

This Greenhouse Gas Just Might Save the Oil Industry

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According to the EPA, carbon dioxide accounted for 84% of all U.S. greenhouse gas emissions from human activities. The largest source of those emissions comes from electricity generation, which accounted for 38% of the total. Coal is the driving force behind that number, as it produces more carbon dioxide emissions than either oil or natural gas. Transportation and industrial sources are also major emitters of carbon, at 31% and 14%, respectively. The good news in all of this is that these emissions could prove to be very valuable to the oil industry.

Oil's biggest problem

Oil is a finite resource. At last count, the United States only had about 29 billion barrels of proven reserves. Given that we consume nearly 7 billion barrels of oil each year, that means we rely on other nations to meet much of our oil needs. That being said, there's actually substantially more oil underneath the U.S. -- the only problem is that we can't recover it.

The average U.S. oil well recovers only about 30% of the original oil that's in place. If we could double our recovery to 60%, the U.S. would be ranked fifth in the world in terms of proven oil reserves. The bottom line is that we're leaving an estimated 89 billion barrels of oil trapped underneath the United States. But this is where carbon dioxide can step in and save the day.

Carbon dioxide to the rescue

By employing enhanced oil recovery, or EOR, techniques using carbon dioxide, companies such as Denbury Resources (NYSE: DNR) and Occidental Petroleum (NYSE: OXY) are able to push more oil out of our legacy oil basins. Occidental is a leader in carbon dioxide flooding, as 60% of its oil production in the Permian Basin is from its carbon dioxide EOR related projects. The company believes that it will be able to recover another 2.5 billion barrels of oil equivalent thanks to its extensive use of carbon dioxide.

Denbury is even more focused on carbon dioxide EOR, as 100% of its business is dedicated to that method. Like Occidental, it has access to large, naturally occurring sources of carbon dioxide. However, Denbury is also moving to capture and store carbon from industrial facilities to fuel its future growth.

This is really where carbon and oil can work together in harmony. For example, Denbury is using 50 million cubic feet per day of carbon dioxide from an Air Products and Chemicals (NYSE: APD) hydrogen plant in Texas. The carbon from that facility should enable Denbury to recover up to 3.1 million barrels of oil each year. In another example, next year Denbury will take about 115 million cubic feet of carbon dioxide per day from Southern's (NYSE: SO) Kemper County Energy Facility in Mississippi. The coal-fired plant will see its overall emissions reduced by 65%, which puts it on par with a comparable-sized natural gas power plant. The future potential of similar projects by utility and industrial users has the potential to produce a lot of oil, while also cutting carbon emissions.

Denbury's involvement in the process is key. It is one of the few companies able to take the captured carbon dioxide, use it to push more oil out of mature oil fields, and then keep the carbon sequestered in the fields. It's really the ideal carbon capture and sequestration concept.

Final Foolish thoughts

We have two big problems in America. One, there isn't enough oil to meet our needs, and two, our thirst for energy is emitting huge amounts of carbon dioxide into the atmosphere. Enhanced oil recovery methods that take that carbon and inject it into mature oil fields is really a win-win solution.

Carbon flooding is one of the many techniques we are using to drive record oil and natural gas production to revolutionize the United States' energy position. That's why The Motley Fool has highlighted a company that specializes in it as part of a comprehensive look at three energy companies set to soar during this transformation in the energy industry.