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Regulations and Institutions to Promote CCS

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CCS is being deployed at a sluggish pace. In the U.S. in particular, several challenges are surfacing in the areas of CO_2 storage and pipelines.

Where CO_2 reservoirs are concerned, on September 4 the U.S. Environmental Protection Agency (EPA) announced draft permits for three storage wells at Occidental Petroleum's Permian Basin project, marking the first time that permits have been issued in Texas for Underground Injection Control Class VI wells (wells used for injecting CO_2 into deep rock formations). The three planned storage wells are to be used to receive CO_2 from Stratos, currently the largest DAC plant planned in the U.S.

However, at an EPA meeting on October 10, West Texas residents voiced opposition to the large-scale CO_2 project being proposed by Occidental Petroleum and called on the federal government to spend more time considering the permit applications for the facility in question.

Archer-Daniels-Midland (ADM), which manufactures ethanol from corn and is also engaging in BECCS, confirmed on September 13 that leaks had developed at its first major CO_2 storage plants in Illinois, and that the EPA had found the company to be in violation of its underground injection permit. In a letter from the EPA to ADM on August 14, the EPA said that a July inspection of the site found that carbon dioxide injected into the subsurface flowed into unauthorized zones, and that the company failed to follow an emergency response and remediation plan and to monitor the well in accordance with its permit. In a reply from ADM to the EPA on August 22 the company said it had detected some corrosion in one of its two deep monitoring wells and subsequently plugged it.

According to the EPA, there is a strong possibility the leaks at the ADM project were the result of the corrosion of steel used in the monitoring well. This issue will pose a significant risk to several dozen other projects scheduled to use the same type of metal. 13 Chrome stainless steel has been used for decades in oil and gas wells, but it appears to be vulnerable to corrosion when exposed to liquid carbon dioxide. The EPA and ADM have pointed to the corrosion of the 13 Chrome stainless steel used

at the Decatur facility. In the week starting September 30, ADM reported a second leak from a separate monitoring well to the EPA.

Where CO_2 pipelines are concerned, on November 5 voters in South Dakota will vote on whether or not to repeal a law concerning CO_2 pipelines in the State that was adopted at the beginning of 2024. The primary reason a formal objection to the legislation in question arose is because the law does not address the issue of eminent domain. If the law is repealed it will deliver a major blow and backward step to Summit Carbon Solutions. Summit is planning a 4,000-km project through the states of Iowa, Nebraska, Minnesota and North and South Dakota. Three companies had been planning major CO_2 pipelines, but the other pipelines have been withdrawn in the face of regulatory barriers, opposition from landowners and other challenges. Summit's pipeline is the last major project remaining.

With onshore CO_2 reservoirs coming up against these sorts of challenges, interest in offshore CO_2 reservoirs is growing. The Bipartisan Infrastructure Law had been calling on the Department of the Interior to complete regulations by November 2022 in order to open CO_2 reservoirs on the federal outer continental shelf. The process has faced delay upon delay, however, and the Department of the Interior plans to complete draft rules at the end of 2024.

Furthermore, amid the delays in opening federal offshore reservoirs, attention is beginning to focus on State offshore reservoirs. On October 10 ExxonMobil announced it had secured a lease from Texas for an 1,100 km^2 State seawater area as a site for offshore CO_2 storage.

With the above-mentioned developments as a backdrop, on October 10 the DOE announced a draft Carbon Management Strategy up to 2030. The DOE's near-term strategy not only incorporates "Focusing research, development, demonstration, and deployment funding on priority use cases" but also components such as "Building out CO_2 transportation and storage infrastructure," "Supporting the implementation of policies and regulations," and "Engaging communities and workers in projects."

In the U.S.' case, mechanisms for comprehensive stakeholder participation as well as institutions and regulations (including technical standards for materials employed in monitoring wells) are becoming necessary. On the basis of the U.S.' example, to promote CO_2 storage domestically and overseas from here forward, as paradoxical as it may seem, the preparation of institutions and regulations to underpin CO_2 storage projects will become important, not just support on the funding side.

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