

For Carbon Capture, Utilization Is Key

Adam Wilson, Special Publications Editor | 20 October 2017



Credit: Adam Wilson/SPE.

From left, Chuck McConnell, Vanessa Nuñez-López, Concetto Fischetti, and panel moderator George Koperna discuss carbon capture, utilization, and storage at the CCUS Technical Section dinner at SPE's Annual Technical Conference and Exhibition.

- [CCUS](#)

In the world of CO₂ capture, utilization, and storage (CCUS) technology, utilization is the driving factor.

Three experts discussed the motivations, limitations, and challenges of CCUS at a dinner held by the Society of Petroleum Engineers (SPE) CCUS Technical Section at SPE's annual meeting at the beginning of October.

Moderated by George Koperna, chairman of the SPE CCUS Technical Section and vice president with Advanced Resources International, the panel comprised Concetto Fischetti, engineering director with the Oil and Gas Climate Initiative (OGCI), which sponsored the dinner; Chuck McConnell, executive director of the Energy and Environment Initiative at Rice University; and Vanessa Nuñez-López, research scientist associate with the Bureau of Economic Geology at The University of Texas at Austin.

McConnell highlighted the importance of carbon use for enhanced oil recovery (EOR). "One of the aspirations I have in my life is that we're going to finally get through one of these conferences where nobody says CCS [carbon capture and storage]—not one time," McConnell said at the beginning of his talk. "They say CCUS every time."

"If you don't get that you need to do EOR," he continued, "you don't get anything about this technology. And I think that's from a commercial standpoint and fundamental standpoint about the technology and the application of it."

Nuñez-López agreed. "Without a doubt, enhanced oil recovery has been the main driver of CCS. It is really channeling the development of the technology globally."

Meeting goals to mitigate climate change, such as those laid out by the recent United Nations Paris Climate Agreement, is another driving force behind the technology.

"Carbon capture and storage technologies have been recognized as being an essential part of the climate mitigation portfolio," Nuñez-López said. She said she is working on a project funded by the US Department of Energy, "and I'm looking at the carbon balance of EOR, and I am obtaining results that show that, being integrated, CCUS projects can be actually engineered so that the oil produced through EOR can be net carbon

negative. Maybe not throughout the entire project but through like half of the project.”

She lamented, however, the recent decline in CCUS efforts. “Just recently, the Global CCS Institute identified 38 large-scale, integrated CCUS projects, which is impressive. But, there were 65 just 5 years ago. So, I think we all agree that the deployment of the technology has been lagging behind where it really needs to be if we want to be able to meet the Paris Agreement and meet the goals of sustainable energy.”

Fischetti pointed out that current CCUS projects account for less than 1% of the target for carbon capture. “That is why OGCI is looking toward a megaproject,” he said, adding that three barriers exist to creating a CCUS megaproject.

The first barrier is high cost. Capturing carbon can be expensive. “In a petrochemical plant, you are almost doubling the CAPEX [capital expenditures],” he said.

Fischetti said the second barrier is related to regulations, which he said do not incentivize or subsidize, although that is changing. “In the states, there is some movement,” he said, “but, in Europe, definitely; in the UK, definitely.”

The third barrier Fischetti mentioned involves accuracy of the carbon storage. “What we have is just the need to define the capacity, the injectivity, and the containment ranking of the reservoir,” he said. “We know that we are very concerned not from the integrity point of view but rather from the accuracy point of view.”

McConnell had some advice for those working on CCUS who may be asked about the integrity of carbon-storage reservoirs. “Tell them it’s safe and it won’t leak. It’s that simple.”

[Read more about the CCUS Technical Section here.](#)