D6.3: Citizen engagement strategy

Objectives and research design

Authors:

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Executive summary

Following the description of work of PilotSTRATEGY, the main objective of this document is to design a hybrid consultation and research strategy to be implemented in the study regions, with the aim of gathering local public views on CCS technologies and a potential CO2 storage project in the region, and to improve the quality of public engagement with CCS projects. In carrying out this research, our specific objectives are to:

- Gather data on citizens' views and attitudes towards a hypothetical CCS pilot project in the region (research and consultation).
- Engage the public in learning about PilotSTRATEGY and about CCS technologies and in shaping the implementation of future CCS projects (to address their concerns and aspirations: involvement/placation)
- To gain methodological insights into the implementation of hybrid group-based methods for future public engagement activities on CCS (methodological development).

The design involves the use of hybrid reconvened focus groups consisting of discussion groups of 6-10 participants. These groups will meet twice, with an interval in between to allow participants to reflect on new information and topics discussed in the first meeting. The group sessions will last between 1.5-2 hours and will involve structured facilitation, materials and exercises to encourage participants to reflect on CCS technologies. In the first meeting, participants will be introduced to the problem of climate change mitigation, and then be asked to identify emotions associated with CCS. They will then participate in a brainstorming exercise to discuss benefits and costs of CCS projects. They will then rate words on a semantic differential scale and engage in discussion. During the interval period, participants will be given an information pack and asked to reflect on their findings. The second meeting will involve two exercises: storytelling and ranking of conditions for acceptance of a CCS project. A brief questionnaire will also be administered to participants.

The findings and conclusions from the research will provide valuable insights for future CCS projects, as well as inform the development of future public engagement strategies. The activity serves as a valuable tool for the scientific community, policy makers, and stakeholders in the energy sector, as it sheds light on the critical importance of public engagement and community involvement in the development of CCS technologies.

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The PilotSTRATEGY project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101022664

1. Introduction

One of the key objectives of PilotSTRATEGY is to promote local engagement activities with the local communities in each of the study regions in France (Paris Basin), Portugal (Lusitanian Basin) and Spain (Ebro Basin). In the first months of the project, WP6 focussed on characterizing the overall setting in which the discussions around CO2-storage take place in our project. We conducted an analysis of the policy framework in the relevant countries and the European context, regional community profiles developed through interviews, media analyses and other approaches (task 6.2), and a first wave of a questionnaire-survey exploring community acceptance (task 6.3).

In task 6.2 (D6.2), we argued that there is a need for social science research to understand public perceptions of CO2 storage at the local level, while at the same time opening up pathways for the participation of affected communities in project development. Given the low level of familiarity with CCS technologies among citizens in the study communities, as identified in an earlier task, we recognised that such work could be carried out using a hybrid (research and engagement) group-based methodology, enabling groups of lay citizens to engage with issues related to CO2 storage in their communities, to absorb new information about CO2 storage, and to express their views and concerns about it.

Following the description of work of PilotSTRATEGY, the main objective of this document is to design a hybrid consultation and research strategy to be implemented in the study regions, with the aim of gathering local public views on CCS technologies and a potential CO2 storage project in the region, and to improve the quality of public engagement with CCS projects. In carrying out this research, our specific objectives are to:

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- To gain methodological insights into the implementation of hybrid group-based methods for future public engagement activities on CCS (methodological development).

This report sets out the main features of the research strategy to be implemented from May 2023 onwards. The report begins with a summary of the main issues involved in the design of the methodology, both at a conceptual and methodological level, and describes the details of the hybrid method we have designed to achieve our objectives. It then presents the main details of the recruitment process, data collection and data analysis. It is relevant to note that this concept represents a basic approach that can be adapted to the specific local needs as analysed in previous deliverables (D6.1 and D6.2). Finally, the main conclusions are discussed together with possible lessons for future applications.

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1.1 Public Engagement and group methodologies

As in other technological contexts, the quality and timeliness of the public engagement process has been identified as a key factor in the success or failure of CCS projects (Coyle, 2016). Research suggests that the lack of an appropriate stakeholder and public engagement strategy has contributed to the failure of CCS projects in Europe (e.g. Barendrecht in the Netherlands: Brunsting et al., 2011). In some specific contexts, early engagement with local stakeholders and the local population on areas of community concern and preferred communication methods has been shown to benefit project development by raising awareness of the project and CCS in the local community, increasing local support for further research, and improving relations with landowners hosting the project (Steeper, 2013).

In general, the term public engagement refers to a collection of processes involving the provision and collection of information and varying degrees of involvement of citizens and/or stakeholder groups in some kind of planning or decision-making process around a particular issue or project. One classification of public engagement mechanisms based on the flow of information between participants and sponsors is the distinction between: public communication, where information flows only from the project developer to the public; public consultation, where information flows from the public to the sponsor; and public participation, where there is a two-way communication process with genuine dialogue between the public and the sponsor (Rowe and Frewer, 2005). Another classification is Fiorino's (1990) ladder of engagement, which classifies levels of engagement from the lowest, information, to the highest, developing power. Intermediate forms of public engagement include education, consultation, participation and partnership. Involvement is generally considered to be an intermediate level of public engagement, where stakeholders' concerns and opinions are reflected in reports and some feedback is provided on how the input has been considered.

Methods of public engagement are diverse (Engage2020, 2012; UNU, 2004). They range from the provision of simple information materials through newsletters, websites or open meetings, through surveys and focus groups, to more complex deliberative approaches in which members of the public participate in groups or conferences that attempt to structure the debate and provide balanced information on the issue (e.g. citizens' juries) to the more active participation of the public in decision making (Rowe and Frewer, 2005). It is generally believed that participatory methods, together with information provision and consultation methods, can enrich public engagement with technology issues by allowing more direct interaction between promoters and stakeholders, by stimulating participants' interest and learning about complex issues, and by revealing variations and nuances in public attitudes.

In line with previous work on risk perception (e.g. Myers, 2007) and public engagement with CCS (see e.g. Brunsting, 2013), we chose to develop a research and consultation methodology based on the use of discussion or focus groups and workshops. We have built on the tradition of focus group-based research (Bloor et al., 2002), but also on public participation methods (e.g. citizens' juries, planning cells), by placing a greater emphasis on the provision and discussion of new information. Focus groups, like other group methods, allow a deeper exploration and understanding of community views than other methods. This method also allows for the collection of issues that

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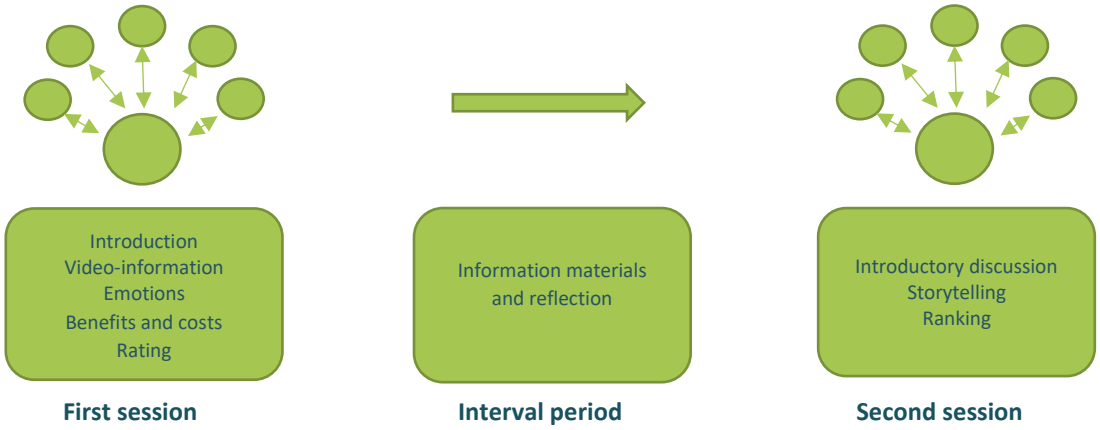
relate to the daily lives of individuals. The use of 'stimulus material' in focus groups can encourage participants to learn about new topics (CCS technologies) and to discuss complex and remote issues.

2. The design of the group-based method

We propose to use hybrid (research, consultation and participation) reconvened focus or discussion groups in the different study sites. Reconvened focus groups are discussion groups of 6 to 10 participants that meet twice, with an interval between meetings to allow participants to absorb new information and reflect on the issues raised at the first meeting. Reconvened focus groups have demonstrated their potential as a consultation method for gaining a better understanding of participants' views and experiences, and their suitability for attempts to generate a 'deliberative process' in which the evidence for and against a policy is carefully considered (Horlick-Jones et al., 2007a; Prades et al., 2008; Poortinga et al., 2018). Because of the importance of providing participants with new information, it is usually necessary to present group participants with more than one perspective from different sources.



The reconvened discussion groups are similar to focus groups. However, they differ from 'classic' focus groups in that they allow participants to be presented with new material, to assimilate this material during the break, and to discuss this material and the issues raised during the first session. It also allows participants to reflect on possible shifts in their perspectives during the interval. In this way, we can generate a learning and deliberative process, rather than simply collecting pre-existing opinions. The groups are therefore hybrid in nature, combining elements of research and engagement.

Each group session should last between one and a half and two hours. During the group sessions, participants are encouraged to reflect on the issue under discussion (in our context, a carbon capture and storage project) by reading or listening to specific information, taking part in exercises and discussing with others. These objectives are achieved through the use of structured facilitation, stimulus materials and exercises or activity-oriented questions.

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Group facilitators should encourage a safe, open and non-judgmental discussion and learning environment and interaction between participants. Group sessions should be audio recorded. Observational notes by a member of the research team may also be useful for data analysis.

2.1.1 Protocol

First meeting

Introduction. The first meeting (ideally face to face) of each group begins with the initial introductions by the facilitator: a brief introduction of the aims and rules of the sessions, the organisers and the participants themselves.

Introduction to the problem or the project[1]. After the initial introductions, the moderator briefly introduces the need and challenges of climate change mitigation (efforts to reduce the release of greenhouse gas emissions that are warming our planet). A short presentation adapted to the country can be used. Participants are then given a minimal description of PilotSTRATEGY and CCS in the form of a short video, a fact sheet, a newspaper or magazine article. This presentation can be combined or substituted by a presentation about the specific CCS project under consideration in the local area by a member of local team.

Emotional reactions. Identify emotions associated with CCS. The facilitator asks participants to select a relevant emotion from a list of emotions that best represents their initial emotional response to CCS. The facilitator encourages participants to verbalise and explain their feelings about CCS and to interact with each other.

Benefits and costs. Listing of benefits and costs. Following further discussion, a group 'brainstorming' exercise is conducted in which participants discuss the potential benefits (local and/or global) and costs/risks of implementing CCS technologies. The facilitator asks participants to list their views on the potential benefits and costs of CCS projects on post-it notes. During and after this exercise, the facilitator encourages participants to verbalise and explain their views and to interact with each other.

[1] The specific focus of the group discussions, as well as the type of stimulus materials may vary among the different study areas. In some communities, it may be more appropriate to focus the discussion on the specifics of the proposed CCS project, while in other communities, where the project is less advanced, it may be more appropriate to focus the discussion on CCS in general, the PilotStrategy Project and on a hypothetical CO2 storage in the community.

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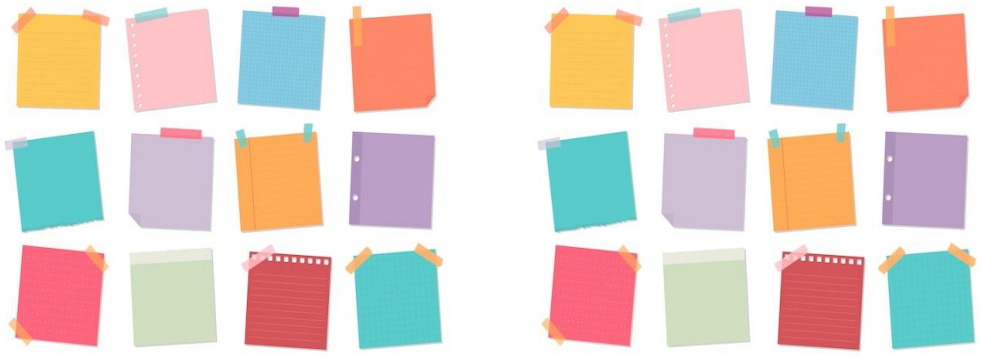
Benefits **Costs**



Rating. After the free listing, participants will be provided with a list of items (words) - written on a card - that must be rated on a scale. The adjective ratings will take the form of a semantic differential. After each participant rates the items, a discussion between participants can be promoted by the moderator. The moderator can also calculate a score for each item and then discuss the results with the participants

Interval period

At the end of the first meeting, participants are given a pack of information, as described below. During the interval between the group meetings (7-15 days), the participants are asked to work through the information pack at their own pace. During this period, they can record their findings, and thoughts about what they have discovered in a specially-designed pro-forma to structure this information.

Second meeting

During the second meeting of each group, following an initial discussion of their findings, two exercises take place.

Storytelling. In the first one, participants are provided with a short 'story' (or vignette) about a case scenario: the possible siting of a CCS project in a community. Then, participants are asked what they believe will happen or to reflect on the various views or actions by the actors or persons presented in the vignette. The objective is to discuss various views on important topics (global benefits and risks, local benefits and risks, legitimacy of implementation and trust) to allow for further discussion.

Ranking of conditions for acceptance. The second exercise will explore key conditions for acceptance of a CCS project. In this task, participants receive a list of conditions, written on cards or on a whiteboard, to rank from the most important to the least important. For instance, participants receive a list of 5 conditions for acceptance of a CCS project in the local area and are asked to rank them in order of importance, from 1 (most important) to 5 (least important). They can also be given the option to add other possible condition that are not in the list and rank these as well.

A very brief questionnaire to measure overall views on CCS and participants' evaluation of the sessions is completed by participants at the end of session 2.

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2.1.2 Group recruitment and timeline

Four focus groups (each meeting on two occasions), composed of between 6 and 10 lay citizens will be run in Spain, Portugal, and France. Commercial agencies for market research can be employed to recruit the group participants in addition to other more informal recruitment strategies such as leaflets posted to potential participants. The recruitment strategy will be decided by the country team based on their knowledge on the region. As our focus is on residents, participants having specialist knowledge or strong views about CCS will be excluded. All groups will be mixed in terms of gender, age and educational level.

		Session 1	Session 2
Group 1	18-65. 4 women/ 4 men	*tbd*	7-15 days later
Group 2	18-65. 4 women/ 4 men	*tbd*	7-15 days later
Group 3	18-65. 4 women/ 4 men	*tbd*	7-15 days later

2.1.3 The selection of information materials about CCS

Regarding the selection of information materials for our group method, the aim is to select existing and new information materials about CCS to inform participants about the general features of CCS, the current debates around the technology and the potential implications of its implementation. The method will combine general materials as well as materials specifically selected for the various study areas. Also, to develop a balanced "engagement" exercise, information materials produced by the CCS community will be combined with materials produced by the media and the civil society groups, as well as with materials specifically designed by the research team.

Materials for session 1 (see Annex)

Three main materials will be used in the first session:

1. *Brief presentation climate change.* Presentation by the moderator on the need for climate change mitigation (CO2 emissions reductions) and on the alternative options to reduce emissions.
2. *Video: Introduction to CCS.* Two minutes video on the main features of CCS technology.
3. *1 page Factsheet on CCS.* One page document explaining what CCS is, why is important, how it works, how safe it is and what are some of the previous experiences.

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Materials for the interval period

Four materials will be handed to participants at the end of session 1.

1. *Neutral to positive news article.* Selected news article from a regional or national newspaper.
2. *Controversial news article. France 24*
3. *Information on consequences.* One page describing the five main consequences of implementing CCS technologies.

Materials for session 2

Two stimulus materials will be used in session 2:

1. *Vignette.* Short scene that captures the various views around a case scenario: the possible siting of a CCS project in a community.
2. *List of acceptance conditions.* List of main acceptance conditions for CCS/other technological projects derived from the interviews or the document/literature analysis.

2.1.4 Data analysis

A structured approach mixing the analysis of the activities and of the transcripts will be applied for the analysis. The group discussions will be recorded, transcribed and coded using computer-assisted qualitative data analysis software. After coding, and around the specific activities proposed in the protocol, each node will be analyzed thematically, and emerging patterns will be refined and cross-compared. The results will be described according to the activities and the emerging themes.

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3. Final remarks

In conclusion, the PilotSTRATEGY aims to gather valuable insights into public perceptions and attitudes towards CCS technologies, with a focus on local engagement activities and community involvement. This report outlines a hybrid consultation and research strategy that will be implemented to achieve the set objectives. The methodology, recruitment process, data collection, and analysis procedures are also described in detail.

The design involves the use of hybrid reconvened focus groups consisting of discussion groups of 6-10 participants. These groups will meet twice, with an interval in between to allow participants to reflect on new information and topics discussed in the first meeting. The group sessions will last between 1.5-2 hours and will involve structured facilitation, materials and exercises to encourage participants to reflect on CCS technologies. In the first meeting, participants will be introduced to the problem of climate change mitigation, and then be asked to identify emotions associated with CCS. They will then participate in a brainstorming exercise to discuss benefits and costs of CCS projects. They will then rate words on a semantic differential scale and engage in discussion. During the interval period, participants will be given an information pack and asked to reflect on their findings. The second meeting will involve two exercises: storytelling and ranking of conditions for acceptance of a CCS project. A brief questionnaire will also be administered to participants.

The findings and conclusions from the research will provide valuable insights for future CCS projects, as well as inform the development of future public engagement strategies. The activity serves as a valuable tool for the scientific community, policy makers, and stakeholders in the energy sector, as it sheds light on the critical importance of public engagement and community involvement in the development of CCS technologies.

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4. Annex

What is CCS?

Carbon capture and storage (CCS) is a process used to reduce the amount of carbon dioxide (CO2) released into the atmosphere from power plants, waste to energy plants and industrial facilities. It works by capturing the CO2 emissions before they are released into the air, and then storing it underground in depleted oil and gas fields, deep saline aquifers or other underground rock formations as basalts. The idea is to prevent the CO2 from entering the atmosphere and contributing to global warming. CCS is an important tool in the fight against climate change, as it allows us to continue using fossil fuels while reducing their environmental impact.

Specific exercises and protocols

First session

Presentation	*See ppt*
Video	ZEP: https://www.youtube.com/watch?v=aHtbDmzjYgg AFP: https://www.youtube.com/watch?v=mK7sCzkuMrE PTECO2: https://www.youtube.com/watch?v=rCiqWkG_wnM NEWGENCOAL: https://www.youtube.com/watch?v=ROEFaHKVmSs BBC Carbfix: https://www.youtube.com/watch?v=azQhsNWpbU4 BGS: https://www.youtube.com/watch?v=7j3OTLmaE-g https://www.youtube.com/watch?v=4v2_4Dr2Gds (very visual explanation of storage)
List of emotions	• *Excitement* • *Curiosity* • *Awe* • *Skepticism* • *Fear* • *Confusion* • *Enthusiasm* • *Anticipation* • *Hope* • *Disappointment* • *Frustration* • *Disbelief* • *Inspiration* • *Amazement*

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Lists of benefits and costs	**Benefits** **Costs** 
Do you consider CCS to be…?	*1. Unnecessary - Indispensable* *2. Conventional – Innovative* *3. Expensive – Economical* *4. Dangerous - Safe* *5. Does not tamper with nature--Tampers with nature* *6. Not beneficial for the local economy—very beneficial for the local economy*

Interval period

Scientific	*Article to be selected*
Controversial	*France 24 article*
Consequences	*One page developed by the research team*

Second session

Storytelling	*Vignette (to be developed)*

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Conditions for acceptance	Continuous security monitoring Financial compensation to municipalities Municipal advisory councils to keep the population informed Participation of citizens in decision-making Environmental impact assessment *1 (not important)-2 (somewhat important)-3 (moderately important)-4 (fairly important)-5 (very important)*

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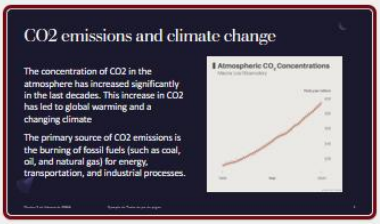
Materials

Power point presentation

1



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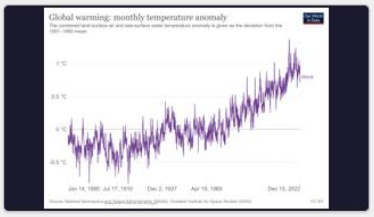

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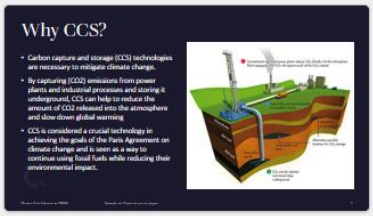

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8

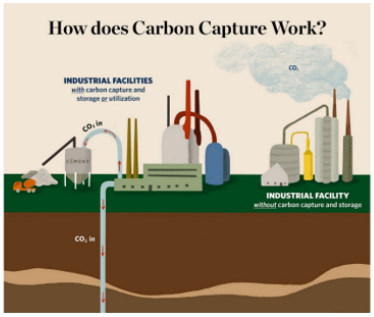
Factsheet

What is Carbon Capture and Storage?

Carbon Capture and Storage (CCS) is a way of reducing carbon emissions, which could be key to helping to tackle global warming. It's a three-step process, involving: capturing the carbon dioxide produced by power generation or industrial activity, such as steel or cement making; transporting it via ship or in a pipeline; and then storing it deep underground in geological formations.

How can CCS help prevent global warming?

The Intergovernmental Panel on Climate Change (IPCC) highlighted that, if we are to achieve the ambitions of the Paris Agreement and limit future temperature increases to 1.5°C (2.7°F), we must do more than just increasing efforts to reduce emissions. CCS is one of these technologies and can therefore play an important role in tackling global warming.



How does CCS actually work?

There are three steps to the CCS process:

1. Capturing the carbon dioxide for storage. The CO2 is separated from other gases produced in industrial processes, such as those at coal and natural-gas-fired power generation plants or steel or cement factories.

2. Transport. The CO2 is then compressed and transported via pipelines, road transport or ships to a site for storage.

3. Storage. Finally, the CO2 is injected into rock formations deep underground for permanent storage.

Where are carbon emissions stored in CCS?

Possible storage sites for carbon emissions include saline aquifers or depleted oil and gas reservoirs, which typically need to be 0.62 miles (1km) or more under the ground.

As an example, a storage site for the proposed Zero Carbon Humber project in the UK is a saline aquifer named 'Endurance', which is located in the southern North Sea, around 90km offshore. Endurance is approximately 1 mile (1.6km) below the seabed and has the potential to store very large amounts of CO2.

Similarly, in the US there are multiple large-scale carbon sites such as the Citronelle Project in Alabama. This saline reservoir injection site is about 1.8 miles (2.9km) deep.

Is storing carbon as part of CCS safe?

According to industry body the Global CCS Institute, CCS is 'a proven technology that has been in safe operation for over 45 years'. It adds that all components of CCS are proven technologies that have been used for decades on a commercial scale.

Where is CCS being used already?

According to the Global CCS Institute's 2019 report, at that time there were 51 large-scale CCS facilities globally. 19 of these were in operation, 4 under construction and the remainder in various stages of development.

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News article (neutral-positive)

CAPTURA CO2

Acuíferos salinos pueden almacenar durante 60 años el CO2 generado en 2021

• Madrid, 9 feb (EFE).- España dispone de hasta "103 acuíferos salinos profundos con potencial para almac durante 60 años el CO2 producido durante 2021" en el país, ha asegurado hoy el presidente de la Asociación la Plataforma Tecnológica Española del CO2 (PTECO2), Pedro Mora.

AGENCIAS
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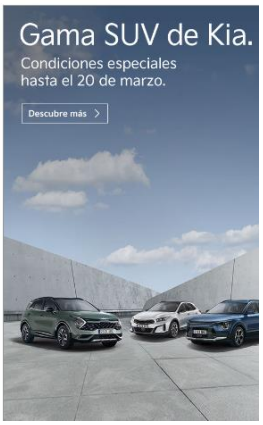
Mora, que ha participado en una 'Jornada sobre almacenamiento y captura de CO2' organizada por su entidad y la Asociación de Periodistas de Información Ambiental (APIA) en el Instituto Geológico y Minero de España, considera que las tecnologías de captura, transporte, almacenamiento y usos del CO2 (CAUC) "son la única alternativa para los sectores con emisiones de carbono".



News article (controversial)

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Consequences of implementing CCS technologies

The implementation of carbon capture and storage (CCS) technologies can have a number of environmental, economic, and societal consequences.

Environmental consequences:

1. Reduction of greenhouse gas emissions: CCS can significantly reduce the amount of carbon dioxide emissions from power plants and industrial facilities, helping to address the problem of climate change.
2. Impacts on land and water resources: The storage of carbon dioxide underground can have impacts on water resources, soil stability, and seismic activity.
3. Potential release of CO2: There is a risk of leakage of carbon dioxide from storage sites, which can have harmful environmental impacts.

Economic consequences:

4. Cost of implementation: CCS technologies can be expensive to implement, requiring significant investments in infrastructure and technology.
5. Job creation and economic benefits: The implementation of CCS technologies can create new jobs in areas such as construction, operation, and maintenance, potentially leading to economic benefits for communities.

Societal consequences:

6. Public perception and acceptance: The implementation of CCS technologies may face opposition from local communities due to concerns about environmental impacts, potential health risks, and property values.
7. Regulation and governance: The development and implementation of CCS technologies will require effective regulatory frameworks and governance mechanisms to ensure that environmental and social impacts are minimized.

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