



**CCUS**  
I N I T I A T I V E

# Framework for CCUS in the Clean Energy Ministerial

May 17, 2018

**CARBON CAPTURE, UTILIZATION, AND STORAGE (CCUS)**

A CLEAN ENERGY MINISTERIAL INITIATIVE

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# SOME HOUSEKEEPING ITEMS

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# AGENDA

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1

**Welcome & Introductory Remarks**

2

**Presentation**

New CEM Initiative on Carbon Capture, Utilization, and Storage (CCUS)

Jarad Daniels, Director, Office of Strategic Planning and Global Engagement, Office of Fossil Energy, Department of Energy (United States)

Khalid Abuleif, Chief Negotiator for Climate Agreements, Ministry of Energy, Industry, and Mineral Resources (Saudi Arabia)

3

**Question and Answer Session**



## **Jarad Daniels**

Director, Office of Strategic Planning and Global Engagement, Office of Clean Coal and Carbon Management, Office of Fossil Energy

Department of Energy (United States)

**Panelist**

Mr. Jarad Daniels leads the Office of Strategic Planning and Global Engagement within the Department of Energy's Office of Fossil Energy, where he is responsible for leading strategic planning and techno-economic analysis for research, development, and demonstration of advanced coal and gas-based power systems. This portfolio includes domestic programs and international engagement conducted in close collaboration with industry, universities, and other research organizations.

Mr. Daniels has over twenty years of experience with the U.S. Department of Energy (DOE), managing domestic energy programs and working in several national laboratories and offices throughout the United States. His expertise includes domestic and global energy and environmental technologies, policies, and programs. Earlier management responsibilities included technology development programs for advanced power systems, environmental management, and nuclear complex remediation. Prior professional experience includes life cycle analysis, process engineering and materials science.

Mr. Daniels received a Bachelor of Science degree in Chemical Engineering from Kansas State University, and a Master of Science degree in Chemical Engineering from the University of California at Berkeley.



## **Khalid Abuleif**

Chief Negotiator for Climate Agreements

Ministry of Energy, Industry and Mineral Resources (Saudi Arabia)

Khalid Abuleif has been Saudi Arabia's Chief Climate Negotiator for the Climate Agreements since COP18 in 2012 and a member of the country's delegation to the UNFCCC since 1991. Khalid Abuleif is currently the Adviser to the Saudi Minister of Energy, Industry and Mineral Resources on Sustainability and Climate Policy.

Having joined the Presidency for Meteorology and Environment (PME) in 1989 where he directed the Pollution Control Department, and developed the institutional framework for the Ministerial Committee on Environment, he has banked over 20 years of experience in sustainability, climate change policy and carbon management.

On climate change science, Khalid has participated in the assessment work of the Intergovernmental Panel on Climate Change (IPCC) since 1990. He was a member of the team that prepared the Summary for Policy Makers for all four Climate Change Assessments. He is also a government representative for all IPCC Bureau meetings for the SAR, TAR and 4AR.

On carbon management and carbon capture and storage, Khalid has led the Kingdom's team in the Technical Group Committee for the Carbon Sequestration Leadership Forum (CSLF) since 2005 and is the coordinator of policy and CDM for Saudi Aramco carbon management program.

Khalid Abuleif is a University of Houston graduate with a B.Sc. degree in Civil Engineering and a M.Sc. degree in Environmental Engineering.

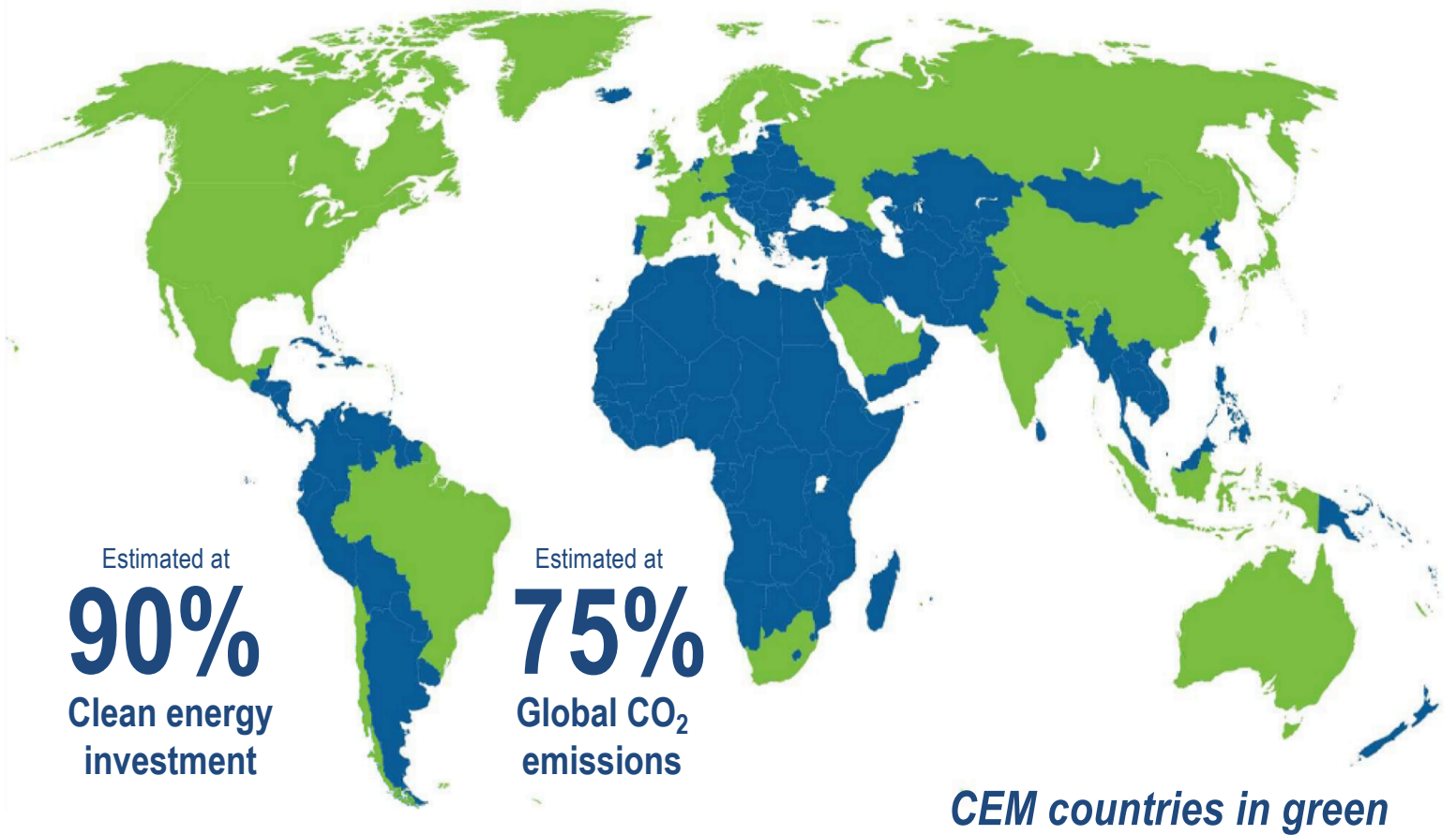


# Background and Framing for the new CEM CCUS Initiative

Jarad Daniels | Department of Energy (United States)

# CEM MEMBERSHIP

24 countries and the European Commission





# ANNUAL MINISTERIALS

**CEM1 - 2010**  
United States



**CEM3 - 2012**  
United Kingdom



**CEM2 - 2011**  
United Arab Emirates



**CEM8 - 2017**  
China



**CEM7 - 2016**  
United States



**CEM6 - 2015**  
Mexico



**CEM4 - 2013**  
India



**CEM5 - 2014**  
Korea

# STRATEGY



Distributed and shared leadership



Voluntary and collaborative



No negotiated communiques



Collaboration with multilateral institutions and private sector



# 8<sup>TH</sup> CLEAN ENERGY MINISTERIAL (CEM8) BEIJING | JUNE 2017



- CEM8 side event with energy ministers and IEA Executive Director
- Discussed factors that attract CCUS investments and highlighted importance to accelerate further CCUS investments
- Discussed the need to place CCUS firmly in the context of broader clean energy strategies
- U.S. Secretary Perry recommended development of new CEM initiatives on CCUS and civil nuclear energy

# IEA CCUS SUMMIT PARIS | NOVEMBER 2017

- Hosted by IEA and co-chaired by IEA Executive Director Fatih Birol and U.S. Secretary Perry
- Engaged energy ministers and chief executives of major energy companies
- Pushed for collaboration and accelerated investment in CCUS
- Industry representatives included CEOs and senior executives from ExxonMobil, Royal Dutch Shell, BP, Statoil, Chevron, Total Glencore, Suncor Energy, GE Power, Dow Chemical, Mitsubishi Heavy Industries, and Port of Rotterdam

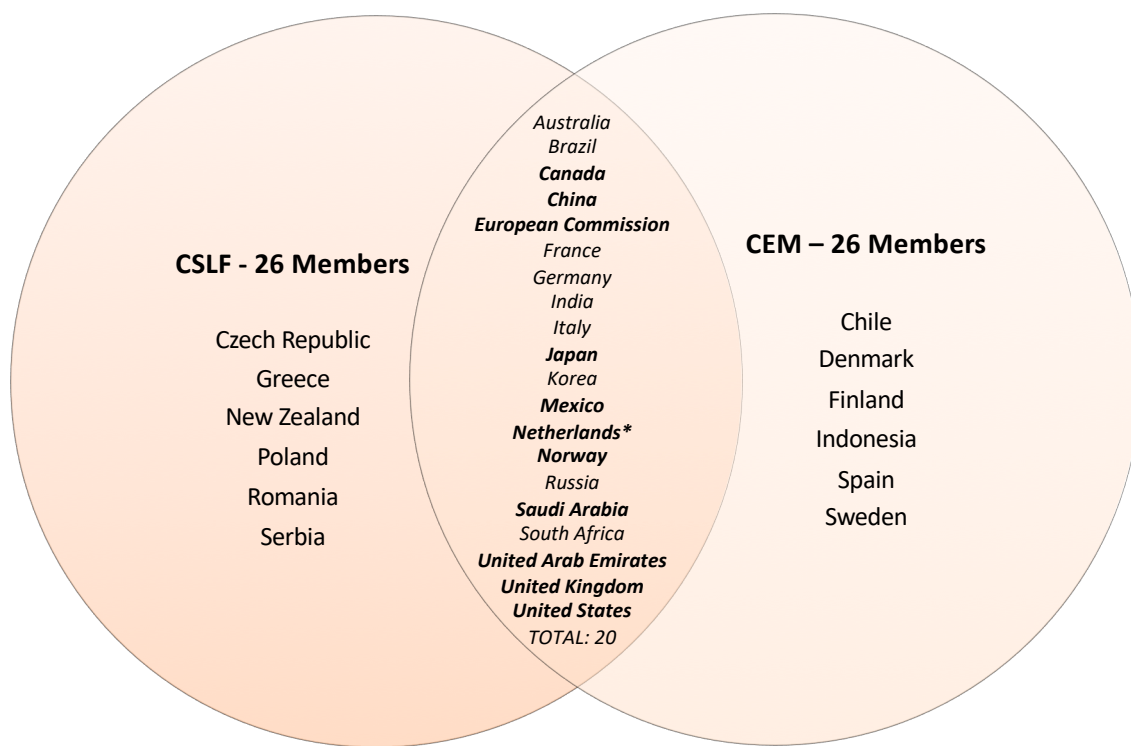


## CARBON SEQUESTRATION LEADERSHIP FORUM MINISTERIAL MEETING ABU DHABI | DECEMBER 2017

- Hosted by Minister Suhail Al Mazrouei, Minister of Energy and Industry (UAE)
- Meeting focused on advancing the business case for CCUS
- Ministerial Communique key points:
  - Support inclusion of CCUS as part of suite of clean energy technologies
  - Leverage success of operational CCUS projects and emphasize the need for greater project development
  - Encourage development of regional strategies to support CCUS deployment
  - Explore utilization options beyond CO<sub>2</sub>-EOR
  - Support collaborative research and development on innovative CCUS technologies
  - Expand stakeholder engagement and strengthen links with other clean energy efforts
  - Increase global shared learnings on CCUS through best practices and lessons learned
  - Continue engagement with the public on CCUS



# CEM LEVERAGES CSLF



\*Netherlands is a CEM observer country



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# New CEM Initiative on Carbon Capture, Utilization, and Storage (CCUS)

Khalid Abuleif | Ministry of Energy, Industry, and Mineral Resources (Saudi Arabia)

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## POTENTIAL ACTIVITIES FOR CEM CCUS INITIATIVE

1. Expand the spectrum of clean energy technologies actively considered under CEM to include CCUS
2. Create a sustained platform for the private sector, governments, and the investment community to engage and accelerate CCUS deployment
3. Facilitate identification of both near and longer-term investment opportunities to improve the business case for CCUS
4. Disseminate emerging CCUS policy, regulatory, and investment best practices as part of integrated clean energy systems



## NEW CCUS INITIATIVE: POTENTIAL PARTNERS

- Governments: Canada, China, European Commission, Japan, Mexico, Netherlands, Norway, Saudi Arabia, United Arab Emirates, United Kingdom, United States (+ others)
- Industry, including the oil and gas community
- Financial institutions, including multilateral development banks (MDBs)
- Organizations: Carbon Sequestration Leadership Forum (CSLF), International Energy Agency (IEA), IEA Greenhouse Gas R&D Programme (IEAGHG), Mission Innovation (MI), Global CCS Institute (GCCSI), and Oil and Gas Climate Initiative (OGCI)
- Other CEM initiatives: 21st Century Power Partnership, Clean Energy Solutions Center, etc.

## POTENTIAL FIRST YEAR ACTIONS

- Provide expert assistance and sharing of best practices to support in-country work
  - CEM Clean Energy Solutions Center “Ask an Expert” service
  - CEM and Clean Energy Solutions Center websites
- Establish an industry advisory body to provide a regular dialogue with key energy ministers on CCUS progress and priorities
- Conduct workshops with industry and policymakers to identify promising CCUS opportunities
- Support feasibility studies and assessments

# PROPOSED TECHNICAL AREAS OF FOCUS

Clean Transport

Energy Access

Energy Efficiency

Energy-Water-Food Nexus

Finance

Grid Integration

**Renewable Energy**

Search All Resources

**Carbon Capture, Utilization, and Storage**

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## Carbon Capture, Utilization, and Storage

- Policies
- Road maps
- Financing
- Feasibility and Case Studies
- Infrastructure
- Regulations
- Stakeholder Engagement
- Standards, Best Practices, and Guidelines

## 9<sup>TH</sup> CLEAN ENERGY MINISTERIAL (CEM9) COPENHAGEN | MAY 2018

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- Formally launch new CCUS initiative at an official side-event with supporting ministers and private sector participation
- Highlight recent CCUS developments, opportunities, and plans forward
- Supporting ministers note the launch and future plans in plenary discussions

## CEM9 SIDE EVENT: CEM CCUS INITIATIVE

- CEM Initiative on Carbon Capture, Utilization and Storage (CCUS) will launch on Thursday, May 24<sup>th</sup> as part of CEM9 Meeting in Copenhagen
- This hour-long side event will be co-chaired by Terje Søviknes, Minister of Petroleum and Energy (Norway) and Fatih Birol, Executive Director, International Energy Agency
- Discussions will focus on the roles of:
  - Government Leadership
  - Industry and Financial Sectors
- The side event provides an opportunity for continued engagement between partner governments and the private sector
- *For additional information, please contact:*
  - Norway: Stig Svenningsen, Assistant Director General, Ministry of Petroleum and Energy, [stig.svenningsen@oed.dep.no](mailto:stig.svenningsen@oed.dep.no)
  - United States: Adam Wong, Office of Fossil Energy, Department of Energy, [adam.wong@hq.doe.gov](mailto:adam.wong@hq.doe.gov)

THANK YOU!

## QUESTION AND ANSWER SESSION



**Khalid Abuleif**  
Chief Negotiator for  
Climate Agreements

**Ministry of Energy,  
Industry, and Mineral  
Resources (Saudi  
Arabia)**



**Jarad Daniels**  
Director, Strategic  
Planning and Global  
Engagement  
Office of Fossil Energy

**Department of Energy  
(United States)**

Webinar recordings provided on  
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**THANK YOU!**

**Your Participation is Appreciated!**