Carbon Sequestration leadership forum

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Highlights from CSLF Technical Group Meeting

Trygve Riis

Technical Group Chairman

Highlights from Technical Group Meeting

Reviewed and Endorsed Five New Projects

- CO_2 Capture Project, Phase 4
- CO2CRC Otway Project – Stage 2
- Oxy-Combustion of Heavy Liquid Fuels Project
- Carbon Capture and Utilization Project / CO_2 Network Project
- Dry Solid Sorbent CO_2 Capture Project

Highlights from
Technical Group Meeting

CO_2 Capture Project, Phase 4

- Nominated by United Kingdom, Canada, and United States
- Overall goal of CCP is to advance technologies which will support deployment of large-scale CCS.
- Phase 4 activities to include further research into CO_2 capture scenarios identified in previous phases, plus development of new scenario for CO_2 separation from natural gas production.

Highlights from Technical Group Meeting

CO_2 Capture Project, Phase 4

- Proposed activities includes sub-programs for:
  - CO_2 Capture
  - Storage, monitoring and verification
  - Policy and Incentives
  - Communications
- CCP4 began in February 2015, will run through end of 2018
- CCP4 members are BP, Chevron, Petrobras, and Suncor

Highlights from Technical Group Meeting

The Technical Group recommends that the Policy Group provide CSLF recognition to the CO_2 Capture Project, Phase 4

Highlights from
Technical Group Meeting

CO2CRC Otway Project Stage 2

- Nominated by Australia and United States
- Located in southwestern Victoria, Australia
- Overall goal is to advance knowledge for CO_2 storage in saline formations.
  - Improved storage model robustness
  - Improved means of predicting subsurface CO_2 behavior and plume stabilization

Highlights from
Technical Group Meeting

CO2CRC Otway Project Stage 2

- Project to run through 2020.
- Includes site characterization and field tests
- Expected outcome is an improvement in methodologies for the characterization and monitoring of CO_2 stored in deep saline formations.

Highlights from
Technical Group Meeting

The Technical Group recommends that the Policy Group provide CSLF recognition to the CO2CRC Otway Project Stage 2

Highlights from Technical Group Meeting

Oxy-Combustion of Heavy Liquid Fuels Project

- Nominated by Saudi Arabia and United States
- Located in Dhahran, Saudi Arabia
- Joint project between Saudi Aramco and Alstom
- Scale is 30-60 MW
- Overall goal is to investigate the performance of oxy-fuel combustion technology when firing difficult-to-burn liquid fuels such as asphalt

Highlights from
Technical Group Meeting

Oxy-Combustion of Heavy Liquid Fuels Project

- Anticipated outcomes include demonstration of feasibility for oxy-combustion with heavy liquid fuels and identification of scale-up / bottleneck issues that need to be addressed
- Project will help push technology forward toward commercialization of oxy-combustion of low value fuels

Highlights from Technical Group Meeting

The Technical Group recommends that the Policy Group provide CSLF recognition to the Oxy-Combustion of Heavy Liquid Fuels Project

Highlights from Technical Group Meeting

Carbon Capture and Utilization Project / CO_2 Network Project

- Nominated by Saudi Arabia and South Africa
- Located in Jubail Industrial City, Saudi Arabia
- Sponsored by Saudi Arabia Basic Industries Corp.
- Overall goal is to capture and utilize CO_2 from ethylene glycol production facilities
- Large-scale project, 1,500 tonnes CO_2 per day

Highlights from
Technical Group Meeting

Carbon Capture and Utilization Project / CO_2 Network Project

- Project to include construction of 25-km pipeline network
- CO_2 to be utilized a feedstock for production of methanol, urea, oxy-alcohols, and polycarbonates
- Food-grade liquid CO_2 also a product
- CO_2 network can be further expanded as opportunities present themselves

Highlights from
Technical Group Meeting

The Technical Group recommends that the Policy Group provide CSLF recognition to the Carbon Capture and Utilization Project / CO_2 Network Project

Highlights from
Technical Group Meeting

Dry Solid Sorbent CO_2 Capture Project of 10 MWe Scale

- Nominated by Korea, UK and Norway
- Located at Hadong Power Plant in southern Korea
- Sponsored by KEPCO Research Institute, KIER, and KOSPO
- Overall goal is to demonstrate solid sorbent capture at pilot scale for long duration

Highlights from
Technical Group Meeting

Dry Solid Sorbent CO_2 Capture Project of 10 MWe Scale

- Target 40 Dollars/ton capture cost
- 200 ton CO_2/day capture rate
- 95% CO_2 purity
- Sorbent is K_2CO_3 based
- Project will run through September 2017

Highlights from
Technical Group Meeting

The Technical Group recommends that the Policy Group provide CSLF recognition to the Dry Solid Sorbent CO_2 Capture Project

Highlights from Technical Group Meeting

Deliverables for Ministerial Conference

- TRM Interim Report
- Report on Development of 2nd and 3rd Generation CO_2 Capture Technologies
- Key Messages from the CSLF "Lessons Learned from Large-Scale CCS" Workshop
- Messages and Recommendations from CSLF Technical Group

Highlights from
Technical Group Meeting

TRM Interim Report

- 2013 CSLF Technology Roadmap (TRM) was launched at 5th CSLF Ministerial Meeting in November 2013.
- Identified ten key technology needs areas.
- Two years later, a TRM Interim Report was completed to gauge progress toward implementation in each of these areas.

Highlights from
Technical Group Meeting

TRM Interim Report

Conclusions:

- The 2013 TRM established the year 2020 as an achievable timeframe for demonstration of the 1st generation of CCS technologies and 2030 for demonstration of 2nd generation technologies.
- Two years later, barriers are still in place that inhibit the accomplishment of these goals.

Highlights from
Technical Group Meeting

TRM Interim Report

Conclusions:

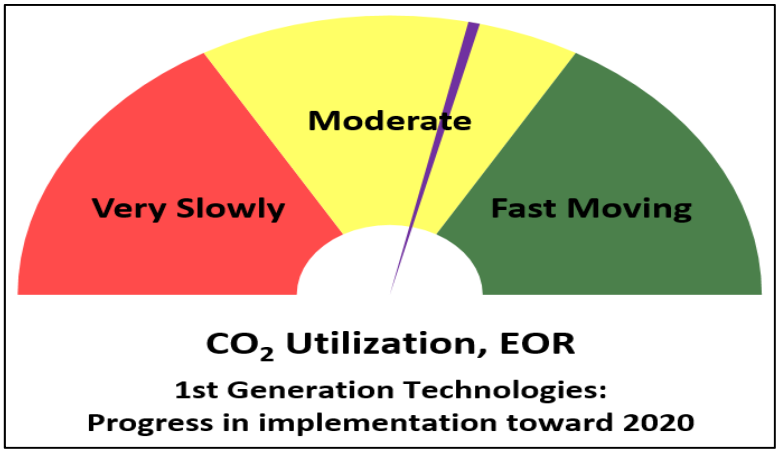
- Except for a very few niche industrial sector applications, for the current generation of CCS technologies, **none** of the ten technology needs areas perceived as progress being ‘fast moving’.

Highlights from Technical Group Meeting

TRM Interim Report

Conclusions:

- 'Slow to moderate' progress toward implementation was perceived, in general, mainly because of existing policy and economic barriers.

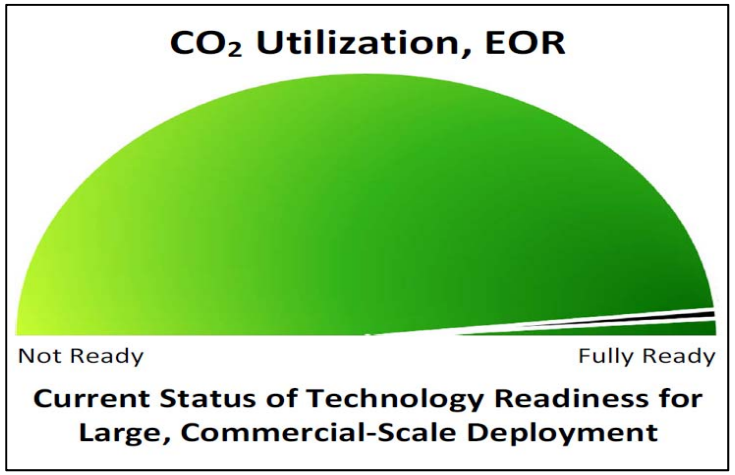


Highlights from Technical Group Meeting

TRM Interim Report

Conclusions:

- Technical readiness of CCS technologies were perceived, in general, as ready for large-scale commercial deployment.
- Barriers are present that are inhibiting progress toward wide-spread implementation.

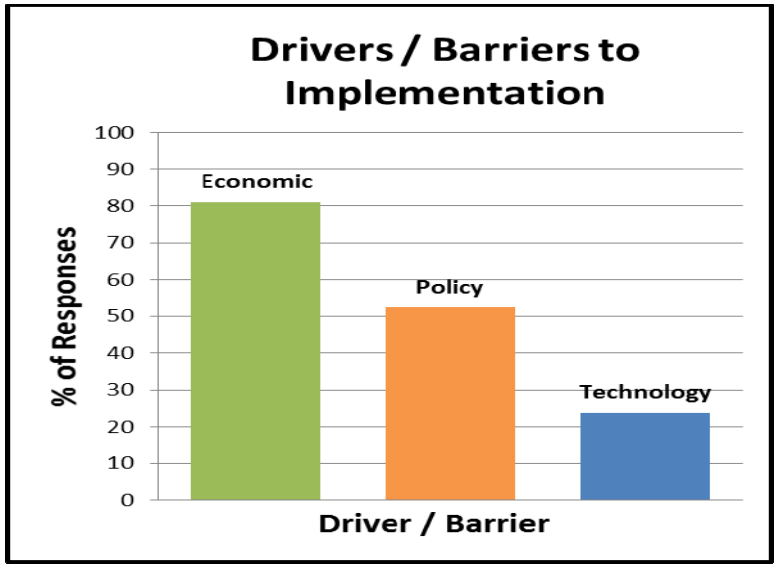


Highlights from Technical Group Meeting

TRM Interim Report

Conclusions:

- Next several years are a critical time. Regulatory policies and approaches toward financing must also become mature. Barriers must be lowered.



CO_2 Utilization, EOR

Other Highlights from Technical Group Meeting

- Norway re-elected as Technical Group Chair
- Australia, Canada, South Africa re-elected as Technical Group Vice Chairs
- Sub-Seabed CO_2 Storage Task Force issued final report
- New Technical Group activities initiated in the areas of:
  - Offshore CO_2 EOR
  - Bioenergy with CCS
  - Improved Pore Space Utilization

Other Highlights from Technical Group Meeting

- Meeting was rich in content, including:
  - Overview of CCS activities in Saudi Arabia
  - Update on CO_2 GeoNet and CGS Europe Projects
  - Overview of Alstom's Oxyfuel development program
  - Update on IEAGHG activities
  - Update on International CO_2 Capture Test Centre Network

Highlights from
Technical Group Meeting

carbon sequestration leadership forum

Comments welcome!