called on Australia to back the EU's fossil fuel phase-out at the upcoming UN climate summit. She highlighted Australia's abundant solar energy resources and critical minerals needed for energy transition and urged the country to take bolder action in phasing out fossil fuels, especially as it aims to host COP31 in 2026. She dismissed nuclear power due to costs and risks and suggested that carbon capture and storage should primarily target hard-to-abate industries. The irony that Germany reactivated several mothballed coal plants this year is not lost on the Australians, who have yet to commit to the EU's request.
Asia	Bullish	The Japanese government plans to issue sovereign "GX bonds" worth 20 trillion yen ($133 billion) over the next decade, aiming to stimulate public and private investments of up to 150 trillion yen ($1 trillion) in green technologies like hydrogen supply networks, carbon capture, synthetic fuels, and small nuclear reactors. Despite concerns about the developmental stage of these technologies, the bonds will be backed by third-party verifiers to ensure solid emissions reduction plans. The finance sector is also transforming, with banks redefining their roles in financing a low-carbon economy. Although low coupon rates may limit the attractiveness of these bonds to foreign investors, this initiative holds significant potential for Japan's manufacturing industry and as a new vehicle in financing the transition towards a low-carbon future.
South America	Bearish	As Brazil heads to the UN's Cop 28 climate summit in Dubai, it aims to showcase its achievements in reducing deforestation and improve its global environmental reputation. Despite a 42.5% drop in Amazon basin deforestation, an increase in the Cerrado region highlights the need for further action. President Luiz Inacio Lula da Silva is advocating for wealthy nations to support developing countries in emission reduction and the transition to a low-carbon economy. Brazil is advancing a legislative agenda to boost investment in decarbonization, including the regulation of carbon markets, carbon capture and storage, offshore wind, sustainable aviation fuel, and hydrogen. That said, plans for offshore drilling in the environmentally sensitive Foz do Amazonas basin may prove challenging to Brazil's efforts in attracting those investment commitments.
Africa	Bullish	The Netherlands, in collaboration with its partners, has initiated a solar marketplace in Nigeria to expedite the transition to clean energy. Despite being one of the world's largest oil and gas producers, Nigeria faces ongoing challenges with electricity supply. The solar marketplace aims to bridge the gap between supply and demand, fostering growth in the Nigerian solar sector. It serves as a comprehensive ecosystem that connects businesses, facilitates networking, and enables collaboration between key stakeholders from both the public and private sectors. This initiative is strategically aimed at growing the critical sectors in Lagos, which is only possible with reliable access to electricity. This is a key component of the country's THEMES+ agenda, making Lagos a 21st-century economy.
Russia / FSU	Neutral	Sakhalin, Russia's first region to establish carbon quotas, aims for climate neutrality by 2025. The established quotas for 2024-2028 apply to 35 large regional companies with annual emissions of over 50,000 tons of CO2 equivalent have been targeted. it's a bit early to evaluate the effectiveness of the program since it's still in its initial year of implementation. At $10.66 for every ton of emissions above the quota, those penalties may have to rise to incentivize higher levels of compliance if CO2 goals are to be met on time. However, the region has been proactive in its efforts to achieve climate neutrality and has earned the top spot in a 2021 independent ranking of Russian regions' climate policies.
*E*Comdty* Aggregate View	Slightly Bullish	Internal Cancellation of Navigator pipeline effort in the US partially offsets gains in Japan and Africa, while modest gains in the EU and Russia/FSU offset the difficulties of an incoherent Brazilian policy. In total, *E*Comdty's* aggregate risk view remains Slightly Bullish the Energy Transition space in this report.

Bullish/Bearish: This political risk factor will likely have some impact on the trajectory of the market over a three-month time horizon, relative to other factors.

Strongly Bullish/Bearish: This political risk factor is likely to have an impact of significant magnitude, either on volumes or perceptions of risk, and to become thedominant overriding factor in the market over a three-month time horizon.