



Communication of carbon capture and storage: Outcomes from an international workshop to summarise the current global position

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EXECUTIVE SUMMARY

For the first time in the history of the development of carbon dioxide capture and storage (CCS) technology a one day international conference was held for stakeholders with a focus on communication. The inaugural conference was sponsored by the Global Carbon Capture and Storage Institute (GCCSI) and hosted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO). In total, ninety-eight (n=98) international representatives from industry, government, non-government organisations, researchers, and communication practitioners came together to participate in an interactive day specifically tailored to summarise the current global position on communicating for CCS deployment. Participants represented seventeen (n=17) different countries including Australia, France, USA, UK, the Netherlands, and Norway as illustrated in Figure 1 below.

The challenge of understanding public perceptions of CCS and how to communicate the risks and benefits of the technology is something that social researchers from leading international research institutions have been grappling with for some years. Up till now, the opportunity to share their findings with interested industry partners has been somewhat ad hoc as more technical issues have always taken priority. However, as the urgency to deploy CCS has risen across the world, and evidence of failed attempts to achieve local community support for projects comes to hand, it is apparent that this issue could become a commercial show stopper for CCS. Therefore this opportunity to share findings from the research was well received from the range of stakeholders involved in CCS deployment.

Theoretical considerations

Critical theoretical considerations for the communication of new technologies were discussed as part of the conference and key considerations are summarised below.

Trust

It has long been acknowledged that trust is essential when communicating about any emerging technologies, particularly if there is some perceived risk associated with the technology. Questions arose on how best to create trust in organisations recognising that each community will be different. Some communities may have had previous bad experiences with organisations, leaving a legacy of general mistrust in any large corporations and their perceived in deploying technologies within a community. One suggestion for building trust was to incorporate values focussed discussions when developing and evaluating a range of options for a community. This would help to highlight the priorities that different communities hold and the trade offs they were prepared to make in relation to a new project. This should help project proponents to tailor the proposition to match the needs of specific local communities and demonstrate the importance of the community to them.

Creating partnerships

Building on the concept of trust, the idea of creating partnerships with communities was also seen as critical and is one of the essential components of the risk communication literature. Process was seen as an important element for creating successful partnerships with communities. This included the need for transparency and providing legitimate responsibilities for members of communities when engaging them.

Having a range of options for communities to make decisions about was also highlighted as a way

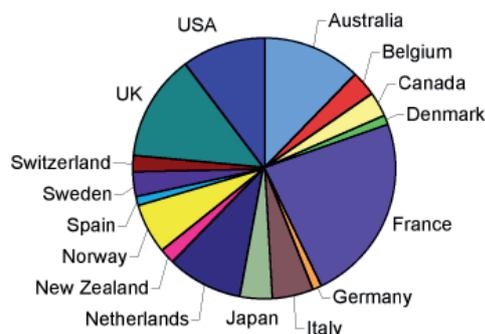


Figure 1: Participating countries

of increasing the concept of partnering. For example, working with a range of communities from the very beginning of the project, before a final site location is decided can provide flexibility and the opportunity for stakeholders to influence how the project develops. Dialogue and consultation were two words that were used often when discussing the role of partnerships.

The concept of partnering was also discussed in terms of whom best to partner with. It was recognised partners were likely to be wider than just the local community and may also include local non government organisations and community groups, national and international finance and insurance companies, government bodies and so forth.

Creating a vision for CCS

Communicating the overall vision for CCS was also seen as being critical for successful deployment. This included focusing on the role of CCS as a transition technology to a low carbon economy and recognising that other opportunities would also need to be pursued. Suggestions included citing examples such as hydrogen for transportation and enhancing the opportunities for carbon negative approaches. Ultimately it was agreed that the focus should be on a portfolio of options and that the only way to communicate CCS was part of that portfolio. Also recognising that for some communities CCS may not be suitable and this needs to be acknowledged by projects from the outset.

Identifying the local value proposition

All of the above pointed to the idea of the need to create a local value proposition for a CCS project to be successfully sited in a specific community. This included ensuring all stakeholders from local politicians and policy makers to key community members understood what was involved in the project. Any misperceptions about CCS need to be clarified and open and transparent communication is essential. It was also recognised that some communities may not believe in climate change and in these instances the opportunity for CCS to be deployed are severely hampered. Without climate change the value proposition for allocating large amounts of funding to CCS over other issues is limited.

Identification of local benefit

Similarly, projects need to clearly identify and articulate the local benefits a CCS project will bring to a community. Without the local benefit projects are likely to face more opposition. Sharing knowledge and ideas from projects as it comes to hand will be helpful in building a bank of potential benefits for local communities. However, generalising benefits across communities was not implied and it will be important to continue to work to identify the local priorities and benefits. As part of this discussion the need to identify potential utilities of carbon dioxide was raised as a way of contributing to the success of CCS.

Who should be the leader in communicating about CCS?

Participants recognised that it is difficult to identify who should have the responsibility to lead a communication plan given that many projects were being co-funded by industry and government respectively. Some felt that it should be the responsibility of governments to do the outreach and education of the public however, it was suggested that there appeared to be an underlying theme that it was the responsibility of the developers. This issue is further compounded by the fact that it is well known that in many countries people do not trust government or industry and therefore their ability to deliver the message is questionable.

Overall it was resolved that it is difficult to answer the question and the answer may be different for each project site. However, a collective approach was felt to be the most effective, where joint messages were built, to limit the opportunity for any confusion. At the same time it was acknowledged that the most important consideration is the need to understand the community and identify who might be the most trusted stakeholders for communicating with them.

Leadership

Leadership was also a focus of the discussion, not only on communication but in moving projects forward in general. It was suggested that currently instead of injecting carbon dioxide we are injecting hesitation by taking so long to get real projects off the ground. However, the blame for the delay was not placed on any one stakeholder group. Rather it was felt that it was important for both government and industry to show leadership on CCS in general. The need for regulatory clarity was also mentioned when discussing the issues of leadership as an essential component of generating long term community acceptance for specific projects.

From the practitioners' perspectives

When practitioners shared their experiences from around the world on the findings from their research there were some very similar and overlapping themes which are detailed below.

Setting CCS in the context of other energy options

For CCS to be even considered there is a fundamental need for communities to believe that climate change is a critical issue that needs to be addressed. In addition, research has demonstrated that people wish to talk about CCS in comparison to other low-carbon technologies as part of an energy portfolio. This helps them to understand the relative risks, benefits and costs of each option. Research has demonstrated that once individuals recognise the limitations of other technologies they may reluctantly accept CCS as the most appropriate solution.

Importance of language used

Language has also been identified as important for creating understanding and meaning about CCS. When the two words storage and sequestration were compared it was found that storage was a better word because it was more easily recalled. Individuals were able to accurately define the principle underlying the technology when storage was used and in general it created a more positive image of the technology. In other words it was seen as providing a more simple and accurate description of the technology which for the lay public is most important.

Tailoring for different audiences

Within each community there are various audiences that need to be considered, particularly for targeting engagement processes and key messages. Research identified segregating the audiences into influential stakeholders, community and education are the most effective way to tailor and target communication activities. These groups are relevant at both the national and local project level. Because of their levels of influence, in general, influential stakeholders justify more resources, both time and money, being allocated to them, but each category needs consideration when planning any communications and engagement strategy.

Instability versus stability of opinions

Research has shown that the majority of the general public know very little about CCS and that individuals are quick to provide their opinion about a technology even if they have little or no knowledge about it. However, these uninformed opinions are unstable and change easily over time. To gain a most stable opinion it is important to provide individuals with the opportunity to engage with easily comprehensible information that is seen to be balanced and credible. Time for individuals to process such information and weigh up the consequences of a technology does create opinions that are more stable over time.

The importance of process and early involvement

With any new project each community will hold valid concerns about the issues that CCS presents to them. By involving stakeholders early in the process of a new project provides a greater opportunity for them to have some ownership and influence on the outcomes. Early involvement also helps to establish

credibility for the project developers and is a way of building trust with the community. Examples where communities have not been involved from the start have tended to have more negative outcomes because of the lack of flexibility, in the community being able to exert some influence over the project.

Multiple sources of information for increased credibility

When communicating to the general public various organisations will have different credibility to them. For CCS to be accepted those communicating the message must be seen as credible. Research has shown that when multiple stakeholders join forces to communicate a message the message is more likely to be well received and trusted, particularly if those communicating the messages are generally known to have opposing views. For example, when NGO's team up with industry partners the information is more likely to be trusted and well received than the information coming from just one of those sources.

What can we learn?

The imperative to deploy CCS projects has led to technical characterisation of sites for storage as the presentation of CCS projects as though they are a done deal. However, experience suggests that developers need to move to a more deliberative process working with communities on generating the best options for each community. Instead of asking questions such as: *How can people best be educated about the safety and benefits of CCS? How can misperceptions be corrected? How can trust and confidence in CCS be enhanced?* and *How can broad public support for CCS be created?* Another option may be to set the discussion into a decision focused framework, recasting the discussion in terms of *decisions that must be collectively made* instead of *responding to decisions that have already been made by others* -usually experts, government agencies, or industry.

Working with stakeholders (at the level of the public, industry, experts, and regulators) to identify decision specific objectives that emphasize maximizing benefits, and minimizing costs and risks is likely to be more positively received than the done deal approach. Deliberations may also be structured to establish performance measures, which may be derived from both expert and non-expert groups. Structuring public outreach and engagement in this manner requires that effort be expended in terms of public education in the vein of all of the considerations outlined above. Implementing these types of best practices will help support a decision making process that leads to more positive outcomes as opposed to convincing people about the safety or appropriateness of a particular course of action like CCS.

Additional ways that the IEA GHG social research network was seen to help industry included developing a practical toolkit to assist projects proceed by shortcutting the learning from experience; provide further ideas for developing trust with communities; working on identifying the benefits a CCS project might bring to a community; continue to conduct applied research alongside projects being deployed so that local opinions can be monitored and used to inform project developers and communities on the findings; building capacity among industry to assist in planning communication strategies; share learning from the deployment of other technologies; and help to build knowledge about CCS and the role it may play for climate mitigation across communities.



1. INTRODUCTION

An informal network of social scientists has been conducting research around various aspects of public perceptions to carbon dioxide capture and storage (CCS) for many years. More recently this network has been formalised under the International Energy Agency Greenhouse Gas R & D (IEAGHG) programme. Although much of this work has been shared with fellow researchers and some interested industry and government representatives there are still large gaps of knowledge transfer. This is mainly due to so many of the CCS conferences being focussed on technological developments with limited time for public awareness and acceptance issues. As such, the Global Carbon Capture and Storage Institute (GCCSI) sponsored a conference to facilitate the exchange of information and knowledge developed in this sphere.

This report provides an overview of the one day conference "Communicating for CCS Projects – What have we learned in five years?" which was hosted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) on behalf of the GCCSI. The conference was held on Wednesday 4th November, 2009 at the Le Meridien Etoile, Paris, France and provided an opportunity for high level industry and government representatives to engage with representatives from the IEA GHG social research network and discuss issues with colleagues in relation to public awareness and communicating for CCS projects. Based on the large group process developed by CSIRO there was a mix of presentations, and time for discussion, and group interactive exercises built into the program. Each of the small tables had a social researcher present to facilitate the discussions and document the major themes that were emerging.

In total, ninety-eight (n=98) participants attended the conference representing seventeen (n=17) countries. These included mainly developed countries such as Australia, France, USA, UK, the Netherlands, and Norway. Not surprisingly, France had the highest number of representatives with 22 in total. The majority of attendees were from industry and the rest from a mix of research, government and non-government organisations.

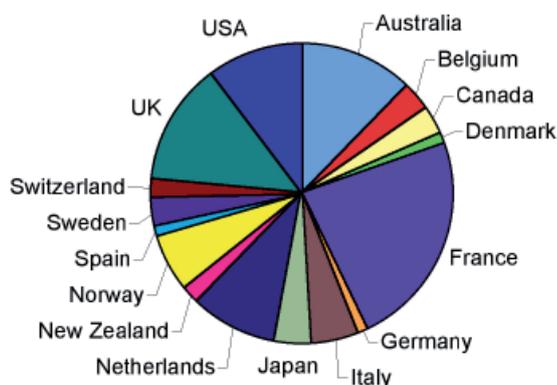


Figure 2: Participating countries



2. THE WORKSHOP – GOALS AND EXPECTATIONS

2.1 Why are we here?

As part of the introductory session each group was given time to discuss their individual motivations for attending the workshop. Although each person volunteered a variety of reasons which were recorded by the table facilitators there were many common themes arising from the individual expectations. These have been grouped together and expanded upon below in no specific order of priority.

1. Networking: A common theme that arose from most tables was the opportunity provided by the day for increased networking. This included a range of expectations including: meeting new people as well as those potentially new to the field; having time to catch up with other individuals facing similar issues and to hear how they are dealing with the issues; and the opportunity to interact with individuals from different disciplines, in particular the social researchers. This was described by one person as an

...opportunity for horizontal communication to discover and access different disciplines and their approach to communicating for CCS.

2. Knowledge transfer/social learning: Making connections between what the social scientists had learned from their research to industry was a major expectation for the day. Particularly to find out what else is going on in the social science research landscape. How this can be applied to real projects and how to involve social scientists in more projects to ensure lessons can be transferred along the way.

3. Identification of issues: Time to identify the issues associated with communicating CCS and gaining public acceptance was also felt to be very important. Some discussed this topic in terms of understanding the direction that industry as a whole is taking with communication and the field of public acceptance and awareness. Issues that were raised in the initial discussions included:

- a. How to deal with the economic/cost argument for both the informed and uninformed?
- b. How to build trust and confidence in CCS?
- c. Who should be the experts to provide input into communication?
- d. How do the different government systems deal with CCS?
- e. What are the issues with onshore storage for local communities?
- f. How should we deal with misinformation as well as misperceptions?

4. Case Studies: Many expressed a desire to learn from other real life experiences to find out what had worked and what might have gone wrong. And more specifically what was done to overcome any of the difficulties encountered.

5. How to address stakeholder needs: This was particularly focused on dealing with local communities, politicians and policy makers. It was also expressed as gaining a better understanding of the contrasting needs of the general public in understanding the role of CCS in addressing climate change versus dealing with particular projects.

6. Identifying better methods of communication and engagement: This ranged from a feeling that communicating from a scientific standpoint was not working. It was raised that some felt new approaches for getting concepts across would be required if local community acceptance was to be a reality. Some even hoped that a template for communicating to the public could be developed. As well as ideas for developing materials that are easily understood by the lay public.

7. Timing and prioritisation: Discussion around this theme included when was the right time to communicate to stakeholders and how should one prioritise the stakeholders within a specific project?

3. THEORETICAL CONSIDERATIONS FOR THE COMMUNICATION OF CCS

3.1 Expert Presentations

After the icebreaking session two key note speakers, Professor Joe Arvai from the Environmental Science and Policy Program, Michigan State University, USA and Professor Michael Siegrist from the Institute for Environmental Decisions, ETH, Zurich made individual presentations. Professor Arvai focussed on risk communication, risk perception, decision making and the importance of partnering with stakeholders around projects. Professor Siegrist reported on current research on the topic of CCS which had revealed many lay people hold misconceptions about carbon dioxide, which in turn influence the risks and benefits associated with carbon dioxide and therefore, the likely acceptance of CCS. Professor Siegrist also reiterated the importance of trust as a significant factor in progressing CCS as well as acknowledging lay concerns that CCS may hinder sustainable development.

3.1.1 Presentation from Professor Joe Arvai



Risk Communication

- Any purposeful exchange of information, via the transfer of risk messages, about health or environmental risks between interested parties. Included in these messages is information about...
 - ...levels of health or environmental risk
 - ...significance or meaning of health or environmental risk
 - ...decisions, actions, or policies aimed at managing or controlling health or environmental risk.
- Exchange of information and opinions, and establishing an effective dialogue, among those responsible for assessing, minimizing, and regulating risks and those who may be affected by the outcomes of those risks.

Risk Communication

Risk Communication (or education) → "Corrected" Risk Perceptions → "Better" Decisions

Risk Communication

Risk Communication (or education) → Support for risk management decisions → Enhanced trust in managers

Risk Communication

TRAFFIC: Official says wait for end result

Risk Communication

Risk Perception and Communication Unplugged: Twenty Years of Process'

Berach Fleckhoff

Table 1. Developmental Stages in Risk Management (Ontogeny Recapitulates Phylogeny)

- All we have to do is get the numbers right
- All we have to do is tell them the numbers
- All we have to do is explain what we mean by the numbers
- All we have to do is show them that they've accepted similar risks in the past
- All we have to do is show them that it's a good deal for them
- All we have to do is treat them nice
- All we have to do is make them partners
- All of the above

Making them partners...

ENVIRONMENTAL THREAT

Plutonium 238

Plutonium is the most toxic substance in the universe.

Making them partners...

Satisfaction with DM process

Support based on DM process

Who should Participate?

Benefits of exploration

Benefits vs. Risk

Provide more funding?

Risk Communication

CAN/CSA-QR80-97 Risk Management: Guideline for Decision-Makers

A National Standard of Canada

Figure 1: Steps in the DM Risk Management Decision-Making Process - Single-Stage Model

Making people partners...

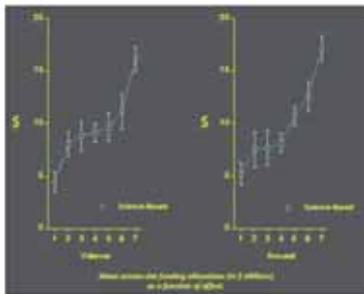
- Educate people about problems, opportunities, risks, and benefits.
- Help to facilitate discussion and deliberation.
- Provide opportunities for question and answer.
- Provide points of comparison that provide people with much-needed context.
- Provide opportunities for decision making and reporting.
- **Helping people address difficulties and deficiencies in decision making.**

Judgmental Biases

Risk Type	crime	deer
Human Health	4	5
Environment	5	6
Property	5	6

Wilson, R.S. & J.L. Arvai. 2006. *Journal of Risk Research*, 9:165-176.

Making people partners...



Arvai, J. & R. Gregory. 2003. *Environmental Science & Technology*, 37:3469-3476.

Making people partners...

- Subjects in this approach demonstrated:
 - Higher degree of satisfaction with choices
 - Greater ease during decision making
 - Greater trust in providers of information
 - Higher knowledge level

What's missing?



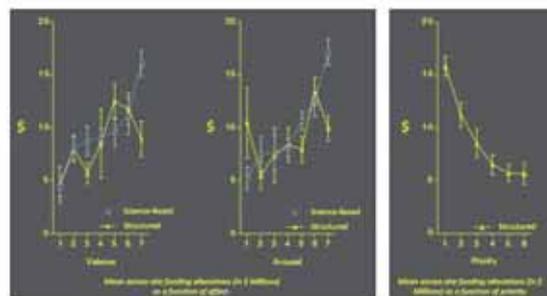
Decision Structuring



Tools

- Decision structuring tools, deployed during deliberative sessions, include...
 1. Decision Trees
 2. Objectives Hierarchies
 3. Portfolio Builders
 4. Consequence Matrices
 5. Swing Weighting
 6. Even Swaps
 7. Direct Ranking

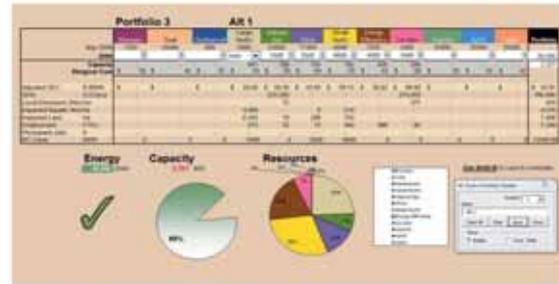
Decision Structuring



Arvai, J. & R. Gregory. 2003. *Environmental Science & Technology*, 37:3469-3476.



Portfolio Builder



Portfolio Builder



Consequence Matrix

Scenario	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Scenario 1	100	100	100	100	100	100	100	100	100	100	100
Scenario 2	100	100	100	100	100	100	100	100	100	100	100
Scenario 3	100	100	100	100	100	100	100	100	100	100	100
Scenario 4	100	100	100	100	100	100	100	100	100	100	100
Scenario 5	100	100	100	100	100	100	100	100	100	100	100
Scenario 6	100	100	100	100	100	100	100	100	100	100	100
Scenario 7	100	100	100	100	100	100	100	100	100	100	100
Scenario 8	100	100	100	100	100	100	100	100	100	100	100
Scenario 9	100	100	100	100	100	100	100	100	100	100	100
Scenario 10	100	100	100	100	100	100	100	100	100	100	100

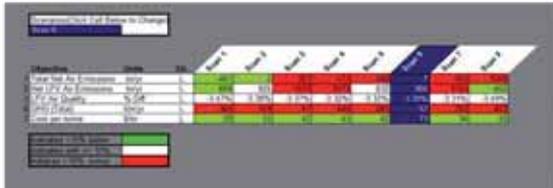
Swing Weighting

Criteria	Weight	Importance	Swing	Best	Worst
Alternative: GHG Emissions	CO2 equivalent emissions	100000	1000	100	100
Alternative: Local Air Emissions	PM10	100000	1000	100	100
Alternative: Land Area	Land Area	100000	1000	100	100
Alternative: Aquatic Area	Aquatic Area	100000	1000	100	100
Alternative: Jobs	Construction jobs	100000	1000	100	100
Alternative: Jobs	Permanent jobs	100000	1000	100	100
Alternative: Noise	Noise (L _{eq})	100000	1000	100	100
Alternative: Visual Impact	Visual Impact Scale	100000	1000	100	100
Alternative: Visual Screening Impacts	Visual Screening Impact Scale	100000	1000	100	100
Alternative: Innovation	Innovation Scale	100000	1000	100	100
Alternative: Sustainability	% Renewable Power By Renewable	100000	1000	100	100

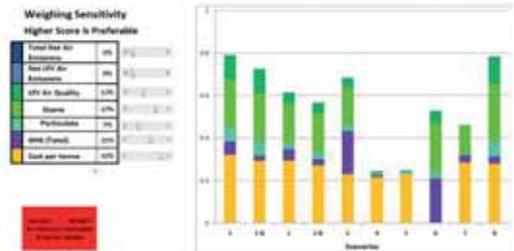
Direct Rank: Options

Alternative	Rank	Weight
Energy Plan		
FS&I		
Mix 2		
Mix 4		
Connect grids		
Offshore wind		

Scenario Comparison

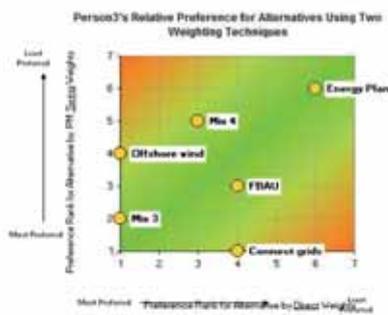


Optimization Model



The states have been normalized so that for any given criteria the best result scores a 1 and worst a 0. These are multiplied by the weight % and compounded to give a relative weighting for each scenario. Note: there is no discernible difference between any quality criteria, they score the same across the scenarios.

Individual Differences



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<http://www.msu.edu/~sknkrks>



3.1.2 Presentation from Professor Michael Siegrist



ETH
 Swiss Federal Institute of Technology
 Institute for Environmental Decisions IED

Public Acceptance of CCS

Prof. Dr. Michael Siegrist
 Institute for Environmental Decisions IED
 Consumer Behavior

ETH
 Swiss Federal Institute of Technology

CARMA - Research on CCS in Switzerland

Funded by: Swiss Government, ETH Zurich, Alstom et al.

ETH
 Swiss Federal Institute of Technology

Experiential System	Analytic System
1. Holistic	1. Analytic
2. Affective: pleasure-pain oriented	2. Logical: reason oriented (what is sensible)
3. Associative connections	3. Logical connections
4. Behavior mediated by "vibes" from past experiences	4. Behavior mediated by conscious appraisal of events
5. Encodes reality in concrete images, metaphors, and narratives	5. Encodes reality in abstract symbols, words, and numbers
6. More rapid processing: oriented toward immediate action	6. Slower processing: oriented toward delayed action
7. Self-evidently valid: "experiencing is believing"	7. Requires justification via logic and evidence

Siegrist et al. 2004

ETH
 Swiss Federal Institute of Technology

Interview Design

- "Neutral information"
- No information about risks or benefits
- No information on the nature of CO₂
- Open-ended questioning
- Stimulating respondents to tap their beliefs
- "Can you explain this in detail?"

(IFCC, 2002)

Technical Concepts	n
Over-pressurized reservoir	10
Diffuse harm to ecosystems	9
Gas is rising (Leakage)	9
Earthquakes	7
Atomic waste associations	5
Characteristics of CO ₂	3
Impact on microorganisms	3
Groundwater impact	2
Gene technology associations	2

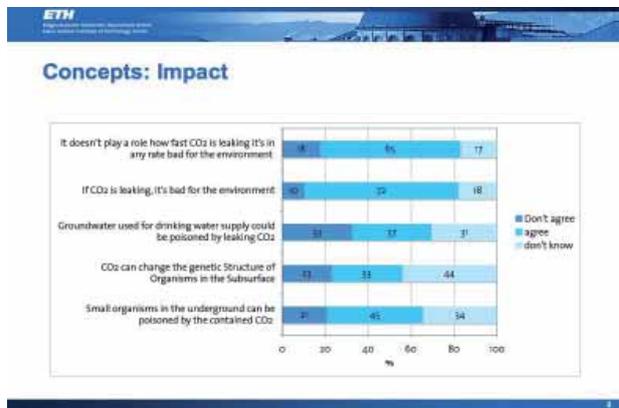
(Wolkvist, Vriesema & Siegrist, 2008)

Socio-economical Concepts	n
Renewables	10
Sustainability	9
Rebound effect	8
NIMBY effect	4

(Wolkvist, Vriesema & Siegrist, 2008)

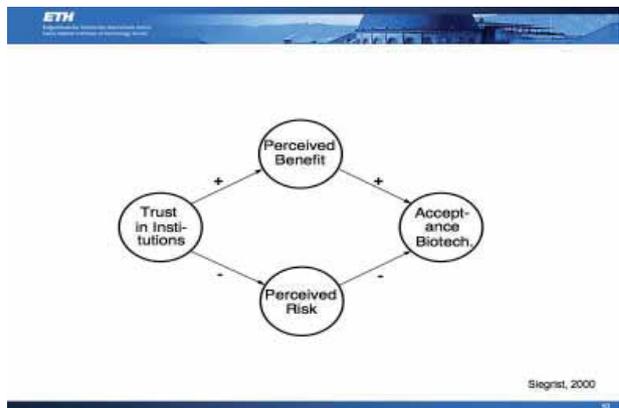
Respondents

- Representative sample of the German-speaking Swiss population (N= 2000)
- 654 completed questionnaires (response rate 33%)
- 36% of respondents have heard about CCS before



Concepts: Socio-economics

Concept	Level of agreement
The development of CCS competes with the development of renewable energy technologies	~4.5
CCS is giving wrong incentives, people could think that the problem of climate change is solved	~4.0
CCS is only fighting the symptoms of climate change but not the underlying disease	~3.5



Conclusion

- Lay people have misconceptions about CO₂
- Risk and benefit conceptions are influenced by these misconceptions
- Communication efforts are needed in order to reduce such misconceptions
- Lay people are concerned that CCS may hinder sustainable development
- Trust will be an important factor influencing acceptance of CCS
- Future research is needed to address the following questions
 - How can misconceptions be corrected?
 - How can we improve trust and confidence in the CCS industry?
 - How can people, who are most concerned about climate change, be converted into supporters of CCS?

3.2 Discussion arising after the presentations

3.2.1 Trust

One of the major discussion themes that arose as a result of the two presentations was the issue of trust. It was acknowledged that trust was essential and a question arose on how to create trust in organisations. It was recognised that some organisations are already trusted while others are not, and such a legacy can make an extreme difference to a project's success. Best reflected in the quotes below:

Trust at the local level is key? How do we get local trust? Being a partner is the way to get local buy-in.

Would anyone outside this room trust us? Where are you going to get trust? Where is the point where you can get trust?

A suggestion for building trust was to incorporate values focussed discussions when developing and evaluating a range of options for a community. Professor Arvai suggested that this would help to highlight the priorities each community placed on a variety of outcomes. This would assist in the identification of local benefits to a community that would add justification for a project to progress.

3.2.2 Creating partnerships

Building on the concept of trust much of the discussion also focussed around the idea of creating partnerships with communities. Process was seen as an important element of creating successful partnerships with communities including the need for transparency and actively engaging communities by providing them with responsibilities and involving them in some of the project development from the outset. The concept of partners was also discussed in terms of who to partner with. That is, it was recognised that a true partnership may be wider than just the local community and the project developer, and may also include local NGO's, finance and insurance companies, government bodies and so forth.

Providing options to communities was also highlighted. This included the option of working with a range of communities from the very beginning of the concept, before a final site location is decided, to provide some flexibility and opportunity for stakeholders to influence how the project will develop. Dialogue and consultation were two words that were used often in discussing the role of partnerships. This included the statement:

How do we have dialogue with communities that has the right element of consultation while still progressing a particular project?

It was also recognised that creating options meant that project developers would need to be able to adapt to the demands and needs of certain communities to ensure they were living up to their commitment of true partnering.

An additional focus for creating successful partnerships was the concept of providing clarity around the regulatory frameworks and oversight. It was felt that communities and all stakeholders would need confidence to understand where the buck stopped if anything was likely to go wrong.



3.2.3 Creating a vision for CCS

Discussion around this theme recognised it was essential to communicate the reason for CCS. This included focusing on the role of CCS being a transition to a low carbon economy and that other opportunities would also need to be pursued. Suggestions here included citing examples such as hydrogen for transportation and enhancing the opportunities for carbon negative approaches. Ultimately it was agreed that the focus should be on a portfolio of options and that the only way to communicate CCS was part of that portfolio. Suggestions included:

When we talk about CCS we have to be quite blunt. Coal, oil and gas to a lesser extent are dirty. We have to use them for the next 50 years and therefore we need CCS to mitigate the emissions.

We need to convince the public that CCS is related to the magnitude of the emissions problem and is a must for centralised large power generation.

However from a social science perspective one would caution that convincing is not necessarily the correct approach. Social and psychological theory suggests when individuals hold an entrenched view, processes used to convince them to change their point of view is likely to be unsuccessful. Rather the literature suggests the aim should be to inform and educate an individual to equip them with the necessary information to make an informed choice. Therefore it is important that the information presented is objective, from a trusted source and provided in a safe and non-threatening way.

Extending the idea, another table suggested it was important to be clear about the role of demonstration projects. That is:

the goal of demonstration projects is to transform technical uncertainty into confidence – and not to save the climate change problem immediately.

It was discussed that the idea of having the facts on the table early, about what CCS can and cannot do, would help to clarify misperceptions about the technology. This led to the need for early communication and engagement to lessen the opportunity for misinformation.

3.2.4 Identifying the local value proposition

All of the above pointed to the idea of the need to create a local value proposition for a CCS project to be sited in a specific community. This included ensuring all of the stakeholders from local politicians and policy makers to key community members understood what was involved in the project. That any misperceptions were clarified and communication was open and transparent about CCS. It was also highlighted that some communities may not believe in climate change and in these instances the opportunities for CCS were severely diminished as without the climate change problem the value proposition of allocating large amounts of funding to CCS over other issues was limited.



4. INDUSTRY EXPERIENCES FOR THE COMMUNICATION OF CCS

4.1 Learning from case studies

In this session three presentations were provided to share findings from real projects. Once again, there were many common themes which arose from the presentations which concurred and built on the suggestions from the earlier presentations.

Lacq, Total (Appendix B)

Suggestions from Total's Lacq project included:

- It was important to allocate adequate resources early in the process and understand all of the relevant stakeholders by mapping all of the social relationships that would impact on a project.
- Acknowledge the asymmetric decision making rule, that all participants in the dialogue will not take part in the final decision, but all participants in the decision making take part in the public dialogue
- It is essential to establish the right level and timing of stakeholder management including both those at the local and regional level and those at the national level.
- The importance of the proper timing for public consultation.
- That it was more efficient to have the technical project people available to answer questions during consultation; and finally
- That the public generally have a limited understanding of geoscience and there is a need to understand this lack of knowledge when communicating about CCS.

Barendrecht, Shell (Appendix C)

The key elements identified from the Shell, Barendrecht project for a public acceptance strategy included the need for:

- Actions to improve the "playing field"
- Actions to improve the local value proposition; and
- A good communications strategy that takes account of the identified strengths and weaknesses of the playing field and the local value proposition.

However, in reality for the Barendrecht project it was suggested that:

- the playing field was not favourable in some ways because the government delayed communications
- the national and global value proposition coming from the learnings from the Barendrecht project were easier to identify than the local value proposition. This highlighted the importance of setting the context for the local community and engaging on the risks and impacts.
- the risk perception challenges need to be taken into account when communicating about a project.

Other issues deemed to be outside of the project's control that also affected public perception included the role of the expert. In the Barendrecht case there were a number of opposing "experts" who presented cases both for and against CCS. These were played up in the media who had limited knowledge of CCS and in some cases caused extreme alarm about the safety of the project. Margriet Kuijper introduced the term "NATME: Not According To My Expert" as a critical influencer in public opinion as there are many considered "experts" within society and it is difficult to control their messages when they have a vested interest in either supporting or averting a project progressing.

Regional Carbon Sequestration Projects, National Energy Technology Laboratory (Appendix D)

The final presentation focused on the development of a best practice manual for public outreach and education around carbon storage projects that had been developed in the United States. Within the manual there were ten identified best practices to help project developers establish a more productive engagement process for specific projects. The ten steps included:

1. Integrate public outreach with project management;
2. Establish a strong outreach team;
3. Identify key stakeholders;
4. Conduct and apply social characterization;
5. Develop an outreach strategy and communication plan;
6. Develop key messages;
7. Develop outreach materials tailored to the audiences;
8. Actively oversee and manage the outreach program throughout the life of the CCS project;
9. Monitor the performance of the outreach program and changes in public perceptions and concerns; and
10. Be flexible and refine the outreach program as warranted.

4.2 Reflections from the case studies

The discussion arising from the industry case studies was animated. It was agreed that it was important to have the opportunity to share the problems that different organisations were experiencing in a safe and non-judgemental environment such as the conference. Many participants expressed a need to speak frankly and at length about the issues being faced when trying to communicate and engage communities on a CCS project.

4.2.1 Who should be the leader in communicating about CCS?

This question arose across several table discussions. Participants recognised that it is difficult to identify who should have the responsibility to lead a communication plan given that many projects were being co-funded by industry and government respectively. Some felt that it should be the responsibility of governments to do the outreach and education of the public. However, it was suggested that there appeared to be an underlying theme that it was the responsibility of the developers. This issue is further compounded by the fact that it is well known that in many countries people do not trust government or industry and therefore their ability to deliver the message is questionable.

Overall it was resolved that it is difficult to answer the question, and the answer may be different for each project site. However, it was recognised that a collective approach would be the most effective, where joint messages, from multiple stakeholder groups, were built to limit the opportunity for any confusion. It was also acknowledged that the most important consideration is the need to understand the community and identify who might be their most trusted stakeholders. At the same time ensuring transparency in the processes so that all stakeholders have access to the same information. Keeping the discussion local was felt to be a priority. This was demonstrated in the feedback from the Lacq project, where the company was able to incorporate feedback from the community and respond to their concerns as the project developed.

4.2.2 Leadership

Leadership was also a focus of the discussion, not only on communication but in moving projects forward in general. Some tables suggested that currently instead of injecting carbon dioxide we are injecting hesitation by taking so long to get real projects off the ground. However, the blame was not placed on one stakeholder group. Rather it was felt that it was important for both government and industry to show leadership on CCS in general. The need for regulatory clarity was also mentioned when discussing the issues of leadership as an essential component of generating long term community acceptance for specific projects.

4.2.3 Identification of local benefit

Another key theme was the recognition that who ever does the communication it was essential for projects to clearly identify and articulate the local benefits a CCS project would bring. Without the local benefit it was felt that projects are likely to face more opposition, as evidenced with the Barendrecht case where the local benefit was less easy to identify.

There was a suggestion that collaboration and the opportunity to share knowledge and ideas from projects as it came to hand would be important. This was identified as an opportunity for the social research network to ensure they worked alongside projects to identify the benefits that were perceived important to a community. At the same time it was recognised that generalising benefits across communities was not implied and that it would be important to continue to work to identify the local priorities and benefits. However there may be some similarities between communities. As part of this discussion the need to identify utilities of carbon dioxide was raised as a way of contributing to the success of CCS.



5. AROUND THE WORLD – SOCIAL RESEARCH ON CCS

5.1 Global coverage

During this session representatives of the social research network made a short presentation of key findings that have arisen from their research in relation to CCS. Below is a summary which reflects the key findings from their research represented in a single slide. Where appropriate a short description elaborates on the concept.

5.1.1 Dancker Daamen, University of Leiden

Some findings from public trust research

- **Trust in CCS stakeholders**
 - People consider both environmental NGOs and industrial organizations to be fairly competent (i.e., to have significant expertise on the issue), but expect NGOs to be involved in CCS out of public-serving motives (e.g., concern for the natural environment) and expect industrial stakeholders to act upon organization-serving motives (e.g., economic gain)
 - As a result, people place more trust in NGOs than in industrial organizations or than in the Dutch national government.
- **Organizational communications need to be congruent with inferred organizational motives (creating perceptions of integrity) to instigate public trust**
 - An oil company instigates most trust by communicating motives that people expect it to act upon (i.e., economic gain). Claiming that in addition to economic concerns, the organization is also concerned about the natural environment is okay. However, claiming environmental concern without acknowledging the 'true' organizational motive instigates distrust rather than trust.
- **Representation of different parties in CCS decision-making instigates trust and fosters acceptance of CCS**
 - The involvement of both NGOs and industry in the CCS decision-making process is crucial to instigate trust in the decision process. Trust, in turn, influences public acceptance of the policy decisions made.
 - Of course, it is important that decision makers communicate to the public that parties with different identities and interests are involved in the decision-making process.

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Communicating for CCS
Paris, November 4th 2009

How does perceived credibility of stakeholders affect laypeople's information selection, information processing, and attitude formation regarding CCS?

- * Communications about CCS are counterproductive when stakeholders that provide information about CCS are perceived as low in credibility by the public
 - E.g. When laypeople receive two-sided information about CCS from a stakeholder that they perceive as low in credibility, they prefer to select information that counters the expected viewpoint of this stakeholder. So, when people expect a low credible stakeholder to be a proponent of CCS, they mainly select information about the disadvantages of CCS. This subsequently results in relatively negative attitudes towards CCS.
- * Communications about CCS are most effective when multiple stakeholders that represent different perspectives about CCS collaborate in information provision about CCS.
 - When an oil company and an NGO join forces in information provision about CCS, people perceive this (collaborative) information to be of higher quality than when either one of these stakeholders provides the same information separately.
 - Collaborative communications do not harm the reputations of collaborating stakeholders. So when an environmental NGO and an oil company provide information about CCS together, the reputation of the most credible stakeholder (the NGO) is not harmed by this collaboration.



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Communicating for CCS
Paris, November 4th 2009

5.1.2 Samuela Vercelli, Spienza University of Rome

A life – death issue

**Facing reality,
being honest and trustful?**



**How do your feelings and thoughts
come together with communication
strategies and well designed
communication messages?**

**Samuela Vercelli
Spienza University of Rome**



When we work on CCS, we work on climate change, we work on the hard reality of dramatic environmental transformations. Children perceive very clearly that we are facing a life-death issue. It is not, only, if we will be able to look at television, to keep our standards. It is whether we care for life, or not. So, while children invite us to look at reality, we need to know that any solution will work only if we are honest, thus trustful. It is a big challenge for those of us who work in big organizations or private companies: communication strategies might not fit with our own feelings and thoughts. How can we harmonize different perspectives to produce communication messages that respect life?

5.1.3 Marjolein de best Waldhober, ECN, The Netherlands

Pseudo-opinions
Marjolein de Best-Waldhober

**Have you heard of large, modern coal fired power plants
where CO2 is captured and stored underground?**

- -no (not heard of) **68%**
- -a little **28%**
- -yes **4%**

Can you give this technology a grade?

- "No opinion" **27%**
- gives a grade **73%**

Several studies show that people are inclined to give their opinion when asked, even if they have no knowledge whatsoever on the topic at hand (Bishop, Oldendick & Tuchfarber, 1986; Schuman & Presser, 1981). This is what is found for the topic of CCS as well. Studies using large samples of the Dutch general public by de Best-Waldhober and Daamen (2006; 2008;2009) show that a substantial part of the general Dutch public lacks even the most basic knowledge that is needed to have (or construct) a well considered opinion on these issues. Furthermore, their results show that only part of the respondents who state their lack of knowledge withhold themselves from giving their opinions. For instance, on average half of the respondents who just admitted to having never heard of a specific modern technology, did give an overall evaluation of this technology. These opinions prove to be very unstable, changing easily over time as well as after contextual information or mood changes and are therefore not suitable as predictors of future public opinion. By contrast, opinions on CCS options after valid, balanced, relevant and comprehensible information do prove to be stable in more than one way; informed opinions on CCS options are both stable over time, consistent with the evaluation of consequences of these options, as well as much less easily influenced by contextual information.

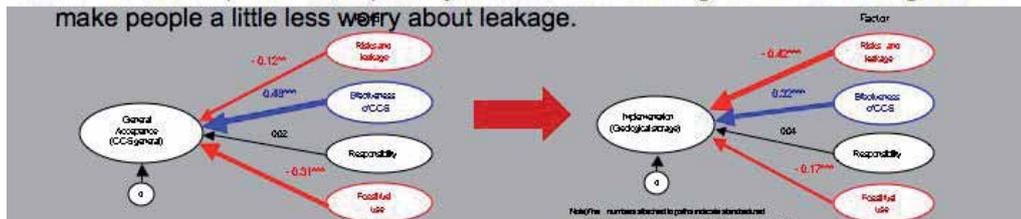
5.1.4 Kenshi Itaoka, Mizuho Institute, Japan

Influential aspects and factors of CCS in public perception: we found through national public surveys

People would value potential effectiveness of CCS in processing general opinion as one of GHG mitigation tech. but in considering implementation they would stress concern about risk and leakage more.

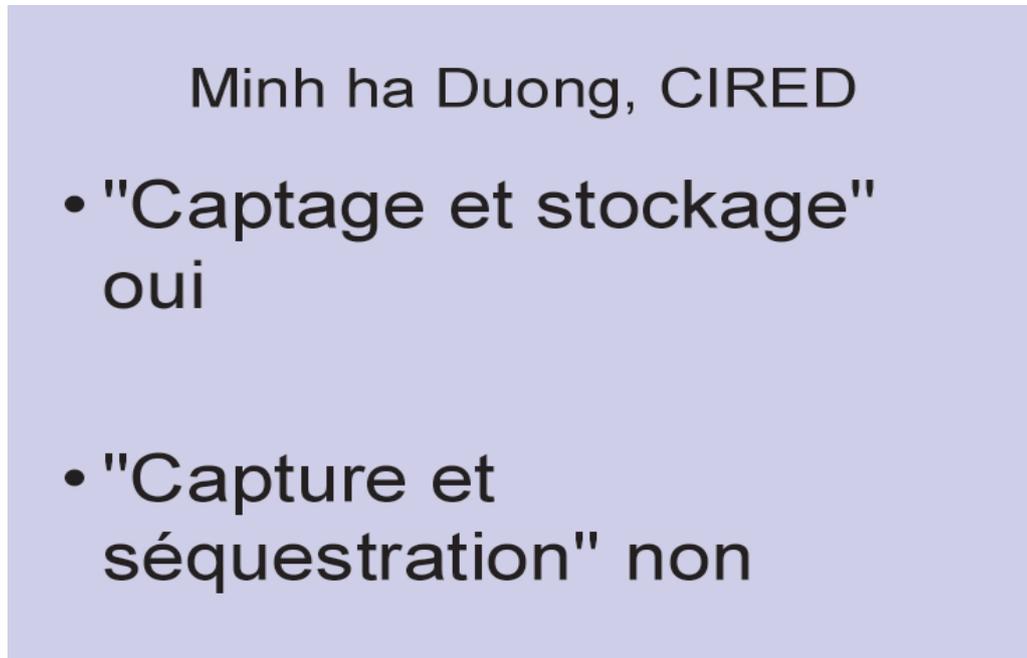
- We found influential four factors (aspects) of CCS:
- **Understanding of potential effectiveness; Concern about risk of leakage; Awareness of responsibility** for mitigation of CO2 emission ;and **Concern that CCS would allow us to keep using fossil fuel**

Some information provision, especially about **natural analogue of CO2 storage** would make people a little less **worry** about leakage.



We found through **focus groups** in a potential site,

- In early stage of site selection, people simply want to know more about what CCS is.
- They care about other factors in communication, such as **credibility of information provider**.



We compared the words "Storage" and "Sequestration" with a questionnaire using a split sample, representative of the French population aged 15 and above. The only difference between each of the half samples was the word used. From the research we concluded that "Storage" is a better word to use because when people are asked about "capture and storage", as opposed to "capture and sequestration", they are more likely to:

- Declare that they heard about it
- Define correctly the principle of this technology
- Say that the word helps to understand what it is
- Say that the word gives a good image of the technology

Sequestration implies more the idea of long term enclosure and monitoring. Maybe this is why more people approved the use of "carbon capture and sequestration" than "carbon capture and storage". But this effect does not justify the use of "sequestration", because the results were not statistically significant. On the contrary, using "storage" avoids the opportunity to look like one is "cooking up" the language.

In summary, we found "storage" is the shorter, simpler and clearer option even though sequestration is the more precise and sophisticated word. For a generic name, to be consumed by the lay public, it is always a good idea to put forward clarity even at the cost of technical precision (i.e. jargon). These considerations give an unambiguous gender (in French) to CCS: male. Confirmed by many depictions that it is a macho technology.

Who are we communicating to?

Know the audience	
Influential Stakeholders	\$\$\$\$
Community – SME's	Small group discussions
Education	Universities, Schools
Project specific •Influential •Community •Education	Local regions – working with industry partners



This slide depicts a potential way for identifying stakeholder audiences and the way that one may consider prioritising them for communication and outreach activities. As the title suggests influential stakeholders are those who can have a large influence on either the project or wider lay public and so need to have a high level of resources dedicated to them. This can include both time and money to engage with them. Examples of influential stakeholders include those who may finance a project, government regulators, media, NGO's etc. Community – as the name suggests is focused on the broader community who may not have a huge interest in a CCS project. However it operates on the premise that because so many people know nothing of CCS, allowing them to have some broad based understanding of the benefits of CCS, it will help them to make more informed decisions about the technology. The Education component focuses not only on schools at all levels but also wider institutions such as museums, science centres and so on, as a way of ensuring information about CCS is made more widely accessible to the public at large.

Finally, for project specific engagement the three areas need to be considered again. That is identifying who are the influential stakeholders within a local community and ensuring they are targeted with a sophisticated engagement strategy to answer any queries they might have. Additionally the broader public through a variety of engagement activities including local shopping centres, large group processes, access to experts and project representatives etc. and education through schools, libraries and other local opportunities.

5.1.7 Sarah Wade, AJW Group, USA

The following is an excerpt from one of a series of interviews with the same group of several stakeholders about their views on carbon capture and storage. The focus of the conversation was on the value of using of carbon sequestration to address climate change. These remarks illustrate both the challenge in developing effective outreach programs and the importance of doing so.

Sue: [CCS] “would be easier ...It’s been taken out of our hands and somebody else is doing it for us then”

Facilitator: “Is that good or bad?”

Sue: “It’s a bad thing because that’s us being lazy”.

Heather: “Because people would just think, like a quick fix think, ‘oh, they’ve fixed it, so I don’t have to...”.

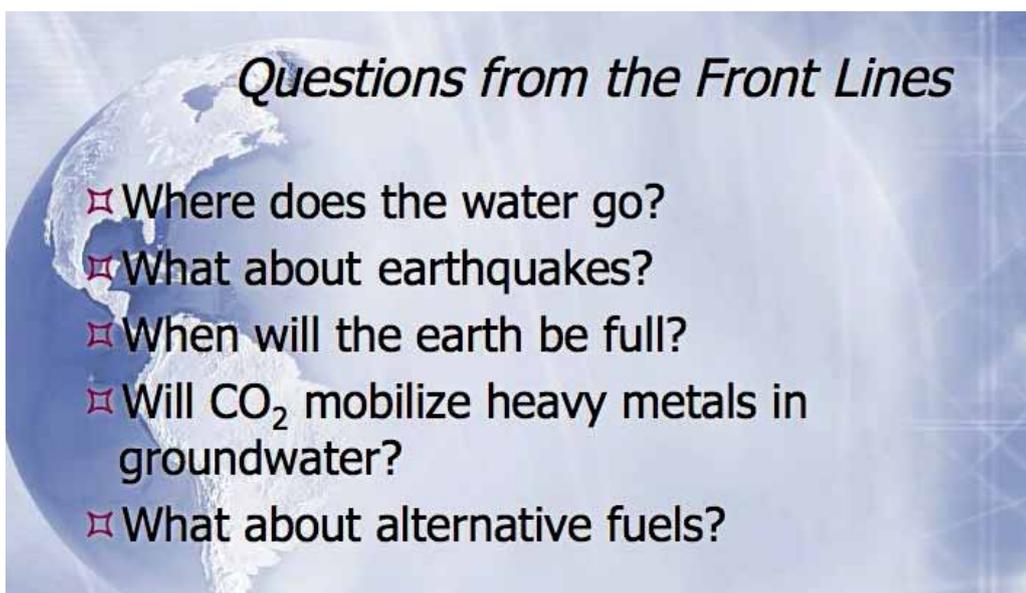
Elizabeth: “....people will just think, ‘oh, well that’s alright then, that’s kind of been fixed.... There’s this invisible body out there that’s taking care of it”

Heather: “Maybe we just shouldn’t tell anyone about it then. Maybe it should be a secret?”

Samantha: “..... can you imagine if there was a leak or something and everyone would go, ‘oh my god, the government are hiding this”

Source: Shackley, Simon, C. McLachlan, C. Gough, “The Public Perceptions of Carbon Capture and Storage,” Tyndall Centre for Climate Change Research Working Paper 44, January 2004

5.1.8 Sallie Greenberg, University of Illinois, USA



Our work has shown that communicating about CCS with multiple audiences centers around key misperceptions about the subsurface and common questions that arise when lay audiences conceptualize CCS based on their pre-existing knowledge. The questions shown here are by far and away the most common questions asked by any audience about CCS.

6. A HYPOTHETICAL DISCUSSION ON THE COMMUNICATION OF CCS

In this session, directly following the presentations from the social researchers, the participants were broken into small groups and provided with a project scenario with a number of questions. Participants worked to develop a communication program for a new IGCC project as outlined below.

6.1 Project Scenario: IGCC Plant with CCS in the EU

You are a team of communication consultants who have been asked to scope a communication strategy for a new carbon capture and storage project. The government today has announced funding for three new flagship projects. The company seeking your help is one of those flagship projects and has been allocated a large sum of public funds towards the project (2 billion euro), for a new IGCC plant with CCS. The project is proposing to store CO₂ in a saline reservoir that is situated near where the new IGCC plant has been proposed but will include some 100kms of pipeline. The plan is to have the project up and running by 2015. However, until now no one in the community was aware that this was likely so the government announcement has taken them somewhat by surprise.

Please consider the following questions:

Given the presentations today what might you need to consider in relation to preparing the communication strategy for this project?

Who do you need to talk to?

What are you going to talk to them about?

What might be the key messages for the projects?

When will you begin the process of communication for each of the groups you have identified?

What other considerations are needed to ensure the communication of the project is a success?

Do you want the job? Why or why not?

Across the groups there were some common steps that were identified. These related to:

- Stakeholder/audience identification – including who are the influential stakeholders that should be prioritised as part of the engagement and communications strategy both locally and nationally. Most suggested a stakeholder mapping exercise that demonstrated levels of influence and opposition to the project would be an essential component of this.
- Identifying the benefits, particularly to the local community, was also seen as critical for progressing the project. This has been an issue for many of the early projects where little local benefit has been identified as a result of a CCS project.
- Social site characterisation was identified as critical for the project developers to gain a greater understanding of the local landscape. This included issues not only in relation to the socio economic status of the area but also recognising any legacy issues that might exist from previous industries operating in the area and the level of risk aversion within the local community as well.
- Need for urgent action to communicate the project was high on the list of priorities. This included not only the standard one page press release, but also ensuring additional information was made available to the media and influential stakeholders within the community
- Dialogue, that is two way communication, with an opportunity to involve the local community in some of the decisions was also seen as an essential component. It was recognised that the amount of flexibility would be dependent on how far the decision making of the project had progressed.
- Identification of trusted messengers and key messages was another common component of the outlined strategies each group developed.

More detailed lists of each of the group discussions can be found at Appendix E.

7. BRINGING IT ALL TOGETHER – A SUMMARY OF THE CURRENT STATUS

As part of the closing session participants were asked to identify the gaps and challenges they are facing and ways that they envisaged the social research network might assist. The common issues are listed below. Then suggestions for specific activities where the social research network may be involved follow.

7.1 What are the gaps and challenges

1. **Prioritising:** This related to identifying the correct order in which to contact stakeholders as well as prioritising who is doing the communicating. This also included ways to ensure communications were targeted and the messages were appropriate for each stakeholder audience.
2. **Who should be involved in the debate?** Questions were raised as to whether the debate should take place at a national level or kept only to the local community. There was also a question as to whether the popular media should also be used in the debate?
3. **Increasing knowledge in the community:** Many participants agreed that it was widely acknowledged that the majority of individuals do not know about CCS and that proactive communication was necessary to raise the profile of the technology.
4. **Need for more CCS in the media:** There was a request for more information about CCS to be in the media that was easy to understand. Examples were cited where currently if you Google CCS most of the information is quite technical in nature. Secondary to this was recognition of the need for credible sources of information.
5. **Monitoring:** Many suggested that it would be useful to monitor how successful specific projects' outreach has been and share what worked and what didn't to the wider industry groups.

7.2 How can the social research network help?

In responding to the identified issues, the major suggestions of where the social research network might help included the following;

1. **Practical toolkit:** There was a request for best practice tools to assist projects proceed today and to shortcut the learning from experience. This request related to developing materials that people can use and apply readily in their own projects. For example, one request was for a slide pack that can be used to communicate with lay persons within a community.
2. **Ideas for ways to develop trust:** Because trust was discussed at several points throughout the day there was a request for more ideas on ways for government and industry to build trust with local communities. The role of partnering with NGO's was also considered as an option for experts, but need to be targeted and engaged in the conversation in a meaningful way.
3. **More work on the benefits of CCS:** As outlined earlier it was felt that developing a series of options which outline potential benefits of a CCS project may be helpful in developing a value proposition for local communities. However, it was recognised that each project would have to take into account the local differences
4. **More applied research:** There was a request that the social research network should be engaged in conducting more applied research to connect their work with the real world. In particular, it was recognised that their advanced facilitation skills would be very helpful when engaging communities.
5. **Capacity building:** Some thought the social research group could help to build capacity among industry to assist in planning individual communications strategies that are successful in their approach.

6. **Sharing learning from other technologies:** Some felt there was an opportunity for the social research team to share knowledge from other technologies and not just CCS. A plea was to not only highlight what to do but also what not to do. It was felt that assistance with raising levels of knowledge in this way would help to make the overall communications problem easier for most project developers.
7. **Increasing knowledge in the community:** It was raised that social researchers could help to build knowledge in project areas, prior to the project foundation and roll out. This was felt to be particularly useful for the general public to increase their overall knowledge and understanding of climate change and the role that CCS might play.

7.3 GCCSI Sponsored International Social Research

Recognising the importance of social research to complement the project work the GCCSI has already sponsored the social research network to conduct some collaborative research projects over the next three years. The focus of each project is summarised below and more detail can be provided from Peta Ashworth at CSIRO – the deliverable dates for each project can be found in Appendix G.

1. **Conference between social researchers and industry** – the Paris conference was one of the first identified deliverables of the GCCSI. Feedback has demonstrated it was a positive success and there is likely to be a follow up event in Japan in November, 2010.
2. **International Comparison of Public Outreach Practices Associated with Large Scale CCS Projects** – this project is taking a case study approach to a number of projects that have already commenced their public communication and outreach strategies. Projects being reviewed include Barendrecht in the Netherlands; Carson Project, Phase III Regional partnerships, the ocean storage projects of Hawaii and FutureGen in the USA; and the Otway Basin and Zerogen in Australia. It is planned to synthesise the lessons from each of these case studies for project developers, to develop a tool kit of resources for projects, and finally conduct three workshops one in Europe, USA and Australia to share the findings of the research.
3. **Synthesise existing materials on public communication and understanding sources of opposition to CCS** – this work is being undertaken by David Reiner at Cambridge. This project seeks to address two critical issues in the evolution of carbon capture and storage (CCS) technologies and the intersection of technology acceptance with the public: a) the quality and availability of public communications materials on CCS and b) the possible sources of opposition to CCS. These two areas are, in fact, related, since the lack of easily understandable or professional materials on CCS from trusted sources may encourage opposition or at least make it more difficult for advocates of CCS to counter opposition charges. More generally, higher quality materials might be expected to be used in any efforts to engage with those who are currently sceptical about CCS, but who are seeking high-quality, trusted and clear basic explanations of the underlying physical processes and technologies and their implications.
4. **Social Site Characterisation tool** – One of the most important risk management tools for CCS projects is careful site selection and project design. The fundamental concept behind this thinking is that sites can be evaluated to identify geological features or characteristics that are likely to decrease or increase the risk of leakage. Once potential risks are understood, a decision will be made to either move to a better site or to design specific provisions into the project to prevent the risk from materializing. Similarly, social characteristics, and other features of a community at a specific site can be evaluated to develop a better understanding of the potential concerns and attitudes towards CCS. This will also help to develop insight into how to effectively engage the community surrounding a CCS project. This process is referred to as social site characterization. This project will focus on the process of collecting and interpreting information about the community surrounding a potential CCS project. It aims to help interested parties do a better job of working with the community in proposed project development sites.

5. **Communicating the results of risk assessment work and evaluation of project design** – This project aims to review the work of the IEA GHG Risk Assessment Network to understand the risk assessment tools being used and the types of issues they are assessing. A number of factsheets will be developed in relation to the frequently asked questions that relate to the more risk related issues of CCS which will be a useful tool for project developers and the communities they work in.

The second phase of this project aims to evaluate the effectiveness of the results of risk assessments being communicated to a local community. It will monitor how various members of the community engage with the process of risk assessment and will examine the challenges and experience gained. It will develop a set of criteria for evaluating the risk communication value of the risk assessment project and others similar, and finally, it will test the evaluation criteria by conducting an evaluation of a specific project being studied.

6. **Extension of FENCO project** – The FENCO project involves scrutinizing the impact of CCS communication on the general and local public. It initially involved a comparative study with seven European countries: Germany, Greece, Latvia, the Netherlands, Norway, Romania and the United Kingdom. The GCCSI component aims to extend this comparison to Australia, Japan and the USA. The study aims to compare the effectiveness of two different methods for communicating CCS which both aim to enable lay persons to develop their own well-considered opinions about the technology. The two methods being compared include focus groups and a narrower version of the Information-Choice Questionnaire. The collected data will be compared to enable conclusions to be drawn concerning the question of how to communicate information on CCS technologies effectively.
7. **Extension of Near CO₂ Project** –The Near CO₂ project proposes to move beyond past studies of public and stakeholder acceptance of CCS in a number of ways and focus on critical questions for successful local projects. In this project it is hoped to survey a local community where there has been some public opposition to understand the concerns of that community in more detail.
8. **Understanding how lay people perceive carbon dioxide** – The views and perceptions of carbon dioxide in the general public underpin how they engage with CO₂ emitting industries and the deployment of CCS technologies. Recent research has indicated that erroneous beliefs may adversely impact on efforts to provide factual information on CO₂ mitigation technologies (Wallquist et al., 2009; Itaoka et al., 2008). Previous focus groups (Itaoka et al. 2008) found lay people had only vague knowledge of the properties of CO₂ and generally recognized CO₂ was less harmful for human health than many other noxious gases. The researchers also found providing possible human health effects with the low possibility of accidents or a few accidental natural analogues i.e. Lake Nyos surprised the public and tended to make them classify CCS as very dangerous. It has been hypothesised that these attitudes would also transfer and exist for individual CCS projects as they come on line. The purpose of the proposed research is to explore public views regarding CO₂ and to examine the influence of knowledge of the various properties of CO₂ on individuals' perceptions of CO₂ and CCS.
9. **Hosting a large group process** – The large group process has been tested in Australia. The process allows researcher to engage in dialogue around climate change and energy technologies with a wider public group. It is another method of introducing the concept of CCS to a wider audience and helps to raise awareness of CCS in a way that has large impact. It allows researchers to identify perceptions of CCS in relation to other energy technologies and provides an opportunity to understand demographic, psychological and environmental influencers to acceptance of CCS. It is planned to host three large group processes in countries where CCS is being deployed to assist in raising positive awareness of the benefits of CCS as a mitigation tool.

10. **Identifying public perceptions to CCS using ICQ* methodology** – Currently, national and international research makes it abundantly clear how uninformed and unaware the average public is regarding new energy technology such as CCS. In recent years, Dutch researchers (de Best Waldhober et al., 2008; de Best Waldhober & Daamen, 2006) have used a specific methodology for the study of informed public opinion. The aim of this methodology is not only to provide respondents with the necessary information to reach an informed opinion, but also to help them make use of this information to form opinions about different policy options: part of its aim is to guide respondents' information processing. This method is known as Information-Choice Questionnaire (ICQ) and can serve as a decision guide. The aim of this research is to take the ICQ developed by Dutch researchers (Dancker Daamen, Marjolein de best Waldhober), complete with all expert information on consequences of large scale implementation of options and make it available to the international public to serve as an online decision guide with the aim of building a more informed public.
11. **Identifying key stakeholder attitudes to CCS: Media Study** – to-date, Australian CSIRO researchers have been collecting media across the English speaking world in order to prepare for the first media data analysis. A range of coding criteria will underpin the media analysis including article length; focal topic; the extent to which CCS is a focus i.e. primary, secondary, peripheral; terminology used; extent to which the article's position was affirmative, balanced, negative or neutral toward CCS etc.. Researchers from the Tyndall Centre (UK) and Battelle (USA) will assist in extending the database of media and interpretation.
12. **Analysis and development of education materials** – Little work has been done to coordinate and integrate education materials for CCS and more broadly climate change and energy technologies. The purpose of this project is to review the range of education materials that have been designed in this space. Next we would ensure that the CCS information is consolidated into a series of targeted educational programs (and associated materials) that couch CCS in the context of climate change and a broad portfolio of low emissions energy technologies. This project recognises the important role of dissemination in the education sector.
13. **Identifying training needs for communicating CCS** – Reviews by Reiner (2008) and others on communication activities for CCS projects have revealed the need to bolster the capability of practitioners in the field. The purpose of this project is to develop a framework for assessing training needs and knowledge gaps among current CCS communicators or potential communicators, and then develop materials to meet the needs of those identified trainees. At the same time it creates an opportunity to encourage those who are reflecting on working in CCS communication related fields to consider the idea in light of more accurate information provision.



8. REFLECTIONS ON THE WORKSHOP

Dr. Joe Arvai, Michigan State University & Dr Michael Siegrist, ETH, Zurich

8.1 Background

Despite some recent controversy about the validity of some climate models, there is still widespread scientific consensus that climatic warming over the past 50 years may be attributed to human activities, specifically those that result in the release of greenhouse gases to the atmosphere. According to the IPCC, the greenhouse gas making the most significant contribution insofar as human activities are concerned is carbon dioxide (CO₂). CO₂ is released primarily through the burning fossil fuels, including biomass when used as a fuel. However, CO₂ is also a by-product of other human activities such as non-fuel combustion (e.g., the burning of woody and plant material during land clearance for infrastructure projects or agriculture) and by certain industrial and resource extraction processes.

Technological options that have been put forth by the IPCC for reducing net CO₂ emissions to the atmosphere include:

1. reducing energy consumption, for example by increasing the efficiency of energy conversion and/or utilization (including enhancing less energy-intensive economic activities);
2. switching to less carbon intensive fossil fuels, for example natural gas instead of coal;
3. increasing the use of renewable energy sources such as those derived from biomass;
4. expanding infrastructure and capacity for the delivery of nuclear energy;
5. sequestering CO₂ through enhanced biological absorption (e.g., via limited-till or no-till agriculture and enhanced absorption through forest conservation initiatives);
6. capturing and storing CO₂ through chemical processes; and
7. capturing and storing CO₂ through physical processes, often referred to simply as carbon dioxide capture and storage (CCS).

Briefly, CCS involves capturing the CO₂ arising primarily from the preparation and combustion of fossil fuels, the preparation and combustion of biomass-based fuels, and certain industrial processes. Conceptually, capturing CO₂ involves (1) separating the CO₂ from other gases, (2) transporting it to a storage site, and then (3) sequestering it from the atmosphere over a greatly extended time frame. In order for CCS to have a significant effect on atmospheric concentrations of CO₂, storage reservoirs would have to be large relative to annual emissions.

8.2 Overview of Presentations

On 4 November 2009, the Global CCS Institute held a one-day workshop in Paris, France, which focused on communication issues for carbon capture and storage projects. The major goal for the day was to share the findings of the past five years of international social research on CCS and begin a dialogue about how to convert findings from studies into practical communication tips for project proponents of CCS initiatives, industry leaders, policy makers, and regulators.

Generally speaking, attendees of the workshop responded positively to both the findings from researchers and the experiences of practitioners working in the CCS domain. The workshop began with a discussion, by Dr. Joe Arvai, focused on recasting risk communication as a vehicle for decision support surrounding climate mitigation strategies. In sum, this presentation argued for thinking about CCS as a single strategy among a suite of mitigation approaches and that the first step in any outreach effort should focus on establishing the portfolio of options that will be deployed in a given area. Doing so involves clarifying stakeholder-driven objectives and associated performance measures and then

¹See National Research Council 1996. *Understanding Risk: Informing Decisions in a Democratic Society*. National Academy Press, Washington, DC.

engaging in a process of confronting tradeoffs when selecting among (or combining) mitigation options. Only when a process like this has been undertaken should traditional outreach about CCS, or any other mitigation strategy, proceed in the manner consistent with the tenets of most risk communication efforts. In order to proceed in this way, the presentation argued that a healthy dose of decision support should be infused within a stakeholder engagement framework, not unlike what has been discussed by the U.S. National Research Council under the umbrella of an “analytic-deliberative” process.

The second presentation, by Dr. Michael Siegrist, about the degree of public acceptance for CCS adapted from recent research conducted in Switzerland. This research revealed that, among the participants in the Swiss study, there were significant misperceptions and knowledge gaps regarding CCS; these, in turn, influenced public perceptions of the risks and benefits associated with CCS. Laypeople hold a variety of widespread intuitive concepts about storage mechanisms, as well as about leakage that influence risk perception and benefit perception. The perception of an over-pressurized reservoir and concerns about diffuse impacts furthermore amplify risk perception. Appropriate images about storage mechanisms and climate change awareness are increasing the perception of benefits. Increased public knowledge may have a positive or a negative impact on the acceptance of the technology, depending on the knowledge domain. A critical component of public acceptance, as discussed in this presentation, was the need to identify means of enhancing trust in agencies and firms that are pursuing CCS as a mitigation strategy.

The third and fourth presentations focused on case studies involving proposed CCS initiatives (by the Total Group and presented by Luc de-Marliave) in France as well as a developing project based in Barendrecht, The Netherlands. Both presentations highlighted the technical requirements of establishing a CCS initiative. But the discussion of the Barendrecht case, led by Margriet Kuijper, also stressed the importance of a robust public outreach strategy at the early stages of project. Specifically, it was argued that such an outreach initiative must focus on establishing a level playing field amongst all of the participants involved in a dialogue about the implementation of a CCS initiative. At the same time, this presentation suggested that the costs and benefits of a proposed CCS initiative (i.e., the “value proposition”) must be made clear to stakeholders; implicit in this discussion was the notion that the CCS initiative should proceed if the benefits exceed the costs. This presentation ended with a discussion of the experiences to date at Barendrecht, which have not been entirely favourable. Because of delays in public outreach and conflicts among experts both for and against CCS, a level playing field could not be established and largely negative risk perceptions led to the conclusion, shared by many, that the risks and costs of CCS outweighed the benefits. The presentations also made clear, that public acceptance research should not only focus on the storage part of CCS, but also the transport of CO₂ could be a source of public concern.

The fifth presentation, made by Sarah Wade, provided an overview of recent characterization, validation and development efforts undertaken by the Regional Carbon Sequestration Partnership Program. This presentation also focused on key insights from an upcoming publication² of “Best Practices for Public Outreach and Education for Carbon Storage Projects”. These best practices include: (1) Integrate public outreach with project management; (2) Establish a strong outreach team; (3) Identify key stakeholders; (4) Conduct and apply social characterization; (5) Develop an outreach strategy and communication plan; (6) Develop key messages; (7) Develop outreach materials tailored to the audiences; (8) Actively oversee and manage the outreach program throughout the life of the CCS project; (9) Monitor the performance of the outreach program and changes in public perceptions and concerns; and (10) Be flexible and refine the outreach program as warranted.

In the session that followed, a group of researchers working under the umbrella of the International Energy Agency's Social Research Network discussed findings from a wide range of studies dealing specifically with public responses to CCS. These short, 3-minute, overviews focused largely on research into the determinants of trust and credibility, the nature of public concerns about the deployment of CCS, the characteristics of recipients of risk messages regarding CCS, the risk of eliciting pseudo-opinions during surveys about the acceptability of CCS, and the need to place CCS within a more comparative

²Specific details about each of these 10 steps will not be discussed in detail here; instead, the complete publication is now publicly available at http://www.bigskyco2.org/files/pdfs/BPM_PublicOutreach.pdf.

and decision-relevant context by viewing it as a possible approach within a portfolio of mitigation options as opposed to considering it in isolation.

The final formal presentation, by Christopher Short near the close of the workshop, provided an overview of the mission of Global CCS Institute. And, in addition to the formal presentations, participants in the workshop took part in a case study exercise where they were asked to develop a hypothetical communication strategy for a CCS project. Much of what was discussed in the context of this case study followed, to a large degree, the tenets set forth in the “best practices” presentation made by Sarah Wade.

8.3 Moving Forward

There is much to praise about this workshop. Each of the presentations was informative and the ensuing discussion lively and insightful. However, one can also envision a situation where there would be significant criticism of the direction taken in most of the discussions about communicating with the public about CCS projects. Specifically, researchers and practitioners who have worked in the arena of risk communication would likely see clear, and troubling, parallels between the tenor of the discussion about CCS and previous experiences with a wide range of risk issues. Indeed, some of the sidebar discussions at this workshop drew parallels between risk communication efforts aimed at nuclear power, including the long-term storage of spent nuclear fuel, and the current discussions about CCS.

One significant concern is as follows: Much of the current discussion about CCS treats it as if it were a “done deal”. For example, many proposed sites for CCS initiatives in the United States, Canada, and Europe have been identified based largely on technical analyses of the appropriateness of sub-surface geologic conditions for sequestration and, equally, the ability to efficiently (and cost effectively) transport CO₂ to these locations. At some of these sites, additional steps are being taken to lay the foundation for CCS infrastructure. Under these conditions, it becomes the job of risk communicators and outreach professionals then to facilitate favourable social conditions so that the CCS initiative may proceed. Therefore, the questions that become asked of many communicators include: How can people best be educated about the safety and benefits of CCS?; How can misperceptions be corrected?; How can trust and confidence in CCS be enhanced?; and How can broad public support for CCS be created?

Past examples from both research and practice have clearly demonstrated that it is extraordinarily difficult to obtain positive answers to these questions when there is the perception – often based in truth – that the decision to move ahead with a given initiative has already been made. A past experience of the chemical manufacturing industry, for example, was that even well conceived best practices for risk communication³ could not achieve their desired result (in terms of correcting misperceptions and building trust). People familiar with the history of many risk communication efforts would likely see similarities between these efforts and the current set of Best Practices for Public Outreach and Education for Carbon Storage Projects.

In presenting this view, the intent is not to criticize the spirit of current initiatives or downplay the need to improve stakeholder comprehension about CCS. Indeed, an informed and deliberative discussion about the merits of CCS initiatives cannot take place unless those involved are able to comprehend and evaluate the costs and benefits, pros and cons of the technology. The same can be said about the important research being carried out by the International Energy Agency’s Social Research Network: Surveys of public perception and acceptance must ask the right questions in a defensible way; the determinants of trust and credibility for those leading CCS initiatives must be better understood; and the underlying concerns and risk perceptions of potentially affected parties must be appropriately characterized.

All stakeholders should be aware, that only providing factual information about CCS is unlikely to change public acceptance. Results suggest that lack of knowledge seemed in some cases to be responsible for

³ e.g., see Covello, V. T., P. M. Sandman, and P. Slovic 1988. *Risk Communication, Risk Statistics, and Risk Comparisons: A Manual for Plant Managers*. Chemical Manufacturers Association, Washington, DC

decreased, and in others, for increased risk or benefit perception. Thus, simply providing information on the functioning of CCS technologies will not be the magic bullet in communicators' struggle for public support. We believe that experts from engineering and communication need to work closely together when further clarifying the role of the discussed lay concepts and when informing the public about the technology. Due to the public's limited attention span, such CCS communication should focus on information and images that quickly help non-experts to improve their understanding, and avoid information and images that might only increase risk perception without resulting in a better understanding of CCS.

But, many researchers and practitioners would also argue that for public outreach efforts to be maximally effective, they must be set within a decision-focused framework. What this means is recasting the discussion in terms of *decisions that must be collectively made* instead of *responding to decisions that have already been made by others* (usually experts, government agencies, or firms). One suggestion in the context of energy and CCS, for example, is to recast multiparty deliberations in terms of decisions about how to produce energy in a manner that is consistent with institutional, legal, or even voluntary agreements about CO₂ mitigation. Adopting such an approach means that, in some places, certain initiatives (like CCS) will never get off the ground; however, if energy must be produced and CO₂ emissions must be reduced, at the very least some form of mitigation initiative will have to be deployed. In some areas the focus may be on CCS (as in the case of West Virginia's Mountaineer facility where on site sequestration is being conducted), while in the others it may take other forms (e.g., the proposal to deploy a new nuclear reactor in the CO₂-intensive province of Alberta).

As part of a decision-focused framework, deliberations may also be cast in terms of working with stakeholders (at the level of the public, the firm, experts, and regulators) to identify decision specific objectives (that emphasize maximizing benefits, and minimizing costs and risks). Deliberations may also be structured to establish performance measures, which may be derived from both expert and non-expert groups, that operationalize objectives for decision making. Expert and non-expert stakeholders may also be invited to brainstorm alternatives, or portfolios of alternatives, that will be the focus of subsequent deliberations. And, stakeholders may be engaged in the process of weighing the pros and cons of different alternatives or portfolios. Structuring public outreach and engagement in this manner also requires that effort be expended in terms of public education in the vein of more traditional outreach efforts (to ensure that the requisite level of issue-specific competence exists throughout the process). Moreover, the types of best practices for public outreach and education discussed at this workshop are still relevant but redirected at supporting a decision making process (as opposed to convincing people about the safety or appropriateness of a particular course of action like CCS).

Approaching public outreach in this manner has been applied, with positive results, in a variety of contexts⁴. Work by Australia's Commonwealth Scientific and Industrial Research Organisation, for example, has focused on applying these approaches to a number of high-profile cases as a means of establishing the "social license" required to move forward (e.g., with offshore mining initiatives). Currently, research efforts based at Carnegie Mellon University, the University of British Columbia, Michigan State University, are focusing specific methods for structuring these types of processes specifically in the context of energy development coupled with climate mitigation efforts.

⁴ e.g., see the following for examples of case studies:

1. Arvai, J. L., and R. Gregory. 2003. Testing alternative decision approaches for identifying cleanup priorities at contaminated sites. *Environmental Science & Technology* 37:1469-1476.
2. Gregory, R., J. L. Arvai, and T. McDaniels. 2001. Value-focused thinking for environmental risk consultations. *Research in Social Problems and Public Policy* 9:249-275.
3. Keeney, R., and T. McDaniels. 1992. Value-focused thinking about strategic decisions at B.C. Hydro. *Interfaces* 22:94-109.
4. Keeney, R. L. 1992. *Value-focused Thinking. A Path to Creative Decision Making*. Harvard University Press, Cambridge, MA.
5. McDaniels, T., R. Gregory, and D. Fields. 1999. Democratizing risk management: Successful public involvement in local water management decisions. *Risk Analysis* 19:497-510.
6. Wilson, C., and T. McDaniels. 2007. Structured decision-making to link climate change and sustainable development. *Climate Policy* 7:353-370.

REFERENCES

de Best - Waldhofer, M. and D. Daamen, (2006) *Public perceptions and preferences regarding large scale implementation of six CO2 capture and storage technologies*. 2006, Centre for Energy and Environmental Studies, University of Leiden: Leiden.

de Best-Waldhofer, M., Daamen, D., Ramirez Ramirez, A., Faaij, A., Hendriks, C., & E. de Visser. (2008) *Informed Public Opinions on CCS in comparison to other mitigation options. in GHGT-9, 9th International Conference on Greenhouse Gas Control Technologies*. Washington, USA: Elsevier.

Nisbet, M.C., Brossard, D., & Kroepsch, A. (2003). Framing science – the stem cell controversy in an age of press/politics. *Harvard International Journal of Press-Politics*, 8(2), 36–70.

Reiner, D. (2008) *A looming rhetorical gap: A survey of public communications activities for Carbon Dioxide Capture and Storage Technologies*. Electricity Policy Research Group. Cambridge University. London: UK



APPENDIX A

COMMUNICATING FOR CCS PROJECTS – WHAT HAVE WE LEARNED IN FIVE YEARS?

09:00-09:30	Welcome and introductions Why are we here?
09:30-10:20	Opening Keynote Speakers
	<i>Professor Joe Arvai</i> Joe Arvai is a Professor of Judgment and Decision Making at Michigan State University. He is appointed across three academic units: Environmental Science and Policy, Cognitive Sciences, and the Centre for the Advanced Study of International Development. At MSU, Joe is also the Director of the Skunkworks lab for Risk and Decision Research. Professor Arvai's research focuses on advancing our understanding of how people process information and make decisions, both as individuals and in groups. A second objective of his research is to develop and test decision support tools that can be used by people to improve decision quality across a variety of risk and environmental contexts. Dr. Arvai's home is in Michigan but he works across Canada, the United States, and internationally as an advisor to various government agencies and non-profit groups; to this end, he has worked as an advisor to NASA, the EPA's Science Advisory Board, the National Academy of Sciences, and Natural Resources Canada. In 2006, Professor Arvai received the Chauncey Starr Award from the Society for Risk Analysis.
	<i>Professor Michael Siegrist</i> Michael is the Director of the Institute for Environmental Decisions (IED), Consumer Behaviour at ETH in Zurich. His research focuses on risk perception, risk communication, acceptance of new technologies, and decision making under uncertainty. He is especially interested in food and consumer behaviour. During 1997-1998 he worked as a Project Manager at the ZVSM (Zentralverband schweizerischer Milchproduzenten), Department of Marketing Research. During 1998-2000 he was a visiting researcher at Western Washington University, WA, USA (funded by the Swiss National Science Foundation). He returned back to the University of Zurich, and worked as a senior researcher. He was the principal investigator of several projects examining lay people's risk perception.
10:20-10:40	Q&A in response to presentations
10:40-10:55	MORNING TEA
10:55-11:55	Industry Presentations <i>Luc de-Marliave, Lacq Project, TOTAL</i> <i>Margriet Kuijper, Barendrecht, SHELL CO2</i> <i>Sarah Wade, US DOE Regional Partnership</i>
11:55-12:30	Q&A in response to presentations
12:30-13:30	LUNCH
13:30-14:06	'In Just THREE minutes' – updates on research findings from representatives of the social research network
14:06-14:30	Q & A in response to presentations
14:30-15:30	Hypothetical – Planning a communication strategy for a real life project
15:30-15:45	AFTERNOON TEA
15:45-17:00	Where are we now? What are the gaps? What are the challenges being faced by industry? How can the social research network help?
17:00-17:30	Where to from here? Update on GCCSI communication research currently underway Reflections on the day

APPENDIX B

LUC DE-MARLIAVE, LACQ PROJECT, TOTAL



**Case study : communicating CCS and public dialog
Demonstrating CCS in an onshore site in Europe.
The current status of the Lacq integrated CCS project**

Luc de Marliave

Climate Change Coordinator

Total S.A.

Communicating for CCS projects - What have we learned in five years ?
November 4th 2009



Carbon Capture and Storage (CCS) is one solution to reduce our CO2 emissions from our facilities

Beyond the current solutions to reduce greenhouse gases emissions :

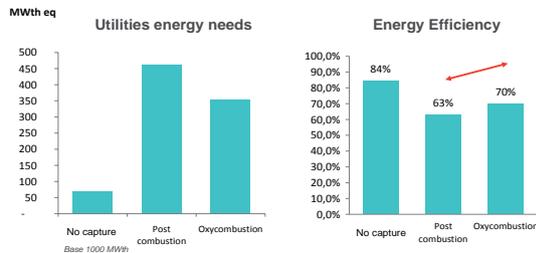
- Existing facilities gas flaring reduction
- Improvement of existing and new facilities energy efficiency
- Development of low carbon alternative energy

Carbon Capture and Storage is considered as a breakthrough technology to be promoted for high CO2 emissions facilities and a promising solution for the O&G industry

- Capture technologies are progressing and O&G producers are keen to promote technologies that are adapted to their specific needs
- Large CO2 networks implementation similar to large historical oil and gas networks development
- For CO2 storage, there is a significant know-how within the industry for
 - ✓ Site characterization
 - ✓ Drilling and injectivity issues
 - ✓ Reservoir simulation, monitoring techniques



Oxy combustion allows to capture CO2 with a reduced energy cost



Source: internal studies and Fluor Econamine published data

3



For storage ... still some technical, economical and social challenges ahead...

- ▶ The site qualification and integrity studies workflow and tools have to be tested on real cases and within different geological contexts (i.e. pilots)
- ▶ Commercial storage will be only developed in several incremental steps
- ▶ Well integrity understanding is still to be improved
- ▶ Public acceptance is not granted and there is minimum geoscience knowledge within the public



**Project location
Total Exploration & Production in France**



5



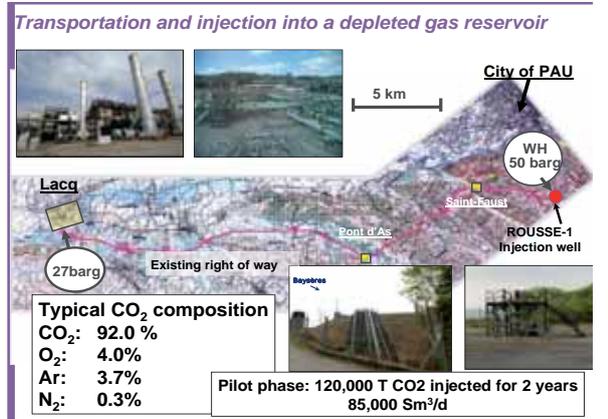
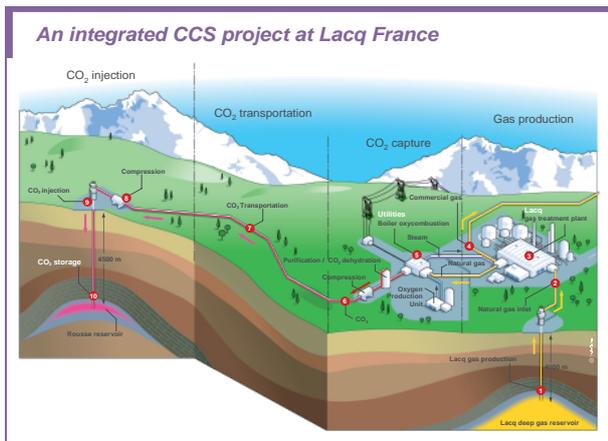
What do we know on public awareness and position?

SOCECO2 -Assessing CSC technology support in France on economical and public acceptance stand point.

Social Awareness & Acceptance evaluation

- ▶ CCS awareness low in France (from poll) (6% aware)
- ▶ From the 6% knowing the technology 50% in favor/50% against
- ▶ After explaining the risks (38% in favor..)
- ▶ CCS has strong supports from businesses and public institutions, but acceptability is not given yet.
- ▶ Some organized opposition at national and local level. Some position papers from NGO's





Project schedule – main milestones

	2006	2007	2008	2009	2010	2011
Conceptual studies, Pre-project	★					
Basic Engineering						
Detailed Eng., Procurement, Construction						
Well work over						
Oxycombustion start-up				★		
CO2 injection start-up						
Public information and consultation						
Permitting process				★		
Public Hearing						

Project information also available on www.total.com/corporate-social-responsibility

- ### For Total : several interconnected relationship management tracks to follow
- ▶ The technical & scientific developments and dialog with the scientific community
 - ▶ The public awareness and dialog, environmental NGO's, associations, elected representatives
 - ▶ The administrative instruction process, regulatory framework, formal submission documents, third party expertise, etc...

- ### Creation of a scientific advisory committee: objectives
- ▶ Assist Total in the science developments for the CCS project in Rouse
 - ▶ Better incorporate technical and scientific stakes, particularly in the storage part
 - ▶ Maximize information flux to the academic world and optimize the opportunity for R&D attached to the CCS demonstration project.
 - ▶ Help to detect in advance the potential issues for the society at large in the project.
 - ▶ Help to identify early opportunities for scientific collaborations within and beyond the project between actors involved in the CCS development.

- ### Scientific collaborations specific to the CO2 project
- University Pau Pays de l'Adour (capillary migration, *micro seismic data interpretation* ...)
 - IFP (soil gasses measurements, cap rock permeability, thermodynamics, long term geochemical behavior...)
 - BRGM (soil gasses measurements, long term geochemical behaviour, natural deep seismicity ...)
 - INERIS (soil gasses measurements)
 - Agence Nationale Recherche CO₂: SENTINELLE (INPL-IFP-BRGM-INERIS-INRA) *Innovative monitoring systems for near surface*
 - TNO (long term scenarios)
 - Institut de Physique du Globe de Paris IPGP (*micro seismic data interpretation* ...)
 - , aquifers monitoring)
 - Contribution to European projects CO2ReMoVe and ZeroEmissionPlatform
 -

Public consultation and dialogue

► Objectives:

- Share the opportunity of having such project in that area and provide technical information of the Laçq pilot itself
- Provide a better understanding of CCS technology context, issues and therefore promote the CCS technology deployment
- Have all questions raised to propose answers at different steps
- Provide information on short and longer term scientific follow up (dedicated scientific committee appointed with external experts) and monitoring
- Help identifying project possible contribution to local socio-economic development
- Demonstrate transparency and provide access to relevant information

► Total's approach

- Open dialogue with all stakeholders before permitting process
- Several public meetings open to public in 2007-2008
- Transparency and access to detailed information, governance
- Local follow up committee with stakeholders during construction, injection and monitoring phase



Main feedback from the consultation...

► Converging issues

- Urgency to act on climate change
- Priority to energy savings and renewable energies
- Joint willingness to share governance
- Economic opportunity for the local area development
- Safety and risk management as a shared priority for all

► Diverging issues

- Potential of the CCS within the climate change issue
- Regulatory issues under mining code

► Performed actions

- Active contribution to the local public information
- Revised landscape integration of the project in the environment
- Revised risk management studies
- Awareness and creative initiatives of the local competent authorities on the issue of climate change



Different levels for public dialog : main issues discussed during the process

- **Local impacts :** Safety issues, housing prices, local image (indirect impact on other activities..) site visual impact, etc..
- **Regional impacts :** regional attractiveness, industrial development, employment, taxes..
- **Global CCS issues :** Cost, scale, additional energy requirements, policy & regulatory issues, public incentives, long term liabilities, risk management, etc..



Public consultation... Just a starting point for a continuous commitment to communication & dialog

Mars 2007 : First meeting in Rouse
 November – December 2007 : 3 public meetings (Jurançon, Pau, Mourenx)
 February 2008 : meeting to prepare the CLIS (official governance committee)
 April 2008 : meeting with newly elected mayor of the storage site
 April – June 2008 : Individual meetings with injection site neighbors
 May 2008 : Meeting with all mayors concerned by the project
 June – July 2008 : CLIS n°1 & 2
 July 2008 : Workshop with the storage municipality council
 July – September 2008 : Public inquiry
 November 2008 : CLIS n°3
 December 2008 : Open site visit in Rouse + letter information to neighbors
 February – April 2009 : CLIS n°4, 5 & 6



In parallel with the public dialog... ...one year of administrative process before formal authorization can be given...

May 2008 : File for project
 June - July 2008 : BRGM Expertise
 21 July 2008 to 22 Sept. 2008 : Public Inquiry
 23 Sept 2008 : Work starts on storage site
 October 2008 : Inquiry commission report
 Oct - Nov 2008 : Municipalities advice
 December 2008 : Complementary file from TOTAL following external expertise
 January 2009 : Second expertise review by BRGM
 March 2009 : Pyrénées atlantique prefectural committee meeting
 May 2009 : Prefectoral formal authorization



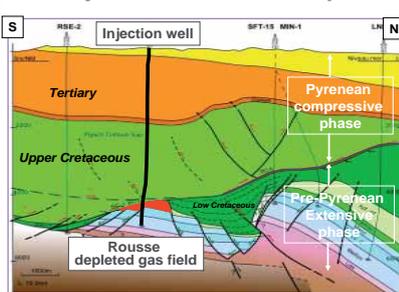
The main fundamental questions :

What makes the Rouse field a good candidate for storage?

What type of technical information can you provide to demonstrate safe and permanent storage ?

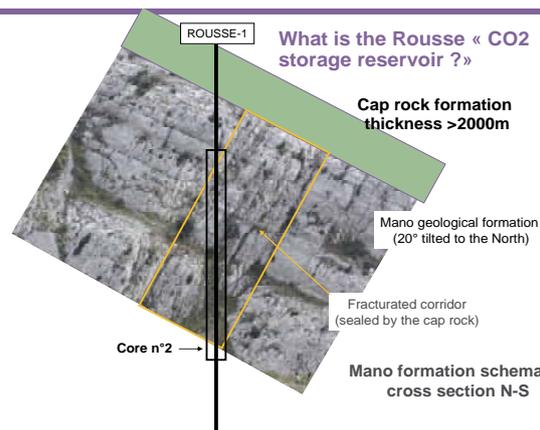


CO2 injection into Rouse depleted gas reservoir

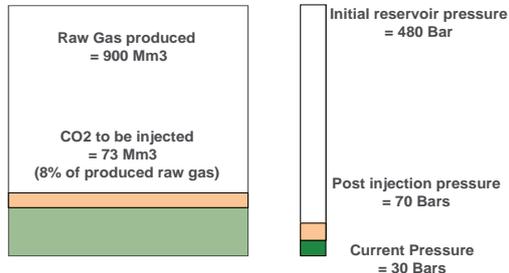


Existing unique well RSE-1 producing since 1972
 Well work over planned winter 2009

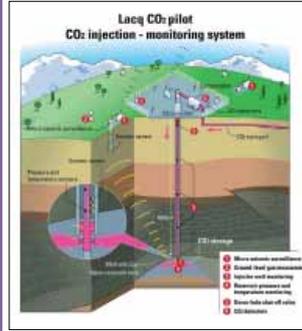
Jurassic fractured dolomitic reservoir (in red)
 Thick cap rock (in green and orange)
 Depth # 4500m/MSL
 Temp. # 150°C
 Initial P = 485 barg
 Current P # 30 barg
 Initial CO₂ = 4,6%
 Initial H₂S < 1%
 No aquifer



Injected CO2 quantities are low compared to initial natural gas quantities...



Demonstrating CO2 storage integrity : Monitoring plan



- Injection phase**
 - Flow rate & composition of injected gas
 - P and T borehole and reservoir pressure (optical fiber)
 - Micro seismic monitoring of reservoir and cap rock
 - baseline before injection
 - Gas migration at the surface :
 - soil gas survey (baseline before injection)
 - surface detectors on well pad
 - Aquifer sampling
- Post injection phase**
 - P and T bottom hole and reservoir pressure
 - Micro seismic monitoring of reservoir and cap rock
 - Gas migration at the surface
 - Aquifer sampling

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Some lessons learned...

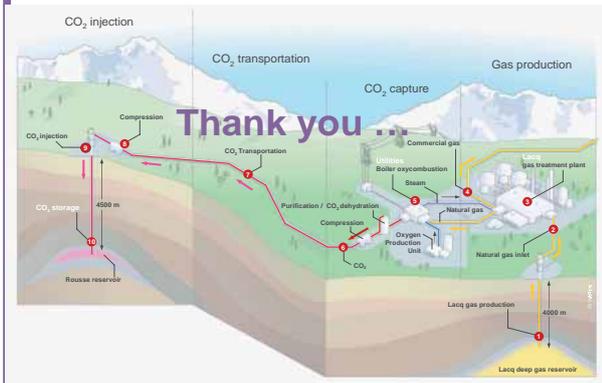
- Set the right level of resources early in the process and perform the full social relationship management analysis to map completely your stakeholders upfront.
- The basic rules: asymmetric decision making
 - « All participants to public dialog do not take part in the final decision but all participants in the decision making take part in the public dialog »
- Establish the right level and timing of stakeholder management process
 - Local and regional vs national,
 - Importance of the proper timing of the public consultation
- More efficient to have the technical project people answering the questions
- Public awareness on geoscience in general to be improved . Highlight the difference between basic geoscience know how and analysis of knowledge gaps for R&D purposes



The case study of the Lacq project...from an external independant review

“The socio-economic case study of the Total project in the Lacq area, conducted with face to face interviews, questionnaires, participation to the public meetings and newspaper analysis, suggest that so far the social context has been rather favorable”.

SOCECO2 project



APPENDIX C

MARGRIET KUIJPER, BARENDRECHT, SHELL CO2



Public Acceptance of onshore CO₂ storage in depleted gasfields

Theory and Practice based on Barendrecht Project experiences

Margriet Kuijper, Shell CO₂ Storage BV

Paris, 4 November 2009



Presentation Overview

- Introduction Barendrecht Project
- Public Acceptance: Theory
 - Playing field
 - Local proposition
 - Communication strategy
- Public Acceptance: Barendrecht Case
 - Playing Field
 - Local proposition
 - Examples learnings communication

Pipeline



- Largely in existing pipeline corridor
- Maximum pressure 40 bar (gas pipeline usually 60-90 bar)

Barendrecht CO₂ storage

Pernis Refinery:
almost 1 million tons of pure CO₂



Annually:
150,000 tons of CO₂ to soft drinks industry (& others)



Winter:
injection of 400,000 tons of CO₂ into (two) Barendrecht gas field reservoirs



Summer:
380,000 tons of CO₂ to greenhouses



Barendrecht gas production site



Why Barendrecht?

- Dutch government keen to have 2 smaller storage demonstration **before** major demonstration projects are launched (in 2015).
- In 2007 a tender invitation procedure was launched to identify suitable projects.
- Preference was stated for an early start date and onshore location (there is already an offshore project in NL: K12).
- Shell is involved in several CCS projects and studies worldwide, and so had the right expertise and assets to take part in the tender round.

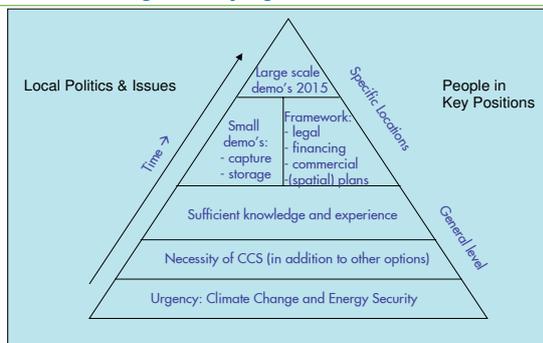
Forward Plan

- November 2009: go-ahead (or not) decision by ministers
- Dec 2009 to Dec 2010: Permit process
- 2010 – 2011: baseline surveys, preparations, procurement
- 2012: construction and start CO2 storage

Public Acceptance

- Brief overview of theory
 - Understanding the playing field
 - The local value proposition
 - Communication strategy (main elements)
- Experience Barendrecht project
 - The playing field
 - The local value proposition
 - Communication: lessons learned

Understanding the Playing Field



Local Value Proposition

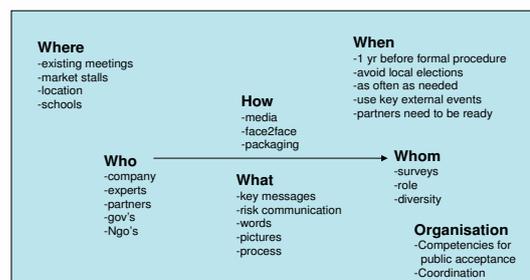


Public Acceptance Strategy

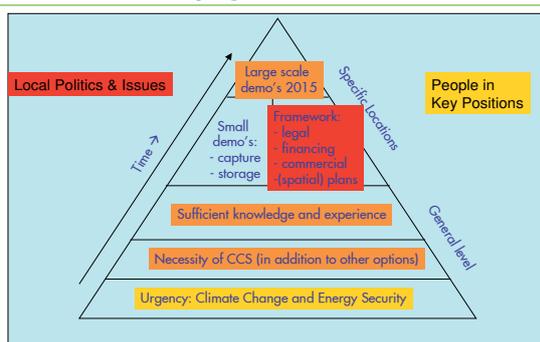
Key elements of a Public Acceptance Strategy:

1. Actions to improve the "playing field"
2. Actions to improve the local value proposition
3. A good communications strategy that takes account of the identified strengths and weaknesses in the playing field and local value proposition

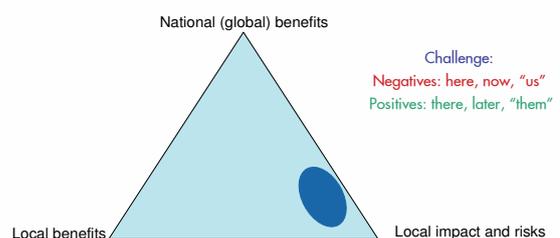
Communication Strategy



The Barendrecht Playing Field

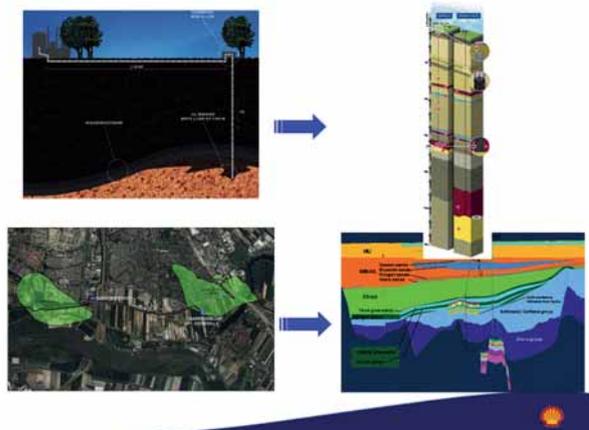


Local Value Proposition Barendrecht perspective

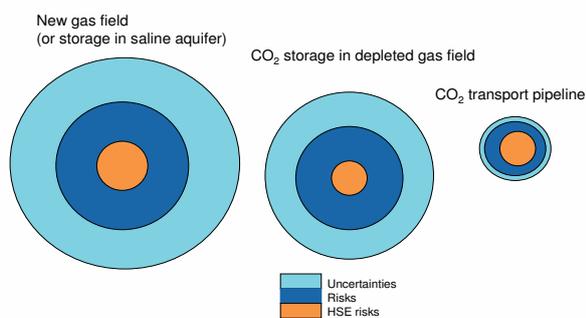


Risk Perception

Risk Property	Score CO2-opslag -- = publieke perceptie
Timescale	-
Worst case fatalities/impact	+/-
Choice (exposure)	-
Cost/benefit (equity)	-/-
Personal influence/control	-/-
New technology	+/-
Damage irreversible	+/-
Identification victims	--
Harmful intention	+/-



Uncertainties, risks and HSE risks



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Conclusion Public Acceptance

- “playing field” was not favourable; national government started communications late
- Local value proposition is/was not good enough
- Risk perception challenges need more attention in communication
- Difficult to control:
 - NATME effect: Not According to My Expert
 - Media choice of experts
 - (credible) Individual Crusaders; e.g. media quoting CDA-politician “there could be hundreds of thousands deaths in case of an accident”



APPENDIX D

SARAH WADE, US DOE REGIONAL PARTNERSHIPS





Public Outreach for Projects Storing CO₂ in Deep Geologic Formations: Best Practices

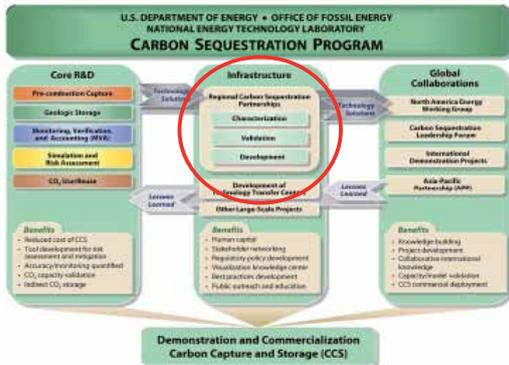
GCCSI Meeting, Paris – November 4, 2009 – Sarah Wade



Overview

- Overview of Regional Carbon Sequestration Partnership Program and Outreach Working Group Efforts
- Outreach Experience within the Regional Carbon Sequestration Partnerships
- The Best Practices Manual for Public Outreach

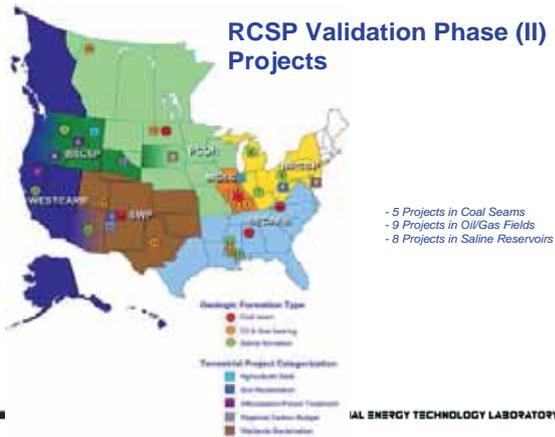
Overall Sequestration Program



Overview Of RCSP Program

- Three Phases:
 - Characterization Phase
 - Validation Phase (small scale field tests)
 - Development Phase (large volume storage tests)
- Representing:
 - >350 Organizations including state agencies, universities, and private companies
 - 43 States
 - 4 Canadian Provinces
 - 3 Native American Organizations
 - 6 Member countries of the CSLF
- Addressing:
 - Permitting
 - Regulatory framework
 - Public Acceptance
 - Liability
 - Best Practices

RCSP Validation Phase (II) Projects

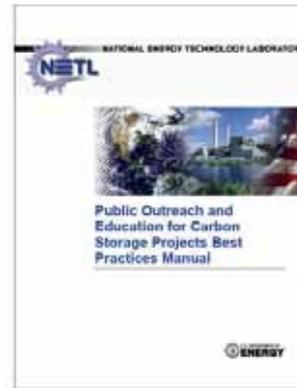


RCSP Development Phase (III) Projects



RCSP Outreach Efforts

- **As Individual Partnerships:**
 - Conducts interview and data collection: focus groups, one-on-one interviews, web-based
 - Develops materials: physical models, websites, briefing materials, videos
 - Convenes informational and education programs
 - Supports the permit application process
- **As a group:**
 - Formed Outreach Working Group
 - Meets monthly to collaborate, learn from each other and keep abreast of CCS “Big Picture” via outside experts
 - Participates in joint workshops
 - Developed Best Practice Manual



#1 Integrate Public Outreach with Project Management

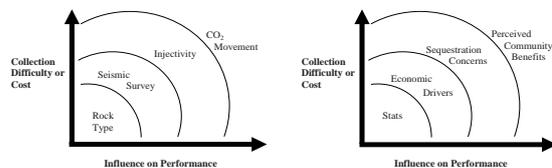
- **What?**
 - Rigorous and iterative investigation, analysis, and use of social science “data”
 - Two-way communication of information
- **Why?**
 - To secure the basic permissions necessary to implement a project
 - To improve the overall “performance” of a project in the eyes of the developer and the community

#2 Establish a Strong Outreach Team

#3 Identify Key Stakeholders

#4 Conduct and Apply Social Characterization

Just as site characterization informs efforts to design a project to suit the local geologic and other physical conditions; it can also be used to design effective public outreach to suit local conditions



#5 Develop an Outreach Strategy and Communication Plan

#6 Develop Key Messages

#7 Develop Outreach Materials Tailored to the Audiences

#8 Actively Oversee and Manage the Outreach Program Throughout the Life of the CO2 Storage Project (Seek Opportunities for Interaction)

#9 Monitor the Performance of the Outreach Program and Changes in Public Perceptions and Concerns

#10 Be Flexible – Monitor Public Opinions and Awareness; Refine the Public Outreach Program as Warranted

Next Steps

- **Best Practice Manual:**
 - Focused on project developers
 - Embodies lessons learned and pointers for implementing activities
 - Appendices will include sample plans, forms and other tools
- Working draft under review internally
- Planned review at RCSP Annual Review meeting
- Planned release to public in late 2009 / early 2010

For More Information

- **DOE / NETL Website for RCSPs:**
http://www.netl.doe.gov/technologies/carbon_seq/partnerships/partnerships.html
http://www.netl.doe.gov/technologies/carbon_seq.html
- Links to each partnership found on that page
- **DOE/NETL Contact: John Litynski -**
John.Litynski@netl.doe.gov
- Sarah Wade: swade@ajwgroup.com





APPENDIX E

RESPONSES TO THE HYPOTHETICAL ACTIVITY

GROUP 1

Issues for consideration:

Liability is not clear – assume it will be transferred from the company to government in 20 – 30 year time frame.

Ideally would start long before but in this case the government announcement has preceded everything.

Gather the information together

Assemble a team

Transparency is critical

Know the contents that we need to discuss

- Put it in a portfolio context
- Safe and secure and monitored

Use the best practice guide outlined by Sarah Wade

First Steps

Acknowledge that the media does not know about the project so need to do a one page press release. Include the:

- Why
- What
- Who
- When

Facilitate contact with government and coordinate

Avoid consultation USE engagement

Take stock of what is already done

Ensure contact with an environmental NGO

Second Steps

- Explain why the project is necessary and identify and clarify any misperceptions that may exist
- Enlist appropriate risk management strategies
- Identify who are the key stakeholders, particularly in relation to the project
- Ensure a flexible approach

GROUP 2

Considerations:

Crisis communication person would be critical for this

Identify the key stakeholders of the community

Identify the local benefits

Need to be able to justify that the government should spend \$ on this

General public needs to be considered as well as local community

Strategy for targeting audiences:

Identify each of the key audiences and local contacts for each category

Need strategies for three parts of the community:

1. General public
2. Community (storage)
3. Community (pipeline)

Conduct a social site characterization of the area recognising political overlay. This will be done in the field and be totally transparent.

What can we draw from the keynote speakers for this exercise?

Is it true that CCS is a marvellous thing?

Comparisons of a surgery

- Talk to someone who has the surgery

Reference project of what works

- Partners
- Already accepting similar risks

Location specific – how do we deal with different cultures? Stakeholders?

Would anyone outside this room trust the people in this room?

- How do we get that trust?

Actual Project Experience:

Fundamental to all CCS projects is one universal fact

Ultimately the liability for the site in the future will ultimately fall to the government so:

Right from the start when a project is being proposed, government has to take responsibility for communicating CCS to the community.

GROUP 3

Strategy

Set the context for the need
Engage local stakeholders
Assume geology is safe

Audiences

Involve crisis communicators

- Supporters
- Industrial relations
- Credible leaders (government)
- Academia
- Local community stakeholder
- National public
- Opponents
- NGO's
- Media

Tell us what are your concerns?

Need:

Part of a portfolio of options
What's in it for you (local benefits)
Safety
Clear and transparent process
Don't be shy about the cost
We have the expertise (state your qualifications)
Rebuttal for opponents
Identify ambassadors and use them
Open communications
Formal process

1. Follow up meetings and Q & A sessions
Small groups – targeted at different audiences
2. Key to success
Respect
Flexible response for the unexpected – iterative
Make sure to be careful
Watch out for the butterfly effect or in the company brand
3. How do we make people feel empowered or empower them without promising too much or frustrating them?
4. How do we deal with something that is well known but a new application?

Short term Vs Long Term

Short

Press release (1 page)
Mayor
Local paper
CCS Case
Misperceptions
Roadmap and impact
Opportunity

Long

Partners
Gift

NGO's

Local versus international
How to bring in and engage?

What can we learn from the presentations?

Sarah Wade : Balance between national and local
Peta: Stakeholders
Lacq: Panel/advisory group
Shell: Local value proposition
Time to put the case together
Joe: Context of energy portfolio
Public as partners – is it too late in this case?

Who to talk to?

Project partners – what have they done already

Short term

Mayor and local government stakeholders – identify their views to determine what happens next
Consider press release after discussion with the above group

Medium Term

Talk to environmental NGO's and other experts
Plan wider consultation

Key messages for different audiences:

Positive framing – global and local
Energy portfolio – context for the country and region
Safe and secure – responsible business
Include any thoughts on local benefits:

- Jobs
- Flexibility at this stage

Why considered in that local region and not others (other options)

Look for trusted spokesperson to deliver the message

Consultation – explain what is next

When beginning consultation for groups?

Short term – immediate

Identify key stakeholders – influential people:

Local government

Media

Prepare first messaging and team together

Medium term – Weeks

Residents and landowners (ongoing – front loaded)

Local authorities/politicians

Local environment groups – trusted

Media

Steps and considerations

1. Gather team
2. ID Stakeholders – internal and external
3. Study community
 - a. Influencers
 - b. Organisations/environmental/Union/Labour
 - c. Health
 - d. Universities
4. Budget allocation – 1% of 2 billion – 12 – 15 million
5. Cooperative dialogue

Several	- Pipelines	- Jobs
	- Storage	- Industry
		- Culture
6. What is in it for me?
7. Community mapping – who actually influences
8. Assume some work has been done in the community
9. Key risks- - “experts”
 - perceived risk
10. CTS – channels/tools/strategy
11. Make explicit messages
12. Recruit local influencers who are against coal
13. Develop value proposition
14. EIS as process – Communication tool
15. ID Stakeholders
16. Internal stakeholders – buy in on transparency

Group 4

Possible location for the scenario – Germany/ Poland

Considerations:

1. Population and demographics of the area?
2. Current industry in the area?
3. What level of population will be impacted?
4. What is the socio economic status of the community? Number employed/unemployed?
5. What is the current political situation? i.e
 - a. Is it close to an election?
 - b. Is there a strong centralised government?
 - c. What is the level of support for the project?
6. What is the previous experience of the area with:
 - a. companies
 - b. industry
 - c. coal
 - d. powerplants
 - e. large infrastructure
7. Assume we are at the beginning stages of the site evaluation and characterisation
8. Level of risk aversion from a company perspective and government
 - a. What is their attitude to risk
 - b. What is the regulatory situation of the area of the site
9. Timing of the project – 2015 target
 - a. Number of communities affected
 - b. Capture + installation – storage – use of resources – pipeline (100k
10. What is the license → need to know
11. Which “decision gates” are there related to the project. Need to know the project management plan.
12. What are the technical risks involved?
13. What messages have the community received from the government so far?
 - a. Is the government seen as a trusted source

Who to talk to:

State government representatives and other officials at various administrative levels

Need to define the audience. Who are we designing this communications strategy for?

- Decision makers
- Influential others

- Land owners
- Community leaders
- Church leaders
- Local population
- Broader national level of population – accountable to all tax payers with government funding
- NGO's
- Project management team – resource allocation
- Scientific community
- Press media

What do we talk about?

- CCS
- Public versus private funds
- Their concerns
- Process – construction etc.
- Electricity production
- Capture/storage – detailed information – could need more specific information depending on what will impact that region
- Risks – health and safety, also seismic – land owners etc.
- Benefits of the project in their community
 - Jobs
 - Cheaper energy?
 - Climate change
 - Incentives to this community. Compensation Vs Opportunity
- Will depend on the community – can be opposed or supportive

Target messages:

Start with the reason for this project is:

- Climate change
- Produce electricity

Outline benefits and risks

Credibility factor for stakeholders

- We are endorsed by.....

When do we communicate?

Community leaders - NOW! Before technical evaluation.

Media - NOW! How often? Consistently to get the message repeated over time.

Scientists - As the project has developed to build a relationship to assist talking to media.

General public - Announce ASAP that public engagement will occur and when. Also, have website and other information available ASAP.

How will you engage?

Landowners through site surveying processes.

NOT a town hall approach – use a smaller group process

Last considerations:

Would not take it on as presented because we feel there is too much uncertainty

Proper design of the consultation process is essential – need for a systematic approach to the issue.

Understanding the needs will help to shape the communication and the tools that will be most effective for this.

Consult with many stakeholders – ideally this would be well before bigger announcements about the project

Be open about the mistakes made about the announcement – in the future you will be open and transparent

Damage control

Political back up – nationally

Need an official launch – shows consolidate the approach

Independent verification



Group 5

Who:

Identify all stakeholders along pipeline route and storage site

Talk to whomever community trusts and people with factual info

Talk to local government – but recognise that they also have vested interests

Talk to people with experience on cases to find out:

- Who they talked to, what happened, who they missed

Take action – engaging and putting out information, bring in Bellona

Conduct social site characterisation – recognise it may involve multiple communities:

- Demographics
- How the community has been affected by projects previously

What

Need to identify what values are important to the community so as to know how to connect with the community

Giving them what they want to hear

What is the local benefit?

Be aware of national groups as well

Put the issues on the table for open discussion

- Rational for the IGCC plant and inform on all potential possibilities

Senior people in the organisation need to be available to talk to the public and stakeholders to develop trust in the project

Enable a process for stakeholders to have influence on project outcomes

Be mindful of the language used

Key messages:

The project is an integral part of grander scheme.

It's safe/safer than crossing the road.

Just as safe as other industrial processes

Identify where it has been done before.

Inform about consequences of global warming.

We need all options of mitigation on the table.

Do not create own opposition. Let sleeping dogs lie.

Provide several layers of information packages.

Benefits → jobs?

Factsheets

When:

As soon as possible – national on the necessity of CCS for fighting global warming

First social site characterisation

Timing should be first considered and then work back to see what is needed

Have all the technical questions sorted

Other Considerations:

You need a scientific project beside/behind this

Roadmap to take people along with you as you gather information

Significant effort – need for detail to simplify the complexity of the project

APPENDIX F

SOCIAL RESEARCH NETWORK DELIVERABLE DATES

Milestone	Due Date
1. Conference on Social Research*/Communication Industry Representatives	
Outline of conference	Jun, 2009
Report of recommendations	Feb, 2010
2. Findings from existing CCS projects - From good to bad to ugly proposal submitted to the Institute by CSIRO and the Energy Research Centre of the Netherlands (ECN)	
Consult with the Institute on case study and workshop approaches including provision of detailed outline	Jun, 2009
Toolbox	Jun, 2010
Overview report	Jun, 2010
3. Synthesise existing materials and research on public awareness and communication	
Outline of review of existing materials	Jun, 2009
Review of existing materials - summary report	Dec, 2010
Factsheets	May, 2011
Overview report	Jun, 2011
4. Social site characterisation tool*	
Outline of social site characterisation tool project	Jun, 2009
Outcomes of focus groups - assessment tool	Nov, 2010
Characterisation tool - report	Feb, 2011
5. Communicating results of risk assessment work and evaluation of project design	
Outline - IEA GHG Risk assessment results	Jun, 2009
Factsheets	Feb, 2010
Evaluation of risk assessment project design	Jun, 2010
Guidelines	Mar, 2011
6. Extension of FENCO Project - Australia, Japan, USA	
Outline of protocol for focus groups	Jun, 2009
Focus groups/ICQ	Jun, 2010
Report	Dec, 2010
7. Extension of Near CO₂ Project	
Joining of Near CO ₂ Project	Jun, 2009
Assessment of participation strategies	Jun, 2010
3 Workshops	Dec, 2010
Evaluation report	Dec, 2011
8. Understanding how people perceive carbon dioxide	
Outline of protocol for interviews and progress meeting with the Institute	Jun, 2009
Progress report - meet with the Institute to report on progress	Mar, 2010
Undertaking of interviews and survey	Jul, 2010
Analysis and Draft Report	Nov, 2011
Report	Feb, 2012

Milestone	Due Date
9. Hosting a large group process* (500 in a room) potentially in Australia, Europe and USA	
Outline of large group process	Oct, 2010
Large group workshop - one - summary report	Jan, 2011
Large group workshop - two - summary report	Jun, 2011
Large group workshop - three - summary report	Oct, 2011
Final Report and publish on websites	Jun, 2012
10. Identify public perceptions to CCS using the ICQ* methodology developed in the Netherlands	
Outline of development of ICQ	Jun, 2009
Development of ICQ and criteria - outline	Jun, 2010
Delivery of ICQ	Jan, 2011
Final Report and publish on websites	Dec, 2011
11. Identifying key stakeholder attitudes to CCS:	
a) Non Government Organisations (NGO)	
Outline of NGO engagement strategy	Jun, 2009
Development of protocol for workshop	Mar, 2010
Progress report - meet with the Institute to report on progress	Jul, 2010
Report	Dec, 2010
b) Media	
Outline of media database development strategy	Jun, 2009
Compilation of media database	Apr, 2010
Progress report - meet with the Institute to report on progress	July, 2010
Report	Jun, 2011
12. Analysis and development of education materials	
Outline of education materials study	Jun, 2009
Analysis of materials - summary report	Jan, 2011
Development of best practice kit of education materials	May, 2011
Development of database	Nov, 2011
Final Report and publish on websites	Jun, 2012
13. Identifying training needs for communicating CCS	
Outline of training needs strategy	Jun, 2009
Development of information kits	Dec, 2010
3 workshops	Jun, 2011
3 workshops	Jun, 2012
Summary report	Jun, 2012

APPENDIX G

EVALUATION

Participants were invited to complete a short evaluation of the conference in the weeks immediately following the event. Of the 100 people that attended 40 chose to complete the short questionnaire. The series of tables below document the results, in some questions not all respondents chose to answer and the numbers are identified within each table.

Table 1: Type of organisation represented

Answer Options	Response Percent	Response Count
Industry	40.0%	16
Government	15.0%	6
Non-government organisation	7.5%	3
University/Research organisation	20.0%	8
Consultancy	12.5%	5
Other (please specify)	5.0%	2
<i>answered question</i>		40

Table 2: Country represented

Country	Response Percent	Response Count
Australia	5.6%	2
Belgium	2.8%	1
Canada	2.8%	1
Denmark	2.8%	1
France	19.4%	7
Italy	2.8%	1
Japan	5.6%	2
Netherlands	11.1%	4
Norway	8.3%	3
Sweden	8.3%	3
United Kingdom	16.7%	6
United States	13.9%	5
<i>answered question</i>		36

Table 3: Quality of sessions

Answer Options	Rating Average*	Response Count
The opening session on risk communication and decision making	4.06	34
The industry session providing real life examples of communication and outreach	4.53	34
The sharing of the social research findings "in just three minutes"	3.81	32
The hypothetical activity in breakout rooms	4.00	31
The closing session on gaps and challenges	3.73	30
	answered question	35

*1 = not at all satisfactory to 5 = extremely satisfactory

Table 4: Quality of presenters

Answer Options	Rating Average*	Response Count
Joe Arvai, Michigan State University	4.44	34
Michael Siegrist, ETH	4.03	34
Luc de Marliave, Total	4.41	32
Margriet Kruijper, Shell	4.52	33
Sarah Wade, AJW Inc.	4.21	33
	answered question	34

*1 = not at all satisfactory to 5 = extremely satisfactory

Table 5: Other factors in the workshop

Answer Options	Rating Average*	Response Count
The opportunities provided to interact with other participants	4.40	35
The total package of the day's activities	4.35	34
The suitability of the venue	4.26	35
The catering provided throughout the day	4.41	34
	answered question	35

*1 = not at all satisfactory to 5 = extremely satisfactory

Participants were asked to indicate if they would attend such an event again. Only two of all the participants that answered said they would not. Similarly all but two of the participants that answered the questions indicated they would recommend the conference to others. So overall it appears the event was a resounding success for the majority of participants.

In response to the question "What else would you have liked included in the day's events" nine (n=9) participants included a comment and these are listed in Table 6 below.

Table 6: Other things participants would have liked included in the day

Response Text
More real life examples. I guess next time we will have more
Apart from the case studies which were interesting, there was FAR too much emphasis on social science; there were no presentations from communications experts or synthesis of how the media are seeing the issue. The international, national and (then) regional level perspectives lacked a clear and unifying advocacy strategy.
CCS Ready will be enforced earlier than CCS implementations. This will have three ranks. For each rank, how communication shall be needed?
The session was timely given the importance of public acceptance to the development of CCS. Given the importance of the issue perhaps some case studies that went into more detail first then illustrating universal themes of what to do and what not to do. Perhaps have a presenter(s) from a project where a CCS project has encountered major public acceptance issues to guide lessons learned.
A carefully scripted Q&A session which might reflect the type of interaction one would have with a journalist regarding issues of both CCS in general and of a particular (generic) project.
I would have liked more breakout sessions - but realise that time was too limited for this.
I think that the program topics were excellent and provided an overall "taste" of the value of social science input - all within the constraints of a one-day opportunity
More real examples, I think they are crucial
Given that the event was sponsored by GCCSI, I was looking for a little more information on its activities and more of a 'presence' from that body.



Finally participants were asked "Are there any further suggestions or comments you would like to make?" Table 7 below documents all of the seventeen (n=17) responses received.

Response Text

There needs to be a follow up work shop some time in the future.

Also it would make sense that the GCCSI is working with the material and experience during this work shop and is trying to work on initial recommendations.

Sorry to say , but I found almost nothing new in this event, almost a blue copy of many others in the same area - and more or less with the same peolpe.

To focus overly on social science is to miss some of the bigger picture which is that projects are breaking ground before the wider international and environmental case for CCS (eg is it a technology backed by UN political consensus?) has been won. Awareness of CCS and the role it can play is low internationally across the general public and this is where communications - led by GCCSI has a critical role now.

At this moment many larage plants in the world should obtain soicial acceptance in order to construct. These experience shall be utilized.

Lamb rack was fine, but at Le Chalet des Îles it was even better.

The room was not really suitable...

I was struck by the level of interaction from participants. I have rarely seen such engagement at a meeting.

More women and more young researchers, although I do understand that a broader audience is not always the answer, depending on the topic and specific aims targeted.

Please upload all the presentation materials.

Great initiative. Need more of this type but we need to move from telephone surveys and academic studies to real world experiences and the sharing of these.

This was a splendid initiative, executed in a most satisfying way; a real WORKshop wth just enough talking from the front to keep us busy.

Note that I attended the morning sessions only, so cannot comment on those that came later.

I missed the first presentations unfor tunately

I haven't seen some of the simple demos available to explain CCS to a lay audience - I suspect others have not either - would be good to bring some of these along to an event like this and share the experience more widely.

I think it would have been useful to examine how other sectors that have faced very significant public opposition (such as nuclear) had managed - or failed to manage - the issues.

A next event should be tied to a tangible initiative, e.g. led by CSIRO or the GCCSI

I really liked :

- the mix of participants in term of countries type of organisation technical / not technical, It was a really reach exchange

- The round table talks after the speeches giving real opportunity to actually discuss the presentation, which is not possible with the whole attendance

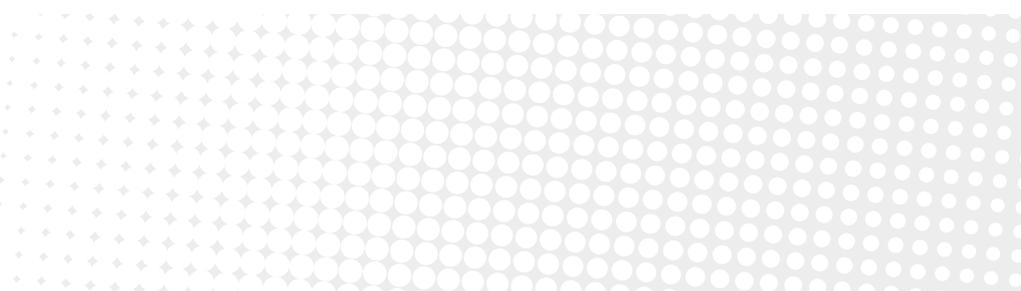
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