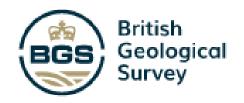
Key determinants of public reactions to CCS in the UK: What shapes acceptance?

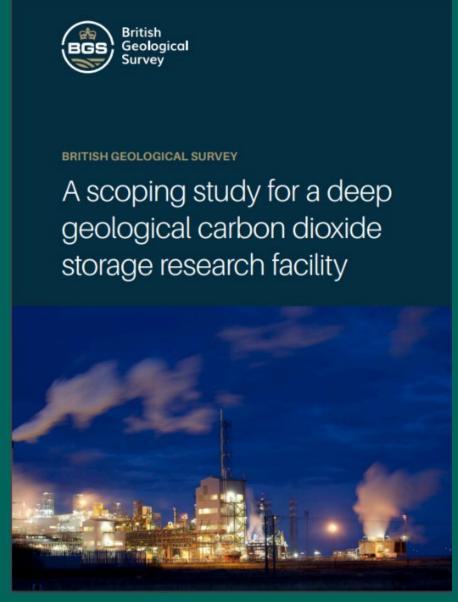
Darrick Evensen and CSRF team
University of Edinburgh, BGS, NERC
International Workshop on Offshore Geologic CO₂ Storage
14 September 2023





Scoping a CO₂ storage research facility – science case

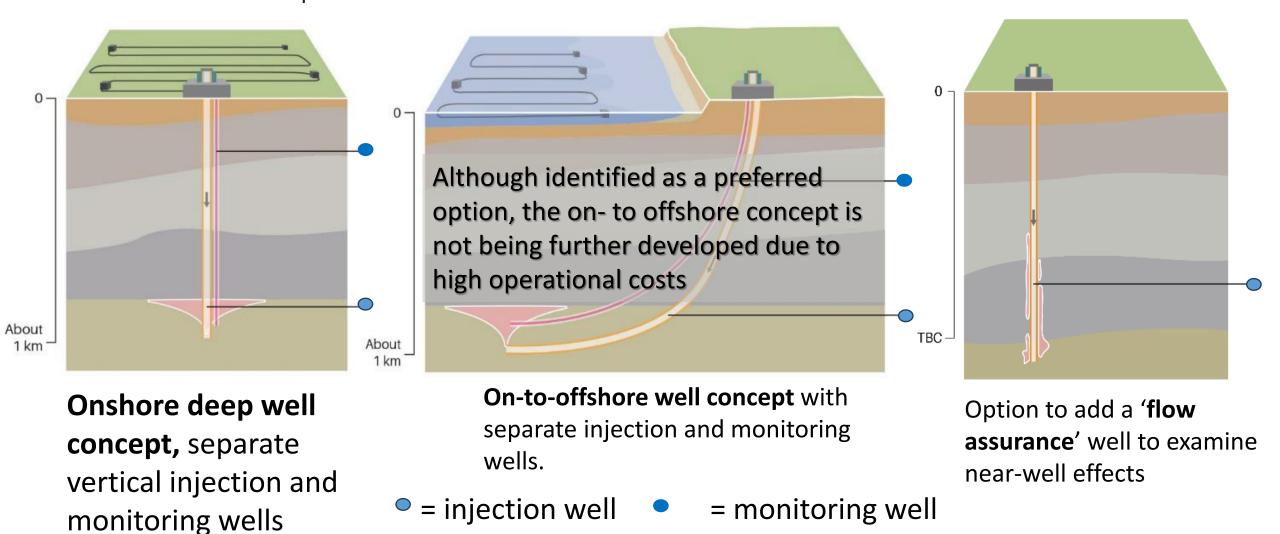
- Understanding real-life operational impacts on long-term storage efficiency to improve storage security and reduce risks & costs
- Improving knowledge of subsurface geological processes at scale
- Cost-effective monitoring, conformance technologies and development of equipment and services
- Understanding the well and near well zone.
- Monitoring technology, environmental research and strategic management of different UK low-carbon energy uses
- Social attitudes to local hosting of major 'Net Zero' infrastructure and citizen science opportunities beyond CO₂ storage



https://www.bgs.ac.uk/download/a-scoping-studyfor-a-deep-geological-carbon-dioxide-storage- 2 research-facility/



Scoping a CO₂ storage research facility – infrastructure options to deliver the science case



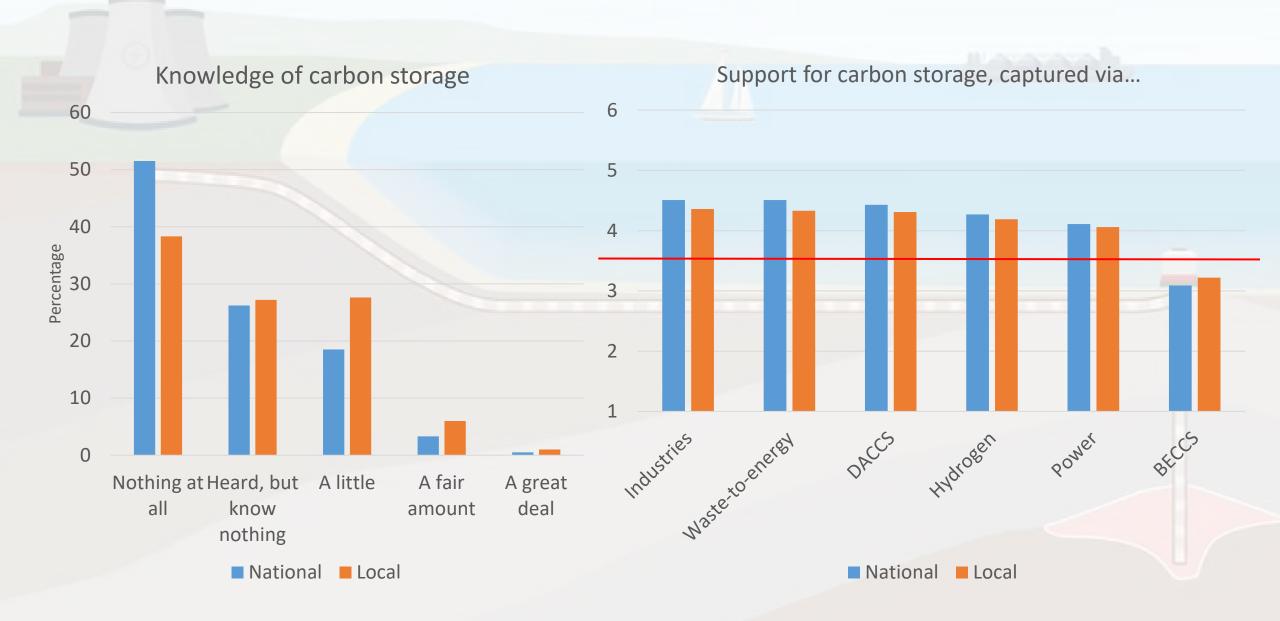
To include surface facility, an injection and monitoring hub, & environmental monitoring ukcsrf.org

UK public perceptions baseline survey

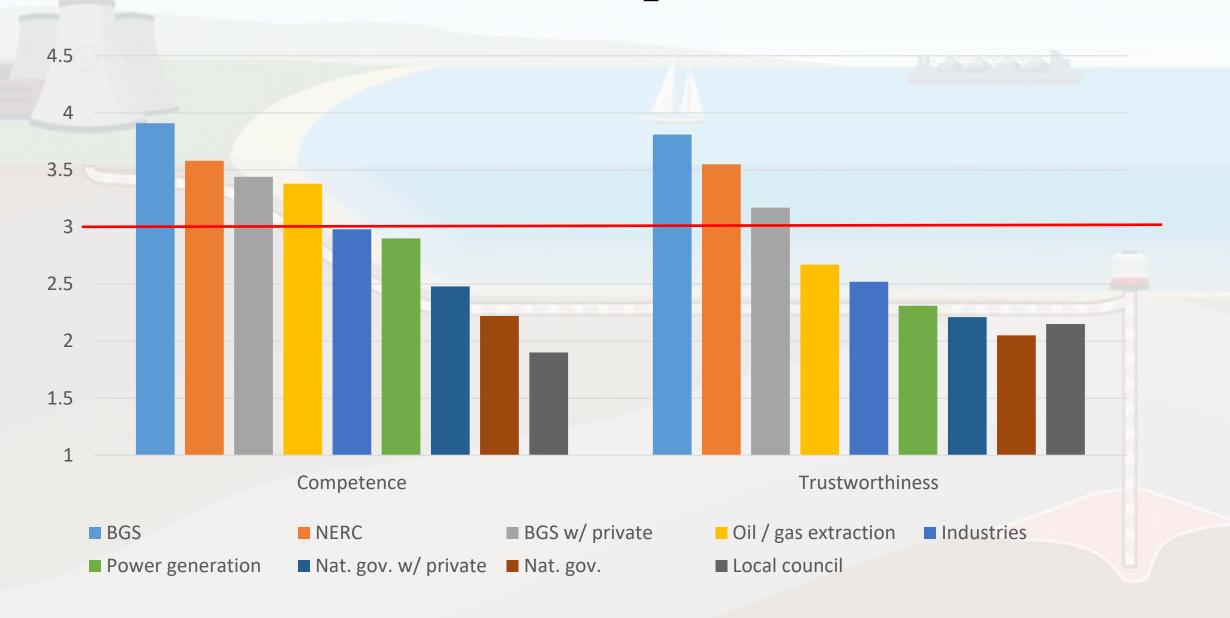


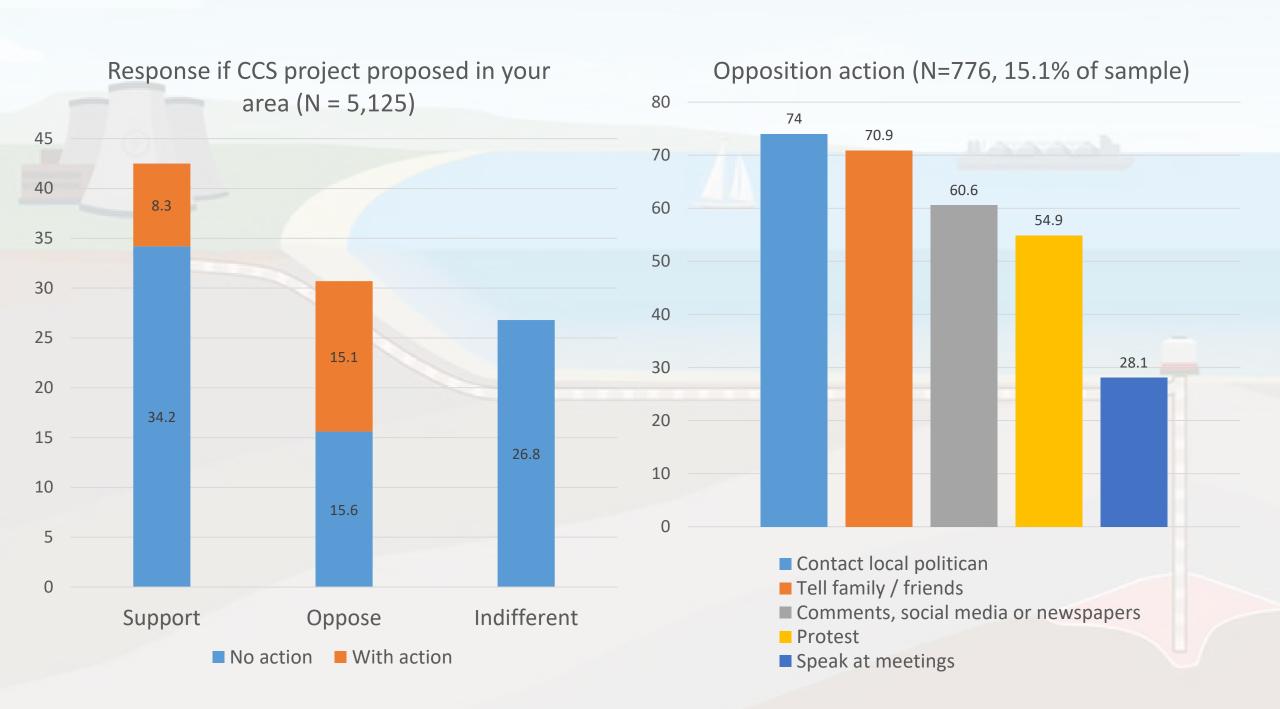
- Nationally representative survey of UK on: age, sex, region, social grade, education, vote in 2019 election, vote in 2016 EU referendum, and attention paid to politics
- Designed to generate longitudinal sample
- 4-13 July 2023: N=5,125
 - National sample = 4,109
 - Localised sample = 1,016
 - Run through YouGov (online panel)
- Median time: 17 min., 50 sec.

Knowledge of and support for carbon storage



Trust – to help deliver CO₂ storage projects





Predictors of active opposition

- Low trust (particularly industry, power companies, and oil and gas, but all actors)
- Female (vs male)
- Final association: safety concerns as key
- All concerns about CCS, particularly: storage technology not yet developed enough, potential for earth tremors, regulation not adequate, and leakage from where stored
- Knowledge (self-report): *ns* as linear variable; but much higher active opposition from people who say 'fair amount' (22%) or 'great deal' (41%) vs nothing at all (16%)
- Political party (Labour = 17.0%, Tory = 16.4%, Lib Dem = 12.0%, Green = 26.9%, Brexit = 23.1%)
- Non-significant:
 - Age, education, income
 - left/right leaning

Predictors of active support

- High trust (particularly BGS, but all actors)
- Male (vs female)
- Bachelor's degree (vs less) weak
- More left-leaning weak
- Final associations: solution to meet climate goals and reduced CO₂ emissions
- All benefits from CCS, particularly: one part of approach to net-zero, reduction of carbon emissions from industry
- Knowledge (self-report): much higher active support (as linear variable); also from people who say 'fair amount' (21%) or 'great deal' (25%) vs nothing at all (4%)
- Political party (Tory = 7.1%, Labour = 9.4%, Lib Dem = 13.3%, Green = 10.8%, Brexit = 6.6%)
- Non-significant:
 - Age, income

Take-home messages

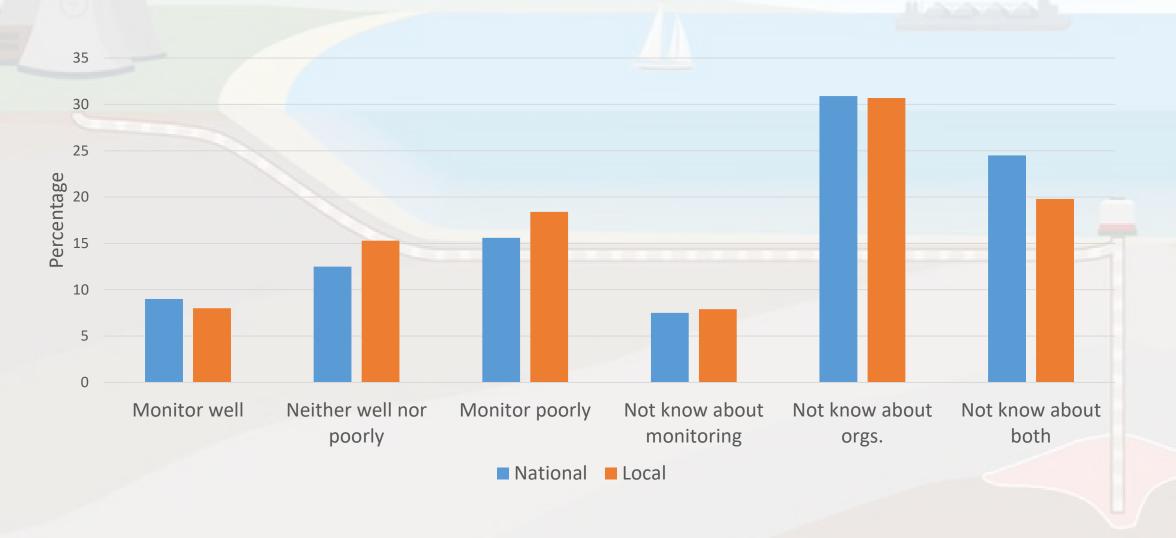
- Expectation that active support and opposition will grow as knowledge expands
- Safety concerns and climate benefits are most important associations
- Trust is a powerful influence, but is slow to build
- Equivocal results on role of political orientation
- <u>Recommendation</u>: More understanding of how people react to communication messages on core concerns, from trusted sources

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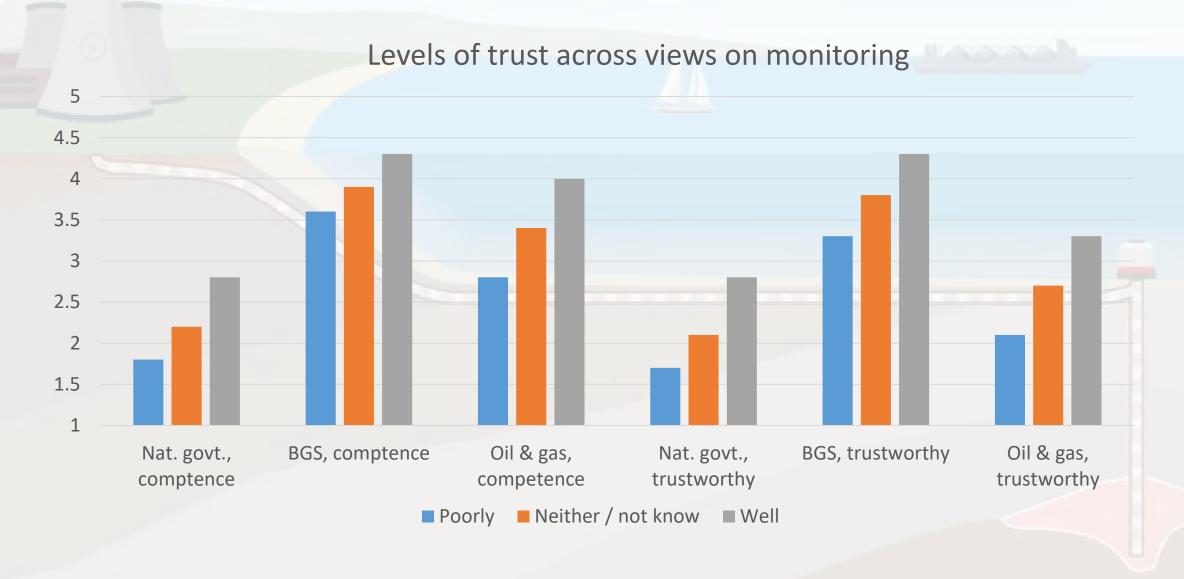
 Many different organisations are involved in each CO₂ storage project in the UK. In addition to planning requirements, a number of independent regulators oversee licencing, worker safety, above surface activities, and below ground activities (for example, the Environment Agency, Health and Safety Executive, and North Sea Transition Authority).

- How well do you feel these organisations would do at monitoring CO₂ storage projects to ensure they operate safely and as planned?
 - I think they would monitor the projects well
 - I think they would neither monitor well nor poorly
 - I think they would monitor the projects poorly
 - I do not know enough about the *organisations* to answer
 - I do not know enough about *monitoring* to answer
 - I do not know enough about the <u>organisations</u> and about <u>monitoring</u> to answer

Public perceptions of carbon storage monitoring



Predictors of monitoring views (trust)



Predictors of monitoring views (socio-demographics)

- Read or heard about CO₂ storage
 - Not know enough = lowest knowledge; poor / neither / well = same knowledge
- Income
 - No differences for personal or household income
- Education
 - No difference between less than bachelor's degree and degree or higher
- Political orientation
 - Conservatives (Tories) lowest % 'poorly', Greens highest, Labour/Lib Dem/SNP in the middle
 - 'Poorly' more left-leaning, 'Well' more right-leaning (small difference)

Predictors of monitoring views (attitudes / behaviours)

- Climate change attitudes
 - Higher personal responsibility for CC = higher % 'well'
 - No differences for CC worry
- CO₂ storage associations
 - Of 'poorly' main assoc. is safety concerns
 - Of 'well' main assoc. is climate solution, then reduced CO₂ emissions
- Taking action to support/oppose
 - 'Poorly' much more likely to act to oppose (32%, avg. 15%)
 - 'Well' much more likely to act to support (17%, avg. 8%)

Take-home messages

- Lack of knowledge about monitoring organisations
- Trust in other organisations as proxy
- Socio-demographics show little variation
- Views of poor monitoring associated with active opposition
- <u>Recommendation</u>: Increase awareness of monitoring organisations, organisation independence, safety assurances, *via* trusted sources

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