

# Uthmaniyah CCUS Demonstration Project

ABDULAZIZ S. AL-QASIM  
SAUDI ARAMCO

# Saudi Aramco Environmental Stewardship

Energy efficiency



Reduce gas flaring



Zero discharge mandate



Renewables



Carbon management



# Carbon Management Technology Roadmap

## Focus Areas

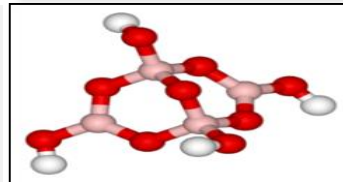
Stationary Carbon Management



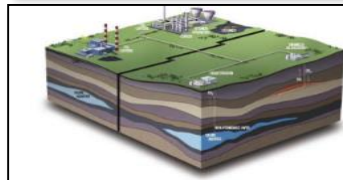
Mobile Carbon Management



Industrial Applications



CO<sub>2</sub> Storage



CO<sub>2</sub>-EOR



# Stationary Carbon Management

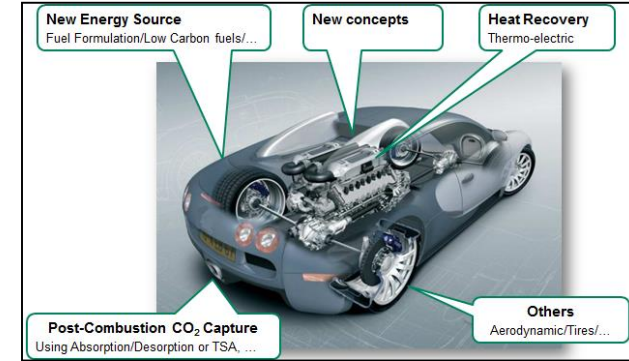
- **Develop CO<sub>2</sub> capture technologies relevant to business needs**
  - Reduce CO<sub>2</sub> emissions from oil facilities.
  - Provide clean technologies for the continuous use of heavy residues.
  - Reduce cost of oil-based CO<sub>2</sub> capture technologies.
  - Contribute to the global CO<sub>2</sub> reduction effort.



# Mobile Carbon Management

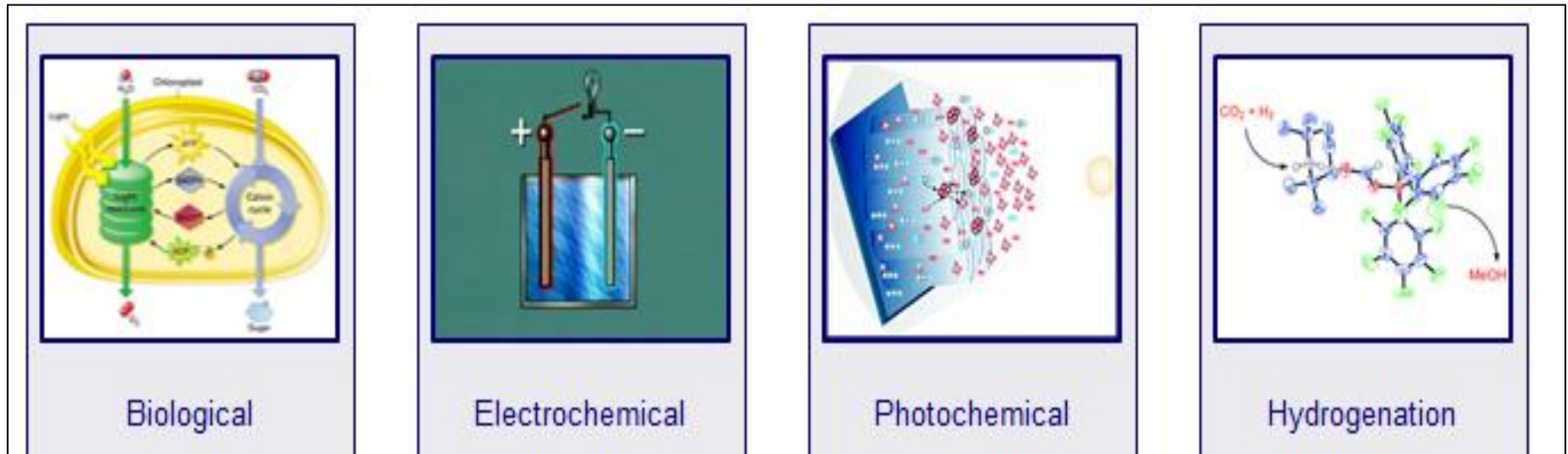
## ➤ Develop practical solutions to reduce carbon footprint from mobile sources

- Improving vehicle efficiency.
- Minimizing the carbon footprint on a life cycle basis.
- Providing technical solutions and with minimum impact on vehicle performance.



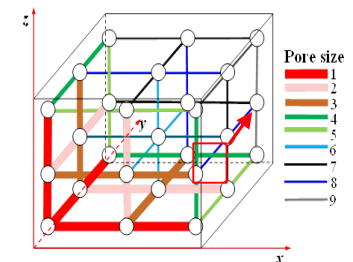
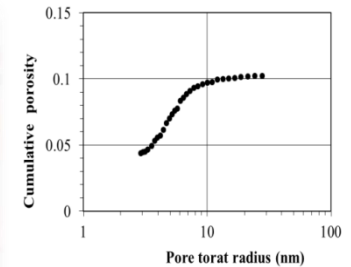
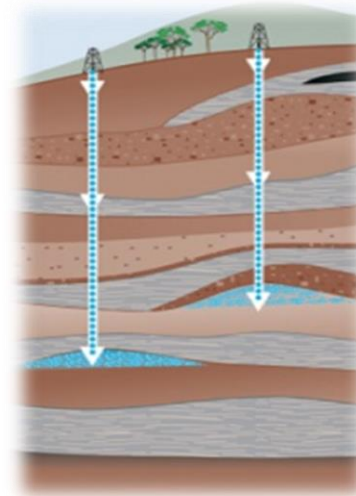
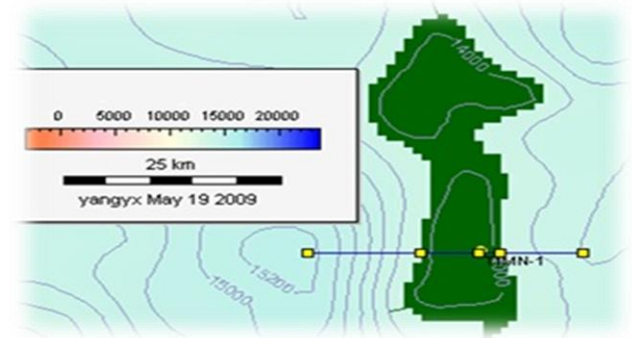
# Industrial Applications

- **Develop new technologies that meet the long-term goal of creating value from the carbon cycle.**



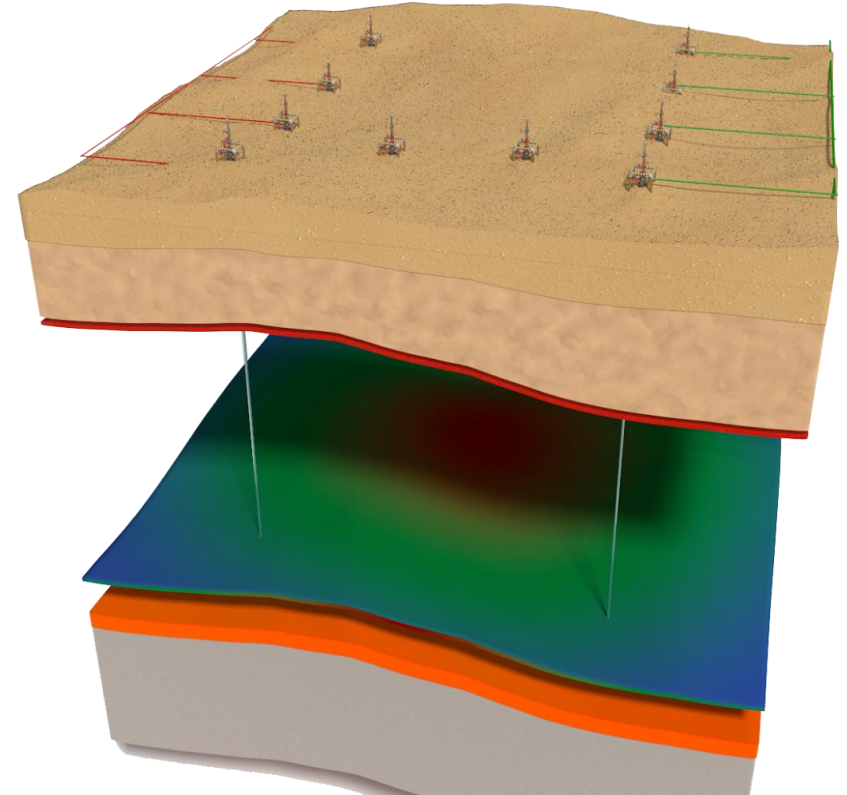
# CO<sub>2</sub> Storage

- Identify storage capacity.
- Evaluate injection ability and sealing capacity.
- Monitor CO<sub>2</sub> movement.
- Assess long-term impact.



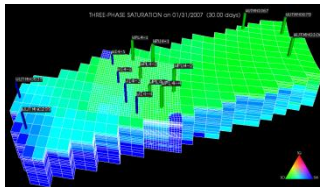
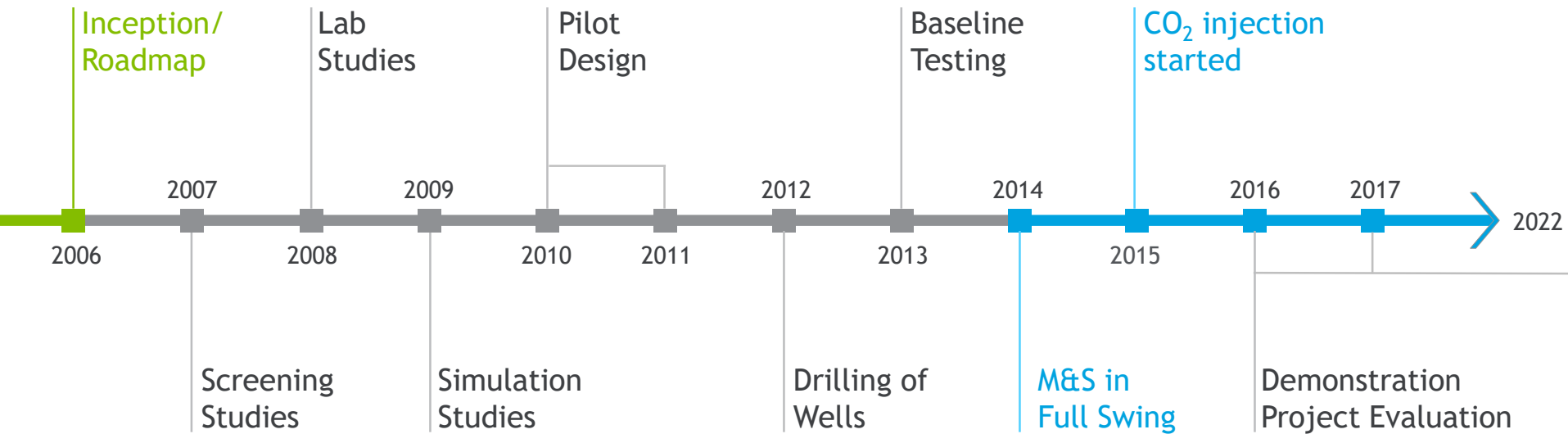
# CO<sub>2</sub> Enhanced Oil Recovery (EOR)

- The 1st in the Kingdom
- One of the largest in the middle east
- Captures ~800,000 tonnes of CO<sub>2</sub> per year
- Pipeline: 85 km to injection site





# Milestones





# Highlights



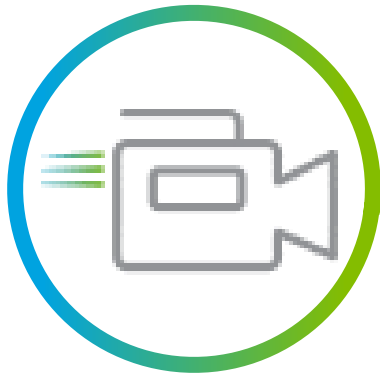
Oil Gains  
Very +ve



Recovery  
Very +ve



CO<sub>2</sub> Storage  
800,000 ton/year  
~60%



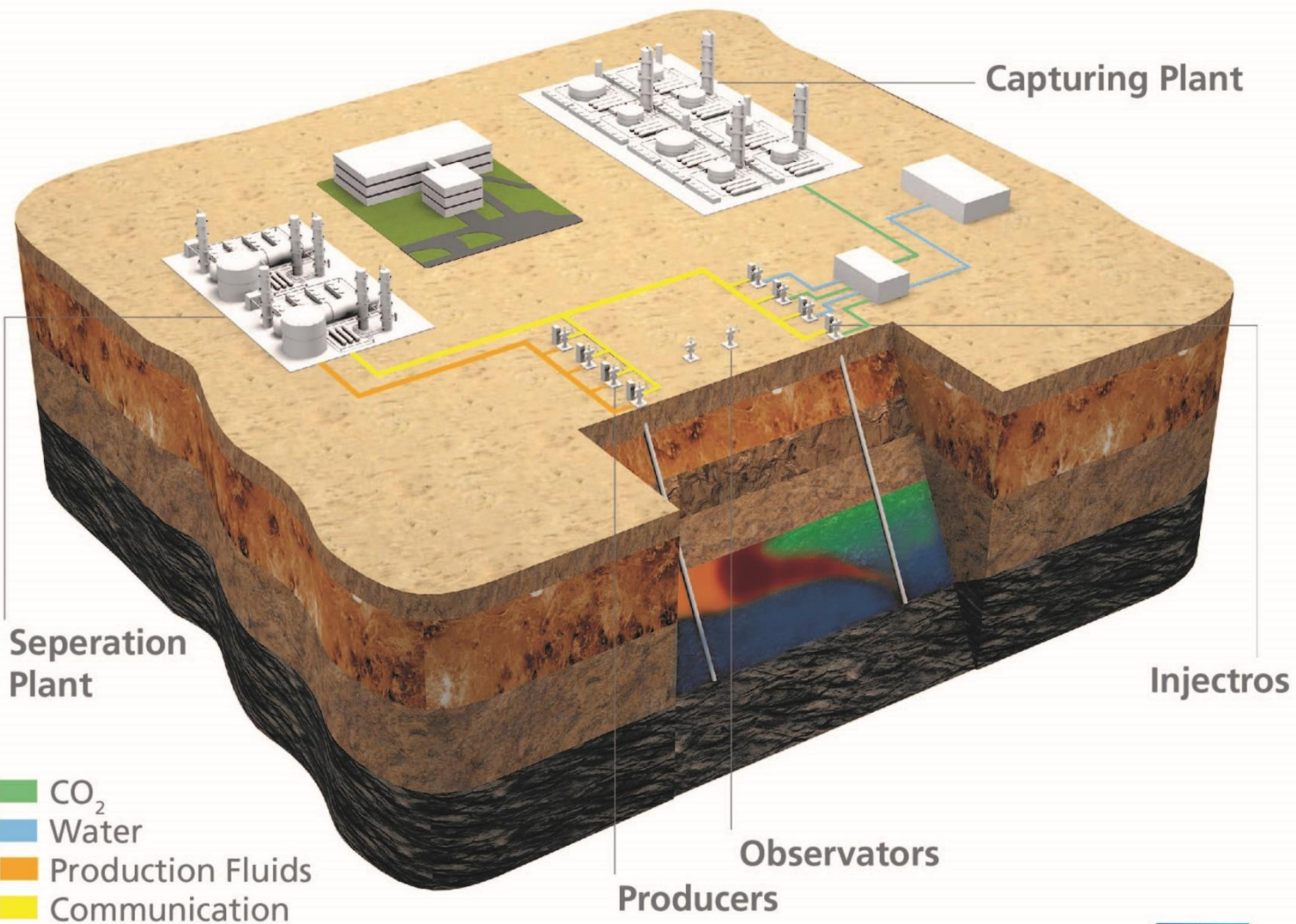
M&S Full swing  
15 deployments



Drill new obs. well  
Sponge core



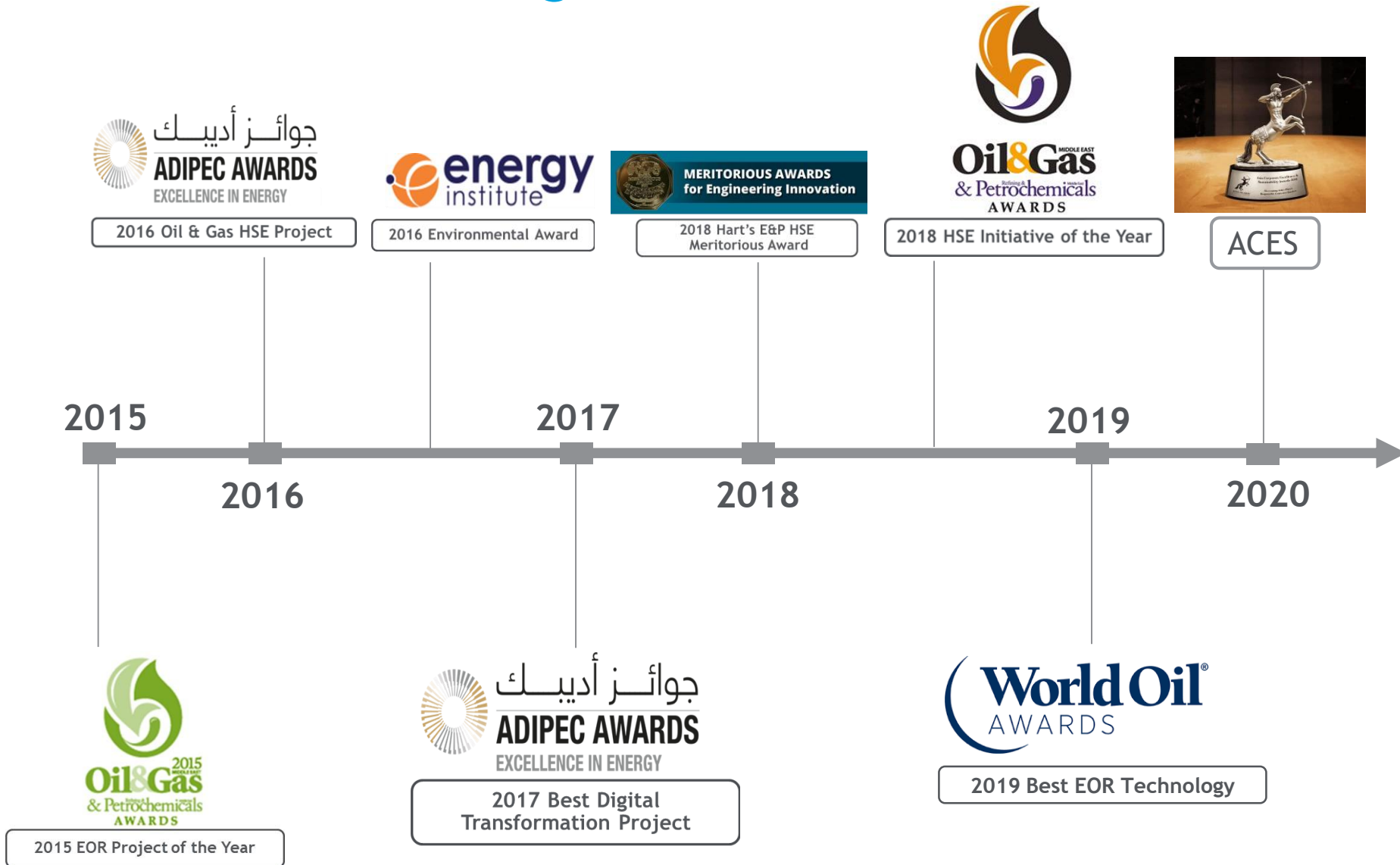
Continuous  
Pilot assessment



EXPEC ARC Technologies



# Awards and Recognition



# Monitoring & Surveillance

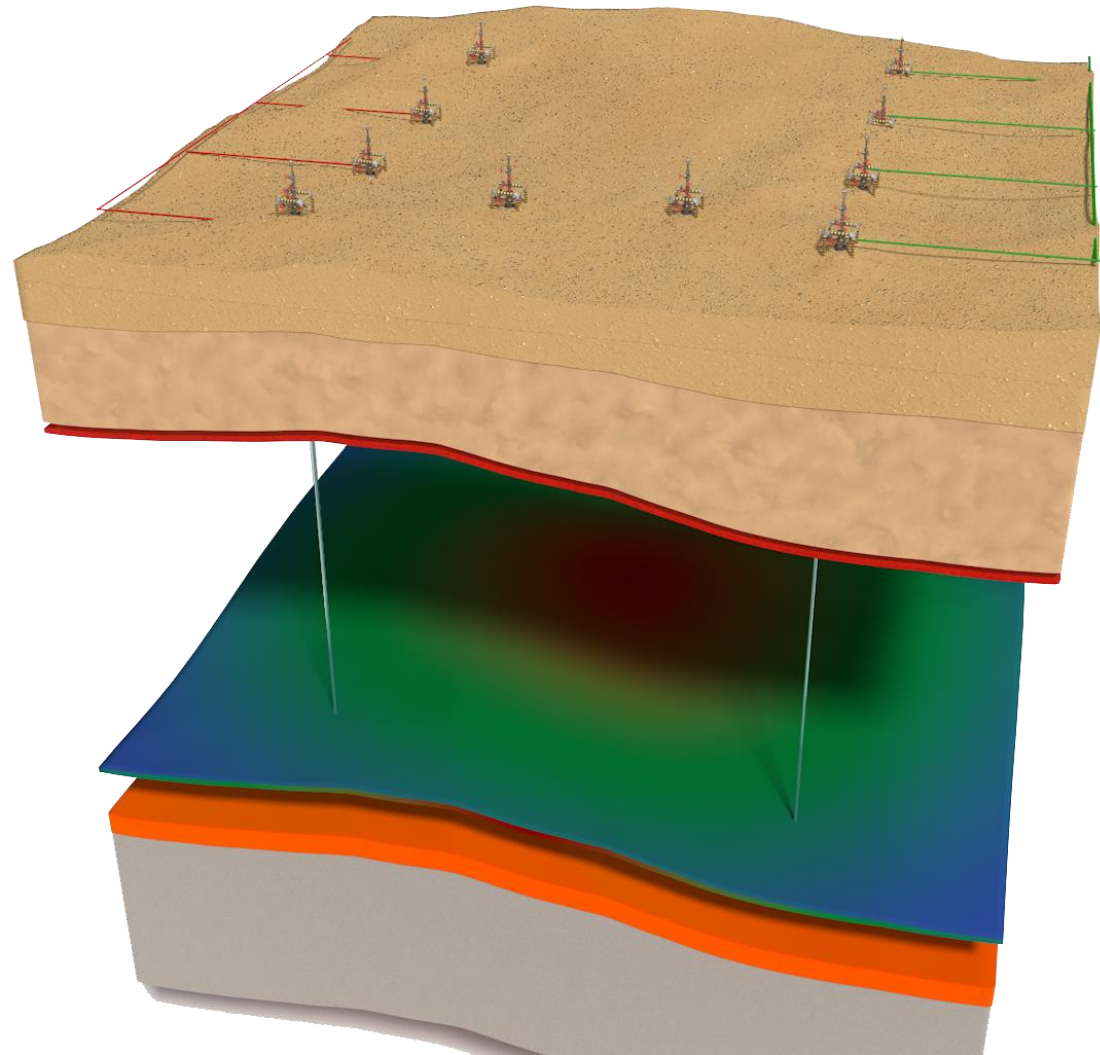
Monitoring Parameters:

Sequestered CO<sub>2</sub>

Plume evolution

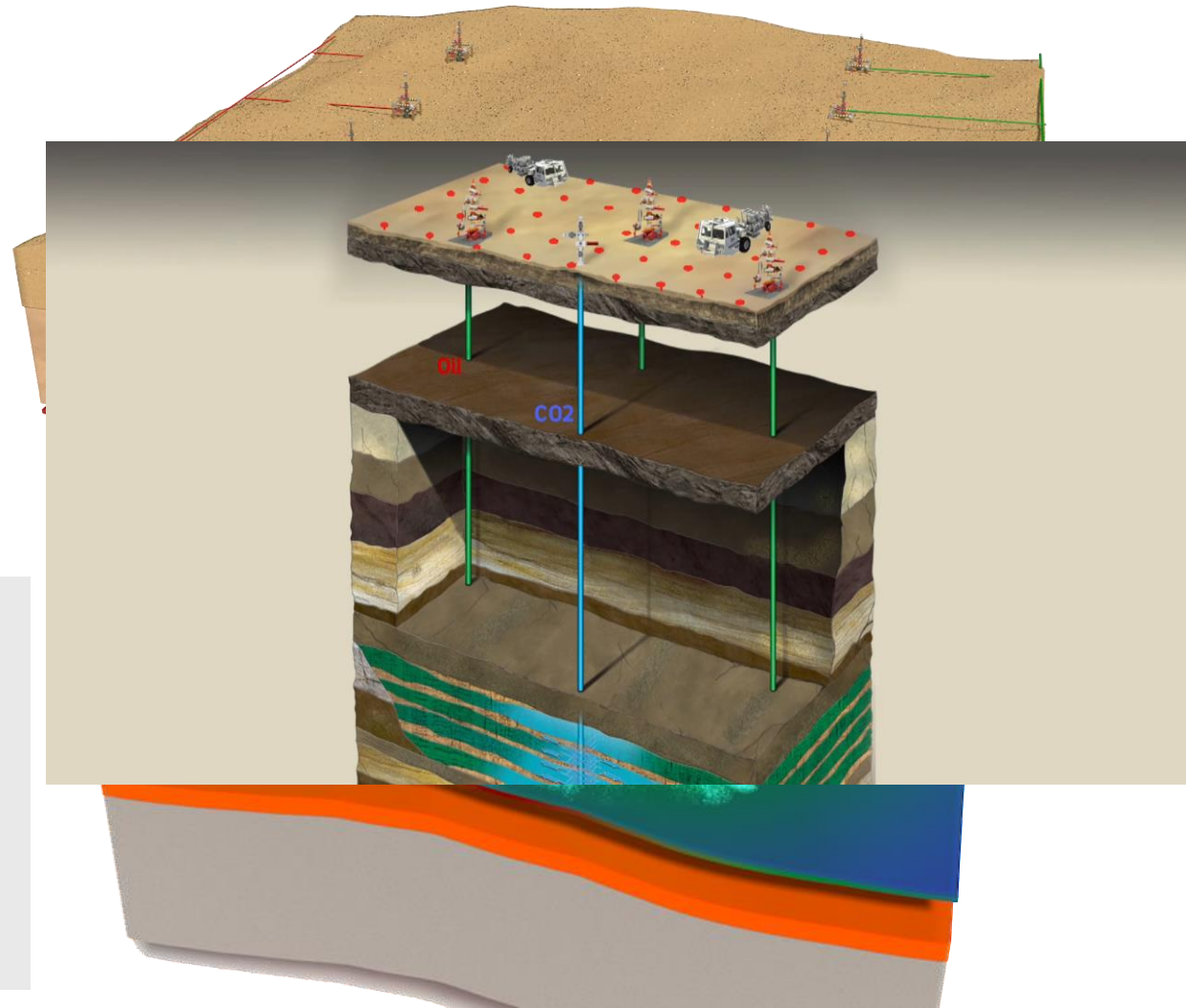
CO<sub>2</sub> Migration

Oil saturation monitoring



# Monitoring & Surveillance

- Seismic sensors



1<sup>st</sup> continuous seismic monitoring

1000 seismic sensors

Tracks plume propagation







Carbon management

Uthmaniyah CO<sub>2</sub>-EOR demonstration project

# Out of the box innovation

Disruptive Technology

أرامكو السعودية  
saudi aramco

