

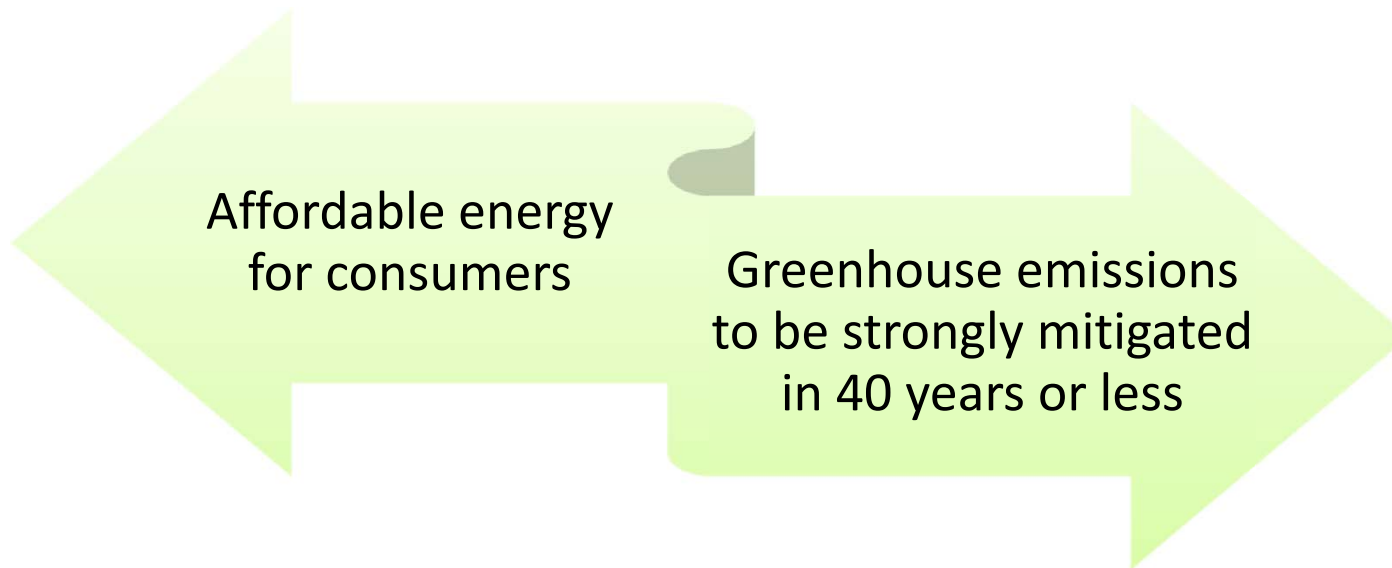
# Development of an Offshore CO<sub>2</sub> Storage Industry

Dr Ward Goldthorpe

Getting Carbon Capture Moving Faster  
Carbon Capture Journal  
8 October 2012, London



# Society's Challenge



Emissions mitigation will take place in a time-constrained economic system – not an evolutionary free market

# The Crown Estate's Storage Rights

## Within the territorial limit (12nm)

- Owner of the seabed
- Property rights over surface and sub-surface

## On the UK continental shelf

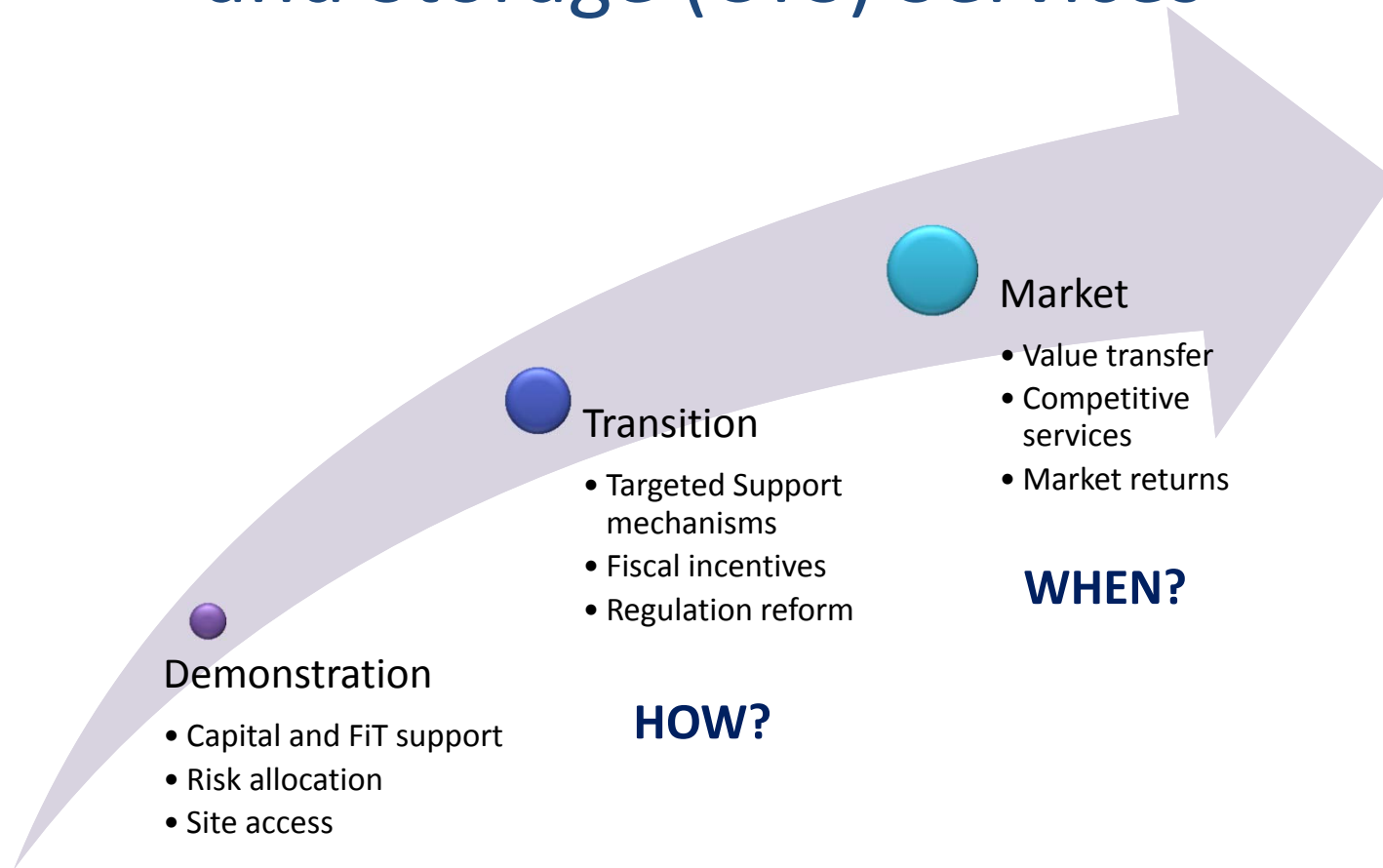
- UK Gas Importation and Storage Zone
- Vested rights under the Energy Act 2008

# The Crown Estate's Objectives

Work with UK government to facilitate deployment of large scale CCS projects during the next 5-10 years

Prepare for competitive storage leasing and project selection beyond the UK commercialisation programme

# Developing the Market for CO<sub>2</sub> Transport and Storage (CTS) Services



# What is the market commodity?

Is it low carbon electricity?

- NO

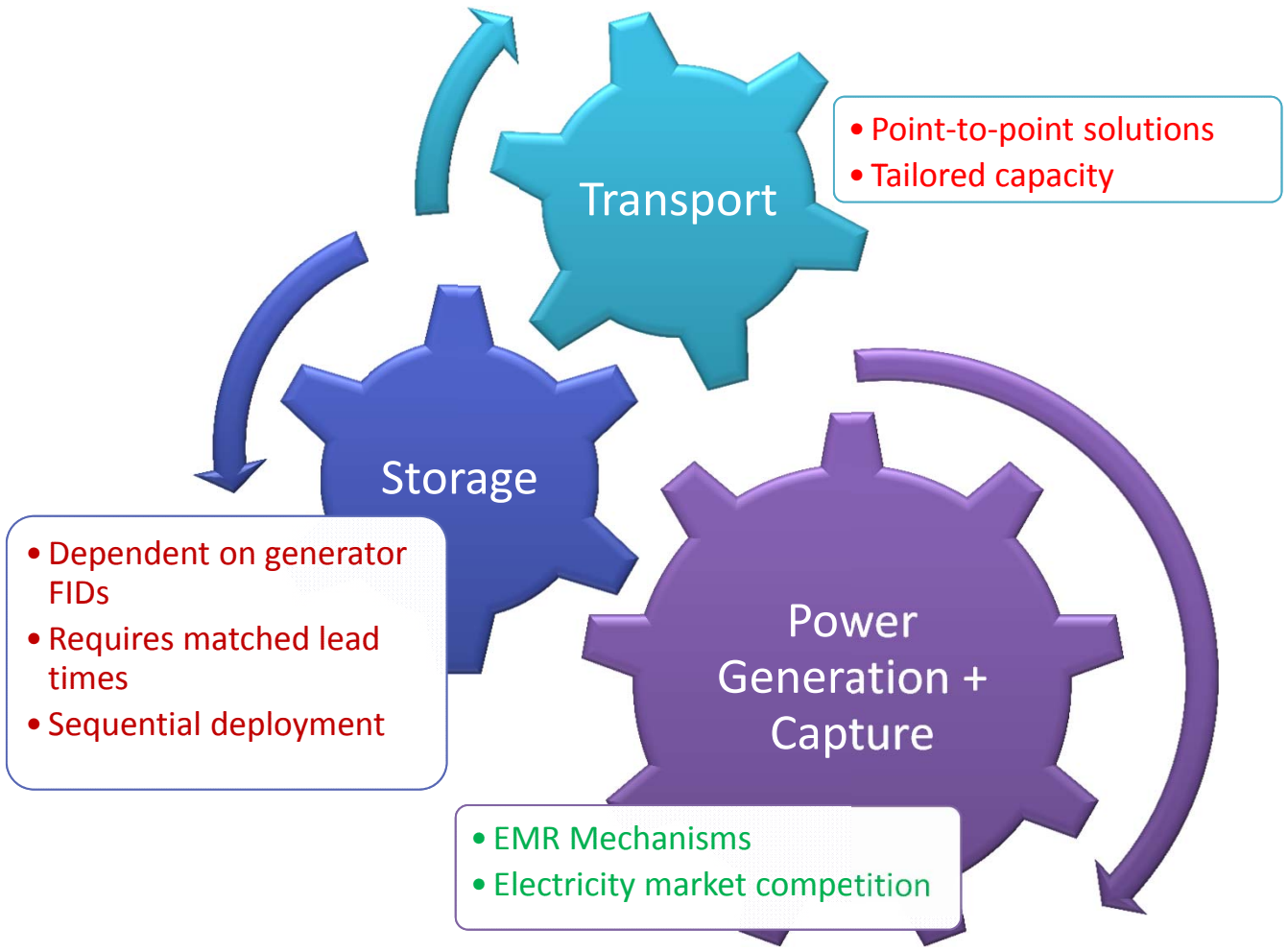
Is it low carbon industrial products?

- NO

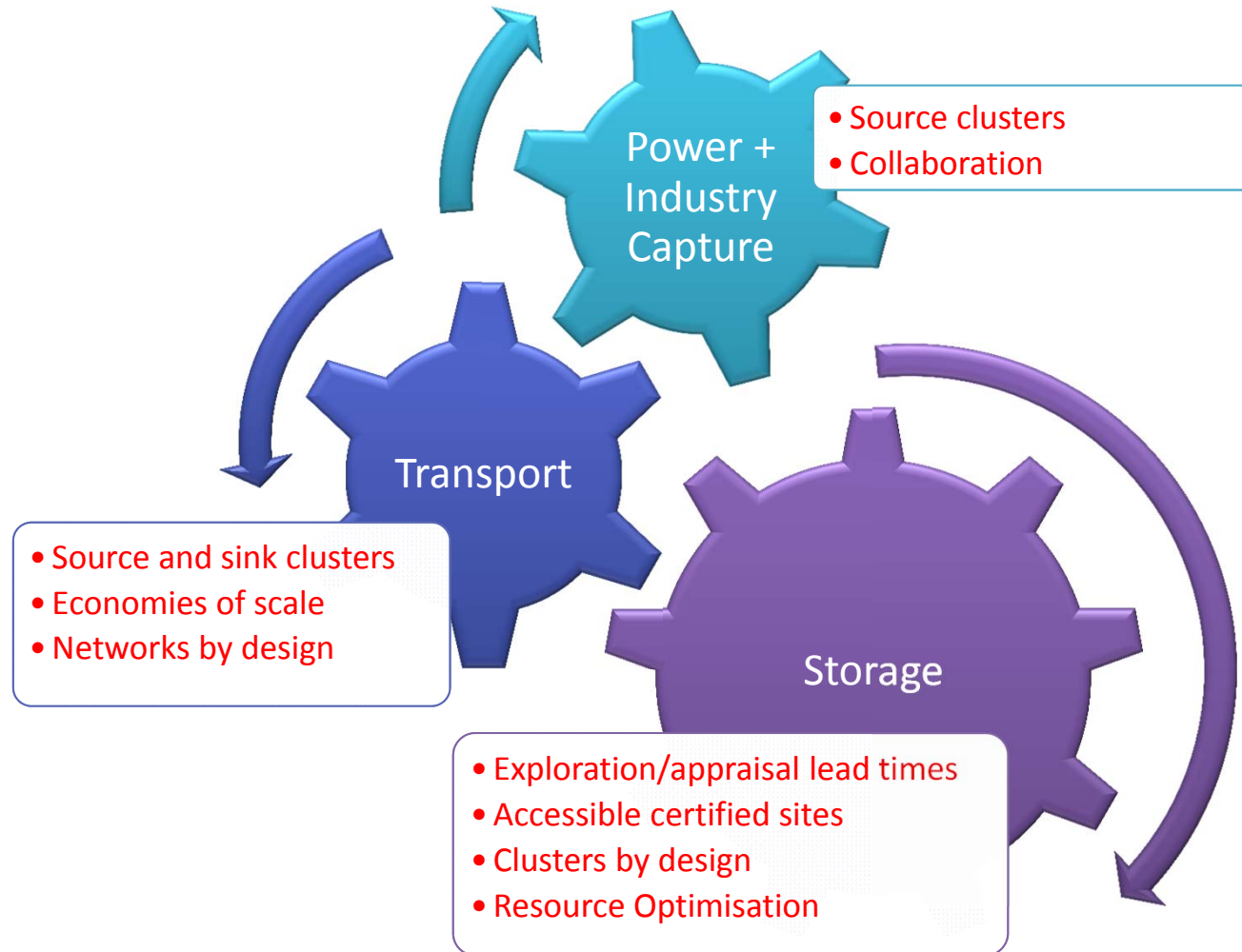
Is it avoided emissions?

- YES

# Deployment Driven via Electricity Market



# Deployment Driven via CTS Services





# Deployment Driven via Economic Value-add

## Australia

- Natural Gas processing and LNG

## Canada

- Oil sands production and CO<sub>2</sub> Enhanced Oil Recovery

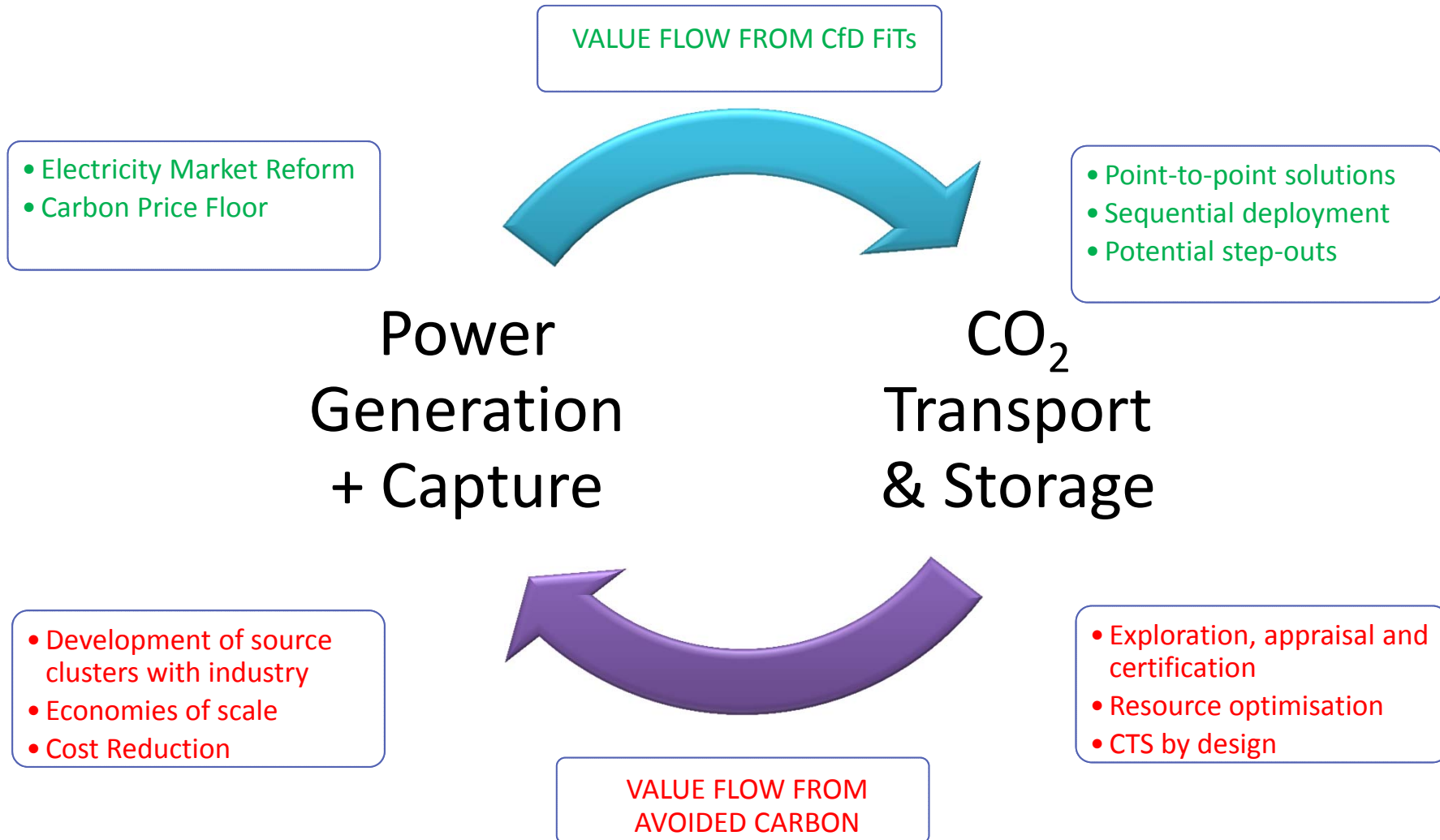
## Norway

- Natural Gas processing

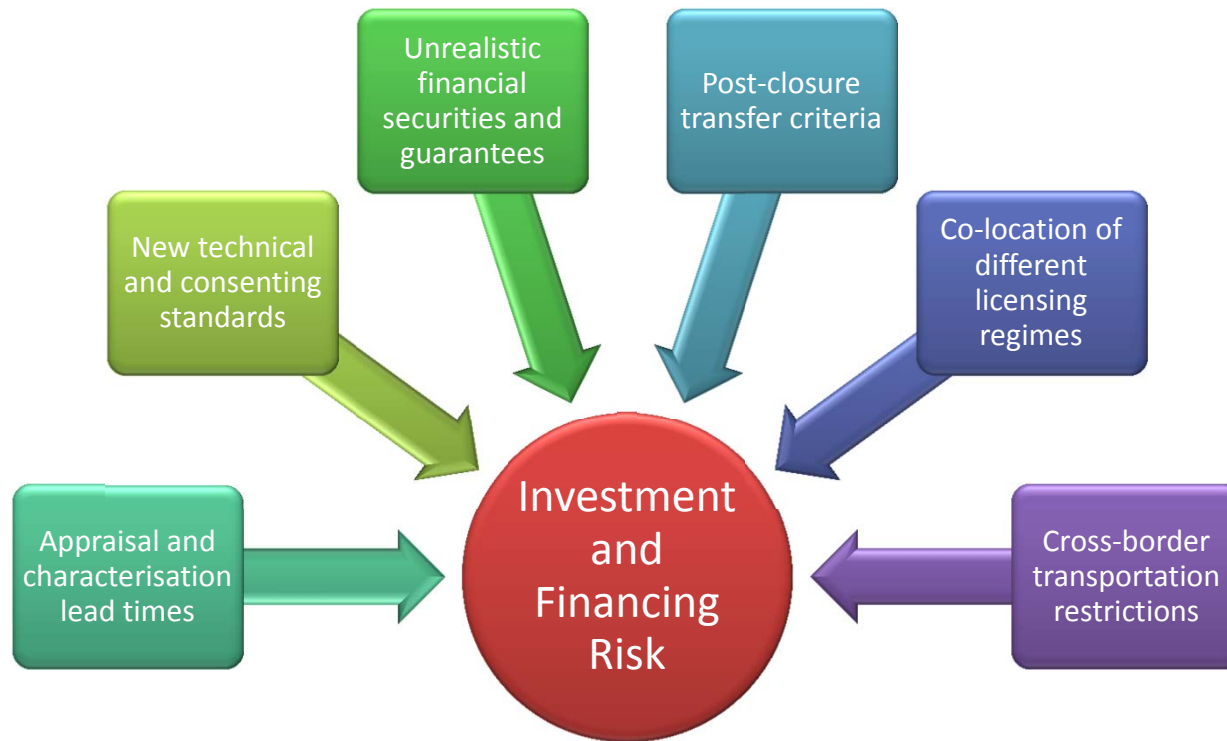
## United States

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

# Creating a Positive Feedback



# Intrinsic Inertia for CTS Deployment



# Crown Estate Activities

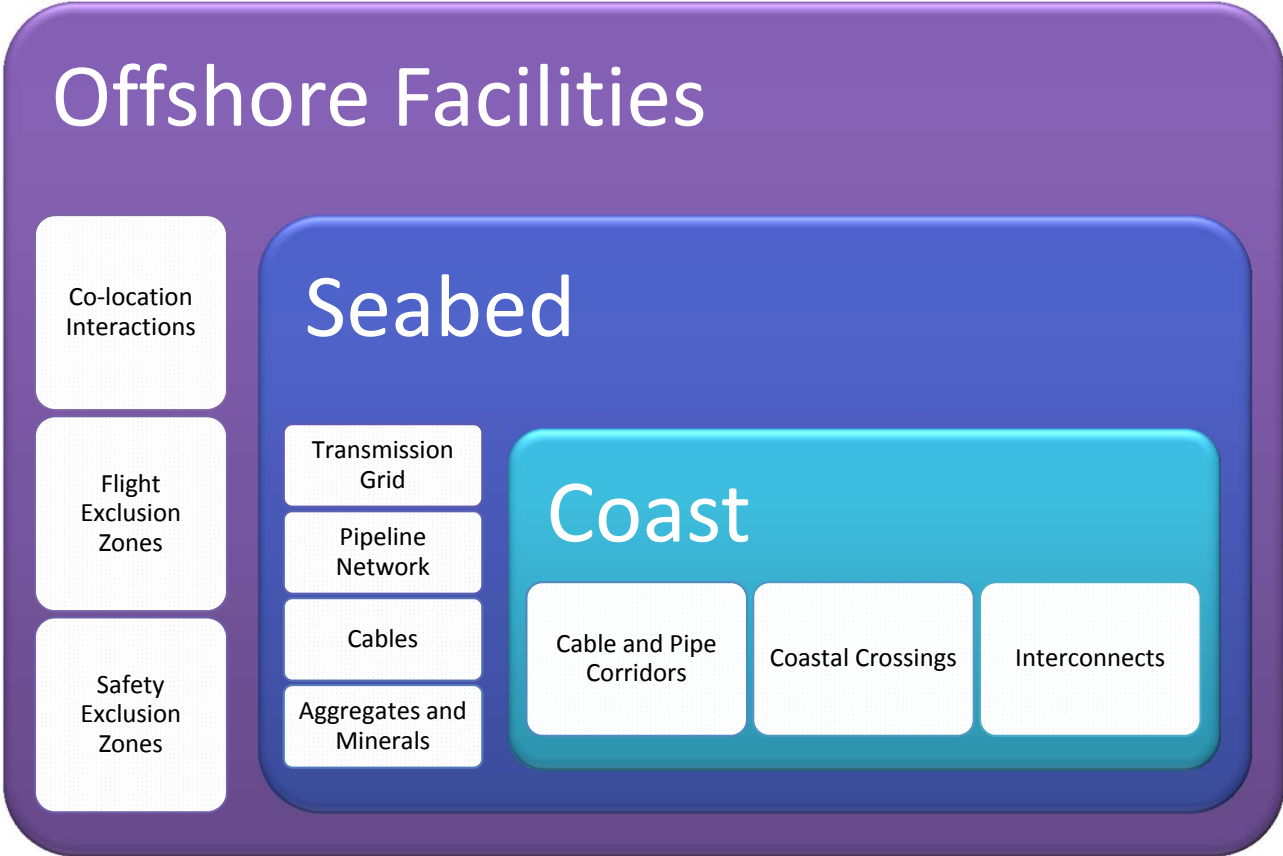
## Adding value to the sector

- Spatial planning
- Resource assessment and management
- Facilitating access to storage sites
- Infrastructure planning
- RD&D and Joint Industry Projects
- Market-making business models

## Commercial Leasing

- Designing lease competitions
- Selecting projects

# Managing Infrastructure Design and Deployment



# Strategic RD&D Objectives

## Robust evaluation and selection of storage proposals

Geostatistics and probability density functions for reservoir and aquifer site characterisation

Measurement, monitoring and verification techniques

Corrective measures and remedial action

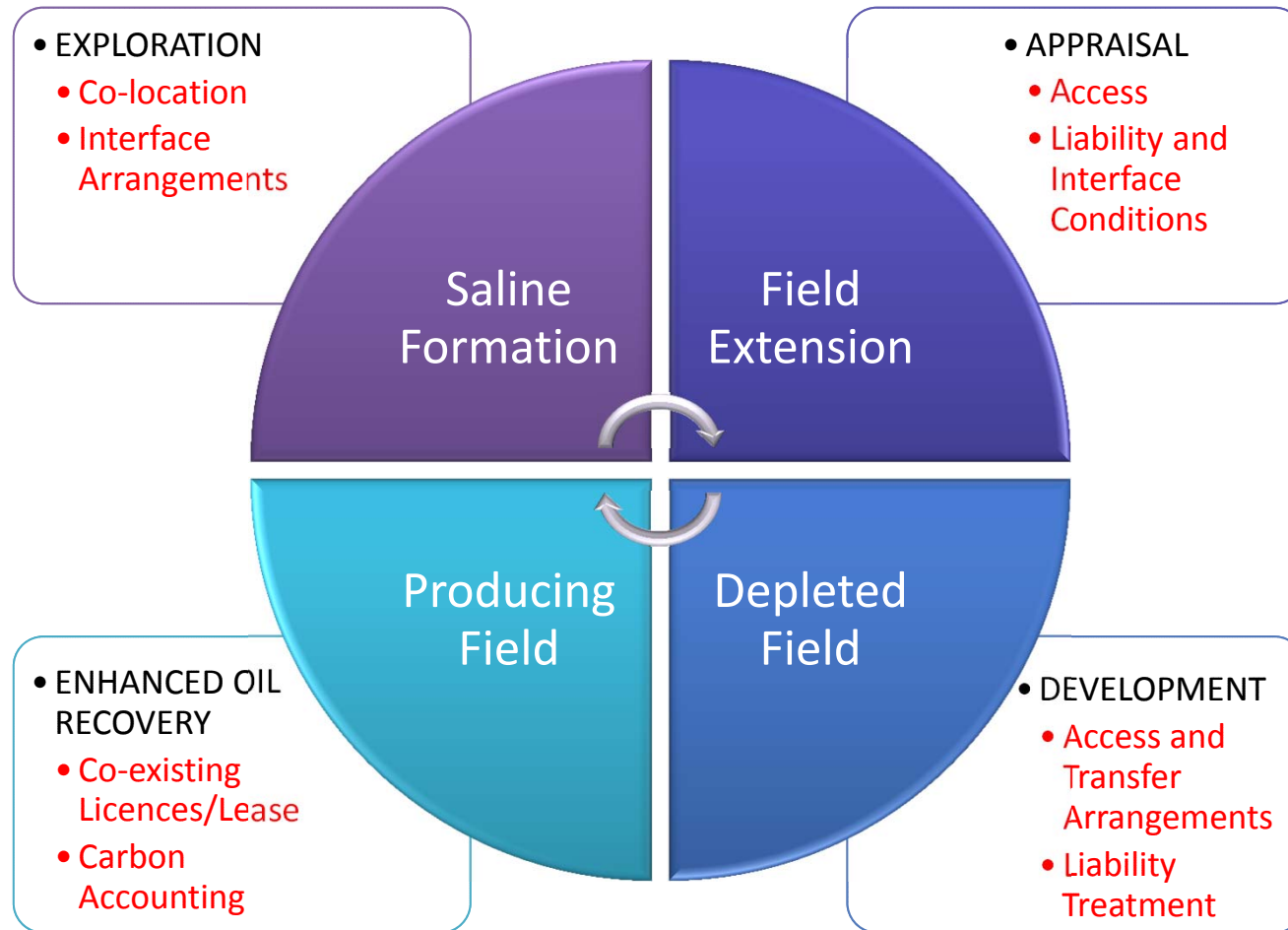
## Facilitate optimised CO<sub>2</sub> transport and storage infrastructure development

Aquifer injectivity, pressure management, and containment

Pipeline standards and network/cluster design

Offshore CO<sub>2</sub> enhanced oil recovery with storage

# Non-technical Site Leasing Issues



# Challenges to Accessing Potential CO<sub>2</sub> Storage Sites

