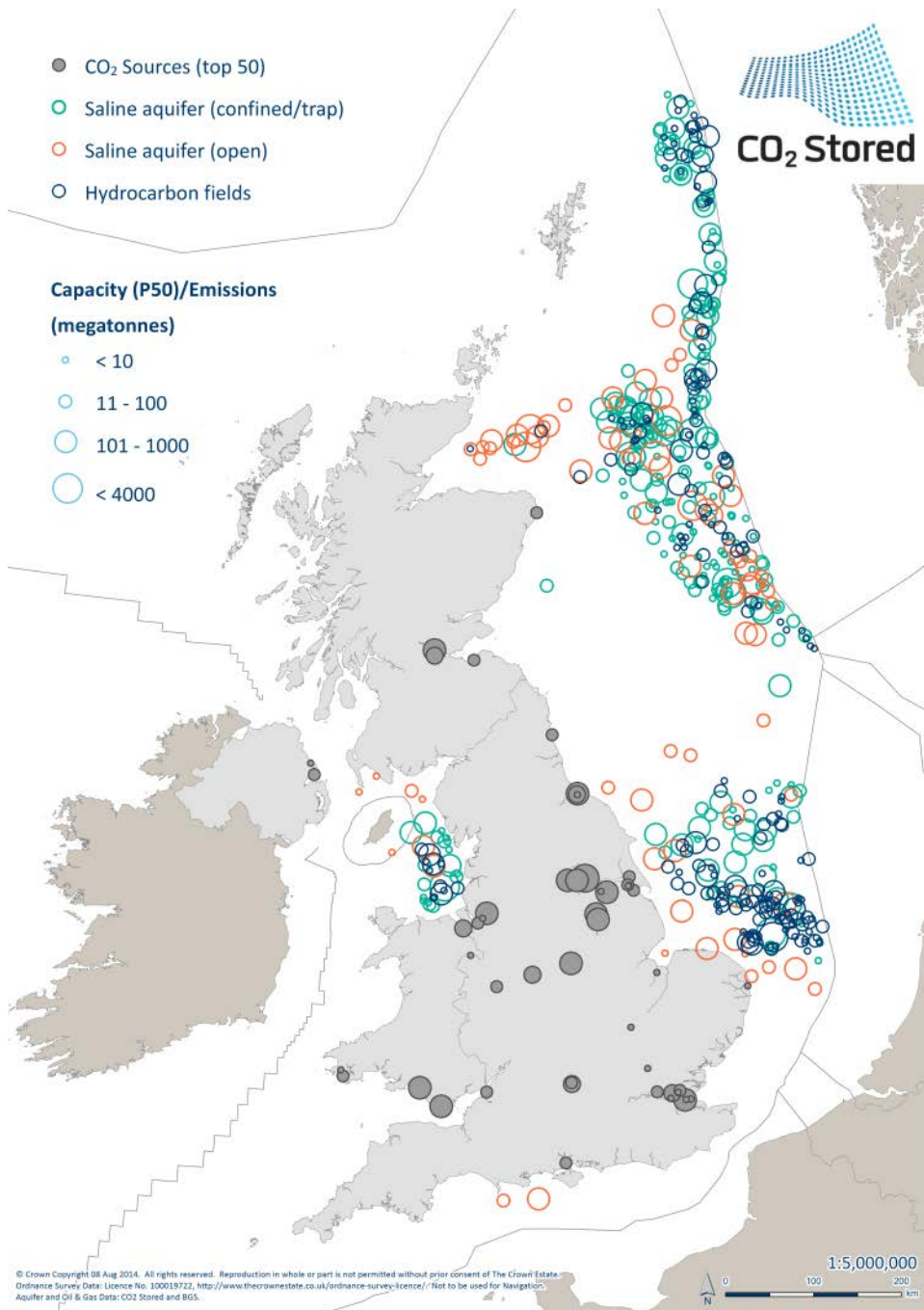


Offshore Storage:

Meeting

the

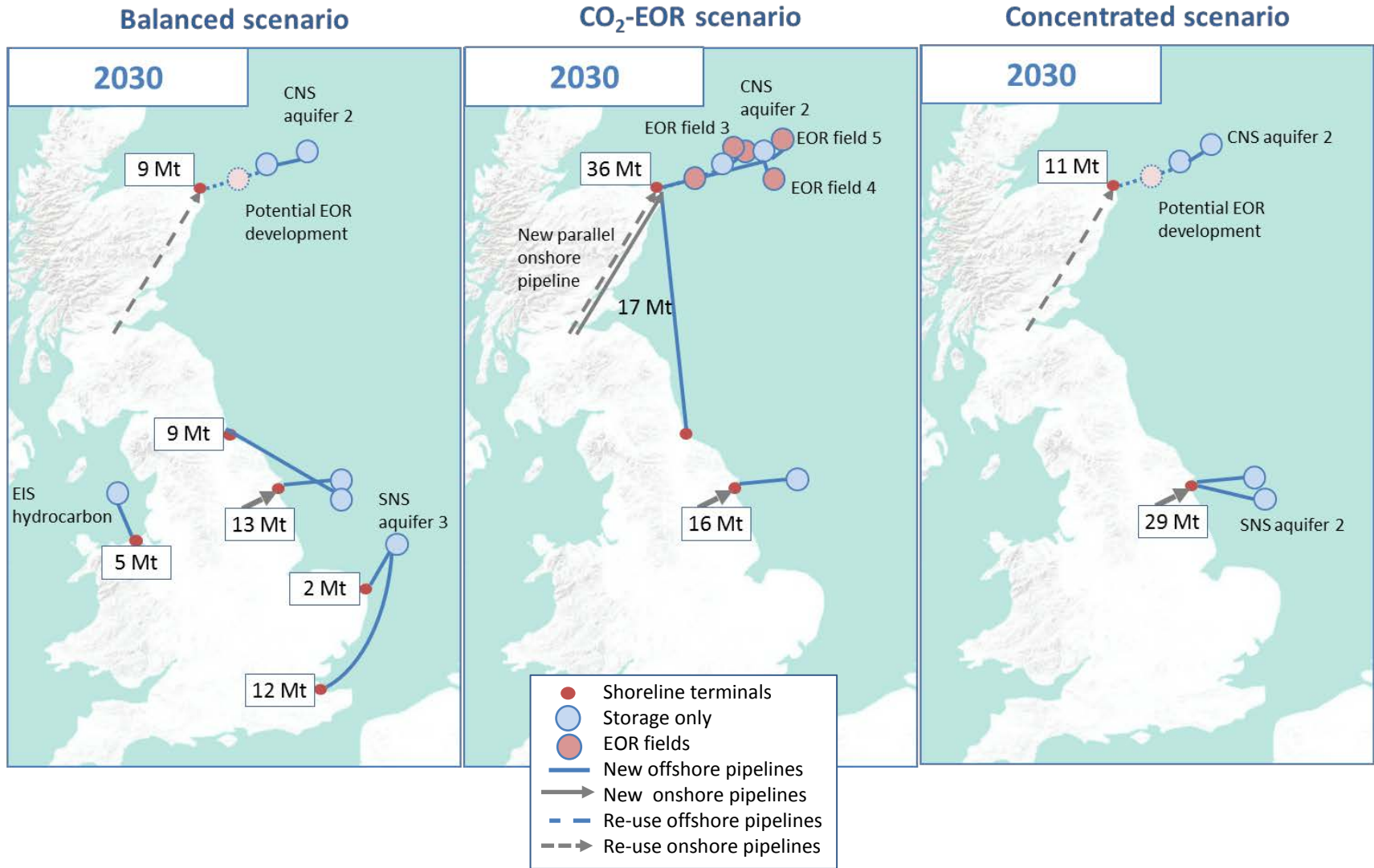
Commercialisation Challenge



# UK Offshore CO<sub>2</sub> Storage Potential

- P50 78 G tonnes
- High ranked BGS site portfolio of 8.5 G tonnes
- Can service UK and Northern Europe

# Example CCS Futures in the UK



How can

public and private

capital

be best spent now?

# Strategic infrastructure solutions under uncertainty

Create robust system level investment strategies which allow for flexibility in future expansions and minimise future losses.

Create option value (ensure benefits outweigh potential losses) of strategies which help safeguard investors.

Ensure storage site portfolio and investment plans mitigate future uncertainties

System uncertainties influence investment decision process



# Strategic vs Project Infrastructure Development

## Bankable Storage Solutions

Depleted/near depleted fields

In-field and near-field appraisal

Step-out aquifer exploration

## Viabale Business Structures

Public-private collaboration

Enabling service contracts

Liability and risk sharing

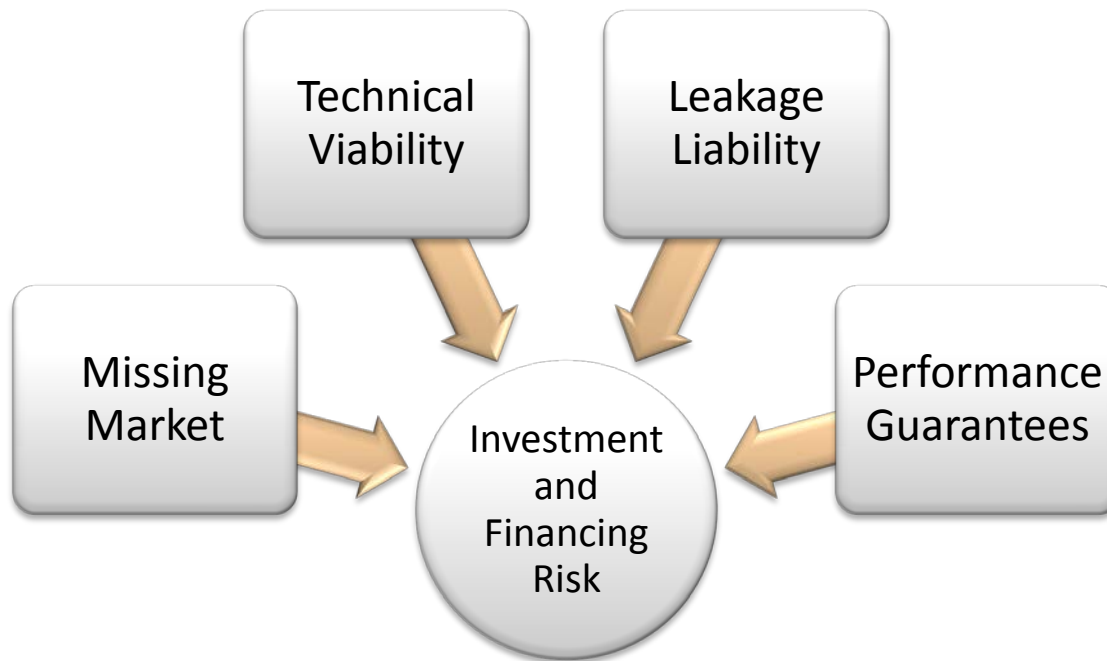
## No Regrets Capacity

Future industrial de-carbonisation

Low carbon heat and fuels (e.g. Hydrogen)

Bioenergy and negative emissions

# Key CO<sub>2</sub> storage business risks to be managed



## Commercial framework for CO<sub>2</sub> storage must address:

- ❑ **Missing market:**  
Lack of revenue visibility
- ❑ **Technical viability:**  
Limited appetite for pre-FID site characterisation
- ❑ **Leakage Liability:**  
Exposure to uninsurable levels of potential liability
- ❑ **Performance Guarantees:**  
Exposure to counterparty non-performance and consequential loss

# Commercial Models for CO<sub>2</sub> Storage

## PRE-FID

### Grant Funding

- Grant contribution to appraisal costs
- Certainty of income required in operational phase with minimum availability payment
- Open book policy for costs
- Award through public sector procurement process

### Cost-plus pricing

- Public sector body commissions characterisation of potential CO<sub>2</sub> stores using service contracts with the private sector
- Rights to use the characterised sites then auctioned to private sector based on defined revenues for CO<sub>2</sub> storage in new industry regulation

## POST-FID

### DECC Competition Model

- Grant contribution to construction cost in construction phase
- Power CfD in operational phase
- Open book policy for costs
- Risk allocation matrix

### Public Sector Model

- Public sector body commissions builds and operations using service contracts with the private sector
- Public sector retains ownership of assets
- Open book policy for costs
- Private sector risk allocation based on relevant commercial precedent for services provided

### PPP Model

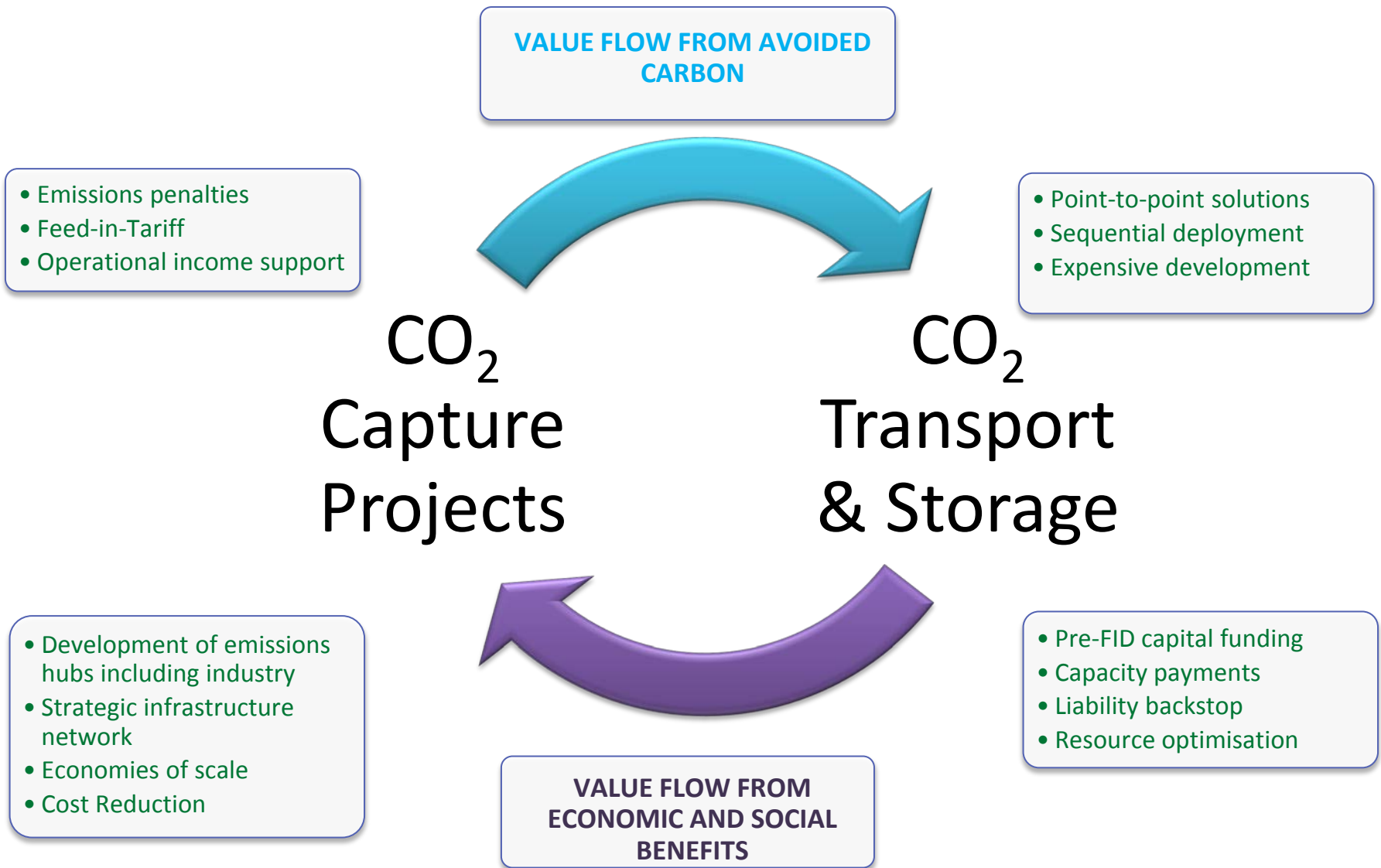
- Public/private partnership splits the ownership of assets and liabilities
- Minimum capacity based payment
- Subsidy top up for usage paid by CO<sub>2</sub> emitter
- Performance incentives or deductions for under-performance

### Private sector RAB Model

- Capital investment forms the Regulated Asset Base
- Guarantee that regulated company's investment is recovered with appropriate IRR
- Liability cap – Government back stop
- Periodic price setting



# Put Actions in a Holistic Framework



Thank you!