



**Task Force Update on Bioenergy with Carbon  
Capture and Storage**

**Mark Ackiewicz**  
**Technical Group Meeting**  
**December 4, 2017**

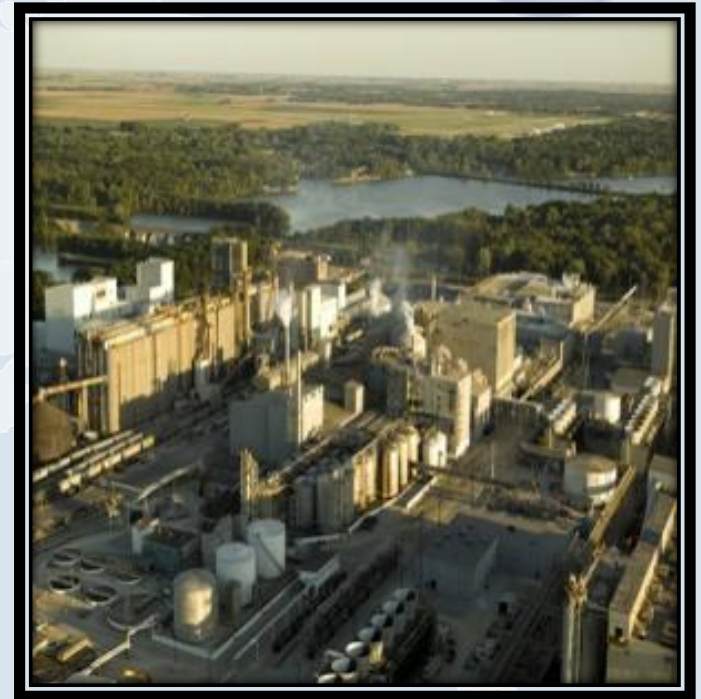


## Background

- **June 2015 Regina CSLF Meeting:** Technical Group formed ad hoc group to investigate and suggest new areas/opportunities for technical action plan.
- **November 2015 Riyadh CSLF Meeting:**
  - Ad hoc team presented findings and suggestions
  - Three new task forces formed, including BECCS
  - Members/interest: USA (chair), IEAGHG, Italy, Norway
- **June 2016 London CSLF Mid-Year Meeting:**
  - Task Force update
  - UK interested in assisting
- **October 2016 Tokyo CSLF Annual Meeting:**
  - Task Force update
- **April/May 2017 Abu Dhabi CSLF Mid-Year Meeting:**
  - Task Force update
  - Draft report update and discussion



- Purpose was to identify:
  - Commercial status
  - Technology options and pathways
  - Resource assessments and emissions profiles
  - Economic analyses
  - Findings from study and develop recommendations



**Archer Daniels Midland  
Company ICCS Project  
*CO<sub>2</sub> Capture from a Biofuel  
Plant***



## **Tentative Timeline of the Task Force**

- ✓ **Aug. 2016: Define report.**
- ✓ **Oct. 2016: Status update at Japan CSLF meeting.**
- ✓ **Oct. 2016: Outline of Report Drafted and shared with Task Force.**
- ✓ **Nov. 11, 2016: Call to discuss Outline.**
- ✓ **Nov. 2016: Determine Participant Section Leads.**
- ✓ **Dec. 2016 – Feb. 2017: Populated Draft Document.**
- ✓ **Mar. 2017: Revise and Finalize Draft for Review.**
- ✓ **Mar. 23 – Apr. 13, 2017: First draft of report completed. Circulated to Task Force Members for comments and edits.**
- ✓ **April 24: 2<sup>nd</sup> Draft distributed to task force to discuss in Abu Dhabi.**
- ✓ **Spring/Summer 2017: Address Task Force comments and complete all report sections.**
- ✓ **Fall 2017: Final Report submitted.**



## Draft Outline

- **Executive Summary**
- 1. **Introduction** (CSLF Purpose, Task Force Mandate, Overview of BECCS and Bio-CCS, Challenges and Benefits of BECCS)
- 2. **Summary of Resource Assessments and Emissions Profiles** (Biomass and Carbon Storage Resource Assessments, Direct GHG emissions, Indirect GHG emissions, Summary of Life Cycle Assessments, Identify Gaps in Analyses and Future Opportunities)
- 3. **Commercial Status of BECCS Technology Deployment** (Planned and Existing Projects, Projects in Operation, Government Programs, Market Drivers for BECCS Deployments, Barriers to Large-scale BECCS Demonstration and Deployment)
- 4. **Overview of BECCS Technology Options and Pathways** (Power Generation, Fuels and Chemicals Production, Industrial sources, Summary of Economic Analyses, Summary of Technical Challenges and R&D Opportunities)
- 5. **Findings and Recommendations**
- **REFERENCES**



## Recommendations

Topic	Recommendation
Biomass Feedstocks	R&D to develop and identify feedstocks that require limited processing Optimize water use and carbon footprint Monitor feedstock availability on regional basis
Technology	Improve pre-treatment processes (densification, dehydration, pelletization) Develop and identify technologies with lower costs and energy penalty
Analyses	Develop a common framework for lifecycle assessment to facilitate accurate accounting of BECCS carbon footprint
Outreach and Communications	Inform policy makers with respect to the benefits of BECCS market opportunities Build trust with public and local communities Stronger collaboration between stakeholders of the CCUS, bioenergy, and BECCS industries
Financing	Incentivising the double benefit of BECCS



## Report Contributors

- **Draft Report sections have been authored by:**
  - U.S. Department of Energy (John Litynski, et al.)
  - IEAGHG (Jasmin Kemper)
  - Center for Carbon Removal (Noah Deich)
  - International Research Institute of Stavanger (IRIS) (Roman Berenblyum)
- **Special thanks to those Task Force members that provided comments:**
  - IRIS
  - CO2GeoNet
  - Center for Carbon Removal
  - Research Council of Norway
  - Sintef
  - Shell