



Social Acceptance of CCS: Lessons from PILOTStrategy

Insights from research on social acceptance and community engagement in carbon capture and storage implementation. A case study from the Ebro Basin project

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Scaling up CO₂ storage – pilot studies in regions with promising geological resources

The PilotSTRATEGY project is investigating geological CO₂ storage sites in industrial regions of Southern and Eastern Europe to support development of carbon capture and storage (CCS)

[Find Out More](#)

Work Packages



WP1 Management



WP3 Simulation



WP5 Safety



WP7 Communications & Impact



WP2 Geo-characterisation



WP4 Pilot Development

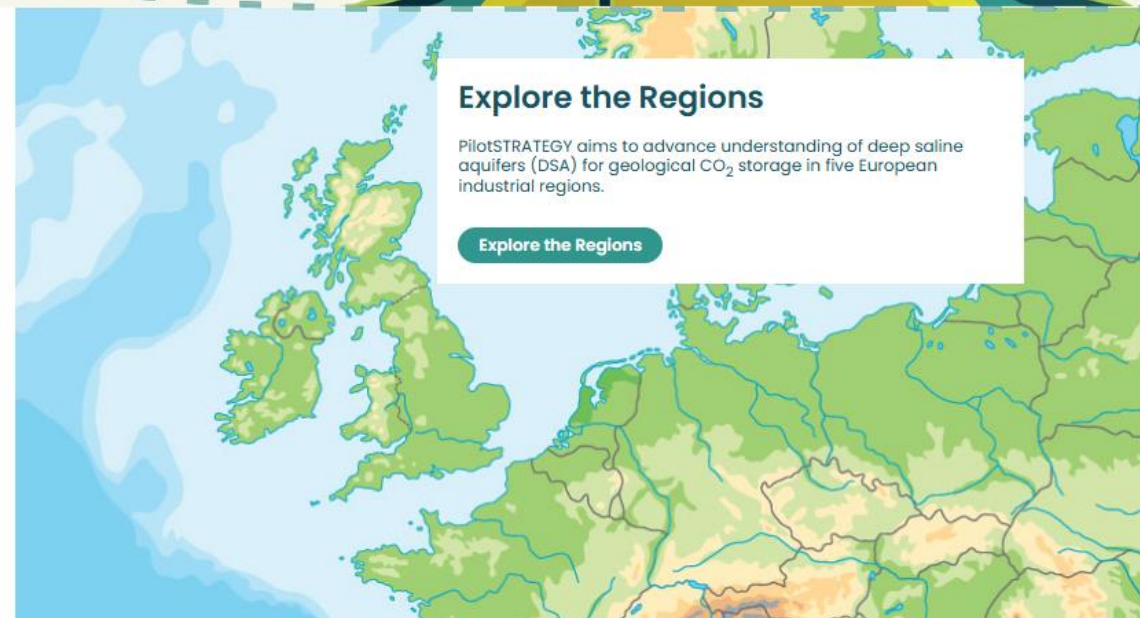


WP6 Social Acceptance

[Explore Work Packages ↗](#)

Explore the Regions

PilotSTRATEGY aims to advance understanding of deep saline aquifers (DSA) for geological CO₂ storage in five European industrial regions.

[Explore the Regions](#)

Research on social acceptance on PilotStrategy

- Research on **social acceptance and community engagement** is an important pillar of PilotStrategy
- The PILOTStrategy project treats the **communities** (in Spain, Portugal and France) not just as sites for potential CCS deployment, but as **dynamic living laboratories**. This allows us to study attitude formation, public engagement and the socio-technical integration of CCS in a real-world context as it unfolds.
- The end goal is to contribute to **generate actionable insights for developing more socially aware and integrated CCS projects**.



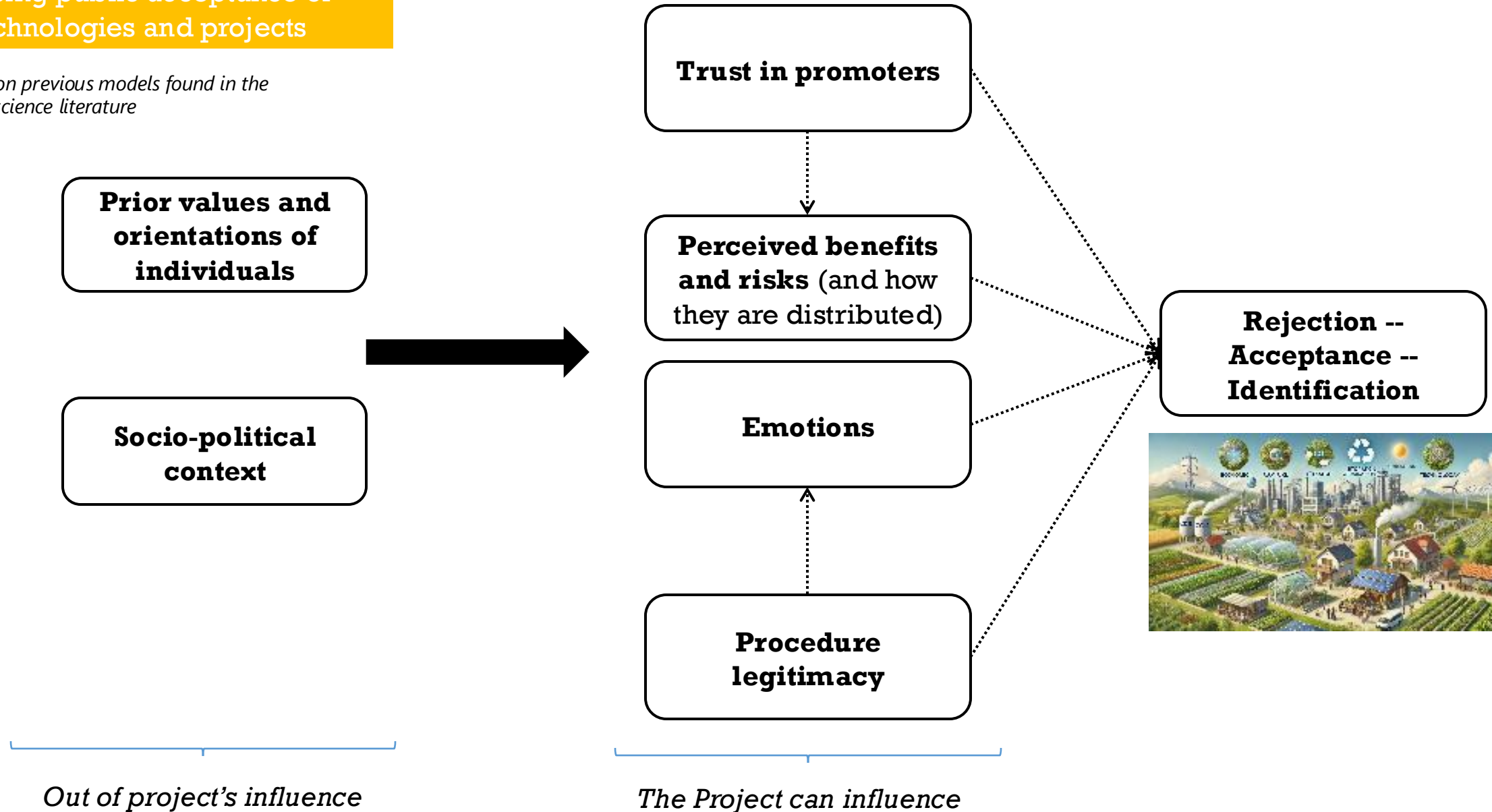
Key Research Questions

1. **Understanding attitudes:** How do diverse local stakeholders and residents perceive and feel about the specific risks and potential benefits of CCS in their region?
2. **Drivers of acceptance:** What are the underlying factors and explicit conditions that shape social acceptance or rejection of CCS projects locally?
3. **Effective engagement:** How do different engagement methods (surveys, interviews, dialogues, committees) contribute to building trust, fostering understanding, and integrating community feedback effectively?
4. **Beyond acceptance to integration:** What processes and conditions are necessary to move from passive acceptance towards active community support, integration, and potentially co-ownership of CCS initiatives?



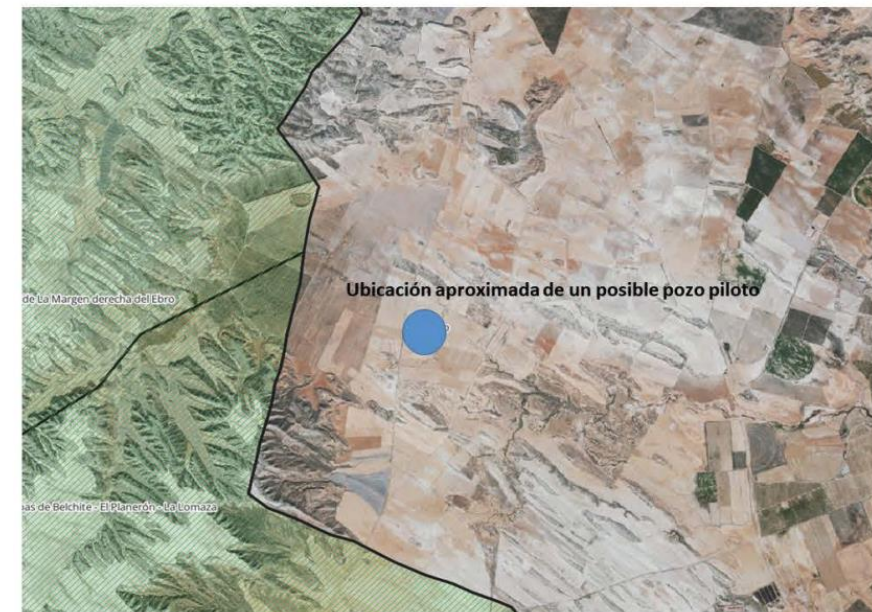
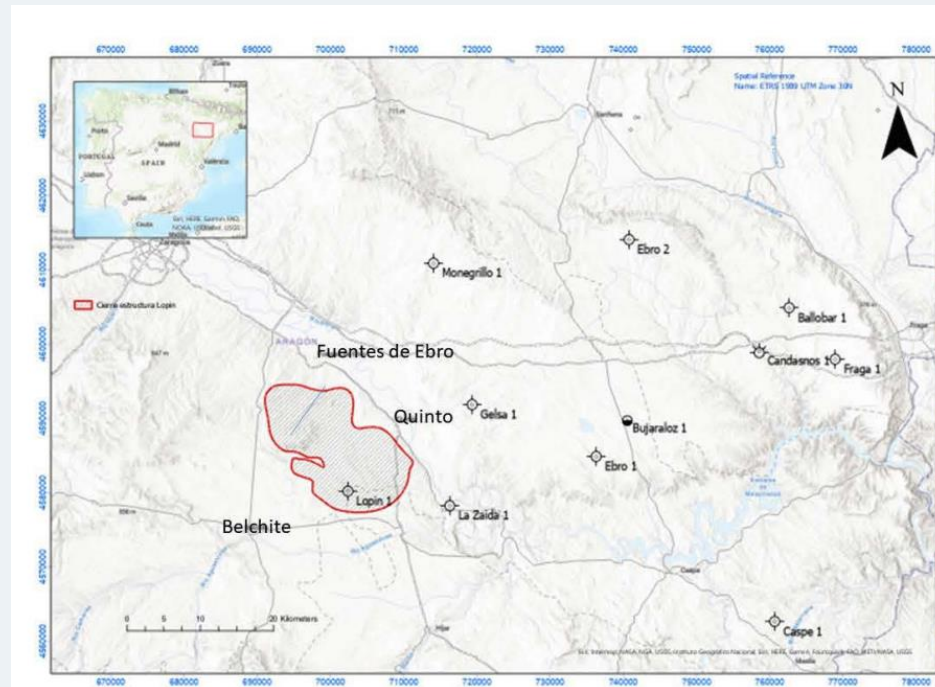
Model for understanding the factors influencing public acceptance of CCS technologies and projects

Based on previous models found in the social science literature

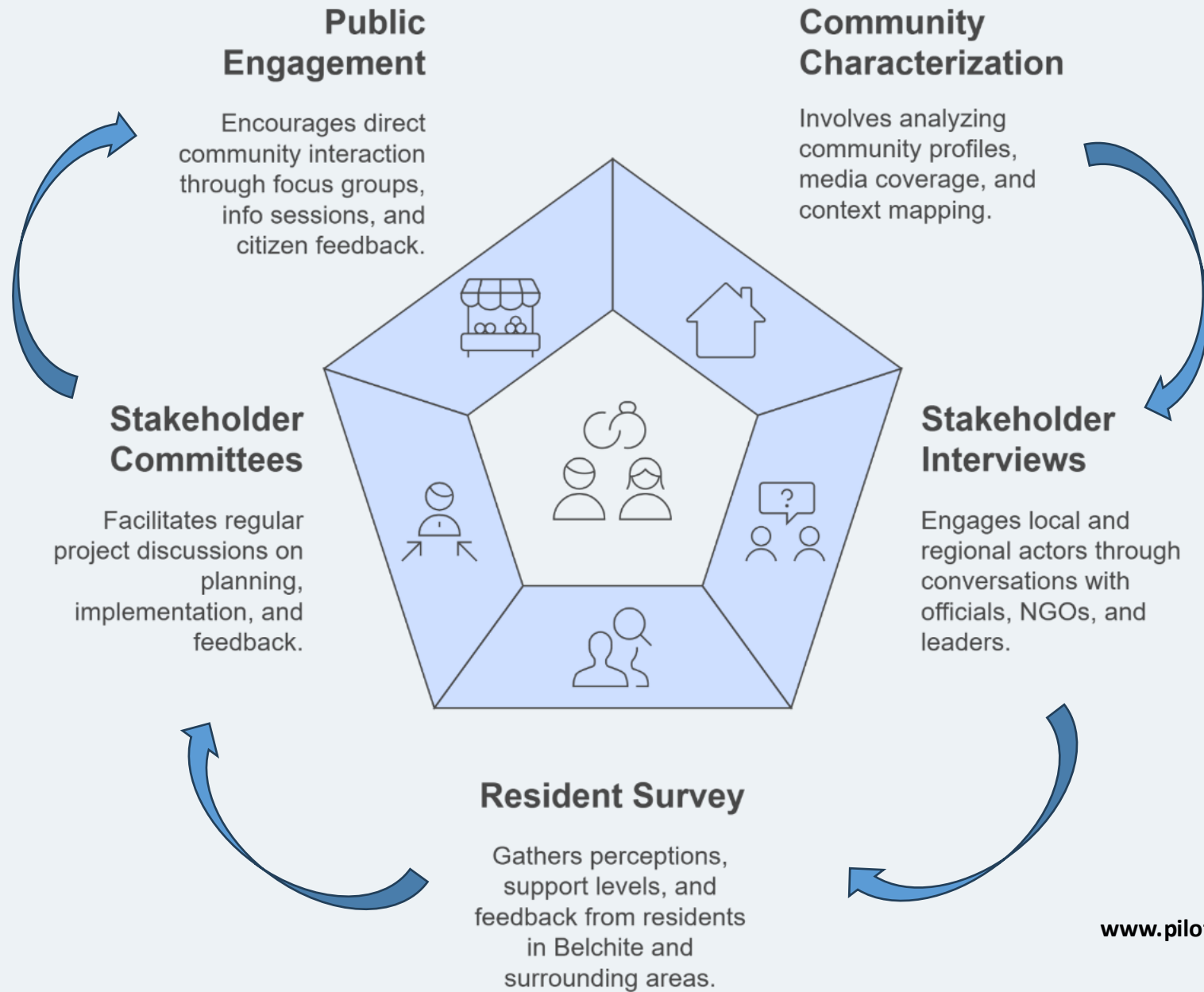


The Lopin site, Spain

The Lopin site, in the Ebro basin in northeastern Spain, is low dense, rural area with a significant agricultural and livestock activity as well as some mining and industrial activity.



Methodology: Mixed-methods social research and public engagement approach





Key results

COMMUNITY (LOCAL PUBLIC) ACCEPTANCE

Moderate acceptability; significantly higher than in other study areas but lower relative to CCS in general (not siting) and to a CCU project, as found in previous studies (StrategyCCUS)

Data collected via a resident survey, July 2023, n= 300



Overall attitude towards a CO₂ storage site

● In Favour (47%) ● Neutral (20%) ● Against (33%)



Each icon represents 1% of respondents.

Opinion Breakdown (Detailed)

● Totally Acceptable (19%) ● Acceptable (28%) ● Neutral (20%) ● Inacceptable (15%)
● Totally Inacceptable (18%)



Each icon represents 1% of respondents.

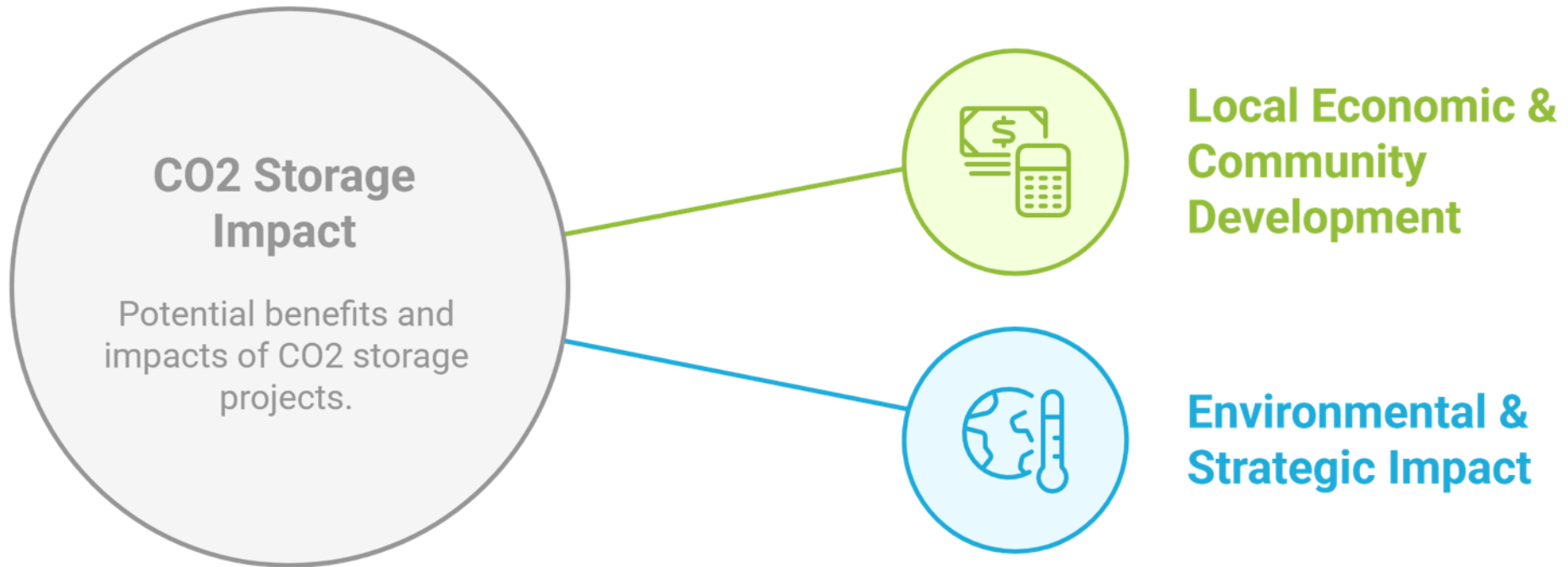
Perceived benefits

- **Global vs. local:** While the global benefits of CCS (climate mitigation) become somehow clearer with information, the articulation and understanding of direct local benefits are crucial for community engagement.
- **Clarity varies:** The potential benefits of CO₂ storage are not always clearly perceived by all local residents; stakeholders sometimes identify them more readily.
- **Focus on local and tangible:** Residents tend to focus on potential positive socio-economic impacts (like job creation) and potential compensations (personal and collective), reflecting their values and immediate concerns.

Data collected via focus groups and engagement activities



PERCEIVED BENEFITS



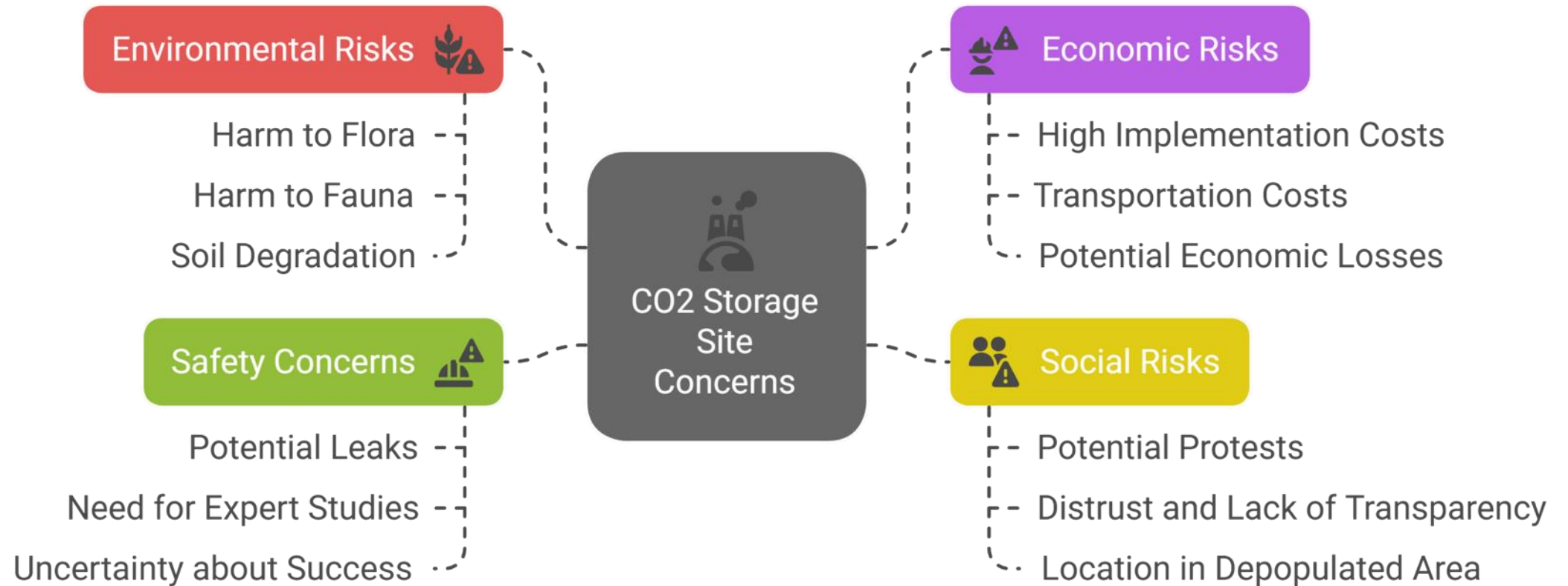
Perceived risks

- **Negativity bias:** Understandably, potential negative impacts often receive more initial focus from residents than the potential benefits.
- **Different mental models of the risk:** Experts and non-experts show contrasting 'mental models' about the subsurface, visualising underground storage more as filling a big cavern with pure CO₂ rather than the more appropriate geoscientific analogy of infusing a 'sponge' of porous rock
- **Equity and fairness:** Key questions arise about who bears the risks versus who receives the benefits, and how impacts are distributed.
- **Trust is crucial:** A lack of trust in project developers or authorities can significantly amplify perceived risks and generate new concerns.

Data collected via focus groups and engagement activities

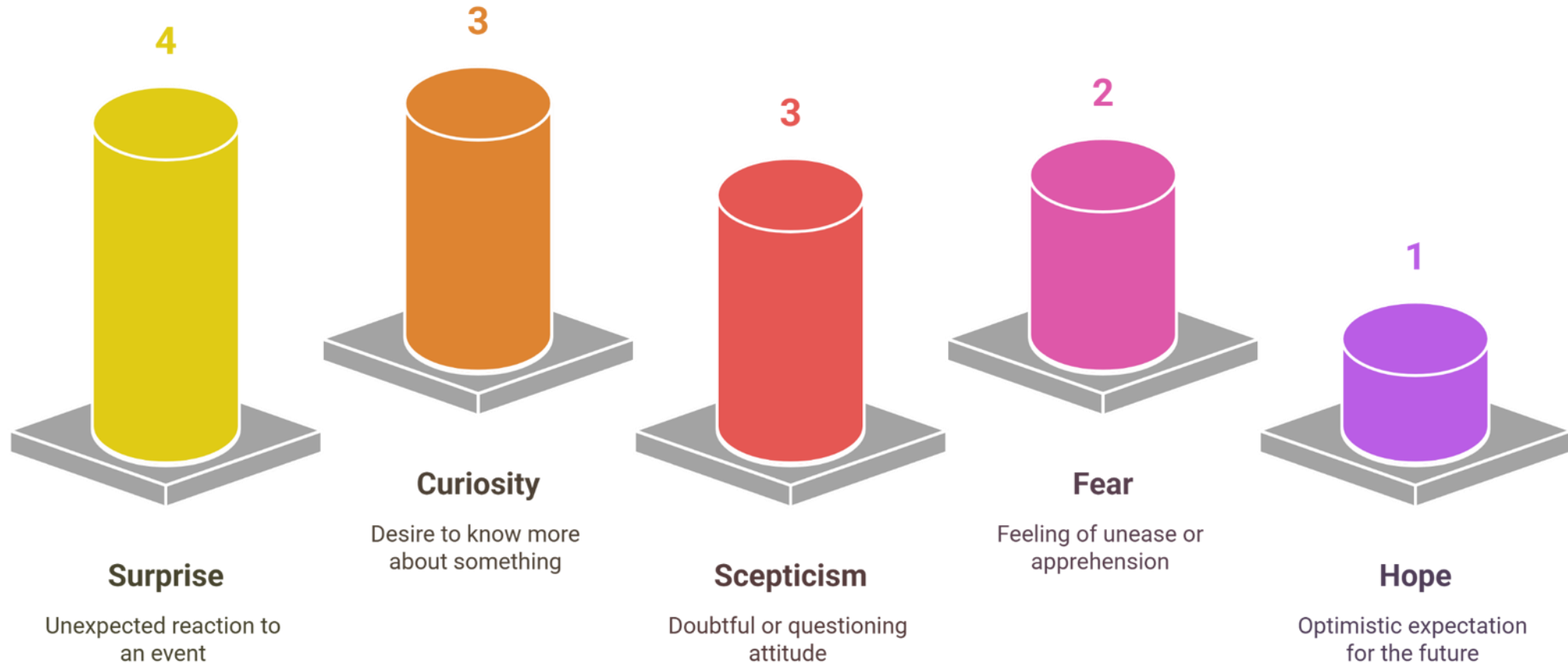


PERCEIVED RISKS



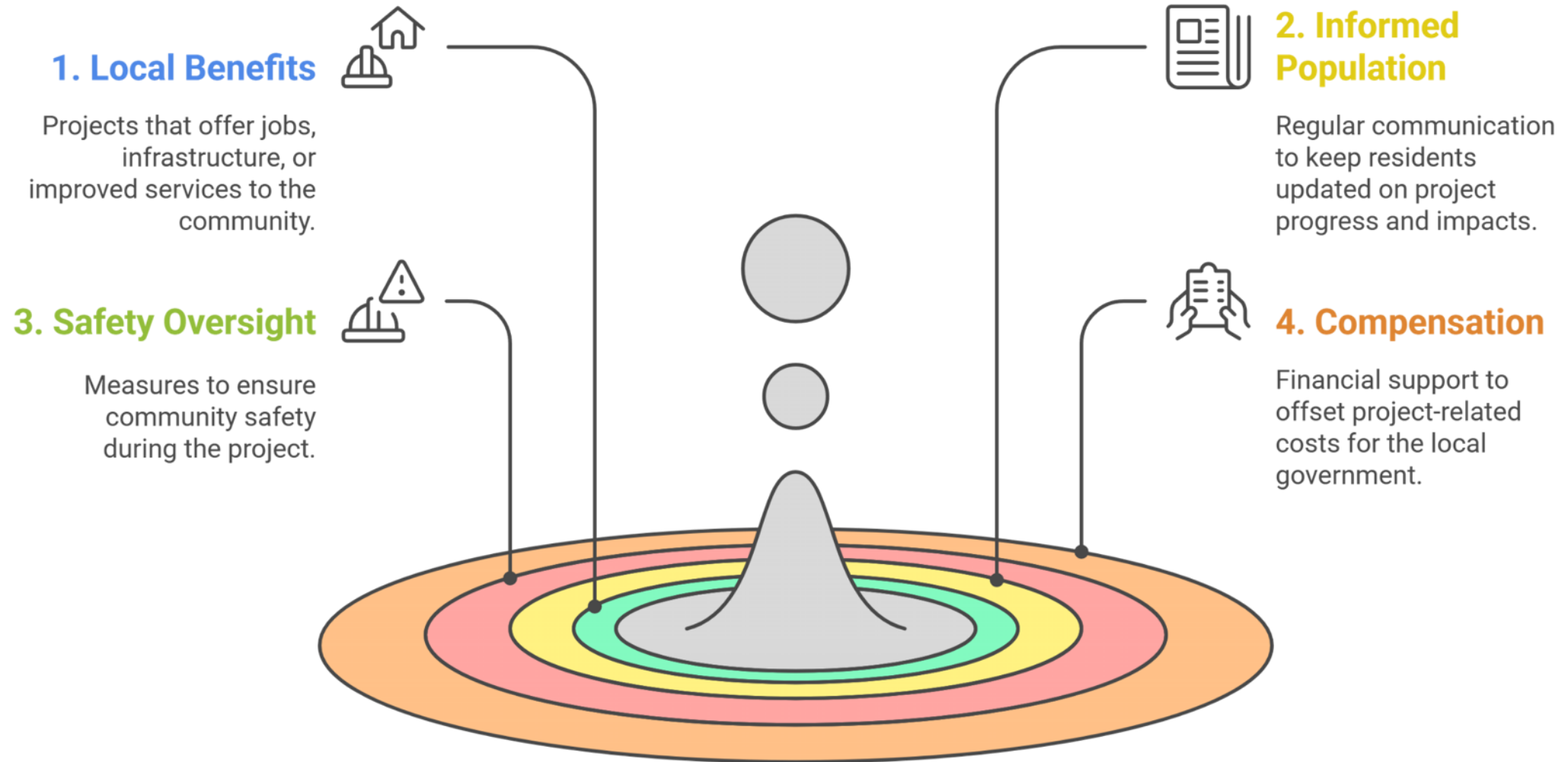
Emotional responses to CCS technologies

Data collected via focus groups and engagement activities with small n



Conditions for the acceptance of a CO2 storage site

Based on interviews with stakeholders and residents.

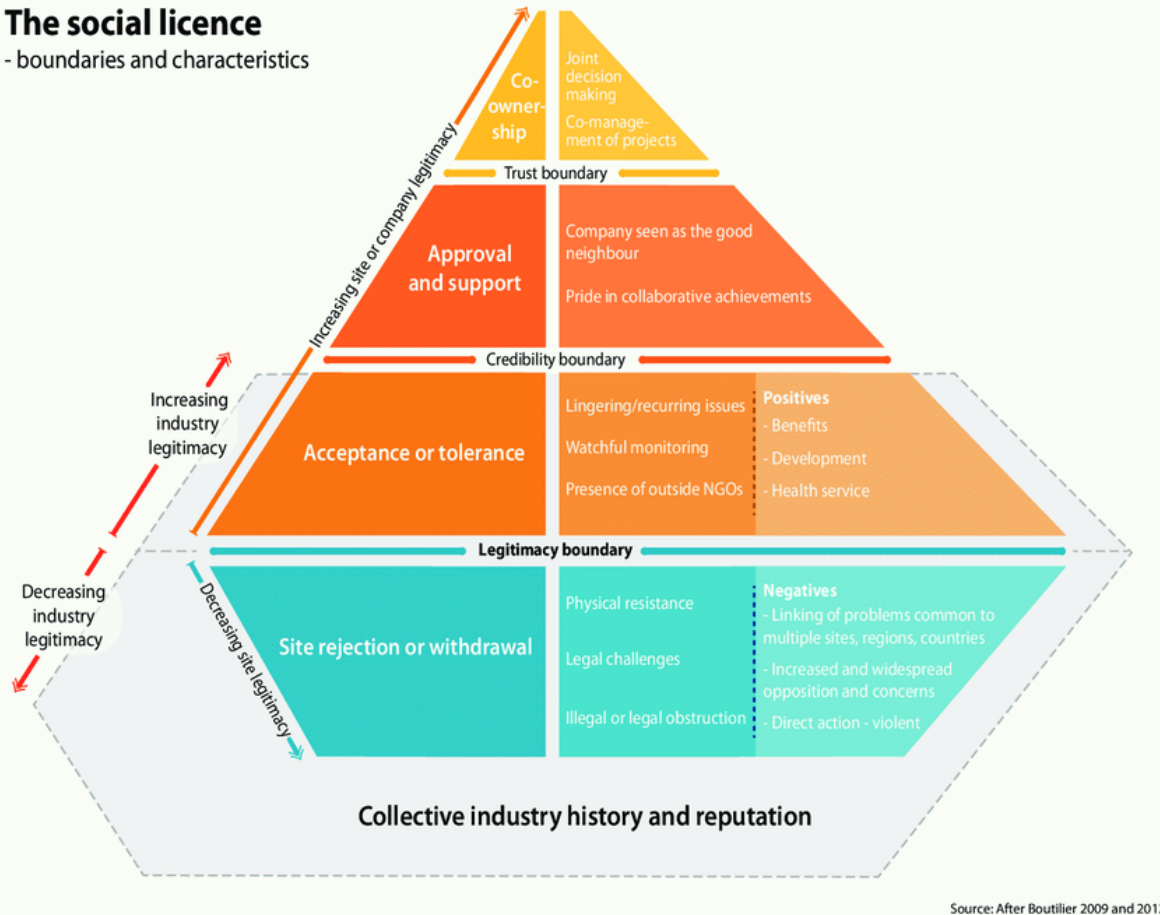


**Achieving Acceptance and Support:
Key Strategies & Recommendations**

From community acceptance to support and co-ownership

The social licence

- boundaries and characteristics



Implement an early, tailored and continuous **engagement** with key stakeholders and local residents to understand local views and needs.

Build **trust** (= Empathy, Honesty, Expertise) through transparency and responsiveness.

Enhance the **perceived local benefits of CO2 storage** (indirect benefits and compensations aligned with community values)

Foster positive **emotions** and a shared understanding through a compelling and honest **narrative**

Select an initially receptive/favorable community (based on **social characterization**)

Foster the **local embeddedness** of the project (integration into existing local structures, culture and context)

Develop a **campaign** that connects the CCS to local economic revitalization, highlighting stories from residents, such as an olive farmer who sees the project as an opportunity to improve irrigation infrastructure with project funds.

Design the project's **visible facilities** so that they blend into the landscape, using materials or designs that interact with the local environment, with prior community consensus.

Establish a CCS **project information office** at the local cultural center, with monthly open sessions where geologists and project representatives explain the safety studies.

Organize **community groups** prior to the detailed design phase to gather concerns, ideas about benefits, and co-design the citizen participation plan.

Establish a **co-managed community development fund** to invest in local infrastructure or training programs requested by the community.



Thank you

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