

Carbon Sequestration Leadership Forum

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Financing Task Force Report

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Chair

CCS now has a driver outside regulation

- Private shareholder actions are fostering a shift on climate issues among fossil using and producing companies. Several companies were the subject of shareholder climate actions in 2017. While most of the companies involved in the most significant shareholder actions already were deeply involved with CCS and EOR, and/or other decarbonization efforts, the effect goes beyond these companies. The industries are now alert.
- The significance is that climate change, and with it CCS, now has a driver outside of regulation. This can be a more stable driver for CCS than policy, which has gone through wild swings in various democracies (U.S., UK, Australia). This is important, because industrial assets are 30-50 year assets.
- Everyone agreed at COP23 that there are no technical showstoppers when it comes to realizing CCS.

Great interest for CCS side-event at COP23



The event hosted the panelists Andrew Purvis from World Steel, Dominique Copin from Total, Trude Sundset from Gassnova and Eric Holdsworth from Edison Electric who discussed the role of CCS for meeting the aims of the Paris Agreement. [https://www.gassnova.no/en/great-interest-for-ccs-side-event-at-cop23-\(2\)](https://www.gassnova.no/en/great-interest-for-ccs-side-event-at-cop23-(2))

Financing CCS in UK and Norway

- Norway has developed of the most interesting CCS action plan. Thus it came as a surprise when Norway seemed to scale back its plans, days after UK ambitions were reignited (October 2017).
- It seemed that Norwegian ministers were slashing the expected state investment in a trailblazing industrial carbon capture project by 90%. But, this week, the CSLF ministerial meeting should clarify what may be a change of funding mechanism. The final decision will take place in 2018. There is reasonable optimism for the future of this ambitious project.
- The same day UK ministers pledged to work with international partners in a second bid to develop a carbon capture and storage (CCS) industry, after the failure of its £1bn scheme two years ago.

US Perspectives on CCS 1/2

- The US Administration is reversing much climate policy from the previous Administration, particularly the Clean Power Plan. Furthermore, the Administration is focusing R&D funding on early stage technology development, rather than commercialization.
- The US Administration's focus on basic R&D, as opposed to large-scale pilots, runs counter to what industry is saying is needed to get CCS more broadly deployed.
- Federal policy reversals on climate are pushing States to take their own action to address climate, mostly focused on renewables.
- Participants need to watch what States are doing, because some could regulate away the possibility of doing CCS.

US Perspectives on CCS 2/2

- Secretary Perry is pushing for CCS to be included in the Clean Energy Ministerial initiative. Also, China continues to be very interested in bilateral collaboration on CCS and EOR. The US has a bilateral agreement now covering two projects: one an EOR project, and the other an offshore project that could be either EOR or saline storage. U.S. and Chinese delegations are meeting for an energy conference in West Virginia in December, and the discussion will include CCUS.
- There is concern in the U.S. about changes in the electric generation fleet to a fleet dominated by natural gas and renewables. About 100 GW of coal has retired over the past 10 years or so. The plants that remain, which are newer and larger, are mostly still decades old. The country has about 20 years before many of those plants reach the end of their useful lives and new plants must be built. CCS has to be ready within about 10 years to be ready for that next wave of facility construction.

Incentives

- Incentives need to be flexible and need to accommodate that companies are differently situated. An electric utility that receives a rate of return is different than a merchant generator that has to compete against the market. A large well-capitalized merchant is different than a small merchant. All are different than an industrial facility.
- Investment tax credits have the advantage over a production tax credit of getting money to the project owner quickly.
- Separate incentives may be needed for pipelines, but the most important may be regulatory incentives rather than financial. Pipelines typically are not built unless the capacity is already reserved before development starts. They typically take 3-5 years for permitting and 1-2 years for construction.

Oil Prices and Impact on CCS

- The Bakken shale is a huge opportunity, but the oil recovery rates are low – 5-7%. Research is ongoing to increase that percentage. If successful in increasing recovery, the area could be looking at a market 10 to 50 times larger than currently (both because of increased oil from current production areas, and increases in the number of formations where economic recovery is possible).
- Regarding low oil prices and impact on CCS, the Weyburn project was developed in 2001 when oil prices were much lower than today, so the right circumstances make CCS economic even with low oil prices.
- Ethane (produced in conjunction with oil and natural gas) can be used for EOR, and is a competitor to CO₂, but it is a niche, and the need for an injectant is so great that there is opportunity for both. Ethane has lower miscibility pressures than CO₂, so it works at higher geological formations.

Technology Learning Curve

First of a Kind and Nth of a Kind

- The experiences with the two large CCS projects in the U.S. – one portrayed positively and the other not – appear to have negatively affected the discussion about CCS, except among the people who matter most: those who are interested in building new projects.
- Other companies are pursuing new projects.
- Each project seems to be sufficiently unique, from the standpoint of technology and economic design, that the main relevance of a prior project is whether (and at what price) it proved the technology worked.

CCS image needs to associated with Clean Energy

- Technology companies like Amazon and Google – major consumers of energy for data centers – are pushing for clean energy.
- Either they are not sufficiently aware of CCS and the need for it to meet climate objectives, or cleaning up fossil energy does not meet their public relations needs in the same way as supporting renewables.
- They will locate where they can get clean energy.

Perspectives (1/2)

- To invest in CCS, banks will need stable Energy Policy including explicitly CCS.
- Banks need fixed liability
- Contract for the difference is one of the preferred solutions
- 21 projects in 2017 give confidence in CCS maturity
- Al Reyadah project demonstrates the success of commercial project without public incentive.
- Industry should not wait for policy –
 - Shareholders, Boards of directors and company leaders can impulse major changes in their strategy with respect to carbon emission and energy efficiency

Perspectives (2/2)

- EOR using CO2 from Power and Industry is a success but beyond EOR what business model ?
- Transport of CO2 needs well defined rules
- A suite of incentives and regulations is needed
- Long term liability no longer seems to be an issue
- Norway feasibility study: an important initiative
- **This Ministerial Meeting is of considerable importance to support CCS**



Thank you

This presentation was prepared in collaboration with:

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