Saudi Arabia’s Efforts on Carbon Management

World Bank Carbon Capture and Storage Workshop

Washington DC
September 2011
Mitigation efforts sought to:
Be driven by technology
Minimize the impact on world economy
Saudi Arabia’s Leadership on Carbon Management

- CCS decision Marrakech Accords, Nov 2001
- Proposed CCS to be eligible for CDM, Dec 2005
- IPCC decision on Special Report, Feb 2003
- Kyoto Protocol Ratified, May 2005
- Joined CSLF; Sep 2005
- Held the first Regional CM Symposium, May 2006
- CDM-DNA approved its rules and procedures, Feb 2010
- Four Kingdom’s Initiative; April 2008
- CCS as an environmental good in CTE WTO, Nov 2009
- Hosted the 3rd CSLF; Jan 2008
- 4K action plan finalized, March 2009
- CCS Workshop KSA Roadmap; Mar 2009
- CCS is eligible for CDM Decision; Dec 2011
- 5 Technical Workshops for 5 economic sectors, Feb - May 2010

Pledged $300 MM for R&D in energy and environment, Nov 2007

Established DNA-CDM, June 2009

CCS Workshop KSA Roadmap; Mar 2009

International

National/Regional
Carbon Sequestration Leadership Forum (CSLF)

- **Saudi Arabia Activities**
  - Saudi Arabia announced a CO2-EOR demonstration project (Oct, 2009)
  - Hosted technical group meeting (Dhahran, Jan 2008)
  - Host CSLF Working Technical Group Session (Dhahran, Feb/March 2011)
  - Saudi Arabia is the Chair of Capacity Building Task Force
Four Kingdoms Collaboration

Vision

Principles

2011 Work Program

Future Work Program

Advance the large scale commercialization and deployment of CCS technology

- United Kingdom
- Netherlands
- Norway
- Saudi Arabia
Four Kingdoms Collaboration

- **Promote large scale deployment of CCS**
  - Collaborate to facilitate large scale development and deployment of CCS

- **Complement national and international advancement of CCS technology**
  - EOR represent promising opportunity for near term commercialization of CCS
  - Industrial uses of carbon dioxides

- **Cooperate with national stakeholders**
  - Promote knowledge sharing among members
  - Encourage collaborative research among members
Four Kingdoms Collaboration

- Workshops to identify and understand:
  - EOR and its impact on economics of deploying large scale CCS (Saudi Arabia)
  - Potential other industrial uses of CO2 (Netherlands)
  - Deliberate on the results of above workshops and identify specific actions (Norway/ UK)
Four Kingdoms Collaboration

- Seek inputs from other invited countries of ways to enhance the initiative and the potential for its expansion
- Formulate and identify collaborative actions among industry and academia
- Examine future work program on areas:
  - Managing emission from mobile sector
  - Impact of EOR on the economics of CCS
  - Cost and benefits of transporting CO2 by ships
  - Research and development
Saudi Arabia’s Activities on Climate Change

**Internal Engagement**

**Research Centers**
- King Abdullah University of Science and Technology (KAUST)
- King Abdullah Petroleum Studies and Research Center

**Universities**
- King Saud University

**Companies**

**Strong Internal Engagement**
Synchronized Capture and EOR Efforts

Capture Fixed Sources
  - Sources Characterization
  - Capture Technologies
  - Lab Studies Simulation
  - Capture Pilot

CO2 EOR
  - Lab Studies
  - Reservoir Simulation
  - Field Experimentation
  - CO2-EOR Pilot
Summary

Actively engaged internally and externally on climate change mitigation

Approach focuses on developing win-win technologies

Comprehensive technology roadmap on CO₂ capture, sequestration and utilization

Research program combines in-kingdom development and international collaboration

CO₂ Enhanced Oil Recovery demonstration plant to be implemented in Saudi Arabia by 2013
Saudi Arabia’s Efforts on Carbon Management

World Bank Carbon Capture and Storage Workshop

Washington DC
September 2011