

Carbon Sequestration Leadership Forum

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Report on the Task Force on Technical Challenges for Conversion of CO₂-EOR to CCS

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Task Force Mandate

- **“Review, compile and report on technical challenges that may constitute a barrier to the broad use of CO₂ for EOR and to the conversion of CO₂-EOR operations to CCS operations”**
- **Economic and policy barriers are outside the scope of the Task Force, as these are policy matters and belong to the Policy Group**



Expected Outcome

Report identifying technical challenges in the conversion of CO₂-EOR operations to CO₂ storage operations, including pure technical issues and regulatory issues that involve technical aspects



Size of the Prize: CO₂ Storage Potential in EOR in the United States

Type	Technical Oil Recovery (Bbbl)	CO ₂ Demand (Gt)	Economic Oil Recovery (Bbbl)	CO ₂ Demand (Mt)
Miscible CO ₂ -EOR	119.1	38.1	67.0	19.8
Near-miscible CO ₂ -EOR	1.2	0.8	0.2	0.1
Residual Oil Zone	16.3	6.5	??	??
Total	136.6	45.4	67.2+	19.9+

NETL report by Kuuskraa et al.,



Existing CO₂-EOR Projects

➤ **Miscible CO₂-EOR Projects:**

112 in the United States, 5 in Canada, 3 in China, 1 in Brazil, and 1 acid gas – EOR in Canada (70% CO₂ and 30% H₂S), for a total of 122 projects

➤ **Immiscible CO₂-EOR Projects:**

6 in the United States, 5 in Trinidad, 1 in China, 1 in Brazil and 1 in Turkey, for a total of 14 projects

Total number of CO₂-EOR projects worldwide: 136 (87% in the US)

Only one CO₂-EOR operation is a recognized CCS operation!



Origin of the Task Force

- At the CSLF Ministerial Meeting in Beijing, P.R. China, in September 2011, the CSLF Charter was amended to include CO₂ Utilization Technologies (the “U” in CCUS)
- On the Storage side, CO₂ utilization means
 - In enhanced oil recovery – **proven technology! – the objective of this Task Force**
 - In other enhanced energy recovery operations (gas, coalbed methane, shale gas and oil, geothermal) – unproven and/or untested technology
- Other forms of utilization are reviewed by another task force



Task Force Membership

- **Canada (Chair):** **Dr. Stefan Bachu**
- **Brazil** **Paulo Roberto da Motta Pires**
- **China** **Dr. Mingyuan Li**
- **Mexico** **Dr. Francisco Guzmán**
- **Norway** **Lars Ingolf Eide, P. Eng.**
- **Saudi Arabia** **Dr. Ahmed Al Eidan**
- **United States** **Stephen L. Melzer, P. Eng., Mark Ackiewicz**



Broad Report Outline and Status

1. Executive Summary – **To be done**
2. Introduction (Task Force mandate, scope and objective of the report, existing CO₂-EOR/CCS operations) – **Completed**
3. Characteristics of CO₂-EOR operations (objectives, suitability, operational aspects, monitoring & surveillance, regulatory requirements) - **Completed**
4. Characteristics of CO₂ storage operations (objectives, suitability, operational aspects, monitoring & surveillance, regulatory requirements) - **Completed**
5. Transitioning from CO₂-EOR to CCS (commonalities and differences, operational scenarios, storage integrity, monitoring and regulatory requirements) - **Completed**
6. Summary and Conclusions, including recommendations - **To be done**



Proposed Task Force Timeline

- Finalize draft report by the Task Force by May 31st, 2013 (it includes a few iterations)
- Submit the draft report to the Secretariat by June 14, 2013, for distribution to all Technical Group delegates for review
- Receipt of Member Countries comments by August 15, 2013— **one set of comments per country, not per delegate!**
- Finalize report by September 15, 2013 and submit it to the Secretariat for distribution ahead of the Ministerial meeting in Houston on November 4-8, 2013