

North Sea CO₂ Storage – a Statoil Perspective

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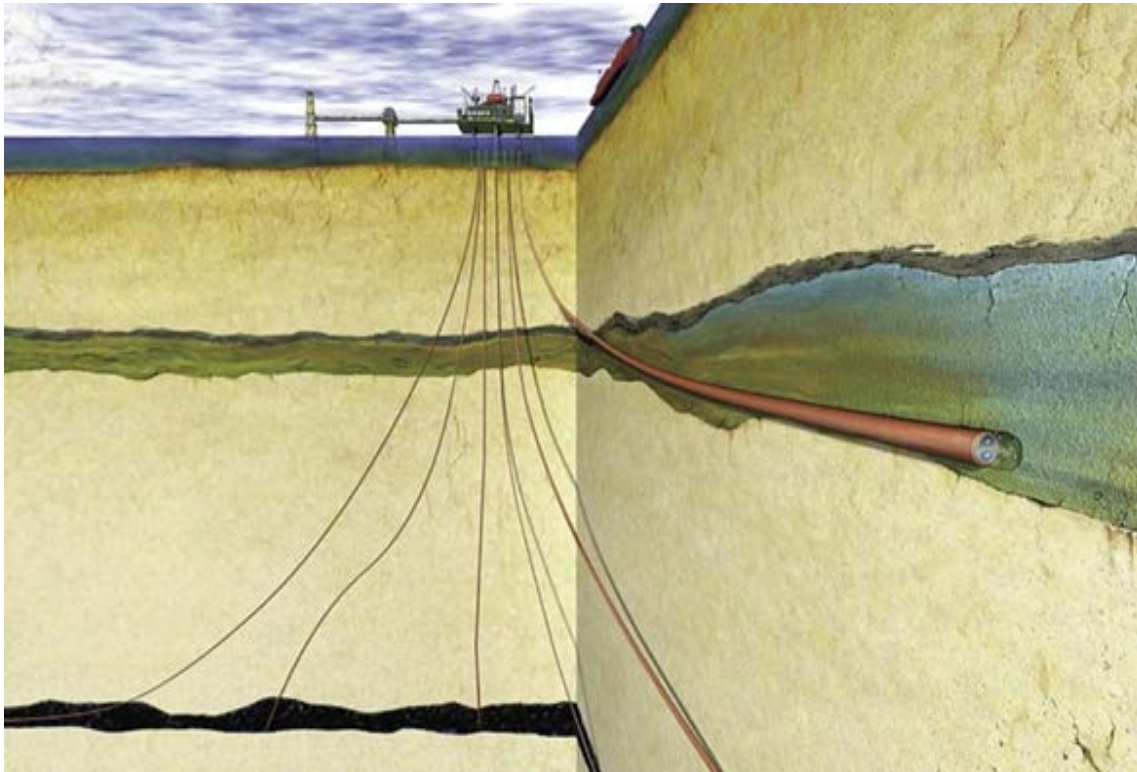


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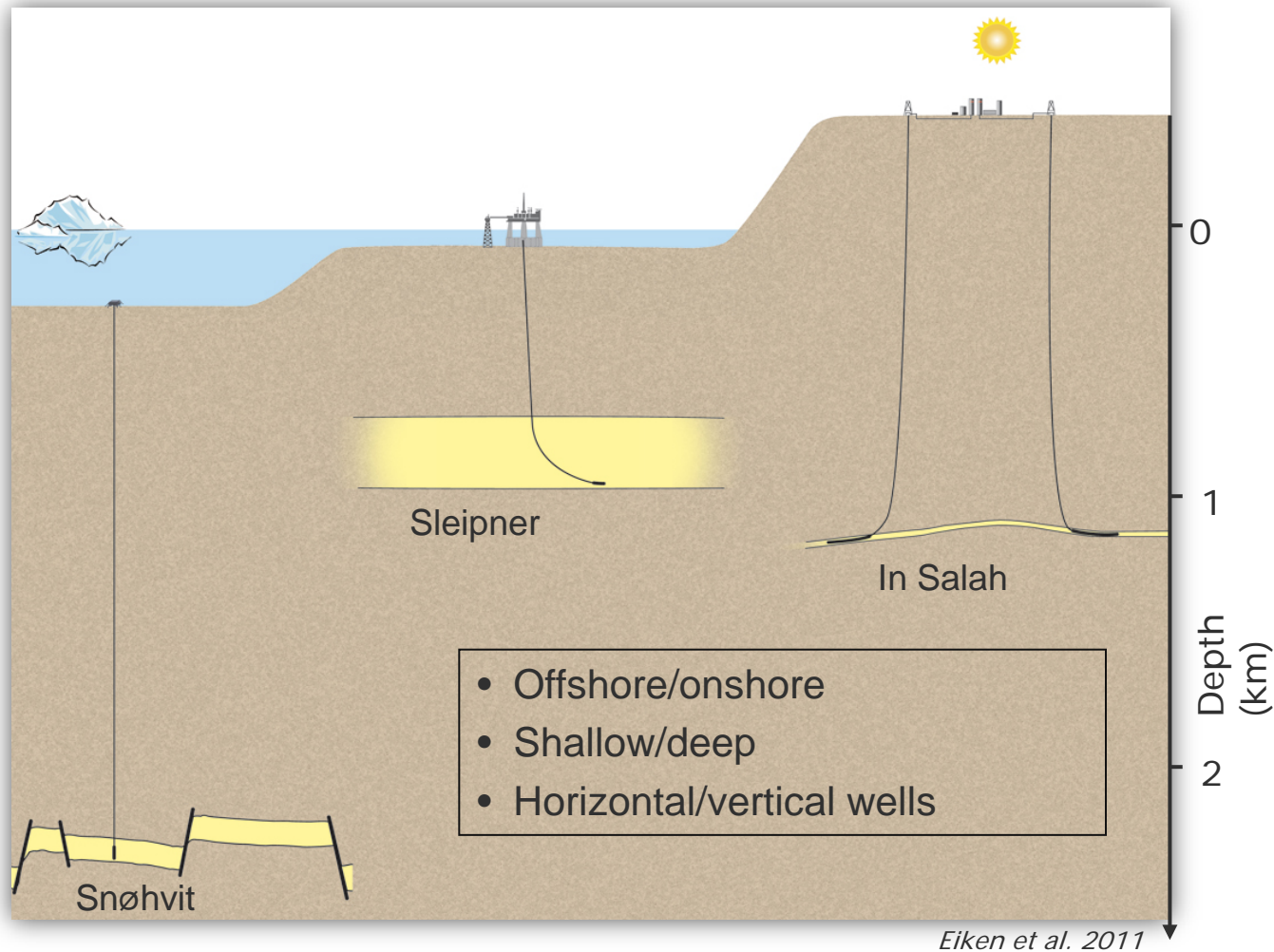


Agenda

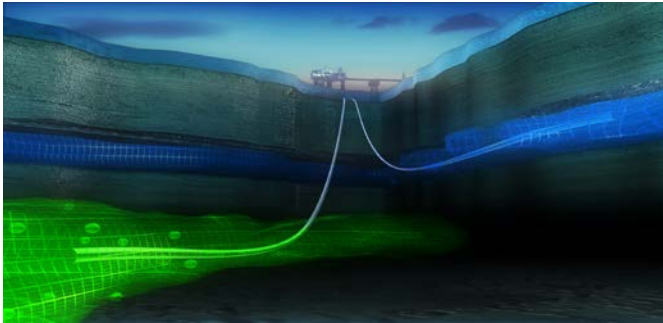


- 1) Can we store CO₂?
- 2) How much?
- 3) Challenges?
- 4) Concluding remarks

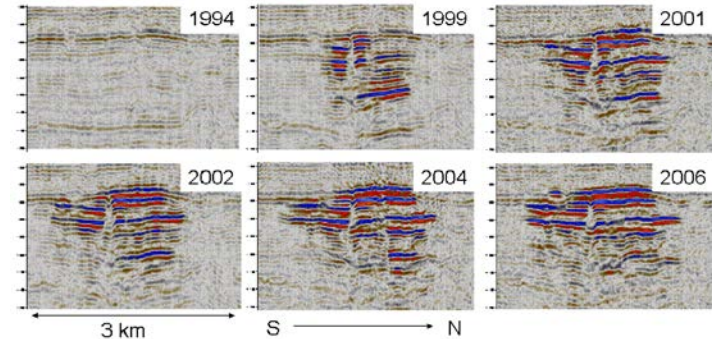
Statoil's diverse storage experience



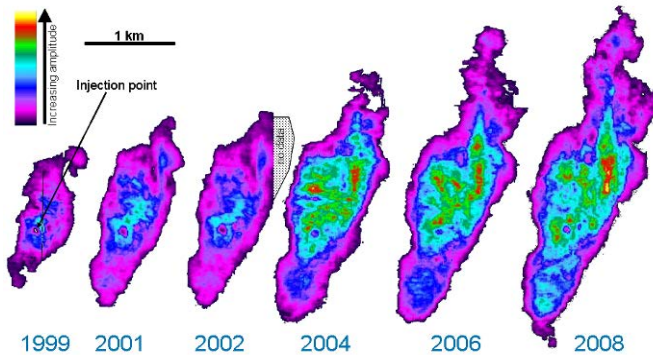
Sleipner - a show window for safe storage



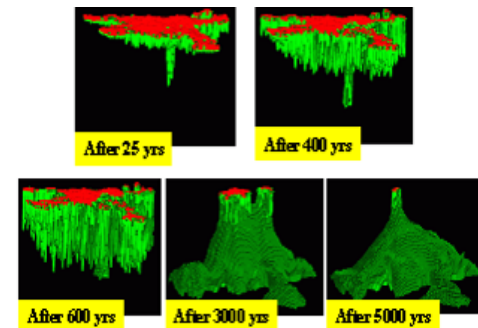
Sleipner - a unique CO₂ storage experience



Seismic from 1994 (before injection start) to 2006



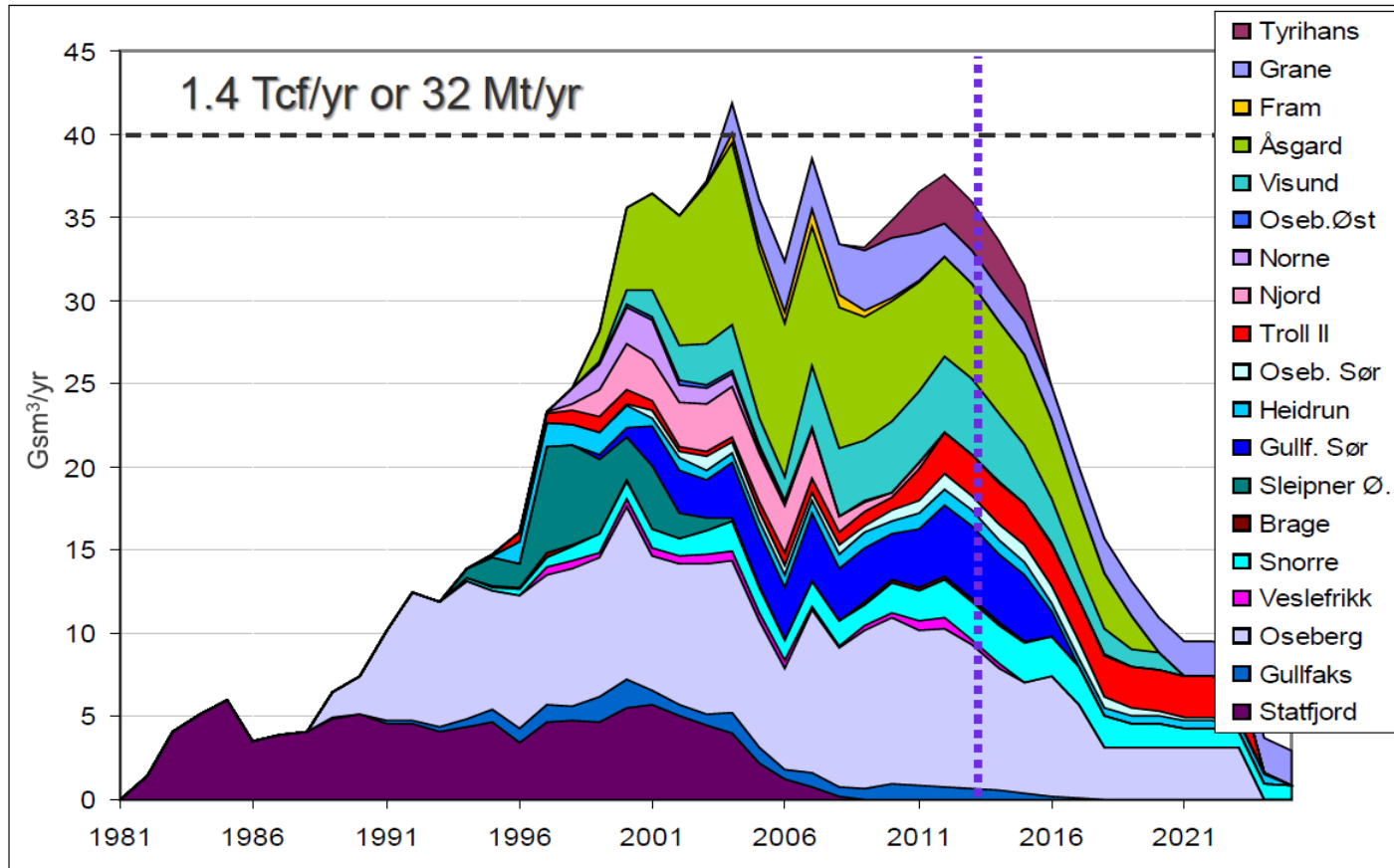
CO₂ plume in map view



Modelling results for dissolution of CO₂ in the formation brine

Statoil history of gas injection for IOR

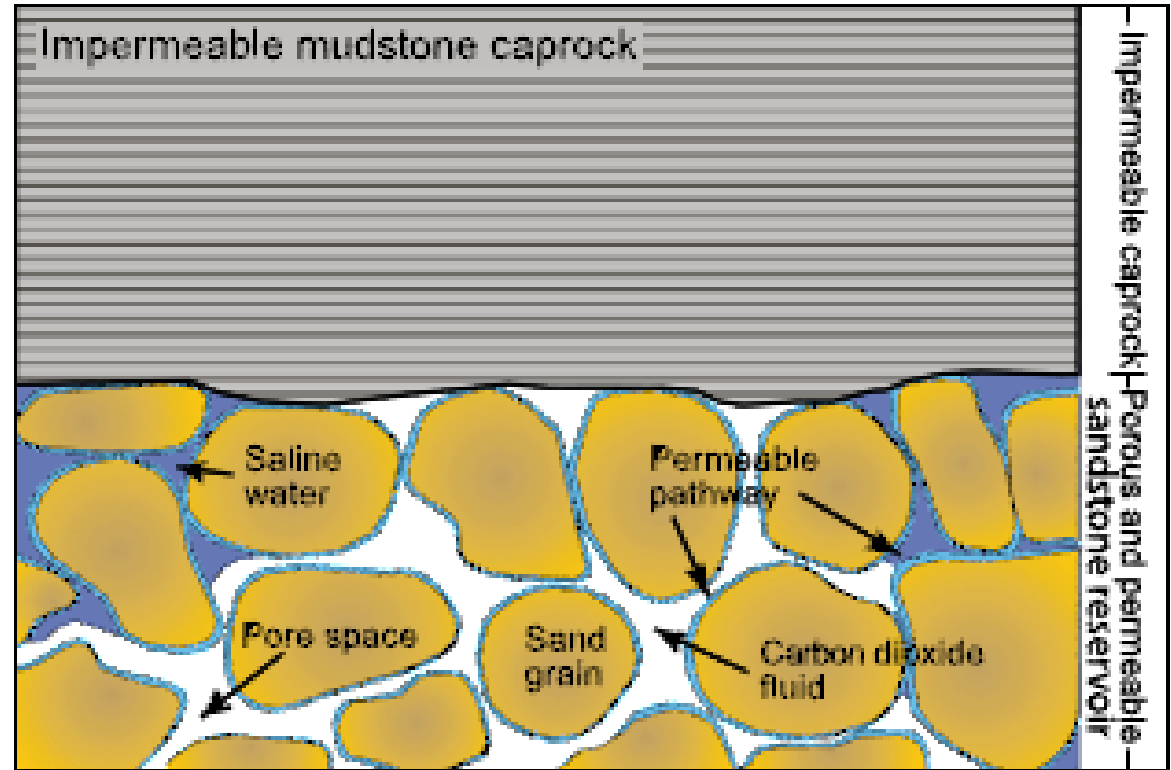
- Gas injection (GSm³/year) for Statoil operated fields



Storage basics – how do we do it?

We need:

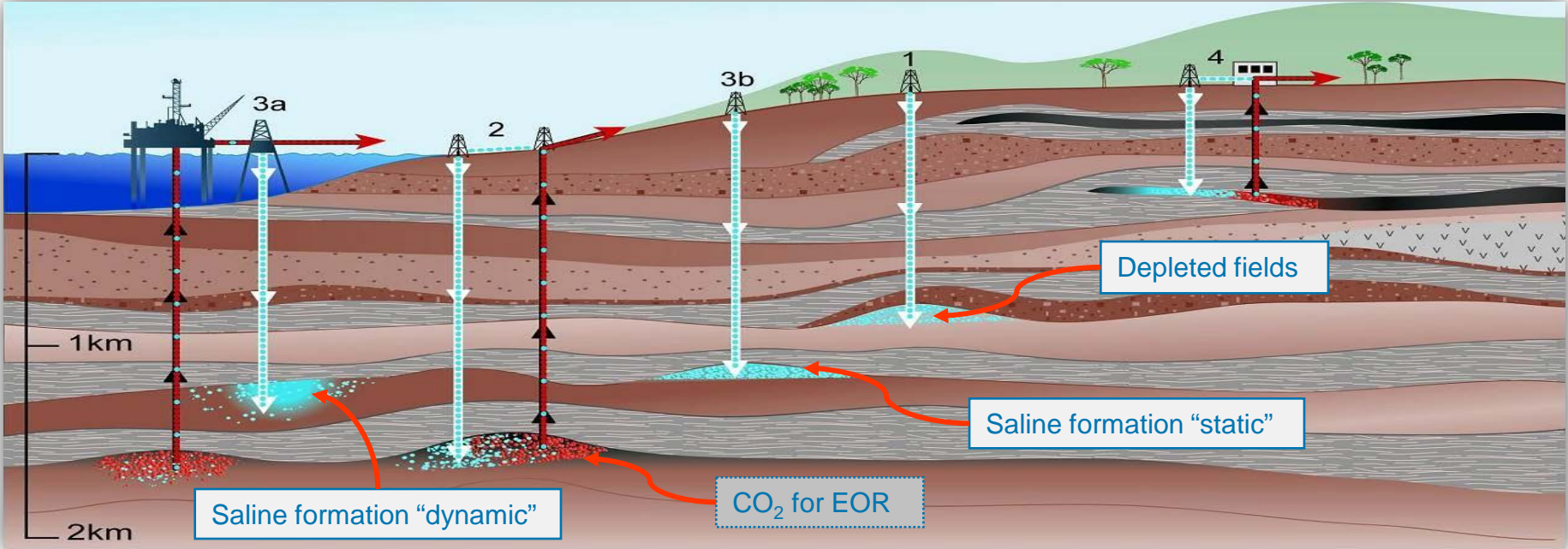
- 1) Porous and permeable reservoir
- 2) High quality seal



© British Geological Survey

(Figure from British Geological Survey)

Storage basics – how do we do it?



Capacity



Injectivity



Containment



Monitorability

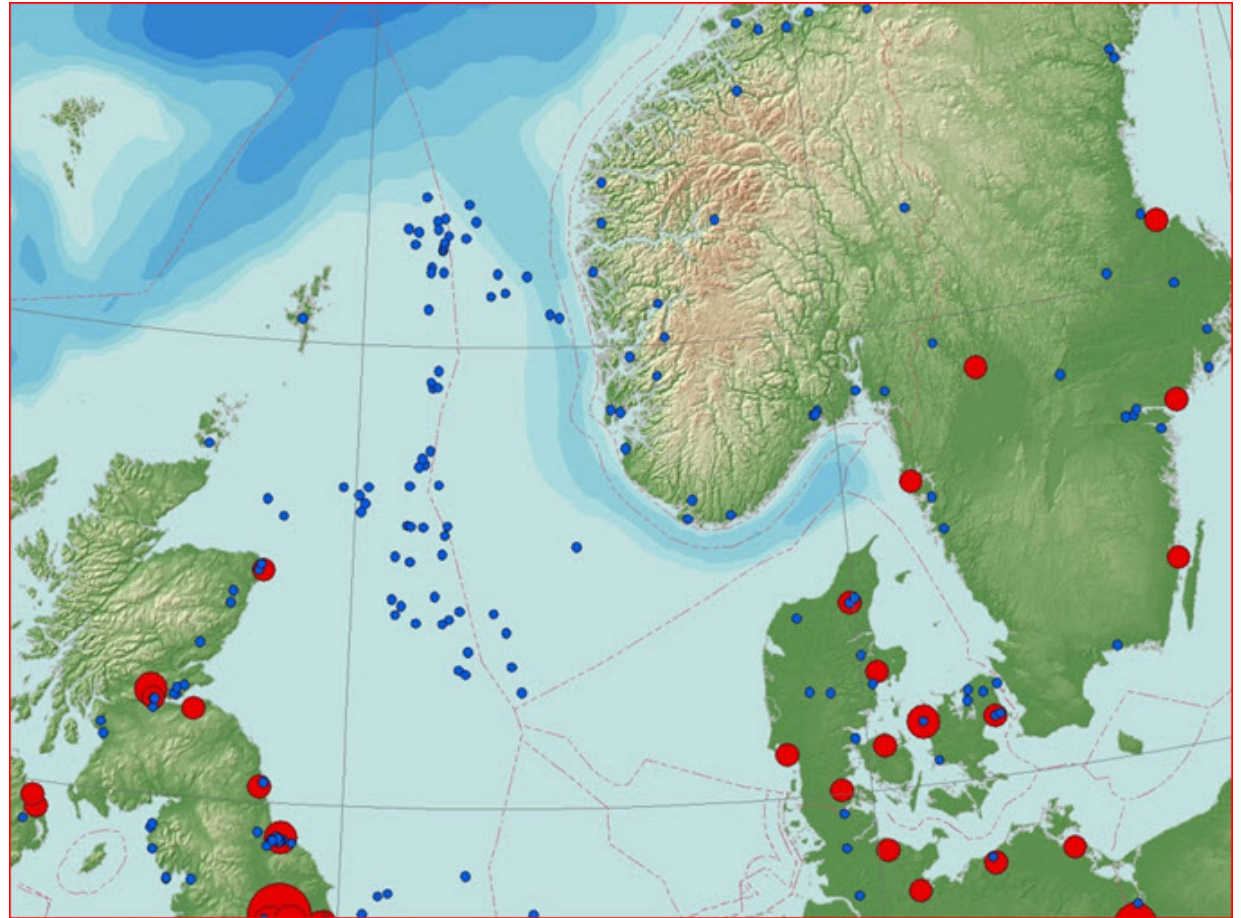
Volume estimation

Quality evaluation

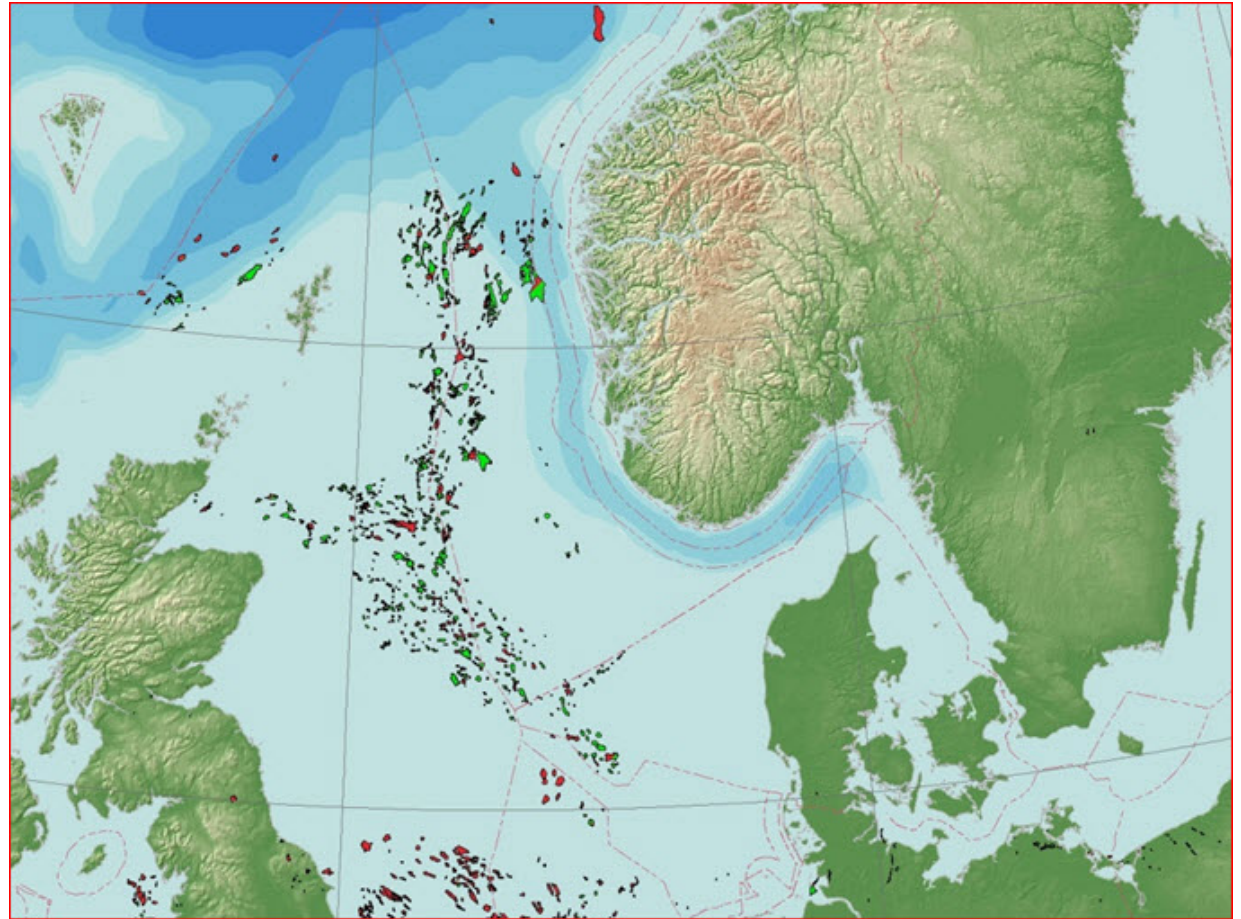
Capability assessment

Storage performance

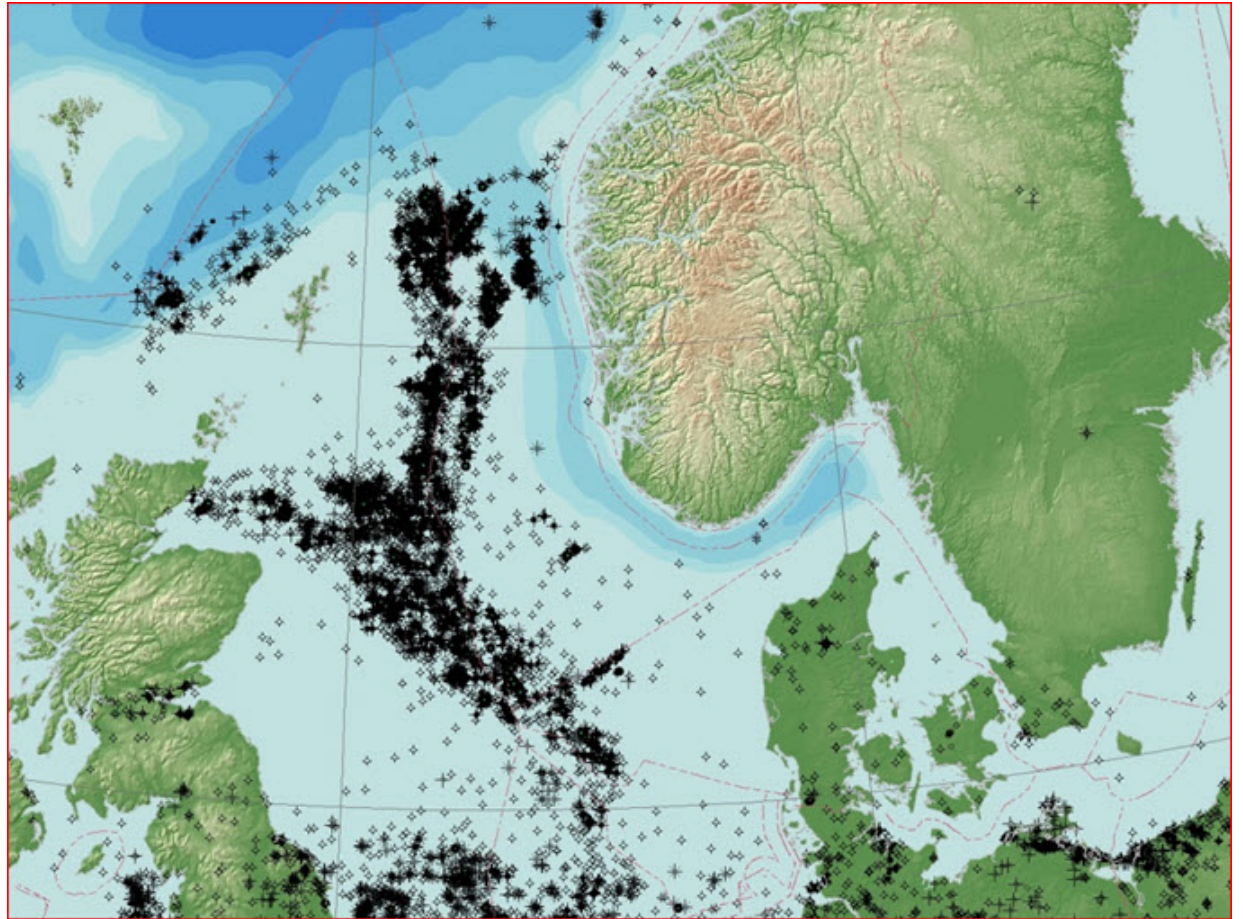
Storage development – example from NCS



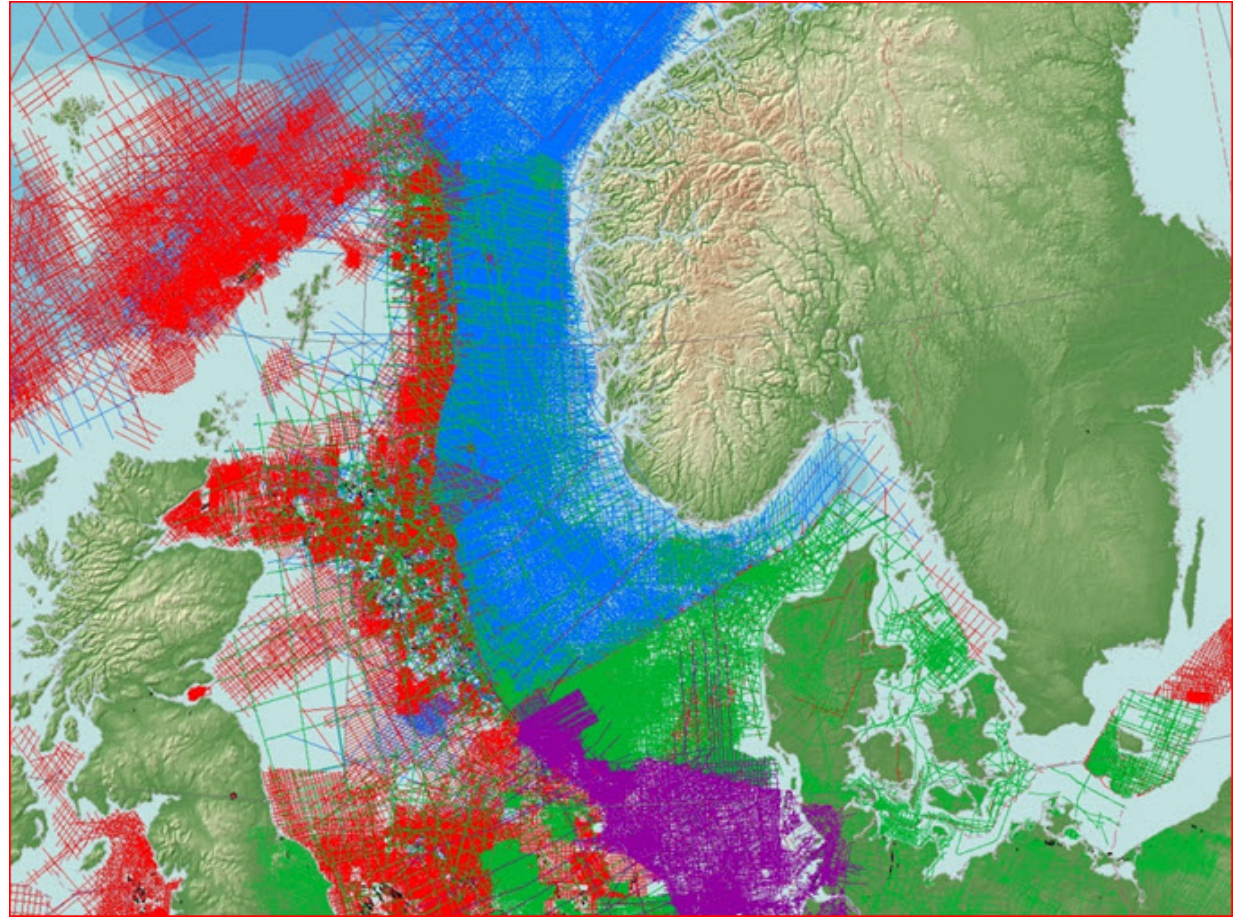
Storage development – example from NCS



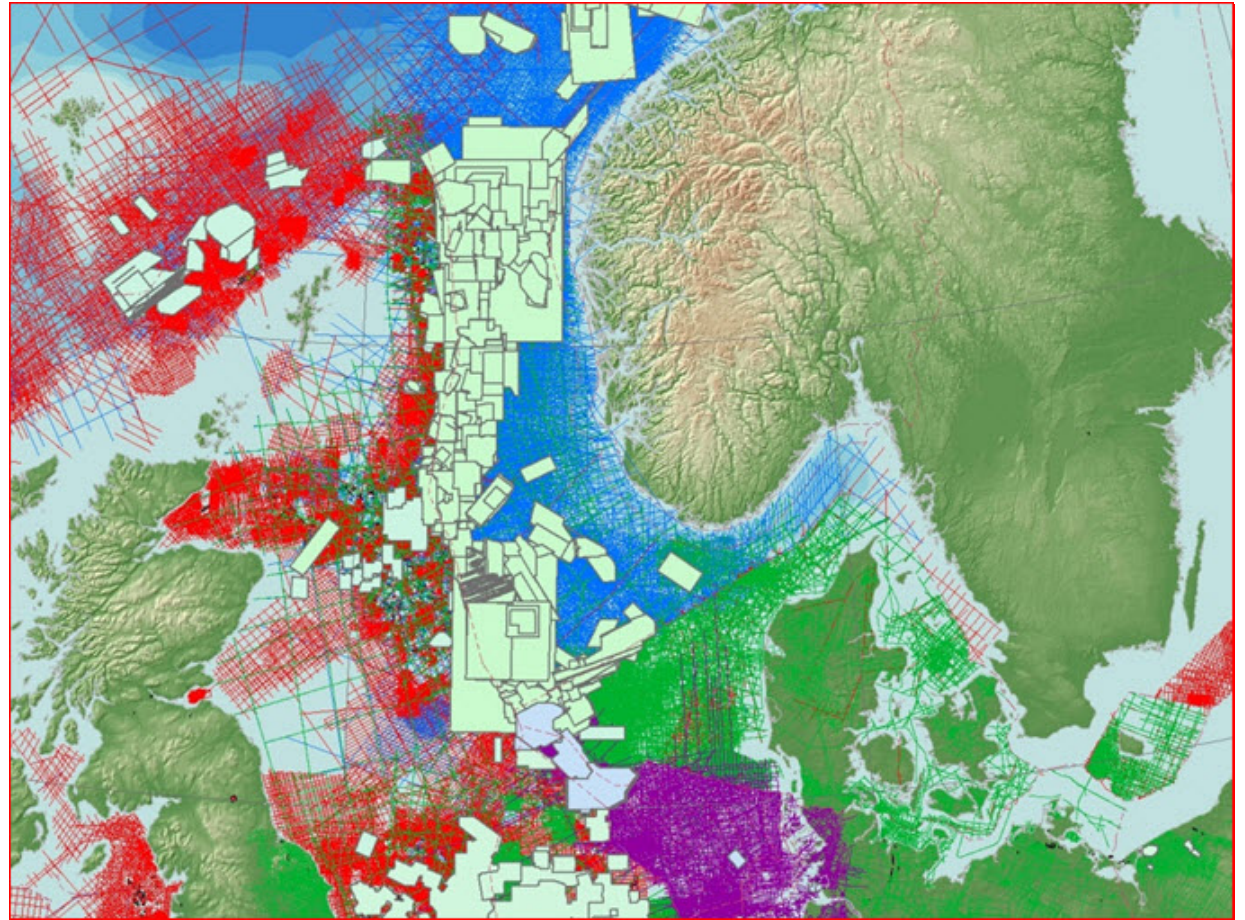
Storage development – example from NCS



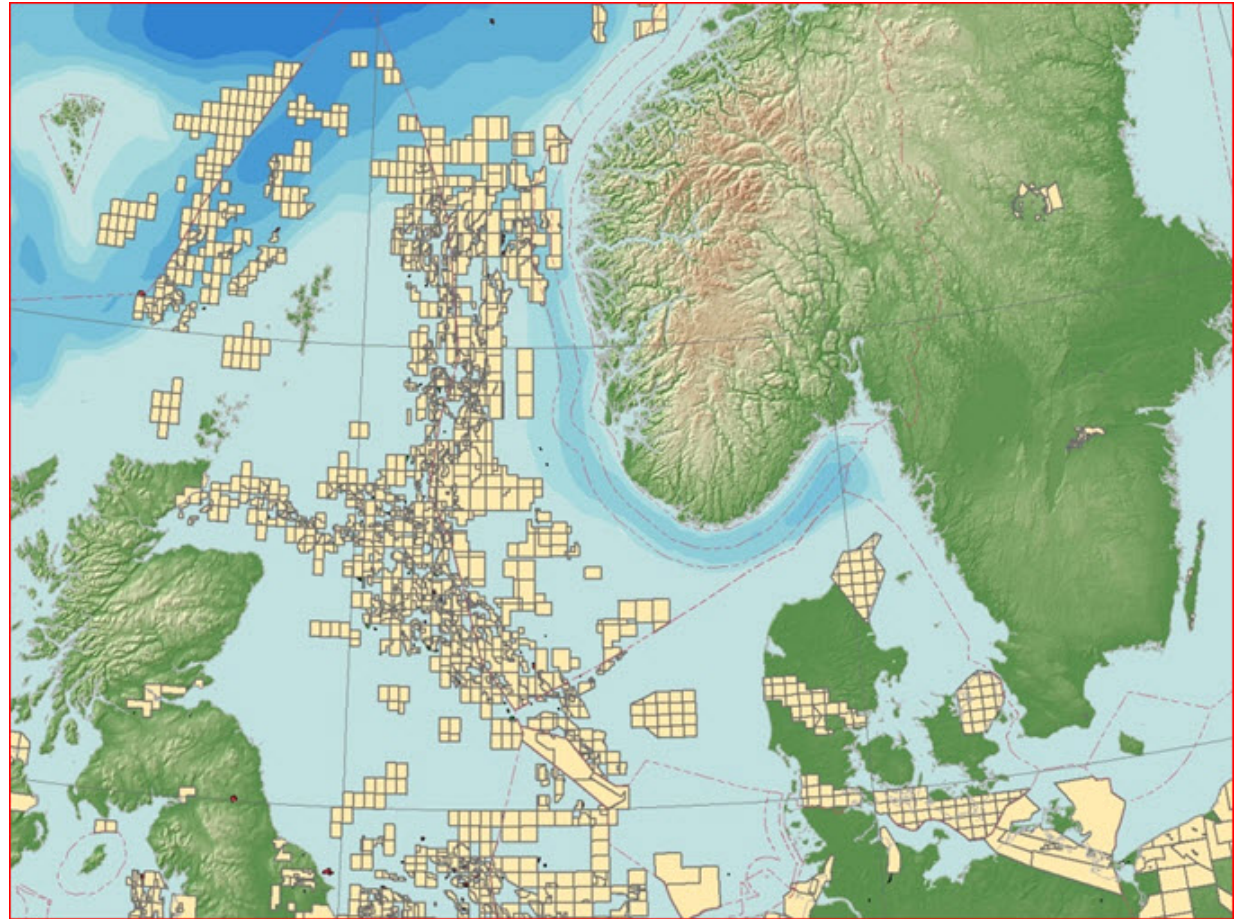
Storage development – example from NCS



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Storage development – example from NCS

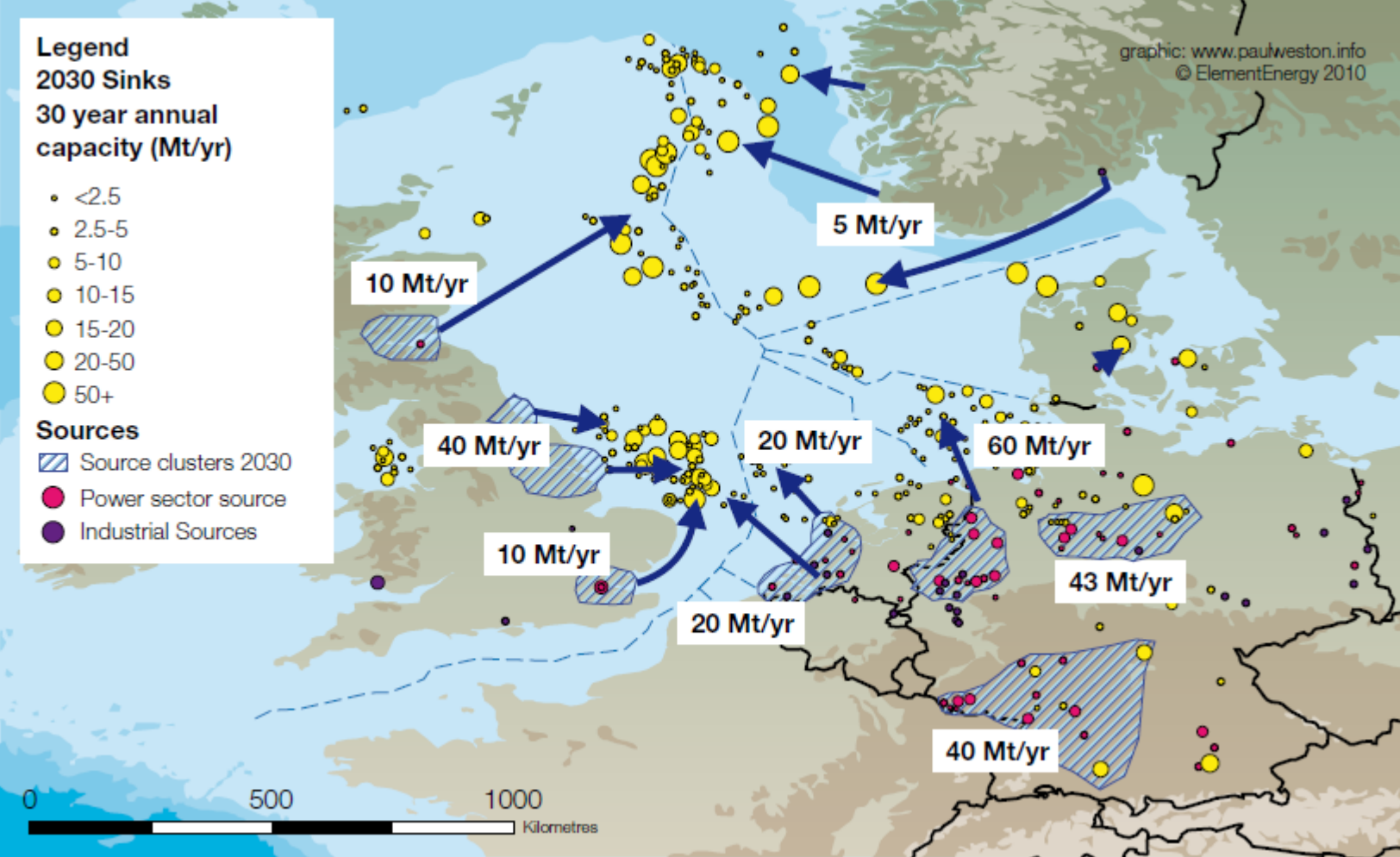


North Sea CO₂ storage capacities

- Norway: 45Gt Aquifers, 27Gt Field related (Norwegian Petroleum Directorate, 2012)
- UK: 68Gt Aquifers ([CO2Stored](#), BGS and The Crown Estate)
- Germany, Denmark, Holland: ~10-20Gt (onshore and offshore, GeoCapacity 2009)

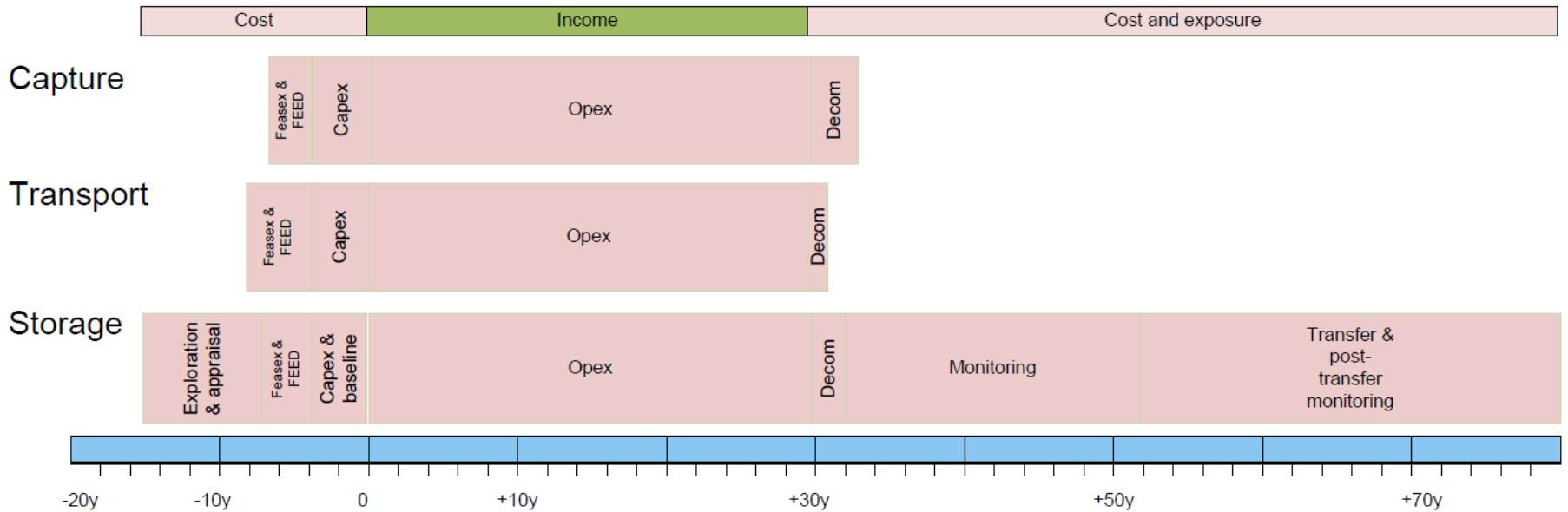


North Sea source-to-sink



(from One North Sea report, 2010, NSBTE)

The timeframe dilemma



* ZEP report on Business Models for Commercial CO₂ Transport and Storage (2014)

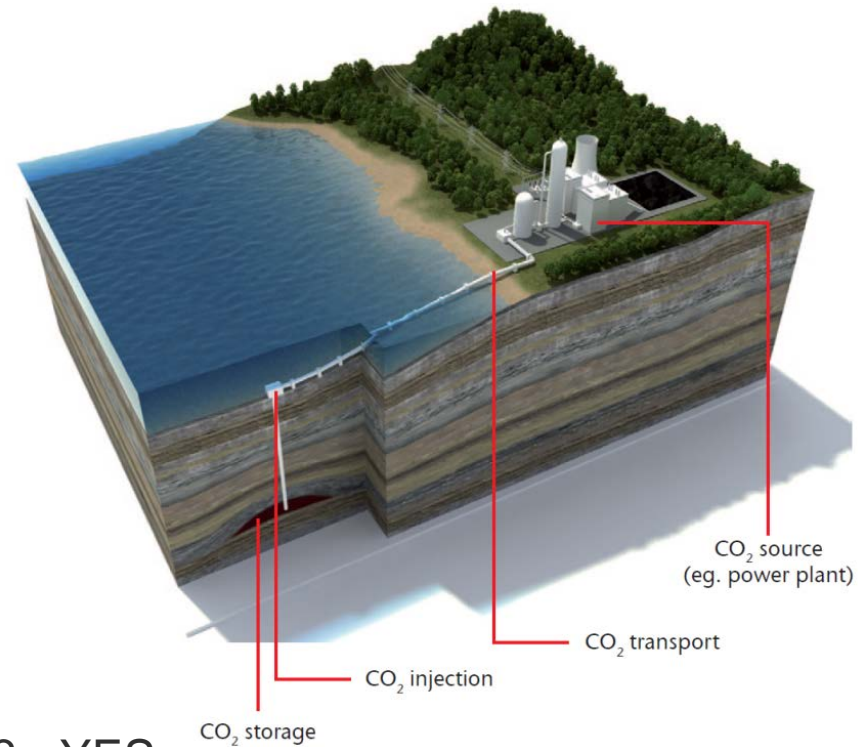
Concluding remarks

Do we know how to store? - YES

Do we have enough space? - YES

Do we have enough time? - MAYBE

Are there still commercial and legal dilemmas? - YES



Thank you

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time for good ideas

