



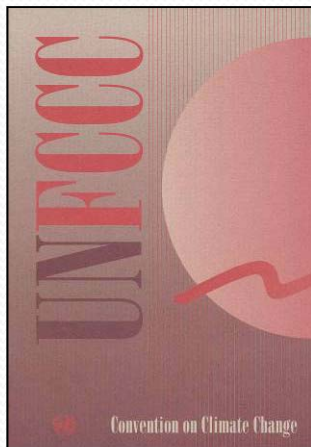
Kingdom of Saudi Arabia  
Ministry of Petroleum  
and Mineral Resources

# **Saudi Arabia's Efforts in Carbon Management**

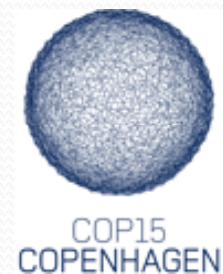
*International Energy Forum  
Symposium on Carbon Capture and Storage  
31 May – 01 June 2010,  
Algiers, Algeria*

***Dr. Ali A. Al-Meshari  
Ministry of Petroleum and Mineral Resources  
Saudi Arabia***

INTERNATIONAL MARITIME ORGANIZATION



Mitigation efforts sought to:  
Be driven by technology  
Minimize the impact on world economy



## Research Centers



## Research Centers



## Universities



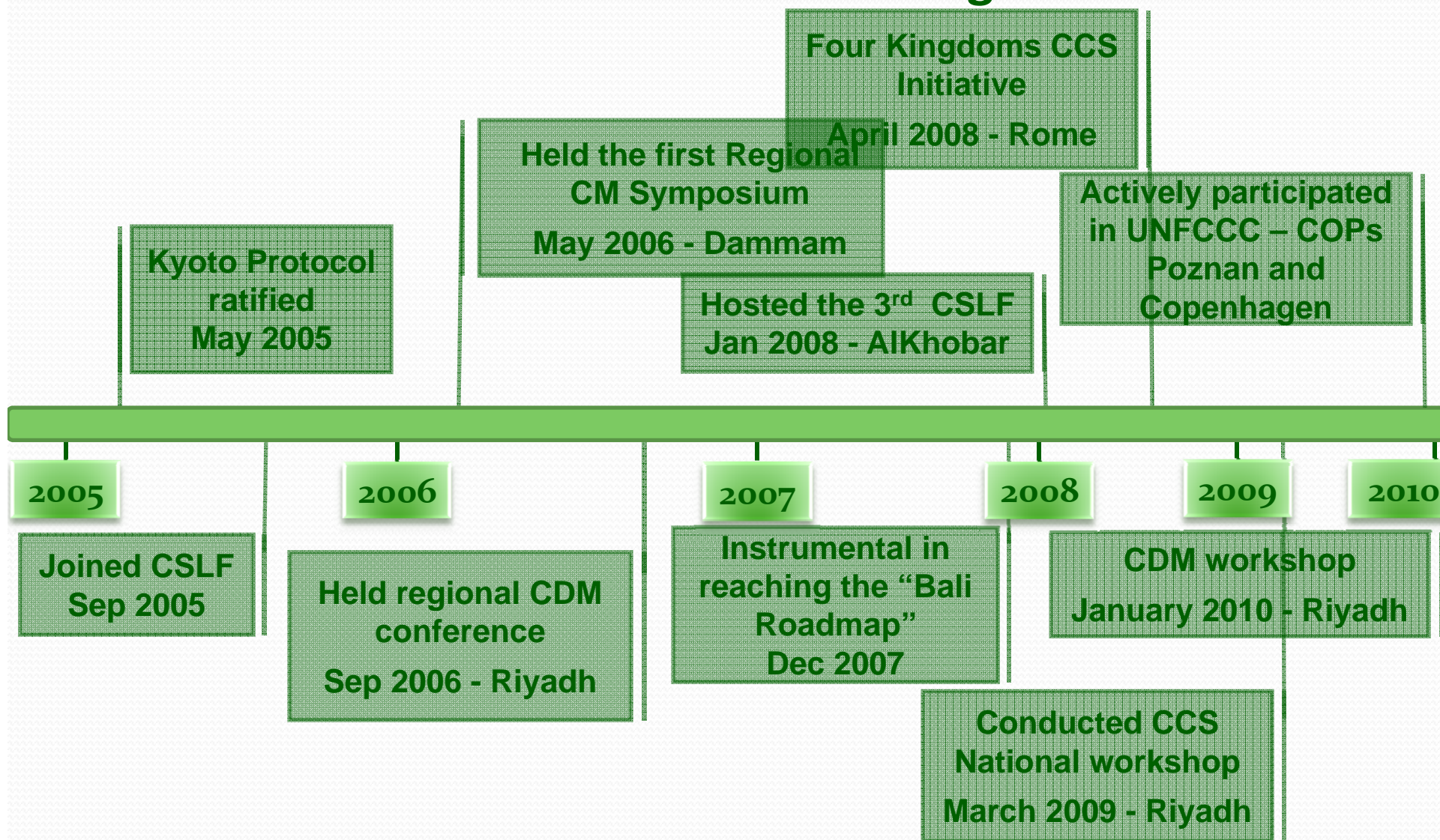
# Strong Internal Engagement

## Companies





# Saudi Arabia's Activities on Climate Change





## Saudi Arabia's Activities on Climate Change

- A strong history on environmental awareness and protection
  - Energy conservation
  - Energy Efficiency
  - Flare reduction (master gas system)
  - Carbon management

# Saudi Arabia's Carbon Management Technology Roadmap

## Carbon Management Technology Roadmap

Capture  
Fixed  
Sources

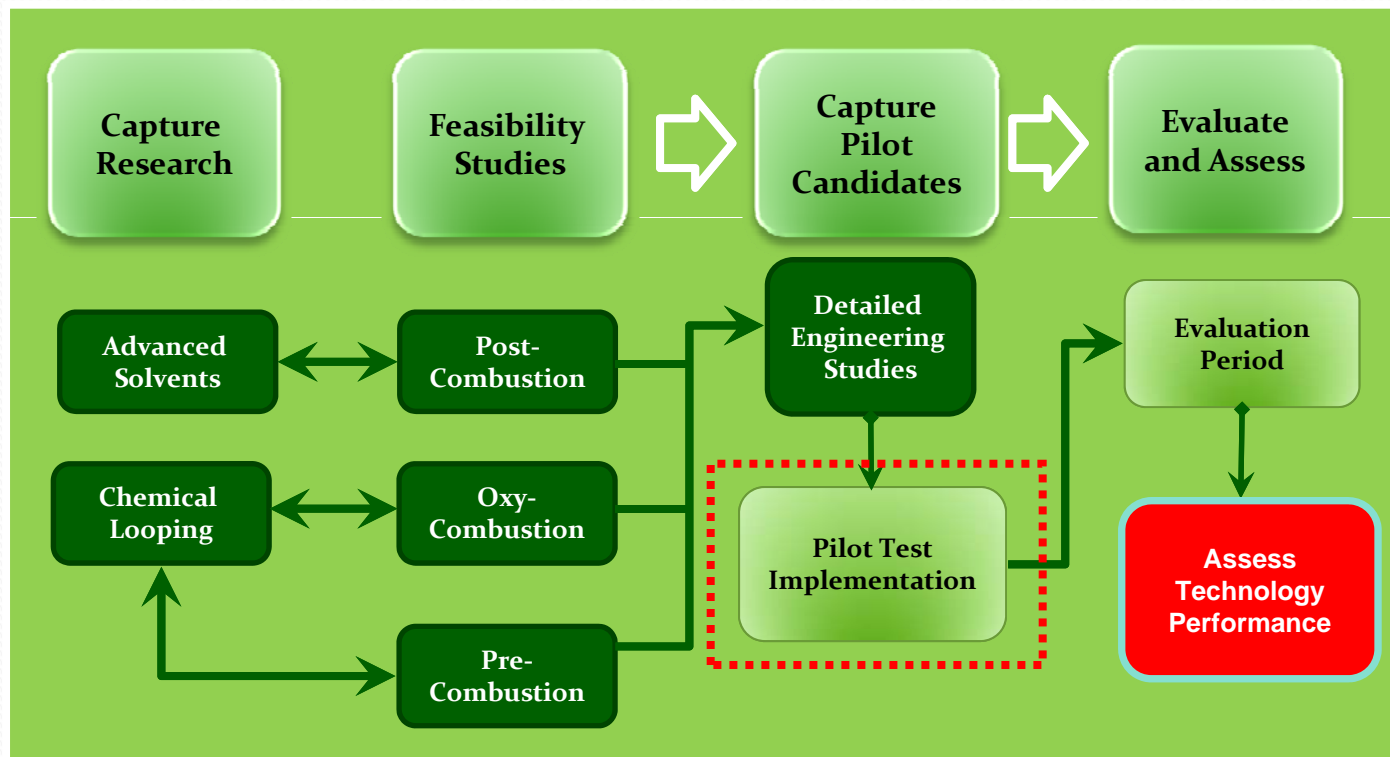
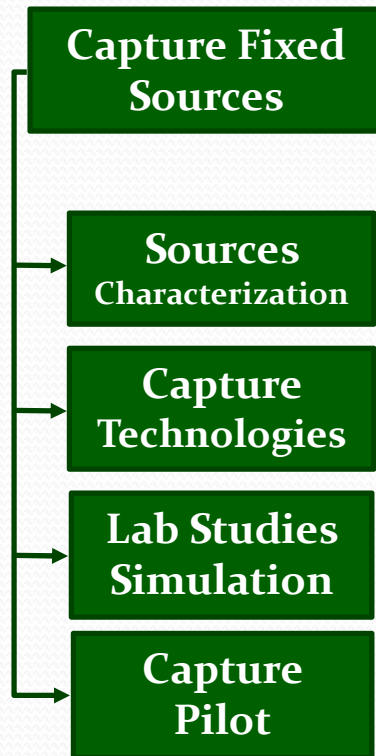
CO<sub>2</sub>  
Reduction  
Mobile  
Sources

Industrial  
Applications

CO<sub>2</sub>  
Storage

CO<sub>2</sub> EOR

## Capture from Fixed Sources





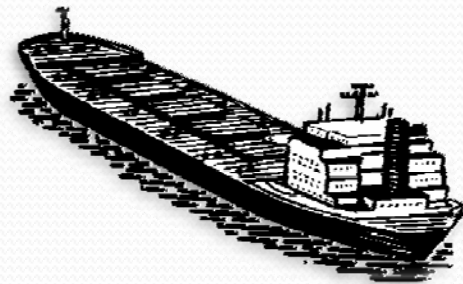
## CO<sub>2</sub> Reduction from Mobile Sources

### CO<sub>2</sub> Reduction Mobile Sources

Cars

Marine

Trains



Capture  
Fixed  
Sources

CO<sub>2</sub>  
Reduction  
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Sources

Industrial  
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CO<sub>2</sub>  
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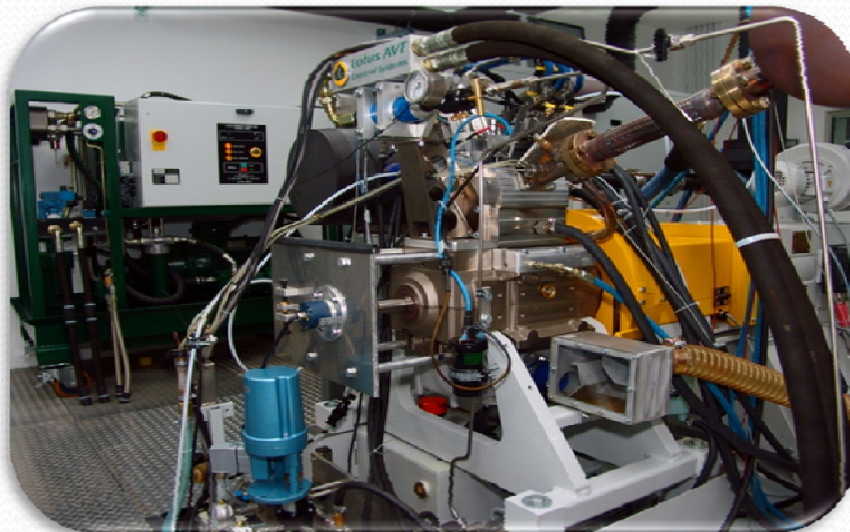
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CO<sub>2</sub> EOR

## Industrial Application

**Industrial  
Application**

**Polymer**

**Carbon  
Fiber**

**Construction  
Material**

**Chemicals**



Capture  
Fixed  
Sources

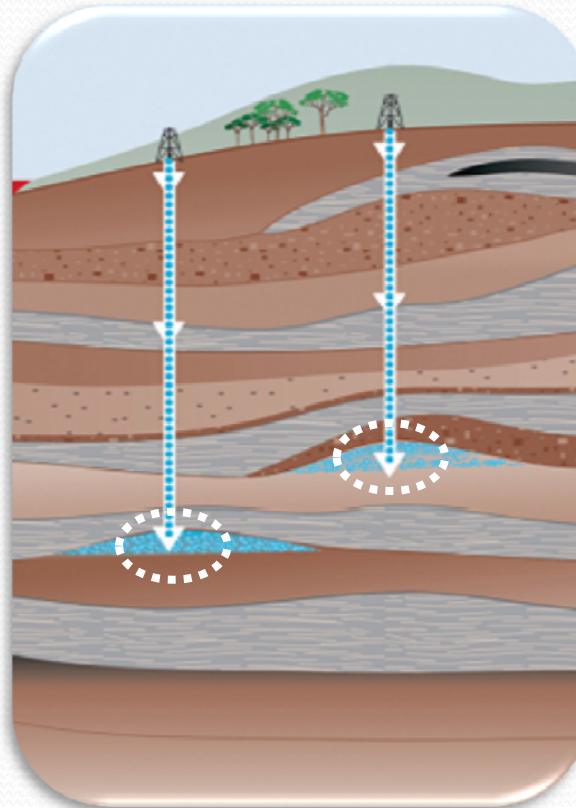
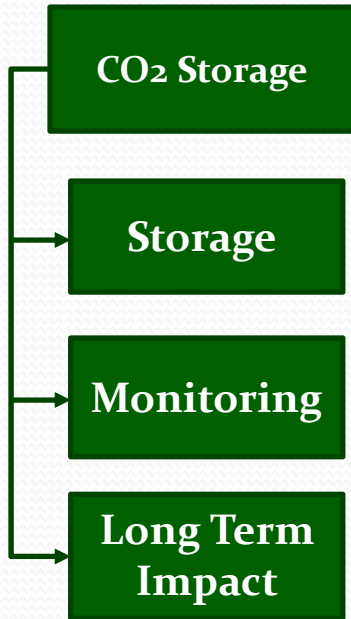
CO<sub>2</sub>  
Reduction  
Mobile  
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Industrial  
Applications

CO<sub>2</sub>  
Storage

CO<sub>2</sub> EOR

## CO<sub>2</sub> Storage



# CO<sub>2</sub>-Enhanced Oil Recovery

CO<sub>2</sub> EOR

Lab  
Studies

Reservoir  
Simulation

Field  
Experimentation

CO<sub>2</sub>-EOR  
Demo



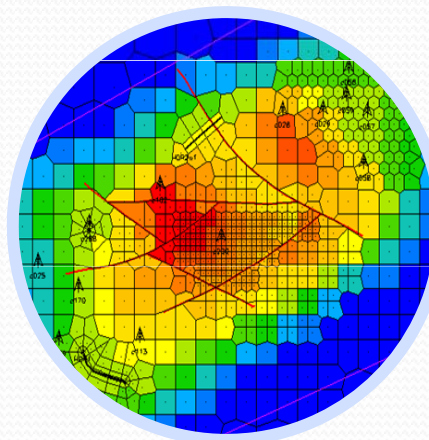
MMP



Swelling



Asphaltene  
Precipitation



CO<sub>2</sub>-EOR  
Simulation



Core  
Flooding

Capture  
Fixed  
Sources

CO<sub>2</sub>  
Reduction  
Mobile  
Sources

Industrial  
Applications

CO<sub>2</sub>  
Storage

CO<sub>2</sub> EOR





## Summary

Actively engaged internally and externally on climate change mitigation

Approach focuses on developing win-win technologies

Comprehensive technology roadmap on CO<sub>2</sub> capture, sequestration and utilization

Research program combines in-kingdom development and international collaboration

CO<sub>2</sub> Enhanced Oil Recovery demonstration plant to be implemented in Saudi Arabia by 2013





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