Near CO_2

Participation and communication near CO_2 capture and storage operations

Deliverable 5.2

Effective strategies for local communication and involvement around CO_2 capture storage (CCS) projects

Report on two dissemination workshops in the NearCO_2 project

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ECN Energy research Centre of the Netherlands

SEVENTH FRAMEWORK PROGRAMME

NEARCO$_2$ is an EC FP7 project collaboration between: CIEMAT, Energy research Centre of the Netherlands (ECN), Fraunhofer ISI, Institute for European Environmental Policy (IEEP), Judge Business School and Tyndall Centre Manchester / Manchester Institute for Innovation Research.
Further information: www.communicationnearco2.eu

Executive Summary

CO_2 capture and storage (CCS) is considered a serious option for climate change mitigation strategies. In the first CCS projects developed, public resistance has appeared to be a potential showstopper for implementation. Therefore, the NearCO2 project has provided essential ingredients for effective communication and public involvement strategies related to CCS projects. Within the dissemination Work Package of the project, two workshops have been organised in London and Madrid, with the prime objective to inform (communication experts within) project developers about the key outcomes, discuss their merits, and explore needs for further research and implementation implications of the recommendations. This report summarises the workshops' outcomes.

Some key issues discussed were:

- For effective communication and engagement strategies, it is important to realise that CCS projects are often initiated by teams or consortia of parties, with different backgrounds, skills, knowledge, resources and organizational cultures. As a consequence, there seems to be a lack of internal alignment. NearCO2 developed elements to address this issue.
- Surveys, focus groups and review revealed that CCS is hardly known to the public and to relevant stakeholders, and the same applies to its relation to climate change mitigation. Generally, there is substantial public support for CCS, but this support was measured to be much less in localities in which a CCS project is under development. Local contingencies also appear to be important, such as local industrial history and social capital.
- Stated awareness of CCS and genuine knowledge about it do not necessarily correlate. Dialogue boards showed that public media are considered very important for dissemination of CCS, but surveys showed that they are generally not considered the most trustworthy source of information, nor the most frequently used source.
- The legal and regulatory framework in which a CCS project is developed provides important boundary conditions for its communication strategy. Early interaction between project developer and regulatory authorities is vital, in order to prevent foreseeable pitfalls and come to an effective strategy.
- In the NearCO2 project, a multimedia DVD was developed on climate change, CO_2 and CCS. Application of the DVD in focus groups showed that participants' attitudes towards CCS did not become more positive after having seen and discussed the DVD. This confirms that (i) providing information does not by definition create more positive attitude, and (ii) bridging the public trust gap will require more than information alone.

Key points of discussion in the workshops were :

- *Timing of engagement:* How to reach early involvement in practice, and when is engagement meaningful? There appear to be two perspectives: some participants advocated engagement as early as possible, even in the location selection process, others preferred a low-profile strategy for a longer period. This is consistent with findings in WP3.
- *Internal communication within the project development team:* It was clear that fully open communication within a consortium will not come automatically. NearCO2 tools to shape this were welcomed, and the building of mutual trust was identified as crucial. Also, the importance of linking to linking to local authorities was stressed.
- *Policy and communication:* The importance was stressed for national authorities to stand for the case of climate change mitigation and the need for CCS. A project developer may well not be a credible messenger for information about this.
- *The building of trust appeared essential for meaningful local engagement.* Here, companies that have a track record of a good neighbour (in minimizing local impacts and/or providing local benefits clearly have a better position than those that don't have this. NGO's can also play a relevant role here, as relatively trustworthy parties.

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Introduction to the NearCO_2 project

1.1 Objectives and key outcomes

CO_2 capture and storage (CCS) is considered a serious option for climate change mitigation strategies. In the first CCS projects developed, public resistance has appeared to be a potential showstopper for implementation. Therefore, the NearCO2 project has provided essential ingredients for effective communication and public involvement strategies related to CCS projects. Based on reviews of regulatory context and current practices for public participation, and in depth analyses of opinion shaping factors, the project developed new (elements for) participation strategies and new multi-media communication material. Some key outcomes of the project are:

- For effective communication and engagement strategies, it is important to realise that CCS projects are often initiated by teams or consortia of parties, with different backgrounds, skills, knowledge, resources and organizational cultures. As a consequence, there seems to be a lack of internal alignment. NearCO2 developed elements to address this issue.
- Surveys, focus groups and review revealed that CCS is hardly known to the public and to relevant stakeholders, and the same applies to its relation to climate change mitigation. Generally, there is substantial public support to it, but this support was measured to be much less in regions in which a CCS project is under development. Local public support also seems to depend on local contingencies, such as local industrial history and social capital.
- Awareness of CCS and knowledge about it can be relatively independent from each other. Dialogue boards showed that public media are considered very important for dissemination of CCS, but surveys showed that they are generally not considered the most trustworthy source of information, nor the most frequently used source.
- The legal and regulatory framework in which a CCS project is developed provides important boundary conditions for its communication strategy. Regulatory conditions both influence the degrees of freedom for a communication strategy, and they also affect the possible impacts of communication. Therefore, early interaction between project developer and regulatory authorities is vital, in order to prevent foreseeable pitfalls and come to an effective strategy.
- In the NearCO2 project, a multimedia DVD was developed providing balanced and well-accessible information on climate change, CO_2 and CCS. However, application of the DVD in focus groups showed that participants' attitudes towards CCS did not become more positive after having seen and discussed the DVD; they also indicated to have many remaining questions. This shows that (i) providing information does not by definition create more positive attitude, and (ii) bridging the public knowledge gap will probably require more extensive provision of information; moreover, building trust requires more than information provision alone.

These and other insights generated in the project were widely disseminated among CCS project developers and their communication experts. The project also generated a substantial number of scientific publications. More information as well as contact information can be found on the website of this project, www.communicationnearco2.eu.

1.2 Workshops within the NearCO_2 project

Within the dissemination Work Package of the project, two workshops have been organised, with the prime objective being to inform (communication experts within) project developers about the key outcomes, discuss their merits, and explore needs for further research and implementation implications of the recommendations. The workshops were held on June 23 in London, organised by IEEP, and on June 30 in Madrid, organised by CIEMAT. This report summarises the interaction and conclusions of them.

2. Workshops setup and programme

Both workshops consisted of two elements: in the morning and early afternoon sessions, the focus was on dissemination of the project results and a first reflection on them by the audience. For this, various WP representatives held presentations. In the later afternoon sessions, discussion sessions (both central and in subgroups) were held to review the wider implications of the project outcomes, confront them with the field experiences the participating experts had, and generate wider conclusions. See Table 2.1 and **Fout! Verwijzingsbron niet gevonden.** for the programmes of the London and Madrid workshops, respectively.

Table 2.1 *Programme Workshop London*

Strategies for communication and effective engagement in CCS-projects: Results of the European NEARCO2 project. University College London, Moot Court, Thursday June 23rd			
Times	**Speakers:**		**Content**
9:30 -10:00	Registration and coffee		
10:00–10:10	**Dr. David Reiner, Judge Business School, Cambridge University**		Workshop Overview Introduction of Speakers Workshop, Logistics
10:10-10:25	**Chiara Armeni** **Welcome from University College of London**		Overview of the CCLP program, ongoing research and analysis
10:25-10:45	**Aidan Whitfield** **Environment Agency of England and Wales**		Overview of CCS in the United Kingdom
10:45-11:15	**Dr. Marjolein de Best-Waldhober** **Energy research Centre of the Netherlands (ECN)** **Dr. Paul Upham** **Tyndall Centre** **University of Manchester**		Overview of the NearCO_2 project Discussion of European focus groups, introduction to DVD on CCS
Coffee break			
11:30-12:00	**Dr. Marjolein de Best-Waldhober (ECN)**		What happened with CCS in Europe? Communications and public engagement activities for large energy infrastructure projects including those in Germany and the Netherlands.
12:00-12:30	**Dr. David Reiner**		Status of public opinion on CCS. Results of survey and dialogue board
Lunch			
13:30–14:00	**Mariette Pol, ECN**		What should happen? Development of engagement strategies. What type of communication and engagement strategies are recommended based on the lessons learned from the research (based on review of toolkits, interviews with developers and ex-post evaluation of case studies).
14:00-15:00	**Discussion 1**	Dr. Thomas Roberts	Three topics for discussion to be chosen by moderators/rapporteurs
	Discussion 2	Jane Desbarats	
	Discussion 3	Dr. Paul Upham	
Coffee			
15:15–16:00	**Panel Discussion and Closing Remarks**		Discussion of outcomes of breakout groups with expert panel

Table 2.2 *Programme Workshop Madrid*

Strategies of communication and effective engagement in CCS-projects: Results of the European NEARCO2 project. Workshop June 30 2011 CIEMAT, Av. Complutense 22, 28040 Edificio 1, sala B. Madrid- June 30 2011		
Times	**Speakers:**	**Content**
9:45 -10:00	Registration	
10:00-10:10	Yolanda Benito **Director of Department of Environment** *CIEMAT*	Welcome and introduction
10:10-10:30	Francisco García Peña *PTECO2*	CCS in Spain
10:30-11.00	Mónica Lupión *CIUDEN*	Activities of CIUDEN on public communication and engagement
11:00-11:30	Paul Upham Tyndall Centre University of Manchester	Introduction of the NEARCO2 project Discussion of European focus groups, introduction to DVD on CCS
Break		
12:00-12:30	Paul Upham	What happened in cases in Europe? Communications and public engagement activities in cases of large energy infrastructure installations?
12:30-13:00	Kong Chyong	What is happening now in 5 European CCS-projects? Results of Survey and Dialogue Board held under public and stakeholders, and interviews held with project developers.
Lunch		
14:00-14:30	Paul Upham	What should happen? What communication and engagement strategies are recommended in the future?
14:30-15:30	Breakout discussion 1 (Chair: Hauke Riesch) Breakout discussion 2 (Chair: Christian Oltra)	Engagement strategies Topics for discussion to be chosen by moderators/rapporteurs
Break		
15:45-16:15	**Full group discussion with Panel:** Paul Upham (UMAN), Christian Oltra (CIEMAT), Francisco Peña (PTECO2), Mónica Lupión (CIUDEN)	A discussion of the results from the breakout groups
16:15-16:30		Final remarks

3. Presentations

In the following sections we summarise some of the main points in the presentations. This summary is necessarily partial – please see the full reports for detail.

3.1 London introductory presentations

UCL Carbon Capture Legal Programme
Chiara Armeni, Faculty of Laws, University College London, UK

Welcome from University College of London. Armeni gave an overview of the CCLP program, ongoing research and analysis. The aims and objectives of the CCLP program are to perform independent analysis of CCS legal and policy developments, to promote informed discussion on CCS, to develop and maintain an up-to-date and open-access website (legal resources, policy news, bibliography) and to provide information for a wide audience.
One of the current projects is the EU Case Study about the transposition of EU CO_2 Storage Directive in selected Member States (UK, Spain, Germany, Poland, Romania, Norway)

Discussion

- Delay in the transposition will have impacts on projects, but to avoid infringement procedures it is in member states' best interests to transpose quickly. There are concerns for projects that will need to gather funding before starting to run, with start around 2016.
- Infringements procedures have been modified. With the new treaty disposition, the Commission can now apply a fine that starts at the beginning of the infringements. This modification makes infringement potentially more serious.

Review of CCS in the UK
Aidan Whitfield, Environment Agency, UK

The Environment Agency is responsible for procuring a permit for CCS installations. Public consultation is part of the process in gaining a permit. Therefore public participation is very important in this area. One of the major concerns is how to deal with public acceptance from early days and to avoid lengthy and expensive procedures.
At this time there are 3-4 demonstrations projects (including Longannet) and seven UK projects (EU NER300), on which late 2012 a decision will be made.
All in all the UK CCS projects are making good progress compared to setbacks in other Member States. In UK there is:

- A choice of only offshore projects;
- Avoidance of high profile areas, with very active public action;
- Provision of a lot of (local) information on internet;

Discussion

- NGOs have a rather mild support for CCS. The no-clean-coal-debate needs to be separated from the CCS debate. CCS can be a renewable technology if combined with biomass.
- It could become a matter of concern that general public taxation is used to fund CCS demonstration. Need to find a better way to fund CCS which would enhance support from the general public.

- Question of how to justify funding for CCS versus other demands on the public purse. Problem is that the general public is unaware of the price of energy infrastructures in general and is unaware of the large impacts and costs of decarbonisation. CCS needs to be put in context.

3.2 Madrid introductory presentations

Welcome and introduction to the workshop
Yolanda Benito, Director of Department of Environment, CIEMAT, Spain

Welcome from CIEMAT. Fernando Recreo, on behalf of Yolanda Benito, gave an overview of the research fields of CIEMAT and introduced CCS as a need in the fight against climate change. He explained the main Spanish CCS projects and also addressed the social studies on CO_2 of CISOT (the department for Social –Technical Studies in Barcelona).

CCS in Spain
Francisco García Peña, The Spanish Technological Platform of CO_2 (PTECO2), Spain

García Peña addressed the main objectives of PTECO2 :
- To advise on national technology strategy capture, transport and geological storage of CO_2;
- Improving energy efficiency in large industrial facilities.
- Preparing a short, medium and long-term R&D planning on capture, transport and storage of CO_2.
- Promoting R&D strategic projects.
- Establishing partnerships to strengthen technological progress.
  - ⇨ This leads to the Strategic Deployment Document and R&D&I Schedule

Main conclusions:
- CCS techniques are essential to achieve EU emissions target for 2020 and meet with the "2050 climate roadmap";
- It will be difficult to apply CCS technologies within European industry without institutional support;
- Without CCS technologies there exists serious risk of industrial relocation in the EU;
- The Strategic Deployment Document and R&D&I Schedule should act as a reference guide for public authorities.

Fundación Ciudad de la Energía: Activities on public communication and engagement
Mónica Lupión, Fundación Ciudad de la Energía (CIUDEN), SPAIN

CIUDEN was created by the Spanish Government in 2006 as an R&D institution fully conceived for collaborative research in CCS and CCTs. This creation is an initiative to strengthen the social, industrial and technological base in El Bierzo in Spain.

CIUDEN has developed a strategy for an integral public involvement and communication plan with a strong multi disciplinary outreach team.
Examples of recent engagement activities are presented:
- The open day at the capture centre which attracted a thousand people;
- Educational programs with 80 schools in El Bierzo (around 13.000 children);
- Guided tours to the CCS facilities, specific meetings to better understand the project.

CIUDEN has realized in 5 years:

- Strong Outreach Team
- Integral Communication Plan developed in early stage
- Good relationship with media
- Materials tailored to audiences
- Site-specific Communication Plans
- Socio-economical characterization
- Identification of stakeholders
- Educational Programs

3.3 NearCO2 project presentations and first discussion

Overview of the NearCO2 project
London: Marjolein de Best-Waldhober, ECN, Netherlands
Madrid: Paul Upham, Tyndall Centre University of Manchester, UK

The Near CO_2 project is funded under seventh framework program. The scope of the project is to:

- Investigate regulatory contexts and practices in public participation (WP1)
- Investigate public opinion and information needs (WP2)
- Develop and asses participation strategies involving local public (WP3)
- Develop multi-media materials (WP4)
- Disseminate findings on effective public participation (WP5)

NearCO2 focus groups: themes and implications for CCS communication
Dr Paul Upham and Dr Thomas Roberts with the NearCO2 team
Paul Upham, Tyndall Centre University of Manchester

In the NEARCO2 project a 15 minute DVD is developed, which is divided in 4 chapters with questions on each chapter.

The aim of this work package was to observe and compare public responses and opinion change in response to introductory and contextualized information on CCS. Focus groups are held in Spain, Germany, Belgium, UK, Netherlands and Poland. The issues and concerns raised by the participants were the same over the countries, focusing on the need of more information, concern about carbon leakage risks and CCS being seen as a temporary fix. Preferences for renewable energy instead of CCS.
The results of the focus groups show that the response to CCS shifted from undecided on CCS before the focus group to negative on CCS and pro-nuclear. There was still a lot of ambiguity and uncertainty about CCS and generally there was a low trust in national and commercial authority.

DVD is downloadable from the project website http://www.communicationnearco2.eu/.

Discussion
One participant suggested looking at the Eurobarometer on CCS, in which correlation between awareness and opposition levels is addressed.

NearCO2: case studies
Marjolein de Best-Waldhober, Jane Desbarats, Suzanne Brunsting, Paul Upham, Elisabeth Duetschke, Christian Oltra, Roser Sala, David Reiner, Hauke Riesch and Carly McLachlan
London: Marjolein de Best-Waldhober, ECN, Netherlands
Madrid: Paul Upham, Tyndall Centre University of Manchester

With the case studies an inventory of formal processes leading to policy and project approval at the general level in the EU and six member states were made. The regulatory environment and the communication quality were assessed in eight cases including three CCS cases (2 in Germany and 1 in The Netherlands).
In Ketzin the CCS project was conceived as a science project, with communication from scientists. In contrast, the other CCS projects were seen as industrial projects, made for profit. When project developers started informing people, they were not trusted. This was counterproductive for the project. Protesting public started to organize. In The Netherlands the national government stepped in and organized a huge debate, but this debate led to polarization of opinions and very aggressive reactions from the public. Finally the Dutch project was cancelled.

Main conclusions:
In public participation the timing of public involvement is essential, as is the ability of the local communities to influence the project decision-making.

Discussion
- In Europe at least, CCS is a context in which professional communications skills and the nurturing of ongoing relationships with communities will often be essential. For the public, this is an unfamiliar technology with genuine scientific uncertainties. Trust in the messenger will always be vital in this context.
- How to avoid polarization and 'trench war'? Talk to small groups or even individuals, through the course of many days, is the best way to avoid the crowd effect, which is unproductive.
- Problem of the EIA report which is not trusted as it is paid by the developers (which they are legally obliged to).
- Need to take into account social impacts from the beginning: that is what Ohio showed.

In-depth analysis of opinion shaping factors
David Reiner, Hauke Riesch & Kong Chyong with the NearCO2 team
London; David Reiner, Judge Business School, Cambridge University, UK
Madrid: Kong Chyong, Judge Business School, Cambridge University, UK

The aim of this work package was to assess opinion shaping factors. Therefore a large survey in the participating countries was held, plus a Dialogue Board in Spain and Poland and an on-line experiment to test importance of visual communication material. The results of experiment were not analyzed at the time of the workshops.

Survey
The survey had a wide range of questions and a geographical interface, enabling respondents to situate themselves in relation to storage sites and power plants. Local and general public as well as stakeholders were approached.

Concerning knowledge of CCS: most respondents have never heard of it. A lot of the respondents claiming knowledge about CCS did not actually know that much.
Concerning trust: developers are not trusted as well as interactive websites. The most trusted are scientists. A strong trend is found that the more respondents are supportive of the project developer, the more they support the local project.

Effect of the information provided: it was found that after the information was presented, the support for the project declined.

Geographically, those who live closest to the storage site are less supportive than those living further. Concerning the capture site, jobs and potential benefits reflected more support for the capture site, which diminishes with distance.

In Poland and Spain Dialogue Boards were held with 30 participants each. A dialogue Board is a virtual focus group via the internet. Results show that participants were generally dissatisfied with available material on CCS. Respondents could not engage with friends and colleagues on the topic. Safety was seen as the most important factor of CCS. Even the most pro CCS participants were strong on the necessity of strong safety standards. The Dialogue Boards were held after the Fukushima disaster, which raised people awareness on unforeseen events. Concerning funding there was an overall feeling that industry were benefiting from CCS and that they should meet the cost.

Development of participation strategies
Sylvia Breukers and Mariëtte Pol with the NearCO2 team
London: Mariette Pol, Energy research Centre of the Netherlands (ECN), Netherlands
Madrid: Paul Upham, Tyndall Centre University of Manchester, UK

In this work package tools have been developed for end-users, i.e. CCS developers, regarding how best to involve stakeholders. A review of the existing toolkits for this purpose assessed their strengths and weaknesses, including their flexibility, the existence of advice to deal with unexpected situations, communications techniques etc. In general the toolkits do not take into consideration the fact that end-users can be a diversity of implementing organizations.
A next step was to interview developers with a focus on the relation between external messaging & engagement on the one hand and organizational practice on the other hand. The results show that existing toolkits are not actively used, communication skills are crucial and that CCS consortia are not unitary actors. A shared vision between partners on communication strategy is often missing. An engagement strategy is developed based on the existing ESTEEM-tool with the addition of an internal organizational learning process which can be tailored to the project developer organization.

Discussion
Workshop participants raised the issue of how to deal with controversy in local newspapers. In this respect there can be a constructive relationship with the news media, which can help explain what some of the local public may struggle to understand. A positive example is given in which journalists have been talking to a whole group of different actors, with the consequence that factual misunderstandings would be less likely. However CCS communicators more often need to be aware that the agenda of most journalists is to have something news-worthy to report (a scoop) which tends to be short term information. They may not be interested in following up a complex case.

4. Discussion sessions

4.1 Discussion Questions for the Breakout Groups

The timing of engagement: most CCS consortia are adopting a cautious approach to public and stakeholder engagement, with exploratory site licences being sought on a low profile basis. Fuller public engagement seems to be planned for a later stage. Is this a sensible strategy, or might some stakeholders and the public perceive this as leaving consultation too late?

Managing engagement: several consortia are taking a very targeted approach to engagement, focussing on building up support among unexposed and well-disposed groups. Engagement w with potential opponents seems to be less common. How might the latter be approached, if at all?

Intra-consortium communication: interviews by the NearCO2 team showed intra-consortium communication to be a key issue and a frustration for some involved. How might operators improve their communication across the organisations involved?

Trust in project developers: Interviews and case study research completed by the NearCO2 team indicated that communications and consultation exercises launched by project developers were typically seen as biased. What other stakeholders could be engaged as part of the consultation process that would help overcome this perception and increased trust among the public?

The role of policy in communications and consultation: Research undertaken by the Near CO_2 team in earlier stages of the project, indicated that consultation can often be negatively impacted by the quality of national law on consultation and communication. It can discourage adequate two way dialogue between developers and the public, and can even result in disclosure of pertinent information on the part of national and local governments. Is there a role for policy as part of communications and CCS? If so, what could the EU in particular do to improve the regulatory environment in relation to the establishment of a more transparent and accessible engagement process?

4.2 Highlights of the London discussion

The discussion below is in the participants' own terms and does not necessarily reflect the views of the NearCO2 team.

Discussion question 1: The timing of engagement

At what point should different type of engagement take place and how?
Public authorities may be interested, as well as local council and local planners in early engagement. It is important to communicate with the local counsellors in an early stage. The counterpart is that if you made your decision what is the point of discussing it? This is the so called Decide and Defend Approach (DDA).
Do you want to engage selected people in the community in the early stage and what might be the options? Hard to find who to choose. Example is given of the Don valley project (6 weeks before the workshop) were two parts of the project are dealing with two different communities. This requires approaching the communities in different ways. Search has to be conducted to find who is aware of what is happening in the community and who is the best to approach. Locally people will be impacted in different ways, views, traffic and economically by the CCS project. Therefore intervention needs to be adapted to the specific situation.

Take into account that there are also differences as to how much people will benefit from the project. Some see no local interest, nor any benefits at individual level.
When do you start engagement at the storage site? Do you start engaging from the moment of site selection? When considering all the options? Or when you have a shortlist with 10 possible sites? Or 3? When and where do you start engaging the public is a difficult timing issue that is not resolved yet.
It is important to have meaningful public involvement and to make sure that the (local) public can be part of the decision making. So the participants concluded that engagement should at least take place before all decisions are made. There must be left some room for influence.

At the other hand there seems to be a fear of (early) communication and engagement. There is a fear that the more consultation you do, the more fuss you create that can lead to more problems in the future. If you do consultations, boundaries and guidelines are needed. A lot of CCS companies have a negative environmental image, which is a barrier in the communication and engagement process. The CCSA can play an important role in providing more independent information and important mediation role.

Question 3: Intra-consortium communication:

Public authorities can be reluctant to engage different organizations and encourage gathering of entities for the CCS project.
The only way to make the project financeable is to have common ownership, or to own all of it. Liability and decision making are very difficult with multiple actors.
If you want parties to cooperate -and not only for a demo project-, you have to make sure cultural differences are taken into account. Heterogeneous points of view in society need to be reconciled with technical and financial constraints. It is fundamental that there is a responsible person to contact in case of emergency and who has the authority to take decisions. Cooperation is asking a lot of the new CCS sector. CCS is like any large scale project in terms of its management requirements. Need to make sure there is not going to be major ownership issues in the long term.

Discussion question 5: The role of policy in communications and consultation

Importance of education
Acceptance of CCS requires acceptance of climate change and an appreciation of its urgency. Education on this cannot be led by the developers, but should rather be led by government, who are responsible for the decision on CCS. While a legitimate debate on the best ways forward in terms of climate mitigation technologies remains, at least raising awareness of the real significance of climate change itself should raise the chance of discussion and engagement with the local community consisting of how to best implement the capture or storage development. Reopening the climate change debate each time a developer starts a project should not be necessary – workshop participants saw a strong failure of political leadership in communicating about the legal commitment on climate change that governments have taken. Governments should communicate that plants need to capture their carbon or that they otherwise will have to close.

There are also different levels of discussion. It would help greatly if there were wider endorsement of the fact that decarbonisation (CCS) must happen – that developers are expected to 'seal the deal', as part of our legal requirement to reach climate targets. The EU and national government should be in charge to sell decarbonisation as a whole and to say that it needs to happen and that CCS will be a part of it. While developers cannot avoid having to deal with fundamental questions about the need for CCS, a stronger national and international commitment would support them in this. One of the participants asks where does Strategic Impact Assessment sits in this context, because these are government led and could help.

There is a need for publicly available information on which most scientists agree, in order to reduce misconceptions and help win debates that arise. The Royal Society has a very good document on misconceptions on CCS.

In short there are three levels of debate, climate change, targets of emissions reduction and finally the use of CCS in meeting the targets.

4.3 Highlights of the Madrid discussion

The discussion in Madrid did not closely follow the prepared discussion points but covered the following topics. Again, the discussion reported below is in the participants' own terms.

Timing of engagement – levels of debate
Would it be prudent to delay communication when the legislative timing is so urgent? EC law mandates consultation but in a minimal way, as part of the EIA process. Specific discussion point not mandated but EIA would normally be undertaken at an early stage.
There appear to be two camps in this field: "don't put your head above parapet" or "be active and anticipatory". There was some agreement on this – both have pros and cons. A broader national campaign would make a difference by setting a backdrop; as a consequence, companies would not need to start from scratch and could be more pro-active. These may build distrust by not communicating early. Generally, there is a lack of national communication on the case for CCS.

Trust
Participants generally agreed that previous experience with a firm can be very important in determining reaction to new projects and is part of each company's background. The local rejection of a cement plant close to a residential area in Spain where residents experience nuisance and health issues was elicited to exemplify the difficulties in communicating risks to the public. It was followed by a debate on the role of location in the social acceptance of CCS projects and on the difficulties of gaining trust for CCS projects in comparison to cement plants. Some argued that one cannot just tack on CSR. Communication and local engagement needs to be meaningful and real. Hunter valley and Rio Tinto cause dust problems but also have a huge community fund for the local population. There are still vocal locals but they fail to engage as much traction as they would do without the compensatory efforts of the above firms. It was also debated how to approach the public, some arguing that more information provision is needed, other arguing that there is a need to change the conversation.
The former discussion raised the question: *Will communication be more difficult with CCS than cement*? Some participants argued that CCS projects present new challenges because while closure of the cement plant would mean no dust and hence no dust-related complaints, CCS storage must persist for a thousand years. Moreover, many people are unconvinced by the technology. Long term liability for the technology is a big issue, especially in developing countries: who will have the responsibility in the long term after closure?

Possibility of engaging with NGOs?
There is not one formula. But in general the trust issue is key and CCS needs endorsement by trusted people.
From the outside it is amazing that there is no debate in Spain between NGOs and companies. One would have expected companies to engage more with civil society on climate issues. For example the government of Australia has a panel to try to engage NGOs but conservative opposition has boycotted this as they receive political donations from large energy coal firms – (at the time of the workshop) no ETS etc.

A risk of non-engagement is a lack of coalitions that can underpin continuity across changes of government. This is seen as a fundamental reason why CCS does not progress uniformly across nations and within – politics and vested interests.

Role of Policy
In Spain, the Aarhus convention is applied at a minimum level. There seems to be the perception that Spain has a good law but does not implement it. Nothing undermines the credibility of a government more than the lack of implementation of a law. This happens internationally. Governments have an obligation to go towards the citizen and engage and inform, even if it fails. Educate and engender responsibility. We need civil society.

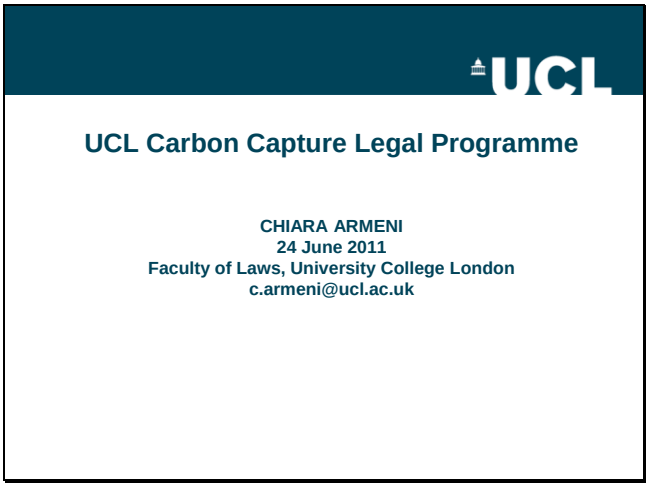
Intra consortia communication
Some companies are willing to learn and share info between companies. And some are less willing, for all sorts of reasons, some good and some not. The issue of knowledge sharing within and between firms merits much closer attention. But this is affected by cultures within and outside the organization, e.g. whether a firm has the fortitude to admit mistakes in relation to public relations. Perhaps if there were some models or showcasing on knowledge sharing? Knowledge sharing can also be hampered by personalities in firms. The problem is that this is part of their assets and they fear opposition.

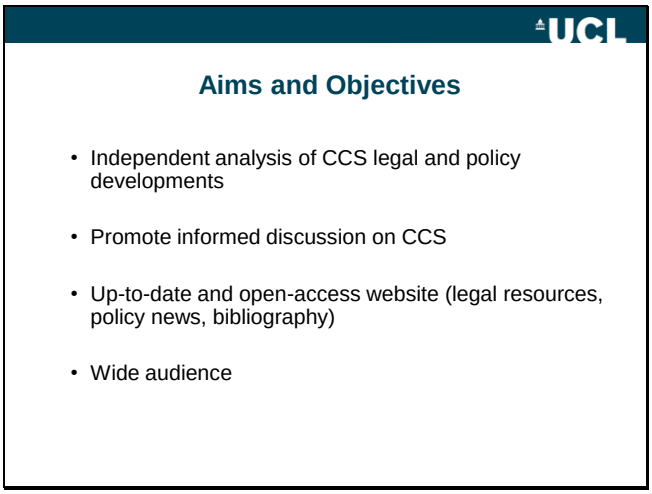
But knowledge is power – and power tends to corrupt. You want an open society but companies want a hierarchical structure. We need firms to open up even though they have started to open up, perhaps less so in Spain.

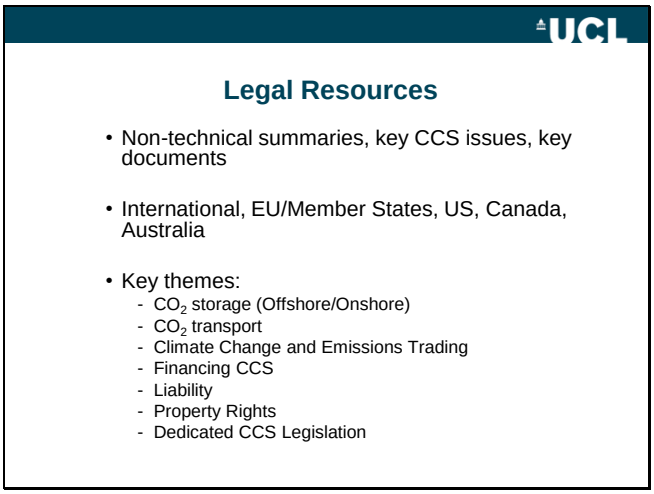
Will companies win by being closed? Way ahead is an open campaign. GCCSI is trying to help build cross-sector fora. But for an energy firm, CCS is a small issue. Is it reasonable that they are likely to change their culture?
At this time most CCS projects are public subsidized so public acceptance is particularly critical: an extra obligation to obtain public acceptance – not a solely commercial project. Therefore communication should be a part of the commitment to inform the public.

Appendix A Presentations

A.1 Presentations London







Current Projects: EU Case Study (Nov.2010-Nov.2011)

- Transposition of EU CO_2 Storage Directive in selected Member States (UK, Spain, Germany, Poland, Romania, Norway)
- Analysis of
  - Member States' legal and regulatory choices
  - Administrative arrangements and tensions (e.g. devolution)
  - Interaction with existing environmental and energy legislation
  - Public participation and engagement
- Academic partners
- Outputs: series of reports and event in Nov 2011

Publications and Events

- 'Think Pieces': critical analysis
- Carbon Capture and Storage: Public Perception and the Law (London, June 2009)
- CCS Global Legal Symposium (New York, March 2010)

External outreach

- Project specific relationships
  - EU project: European Commission, government departments and relevant organisations in chosen M/Ss
  - South Africa project: Governmental, academic and professional
  - International organisations
- Wider activities
  - International Energy Agency
  - Global CCS Institute

Public Participation and the Law: EU CCS Example (1)

- No Specific Provision for Public Participation in the CO_2 Storage Directive
- Amendment to 1985 Environmental Impact Assessment Directive
  - EIA is mandatory for:
    - Capture 1.5 megatonnes or more
    - Storage sites of any size
    - Pipelines 40Km or more
  - Discretionary EIA for other capture or pipeline sizes

Public Participation and the Law: EU CCS example (2)

- CO_2 capture for storage: Annex I activity for Industrial Emissions Directive permit
- Article 24: '*Member States shall ensure that the public concerned are given early and effective opportunities to participate*'
- Annex IV: provisions on Public Participation
- Member States to establish measures to implement it

Thank you!

Chiara Armeni

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http://www.ucl.ac.uk/cclp/

Review of UK CCS

Aidan Whitfield
23 June 2011

File: Review of UK CCS A Whitfield for 23Jun11

Environment Agency

Demonstration plants (circa 300MW)

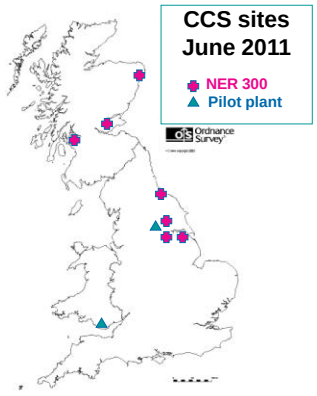
- Demo 1, Scottish Power Consortium, Longannet – Govt. decision by end 2011
- EU NER300 proposals submitted May 2011 – 7 UK projects, 3 in Scotland, 4 in England – EU decision by late 2012
- Demos 2 – 4, DECC market engagement exercise June/July 2011

Environment Agency

Pilot plants (less than 10MW)

- All post-combustion "capture and release" on coal fired power stations
- Scottish Power, Longannet
  - operated for 2 years until early 2011, now in Europe
- Scottish & Southern Energy, Ferrybridge &
- RWE NPower, Aberthaw
  - permits issued by the EA, start-up 2011/early 2012

Environment Agency



Environment Agency

Policy Developments

- Funding for Demo projects
  - Up to £1bn for demo 1 confirmed in Oct 2010 spending review
  - Demos 2-4 to be funded from general taxation
- Electricity Market Reform
  - started in December 2010, aiming to be in place by 2013
- CCS 2050 Roadmap
  - to be published Autumn 2011
- CCS directive
  - Regulations laid in June for transposition into UK law

Environment Agency

UK compared to Europe

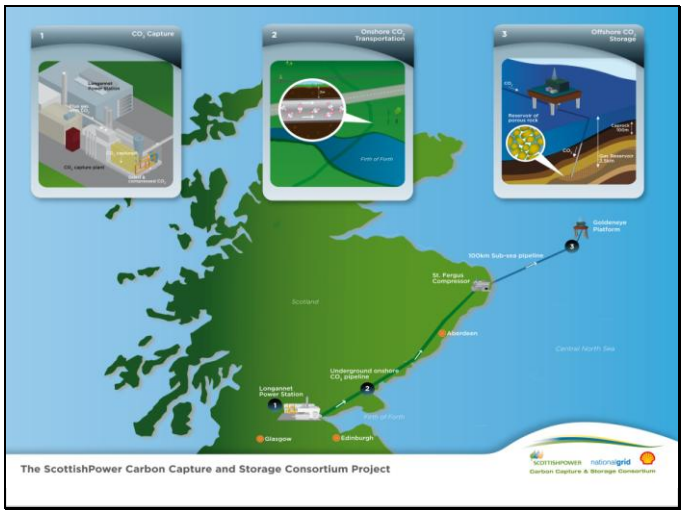
- UK CCS - some delays but is making progress
- In Europe CCS has had delays and setbacks - mostly involving public acceptance and politics rather than technical problems

Environment Agency

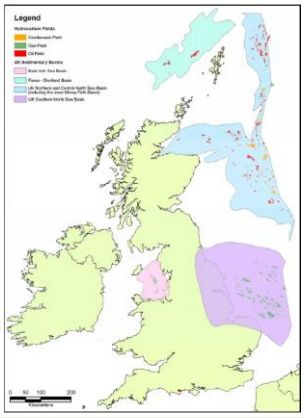
What is UK CCS doing right?

- Political consensus
  - EU, Westminster, Scottish Govt. & at local level
- Wider support
  - Academia, Regulators, Trades Unions
- Clear programme
  - research, pilot plants, demo plants up to 2020
  - possible full-scale deployment after 2020
- Industry support
  - 7 UK CCS projects for NER300 funding
  - 6 projects in the rest of Europe

Environment Agency



UK Oil/Gas fields and sedimentary basins



- Source: British Geological Survey

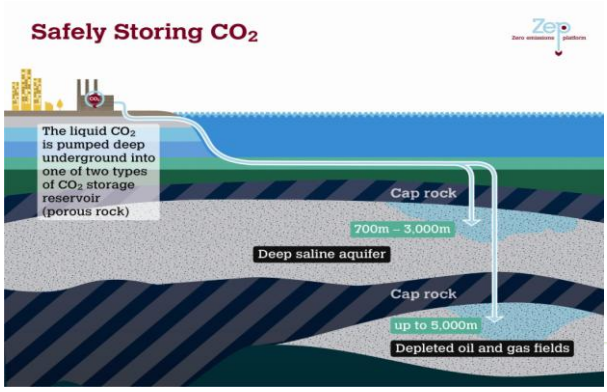
Environment Agency

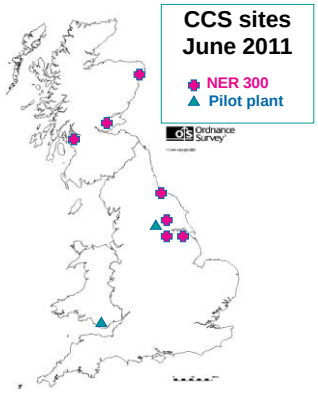
Public engagement – so far so good?

- CCS information available on websites
  - DECC, CCSA, regulators, universities
- National engagement
  - Media, seminars, engineering institutions
- Local engagement led by operators

Environment Agency

Govt. website: www.decc.gov.uk/occs





Environment Agency

UK Public Engagement

- Research is providing a good insight into
  - national awareness and understanding of CCS
  - local community engagement in CCS projects
- Engagement needed at various levels:
  - National - energy supply options etc
  - Local – addressing safety/environmental concerns, understanding any specific local issues

Environment Agency

UK review of CCS

Aidan Whitfield

aidan.whitfield@environment-agency.gov.uk

Environment Agency

A.2 Presentations Spain

Results of the European NEARCO2 project.

Strategies of communication and effective engagement in CCS-projects

Workshop June 30 2011

Welcome Address

CIEMAT, an Energy, Environment and Technology Research Center, is organized in five technical Departments:

- Energy, Environment, Fusion, Technology and Basic Research.

- It has several Centers, in addition to Moncloa where we are,
- The PSA (Almería Solar Platform) with activities in concentrated Solar Energy,
- CETA (Cáceres) dedicated to Supercomputing,
- CEDER (Soria) for Renewable Energy,
- CIEDA (Soria) for Environmental Law, and
- CISOT (Barcelona) for Social Perception.

ENVIRONMENT DEPARTMENT

Scientific areas:

- ✓Air Pollution,
- ✓ Soil Remediation,
- ✓ Radiological Environment,
- ✓ Climate Change and
- ✓ Social Perception of the technologies addressed by CIEMAT

CCS as a Need

- All of you know the needs that fossil fuels (especially coal), involve to ensure demand at least until 2050, while reducing greenhouse gas emissions (especially CO_2).
- These needs have led to the development of systems, zero emission technologies, involving CO_2 capture, transport and storage (CCS)
- The activity is focusing in bringing technology closer to the market, with the development of the first six European demonstration plants, one of them in Spain linked to the experimental CO_2 Capture Platform that is being developed by the Energy City Foundation ("Fundación Ciudad de la Energía"), CIUDEN, a legal public state foundation located at Ponferrada(León)

CCS activities in Spain

- Scientific-technological CO_2 capture and storage has been highly relevant in the last six years, both in the different alternatives proposed for capture: pre-combustion, post-combustion and oxy-combustion, as in the study of geological formations likely for safe storage of captured CO_2.
- A large-scale pilot plant (14 MWt) connected to the Integrated Gasification Combined Cycle (IGCC) coal-fed Power Station in Puertollano (Ciudad Real) for the development of Pre-combustion technologies is already in operation by ELCOGAS SA.
- Also, a Technology Development Plant for CO_2 Capture and Transport, a large scale Pilot Plant to produce CO_2 at transport conditions, is now under construction by the Energy City Foundation ("Fundación Ciudad de la Energía") at Cubillos del Sil (León).

- The Compostilla OXYCFB300 Project includes two boilers:
  - a 30 MWt oxy-firing Circulating Fluidized Bed (LFC) with the objective of capturing up to 90% of the CO_2 produced, and
  - an Oxycombustion with pulverized coal (CP) of 20 MWt
- Also, it includes a Biomass Gasifier of 3 MWt to test innovative approaches to sustainable use of biomass.
- CIUDEN Geological Storage Programme is implementing a Technological Development Plant (PDT) for in situ real scale geological storage technologies development (injectivity and monitoring) at Hontomín (Burgos).

CCS Activities in CIEMAT

- In CIEMAT systems projects to capture CO_2 are being developed by the Department of Energy,
- Geological Characterization and Storage Risk Assessment studies for CO_2 storage in deep permeable formations saturated with saline water are currently being conducted in the Environment Department in close collaboration with CIUDEN' CO_2 Storage Programme under several Technical Agreements and funded Projects.
- Social Perception Group, which had a relevant role in Risk communication and Social perception in relation with the site of Hontomín.

- Since 2005, CIEMAT, the Spanish Geological Survey (IGME) and several Universities and Public and Private Organizations (some of which are present here today, as ELCOGAS) have been collaborating through a Strategic Project (PSE-2-2005) for CO_2 Capture and Storage funded by the Science and Innovation Ministry (MICINN).

CISOT Studies on CO_2

- CISOT objectives for social perception in this project are:
- To promote the social acceptability of technologies for geological storage of CO_2.
- To design programs for the participation and joint decision-making.
- To design programs for the evaluation of the technology management and organizational structures to identify monitor and control risks.

This Meeting will allow further progress in all these aspects and so I reaffirm my best wishes on this day expecting to reach fruitful results for the future.

Thank you


Fundación Ciudad de la Energía:
Activities on public communication and engagement
Monica Lupion
NEARCO2 Project Workshop
Madrid. 30th June 2011


Fundación Ciudad de la Energía
Scope
Fundacion Ciudad de la Energia (CIUDEN)
CIUDEN's Programmes
Building a strategy on Public Engagement
Outreach Team
Integral Communication Plan
Socioeconomical characterization
Site Specific Action Plan
Concluding remarks


Fundación Ciudad de la Energía
Scope
Fundacion Ciudad de la Energia (CIUDEN)
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Fundación Ciudad de la Energía

An initiative of the Spanish Administration

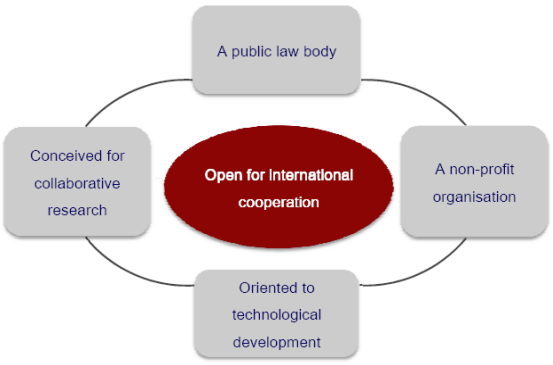
CIUDEN was created by the Spanish Government in 2006 as a R&D institution fully conceived for collaborative research in CCS and CCTs.
An initiative to strength to social, industrial and technological base in El Bierzo and by extension in Spain and Europe.

Fundación Ciudad de la Energía

El Bierzo

Fundación Ciudad de la Energía

Attributes



Fundación Ciudad de la Energía

Scope

- Fundacion Ciudad de la Energia (CIUDEN)
- CIUDEN's Programmes
- Building a strategy on Public Engagement
  - Outreach Team
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  - Socioeconomical characterization
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- Concluding remarks

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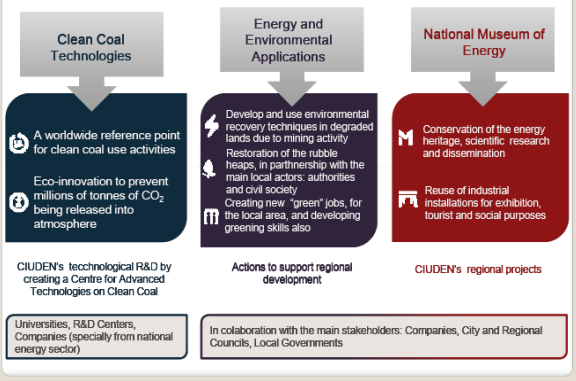
CIUDEN´s Programmes

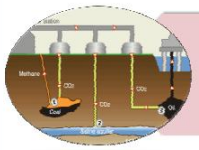


Fundación Ciudad de la Energía

General objectives on CCS

To create a world-wide reference centre for CCS technology development

THROUGH



Plants for CO_2 Capture, Transport and Storage

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Technology Development Centre for CO2 Capture or *es.CO2*

Fundación Ciudad de la Energía

es.CO2 Basic data

LOCATION	CAPEX	OPEX
El Bierzo, Leon NW Spain	Phase I 100 M €	8 M€/y

Commissioning on going!

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NATIONAL MUSEUM OF ENERGY

Fundación Ciudad de la Energía

National Museum of Energy

Contributing to social and economical change in the region

Fundación Ciudad de la Energía

Environmental applications

Restoration of a coal waste heap

Degraded lands due to mining activity

Fundación Ciudad de la Energía

Scope

- Fundacion Ciudad de la Energia (CIUDEN)
- CIUDEN's Programmes
- **Building a strategy on Public Engagement**
  - Outreach Team
  - Integral Communication Plan
  - Socioeconomical characterization
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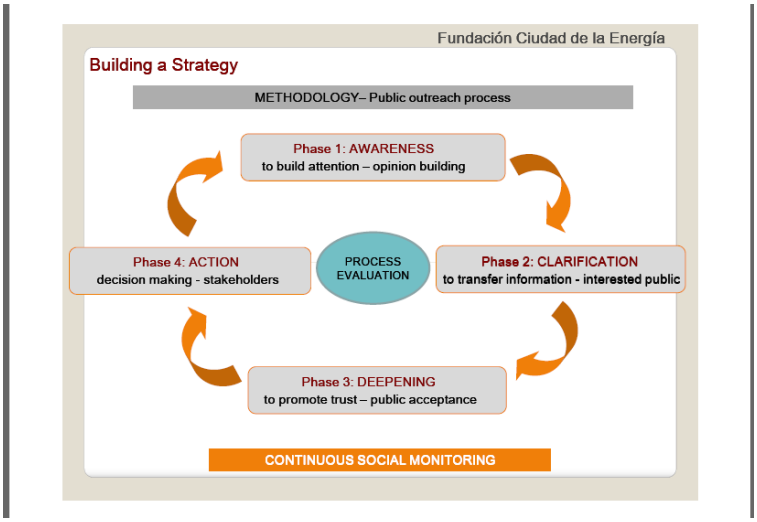
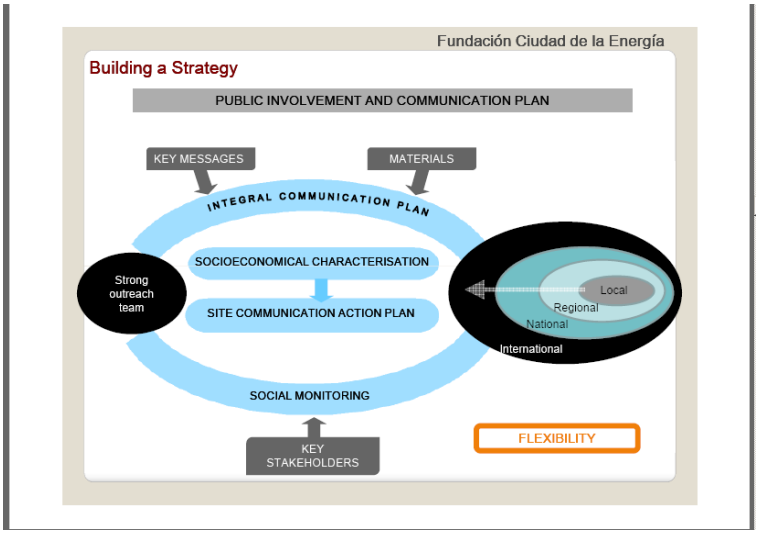
- Concluding remarks


Fundación Ciudad de la Energía
Building a Strategy
METHODOLOGY– Public outreach process
Phase 1: AWARENESS
to build attention – opinion building
Phase 2: CLARIFICATION
to transfer information - interested public
Phase 3: DEEPENING
to promote trust – public acceptance
Phase 4: ACTION
decision making - stakeholders
PROCESS EVALUATION
CONTINUOUS SOCIAL MONITORING


Fundación Ciudad de la Energía
Building a Strategy
PUBLIC INVOLVEMENT AND COMMUNICATION PLAN
KEY MESSAGES
MATERIALS
INTEGRAL COMMUNICATION PLAN
SOCIOECONOMICAL CHARACTERISATION
SITE COMMUNICATION ACTION PLAN
SOCIAL MONITORING
Strong outreach team
Local
Regional
National
International
KEY STAKEHOLDERS
FLEXIBILITY


Fundación Ciudad de la Energía
0. Outreach Team
ESTABLISHMENT OF A STRONG OUTREACH TEAM
• The Outreach Team is composed of specialists from different fields
• Group of specialized spokespersons for media and local population
• Training course in communication for speakers
• Regular working meetings
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Fundación Ciudad de la Energía

1. Integral Communication Plan

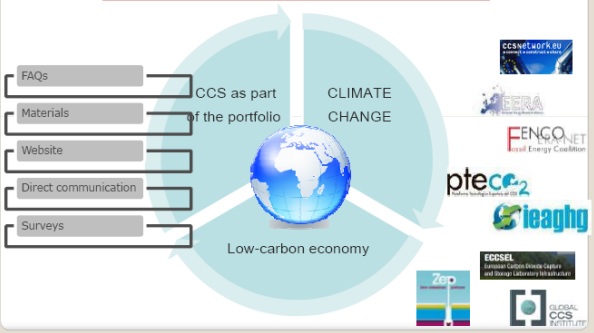
- Development of an Integral Communication Plan fluent, interactive and effective
- ICP for the whole country but additional specific plans for different areas:
  - Capture
  - Transport
  - Storage
- Specific actions tailored to audiences:
  - Key messages
  - Materials
  - Educational Programmes
  - Technical workshops
  - Open days
  - Informative meetings and interviews
  - .....

Fundación Ciudad de la Energía

1. Integral Communication Plan

KEY MESSAGES

Creating a vision for CCS



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1. Integral Communication Plan

KEY MESSAGES

Creating a vision for CCS

CCS WILL CONTRIBUTE 20% CO_2 EMISSIONS REDUCTION BY 2050

Adapted from Zero Emissions Platform

Fundación Ciudad de la Energía

1. Integral Communication Plan

MATERIALS

Educational info

www.compostillaproject.eu

Social Perception Study

Q&A: press and general public

Microdocumentaries

Brochures

Informative video

Fundación Ciudad de la Energía

1. Integral Communication Plan

Active Plan

Conferences

Press releases

Educational Programme

Technical meetings

Open days

Fundación Ciudad de la Energía

1. Integral Communication Plan

RECENT ENGAGEMENT ACTIVITIES

The commissioning of the Technology Development Centre for CO_2 Capture has been taken as an excellent opportunity to make the local population (El Bierzo) aware of the importance of CCS technologies to combat climate change

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1. Integral Communication Plan

CIUDEN LIGHTS THE FIRST FIRE IN THE CO2 CAPTURE CENTRE
2011-04-20 12:31:59

Ponferrada. "Saturday 16 April, at 7:30 pm, a stable and simultaneous ignition of the four burners on the pulverised coal (PC) boiler was carried out, thus reaching this important milestone in the commissioning of the Technology Development Centre for CO2 Capture,

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1. Integral Communication Plan

RECENT ENGAGEMENT ACTIVITIES

Coinciding with the 5th anniversary of Ciuden, an Open Day was held at the Capture Centre. More than one thousand people visited the site and received information about CCS technologies and CIUDEN´s R&D activities, such as the Compostilla Project

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1. Integral Communication Plan

RECENT ENGAGEMENT ACTIVITIES

Educational programmes with 80 schools in El Bierzo (around 13.000 children). 800 have visited CIUDEN headquarters. Topics: CO_2, climatic change, geological storage, oxycombustion and R&D activities

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1. Integral Communication Plan

RECENT ENGAGEMENT ACTIVITIES

Guided tours to the CCS facilities, specific meetings to better understand the project.

Our aim is to spread information on CCS and R&D Projects (university groups, secondary schools, research institutes, private companies, etc).

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2. Socioeconomical Characterisation

	Cubillos del Sil (Capture)	Hontomin (Storage)
Population (Inhabitants)	1771	93
Population density (inhabs./km²)	33.16	4.05
Home sizes (people)	2.5	1.6
Distance to urban area (Km)	12	30
Educational level (>secondary ed.)	14.59%	24.5%
Employment	Services, mining & industry	Agriculture

HONTOMÍN (Burgos). Storage experimental site
- Less populated, rural depopulation
- Rural economy: mainly agriculture
- High natural value
- Castilla-León autonomous region

COMPOSTILLA, Ponferrada. Capture site
- Rural depopulation
- Lost of traditional mining activities
- Industrialized area
- Castilla-León autonomous region

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2. Socioeconomical Characterisation

KEY STAKEHOLDERS

Developers	CIUDEN+ENDESA
Financers	Spanish government and industries
Project operators	CIUDEN+ENDESA
Policy makers (local and regional in each site)	Local city councils. Castilla-Leon and Aragon regional governments. Spanish government
Political parties	PSOE, PP, PAR, Local parties
Regulators	EC and the Spanish Government
Key stakeholders	Local communities, Local political groups, NGO's, Chambers of Commerce, Trade Unions,...
'Affected' communities	The local and regional population
Experts and research groups	Regional Universities and Research Institutes, CSIC, IGME, CIEMAT
Media	Local, regional, national and international media

Actions designed for communication purposes have to bear the differences among the target groups

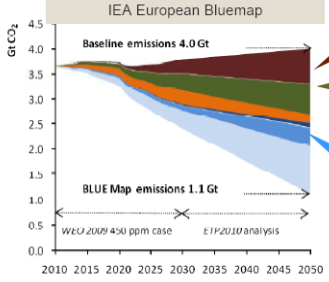
Fundación Ciudad de la Energía

2. Socioeconomical Characterisation

KEY STAKEHOLDERS: Policy makers

- Low carbon economy is one of the main goals of Spanish energy policy
- IEA and the Spanish government identified **CCS** as an important strategic technology to help Europe and Spain achieve the carbon free blueprint

IEA European Bluemap



Willingness to develop CCS Ciuden, Compostilla, Spearhead projects

In 2009 34 TWh wind production and ¼ of install capacity is renewable

2005-09 15% reduction in primary energy intensity

ZEP GA. P. Palencia, V J Cortés. 2010

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2. Socioeconomical Characterisation

KEY STAKEHOLDERS: Policy makers

To summarize

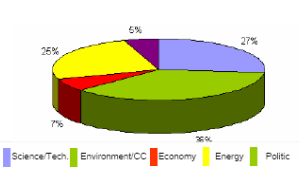
- Recognition of the importance of the technology
- CIUDEN as example of the commitment with CCS
- Spain has the experience of designing proper market based incentive mechanisms to ensure successful demonstration for commercial deployment

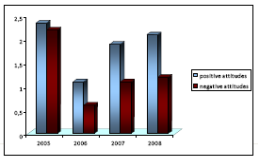
Spain will use its experience and willingness to support an European solution to make CCS one of the carbon free technologies in the world's energy portfolio

Fundación Ciudad de la Energía

2. Socioeconomical Characterisation

KEY STAKEHOLDERS: Media Coverage





Main topic of the articles:

- Environment & climate change (36%)
- Technology and science (27%)
- Energy (25%)

- More emphasis on benefits of the technology than on risks
- Benefits associated to reduction of CO_2 emissions
- Risks associated to immature technology and legal responsibility of storage

Source: CIEMAT (2009)

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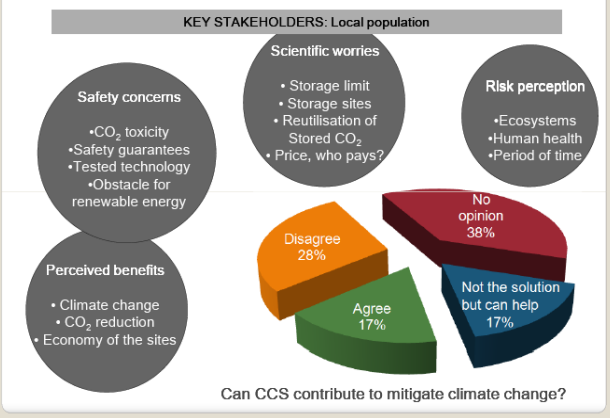
2. Socioeconomical Characterisation



Fundación Ciudad de la Energía

3. Site Communication Action Plan

Three areas, three strategies

- The capture area
  - Reinforce the idea of economic opportunity
  - Strategic location
  - Synergies with other projects
- The transport area
  - Security and infrastructure with low environmental impact
  - Clear, accurate, flexible communication.
  - A spokesperson with extensive knowledge of the territory and contacts
  - A proactive approach
- The storage area
  - Contribution of the territory to solving a global problem
  - Provide some compensation policy in the area

Fundación Ciudad de la Energía

Scope

- Fundacion Ciudad de la Energia (CIUDEN)
- CIUDEN's Programmes
- Building a strategy on Public Engagement
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  - Socioeconomical characterization
  - Site Specific Action Plan
- Concluding remarks

Fundación Ciudad de la Energía

CONCLUDING REMARKS

- **Strong Outreach Team:** Trained speakers/variety backgrounds
- **Integral Communication Plan developed in early stage**
  - Intense relationship with media
  - Materials tailored to audiences
  - Key messages: CCS part of the climate change solutions; CIUDEN R&D promotes public-private cooperation; the economy of knowledge generates jobs and opportunities in the areas
  - Site-specific Communication Plans
- **Application socio economical characterization**
  - Identification of stakeholders
- **Educational Programmes: critical issue for near future**
- **Upcoming activities**
  - Strengthen relationships with stakeholders
  - Continue with public engagement activities
  - Development new dissemination materials
  - Networking with other projects (synergies)
  - ....

THANK YOU FOR YOUR ATTENTION

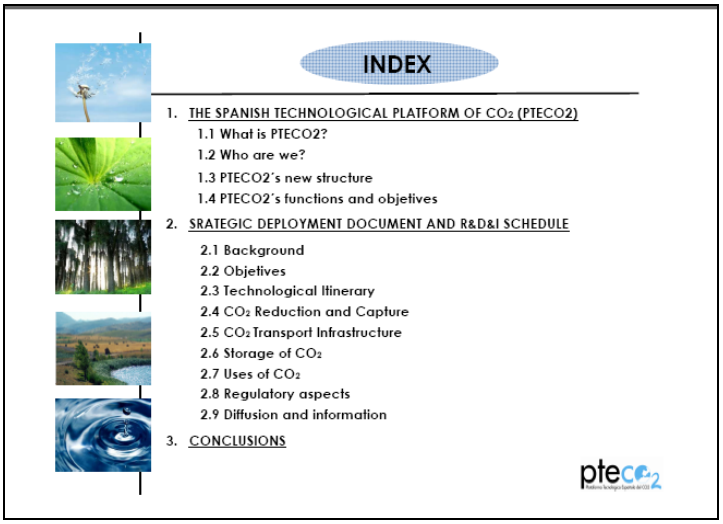
For further information, please visit the website www.ciuden.es
or e-mail:Monica Lupion m.lupion@ciuden.es

pteco2
Plataforma Tecnológica Española del CO2

The Spanish Technological Platform of CO_2 (PTECO2)

Strategic Deployment Document and R&D&I Schedule

July 2011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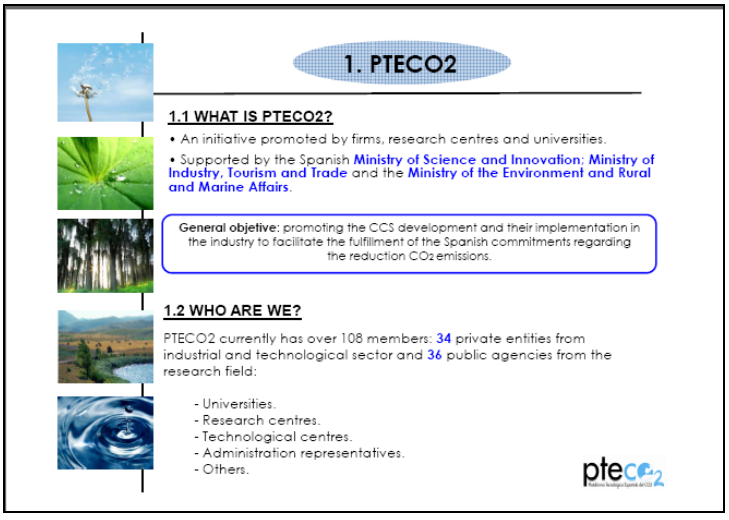
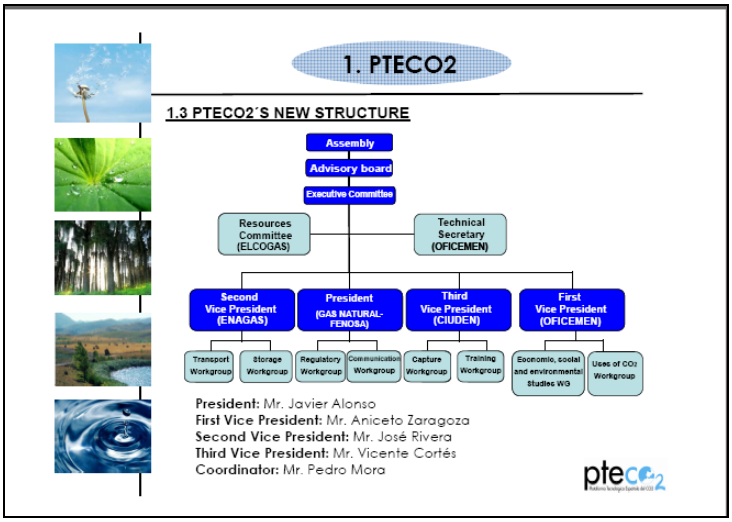

1. PTECO2
1.1 WHAT IS PTECO2?
• An initiative promoted by firms, research centres and universities.
• Supported by the Spanish Ministry of Science and Innovation; Ministry of Industry, Tourism and Trade and the Ministry of the Environment and Rural and Marine Affairs.
General objetive: promoting the CCS development and their implementation in the industry to facilitate the fulfillment of the Spanish commitments regarding the reduction CO2 emissions.
1.2 WHO ARE WE?
PTECO2 currently has over 108 members: 34 private entities from industrial and technological sector and 36 public agencies from the research field:
- Universities.
- Research centres.
- Technological centres.
- Administration representatives.
- Others.
pteco2


1. PTECO2
1.3 PTECO2´S NEW STRUCTURE
Assembly
Advisory board
Executive Committee
Resources Committee (ELCOGAS)
Technical Secretary (OFICEMEN)
Second Vice President (ENAGAS)
President (GAS NATURAL-FENOSA)
Third Vice President (CIUDEN)
First Vice President (OFICEMEN)
Transport Workgroup
Storage Workgroup
Regulatory Workgroup
Communication Workgroup
Capture Workgroup
Training Workgroup
Economic, social and environmental Studies WG
Uses of CO2 Workgroup
President: Mr. Javier Alonso
First Vice President: Mr. Aniceto Zaragoza
Second Vice President: Mr. José Rivera
Third Vice President: Mr. Vicente Cortés
Coordinator: Mr. Pedro Mora
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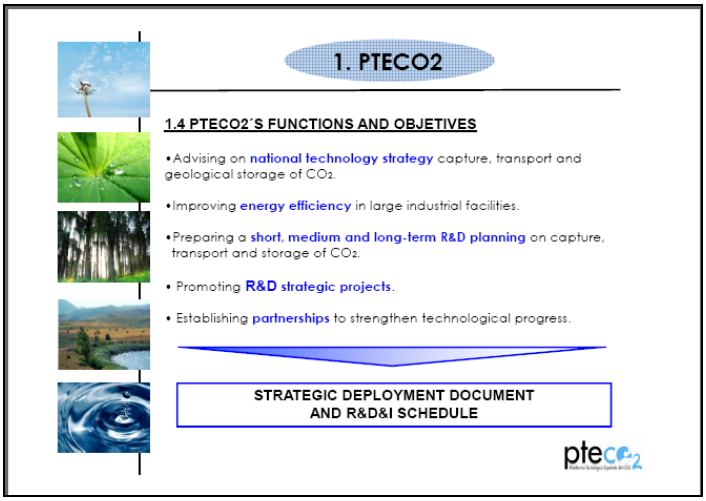
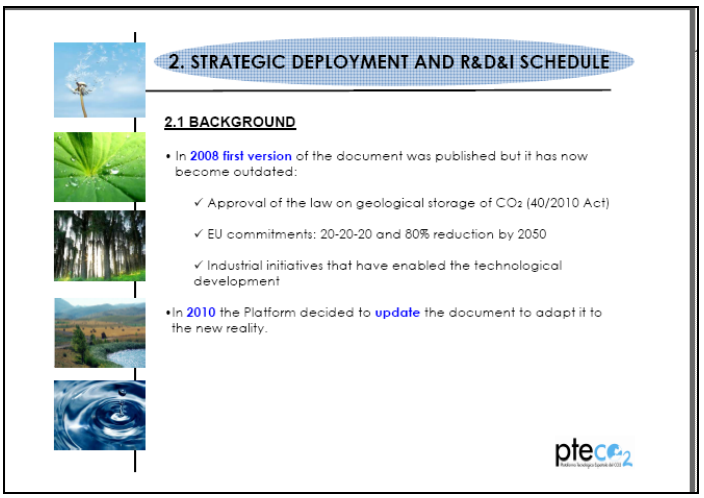
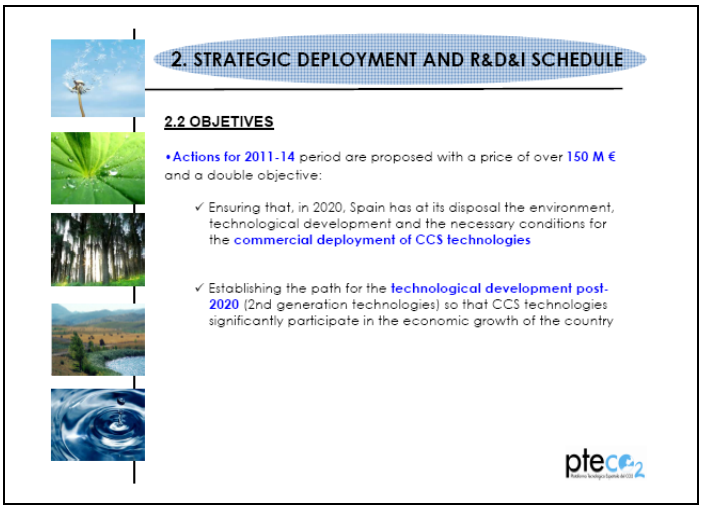
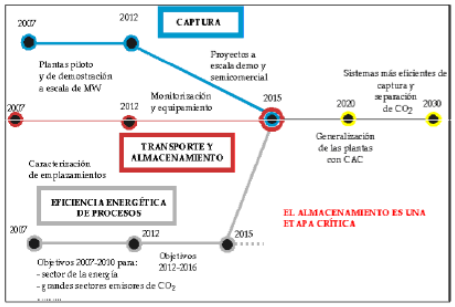

1. PTECO2
1.4 PTECO2´S FUNCTIONS AND OBJETIVES
•Advising on national technology strategy capture, transport and geological storage of CO2.
•Improving energy efficiency in large industrial facilities.
•Preparing a short, medium and long-term R&D planning on capture, transport and storage of CO2.
• Promoting R&D strategic projects.
• Establishing partnerships to strengthen technological progress.
STRATEGIC DEPLOYMENT DOCUMENT AND R&D&I SCHEDULE


2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE
2.1 BACKGROUND
• In 2008 first version of the document was published but it has now become outdated:
✓ Approval of the law on geological storage of CO2 (40/2010 Act)
✓ EU commitments: 20-20-20 and 80% reduction by 2050
✓ Industrial initiatives that have enabled the technological development
•In 2010 the Platform decided to update the document to adapt it to the new reality.


2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE
2.2 OBJETIVES
•Actions for 2011-14 period are proposed with a price of over 150 M € and a double objective:
✓ Ensuring that, in 2020, Spain has at its disposal the environment, technological development and the necessary conditions for the commercial deployment of CCS technologies
✓ Establishing the path for the technological development post-2020 (2nd generation technologies) so that CCS technologies significantly participate in the economic growth of the country

2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.3 TECHNOLOGICAL ITINERARY



2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.4 CO_2 REDUCTION AND CAPTURE

Objetives

- Exploiting **pilot plants** built in Spain as a testing field for technology development and integration of CO_2 capture processes.
- Promoting **new pilot and demonstration plants** integrated into industrial processes different from electricity generation sector.
- Developing demonstration projects in Spain to ensure the **commercial deployment** of CO_2 capture technologies.
- **Promoting R&D&I** to develop new materials and processes for CCS technologies.

2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.4 CO_2 REDUCTION AND CAPTURE

DEVELOPMENT	ESTIMATED COST	CALENDAR
Optimization of the first capture technology	20 M€	2011-2014
Installation of experimental second generation plants	20 M€	2012-2014
Pilot plant construction applicable to other industries	10 M€	2012-2014
Development of new materials and processes	15 M€	2011-2015

2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.5 CO_2 TRANSPORT INFRAESTRUCTURE

Objetives

- Performing **an initial characterization of the CO2 for transport**, together with the development activities of CCS technologies.
- Progressing in the pre-study of the **future transportation network** , in order to have an initial knowledge of its basic parameters.
- Defining the **safety and environment basic criteria** which may affect the development of this infrastructure.

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2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.5 CO_2 TRANSPORT INFRAESTRUCTURE

DEVELOPMENT	ESTIMATED COST	CALENDAR
Characterization of CO_2 for transport	1 M€	2012
Studies of the network	1,5 M€	2011-2014
Equipment development	1 M€	2012-2014
Security and Environment	1,5 M€	2012-2014
Regulation and legislation	0,75 M€	2012-2013
Economy studies of transport	0,5 M€	2012-2014

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2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.6 CO_2 STORAGE

DEVELOPMENT	ESTIMATED COST	CALENDAR
Map storage	2 M€	2011-2015
Characterization of carbon storage and seal formations	4,5 M€	2011-2015
	6 M€	2015-2020
Trapping mechanisms	6,5 M€	2011-2015
	8,5 M€	2015-2020
Storage modeling	3,5 M€	2011-2015
	4,5 M€	2015-2020
Storage integrity: monitoring and verification	1 M€	2011-2015
Safe confinement of CO_2	3,5 M€	2011-2015
	1,5 M€	2015-2020
Technical and economic studies	0,5 M€	2011-2013
Pilot projects on storage	100 M€	2015-2020

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2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.7 USES OF CO_2

Objetives

- Promoting different ways to use CO_2 as **a complement to geological storage**.
- Developing new applications that use and confine CO_2 at **a similar scale as it is generated**.

DEVELOPMENT	ESTIMATED COST	CALENDAR
Setting standards and develop legislation	7 M€	2011-2015
Environmental conditions studies		
Carbon fertilization in greenhouses		
Development of steels and corrosion resistant materials caused by CO_2		
National Germplasm Bank of Algae		
Mass cultivation of microalgae		

2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.8 REGULATORY ASPECTS

Objetives

- Assisting in the formulation of new proposals both for **legal and funding mechanisms** which regulate and ensure the development and implementation of CCS technologies, as well as estimating the additional costs of carrying out a full-scale demo plant.

Development

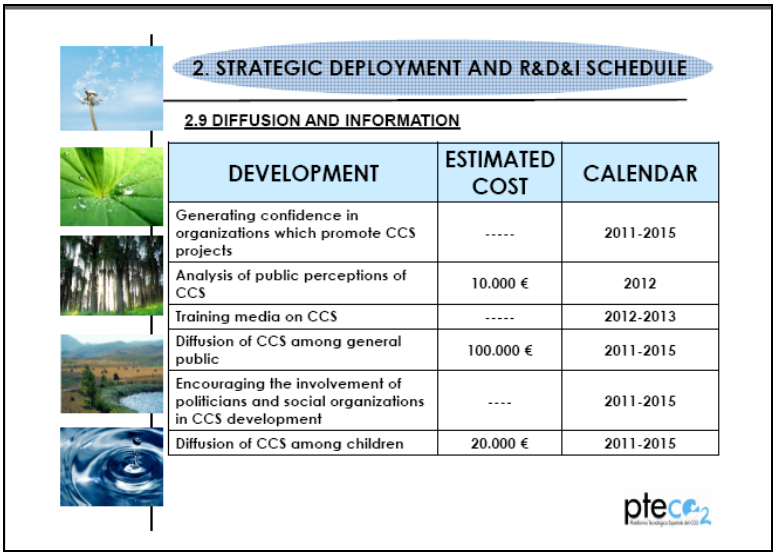
- **Regulatory development** of the Law on Geological Storage.
- **Regulatory development** of other CCS activities, especially transport.
- Promoting and developing **funding sources and mechanisms** for CCS technologies.

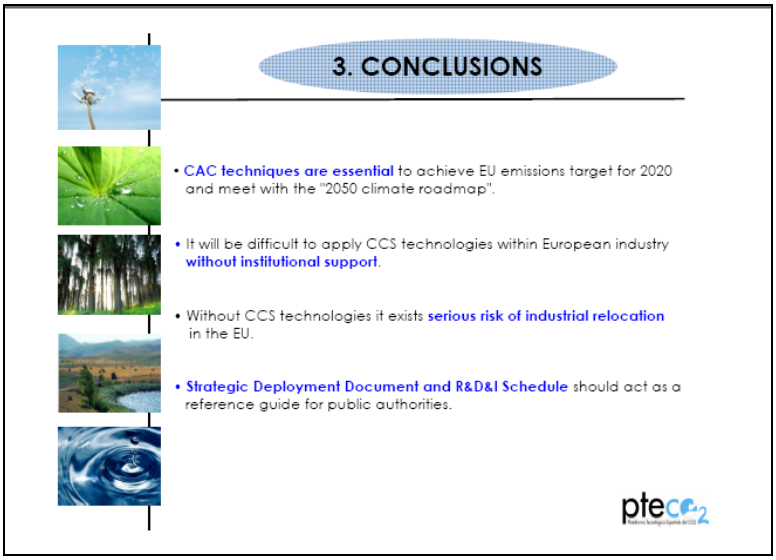
2. STRATEGIC DEPLOYMENT AND R&D&I SCHEDULE

2.9 DIFFUSION AND INFORMATION

Objetives

- Providing media, public institutions and citizens with well founded **technical and scientific information**, which promotes understanding and positive public perception of CCS technologies.
- Implementing **communication procedures** that promote the involvement of all stakeholders in planning and evaluation of CCS initiatives and projects.





A.3 Presentations given in London and Spain

ECN

Energy research Centre of the Netherlands

NearCO_2: case studies

Marjolein de Best-Waldhober, Jane Desbarats, Suzanne Brunsting, Paul Upham, Elisabeth Duetschke, Christian Oltra, Roser Sala, David Reiner, Hauke Riesch and Carly McLachlan

Near CO_2 Participation and communication near CO_2 capture and storage operations

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CITIZENS AGAINST CO2 SEQUESTRATION

WE DO NOT CONSIDER THIS TO BE "GREEN TECHNOLOGY" - IT IS AN EXPERIMENT AND WE ARE THE GUINEA PIGS! IT IS AN EXPERIMENT THAT RISKS OUR HEALTH, SAFETY AND ENVIRONMENT - FUNDED MOSTLY BY YOUR TAX DOLLARS - LET'S NOT LEAVE THIS EXPERIMENT FOR FUTURE GENERATIONS TO CLEAN UP!. THIS SITE WAS CREATED FOR PEOPLE ALL OVER WORLD OPPOSED TO CO2 SEQUESTRATION (CCS) JOIN THE MOVEMENT - EMAIL - STOPEXPERIMENTALCO2PROJECTS@YAHOO.COM

Please help the Netherlands STOP CO2 under Barendrecht

DUTCH "GREEN" MINISTER FAVORS SHELL AT THE EXPENSE OF BARENDRECHT GUINEA PIGS.

BEWARE - "Black" project will be sold as "green" in Copenhagen.

CITIZENS AGAINST SEQUESTRATION

470 Mountains Destroyed

Regulatory analysis

"Inventory of formal processes leading to policy and project approval at the general level in the EU and six member states."

- Legislation reviewed for: Belgium, the Netherlands, the United Kingdom, Spain, Germany and Poland.
- National compliance with the Aarhus convention was evaluated using a review template;
- Following elements of CCS investigated:
  - Facility reporting requirements and CCS under the EPRTR;
  - Directive 2009/31/EC on CCS and access to information;
  - Discussion of national CCS legislation?

ECN Near CO_2 Participation and communication near CO_2 capture and storage operations

Case Studies: Method

Comparison between several CCS cases:
- Barendrecht, the Netherlands
- Ketzin, Germany (CO2SINK)
- Beeskow, Germany

Additional comparison of CCS cases with non-CCS cases:
1 Wind case in the Netherlands, 2 pipeline cases and
2 biomass cases in the UK, one gas-fired power plant in Spain

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Case Studies: Method

Data collection method
- Existing data/data already collected for other projects
- Information obtained through the internet
- Existing "offline" literature such as press articles
- Available project communication materials
- Interviews with key actors

Data collection topic list
- Project features
- National and local project context
- Stakeholder relations
- Information/communication process and materials used
- Media coverage

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Project	Regulatory Environment	Quality of Communications
Ketzin -CCS	☺	😐
Beeskow-CCS	☺	☺
Barendrecht-CCS	☺	😐
Kennemerwind - Wind	☺	☹
Winkleigh – Bio-energie	😐	☹
Eccleshall – Bio-energie	😐	😐
La Pereda – Kolen tot gas	☹	☹
Milford Haven – Gas pijpleiding	😐	☹

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Public Protest: Beeskow, Germany

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Public Protest: Ketzin, Germany

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Dynamics of public protest

Project developer(s) start (s) informing people, but is (are) little trusted source

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Dynamic of public protest

Some members of local public raise concerns to project developer and to local authorities

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Dynamics of public protest

Concerns are not being taken seriously (or so it is perceived). Often deemed "emotional" or "irrational"

The management of the information centre in Barendrecht in a newspaper article:

"In the first three or four months, people were very emotional -- angry, if you want -- or sad, I would say," Leyds said. "I think it was a sort of fear of the unknown. The variety of people is enormous. There's people showing up telling me, 'You must be from Shell. You're disguised as a citizen.' They were angry at me. They thought I was lying."

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Dynamics of public protest

- Some community members and/or members of local political parties take the lead in organizing public protest

"Cootje 2 does not want to die"

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Dynamics of public protest

- A process of arguing and counterarguing leads to polarization between proponents and opponents

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Dynamics of public protest

Trench war

ECN Near CO_2 Participation and communication near CO_2 capture and storage operations

Main Conclusions

Outcome of public participation mainly depends on:

- Timing of public involvement
- Ability to influence project decision-making

Prerequisite:

- Facilitating policies and regulations

In-depth analysis of opinion shaping factors

David Reiner, Hauke Riesch & Kong Chyong
with the NearCO2 team

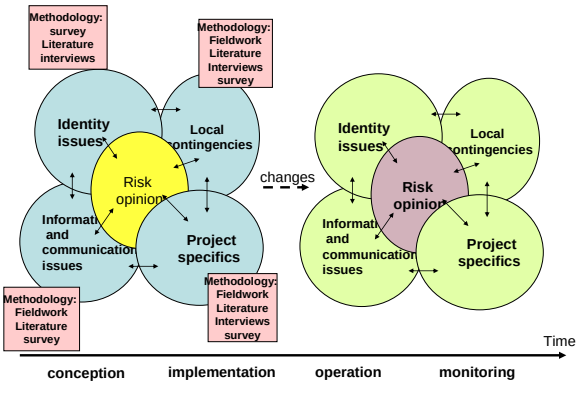
University College London
23 June 2011

Near CO_2 Participation and communication near CO_2 capture and storage operations

WP2 Tasks

2.1 Role of the media
2.2 Importance of the information source
2.3 Characterisation and communication of risk
2.4 Importance of local contingencies

Opinion Shaping Factors



Methods for Collecting Data

- Online Questionnaire (target key stakeholders in each region and general public in each country)
  - Pre-test by interviewing at least one member of each target group per country to assist in better understanding of local contingencies
- Dialogue Boards (qualitative analysis tool)
- Experiment (to test importance of visual communication material)

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Target Groups

- General public (n=200 national, n=200 region)
- Journalists
- Developers/industry
- Politicians/members of planning committees
- NGOs/community groups

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National Projects (EERP funded)

- UK: Hatfield
- Netherlands: Maasvlakte
- Germany: Jaenschwalde
- Spain: Ponferrada
- Poland: Bełchatów

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5 Levels of Uncertainty

- Seek to use a framework to examine risk perceptions that assesses response to different levels of uncertainty:
  - Uncertainty about the outcome
  - Uncertainty about the parameters
  - Uncertainty about the model
  - Uncertainty about our underlying assumptions
  - Complete uncertainty (unknown unknowns)

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Questionnaire Outline

0: Position (public, stakeholders)
1: Background attitudes and knowledge
2: CCS, general
3: Local plans
4. Additional Information on CCS
5. Information sources
6. Local community
7. Procedural Justice
8. Media preferences
9. Sections for different stakeholders
10. Demographics

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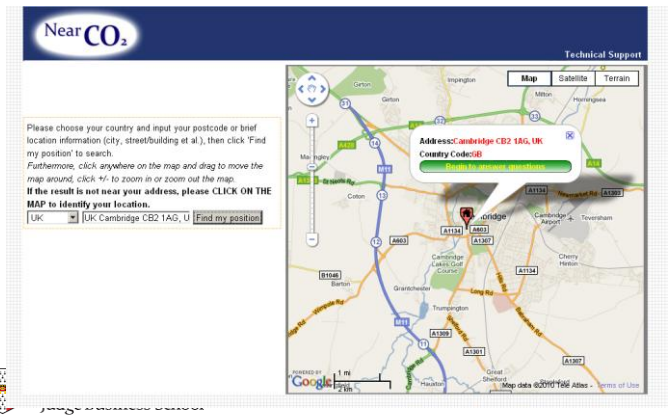
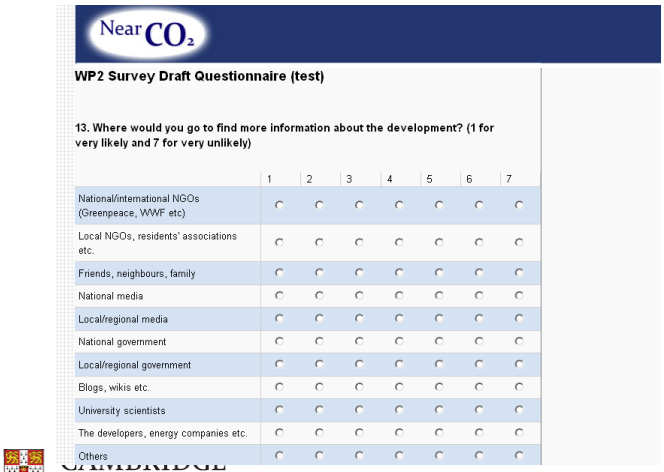
Survey System - Intro





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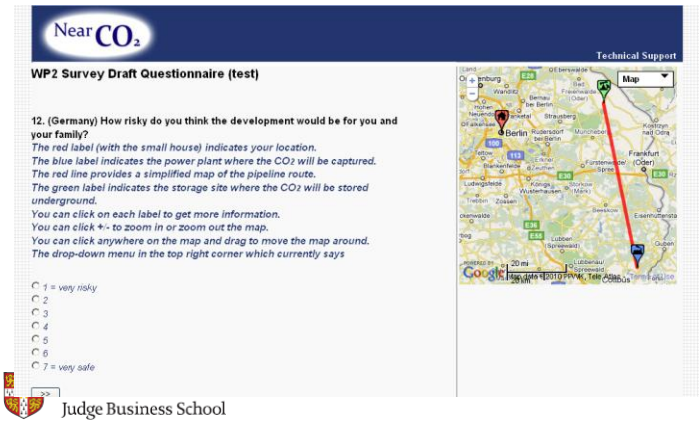
Questionnaire – Geographic Interface



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Dialogue Boards

- From the regional sample of 200, TNS will recruit 25 respondents to participate in a dialogue board in three countries: Germany, Spain and Poland
- An online dialogue board generally runs for 3 days. On each day a number of open-ended questions are posed to which respondents respond. The guiding principle is that respondents log on at least twice a day and post their responses. This means an average participation of one to two hours a day for each respondent. The times when questions are posted and respondents log on are determined on the basis of the target group.
- Images, photos, internet links and video clips can be shown on the dialogue board.

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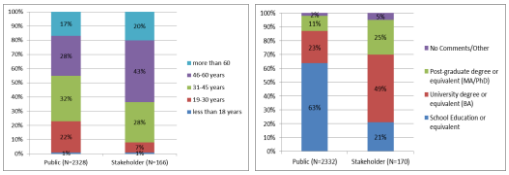
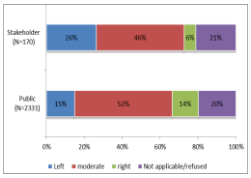
Dialogue Board (moderator view)

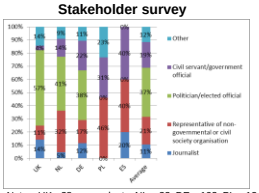
Descriptive statistics (1)

Demographics



Stakeholder survey





Notes: UK - 28 respondents; NL – 22; DE – 103; PL – 12; ES - 5

- Participants were surveyed (online) in Jan-Feb
- Responses from Public survey were 2338; from Stakeholders 170;
- Public survey: 51% were Males, 49% females;
- Stakeholder survey: 77% were males and 23% females

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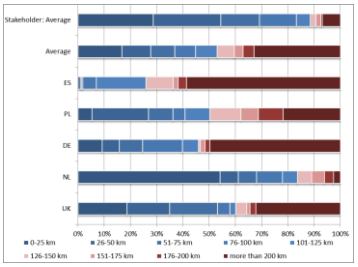
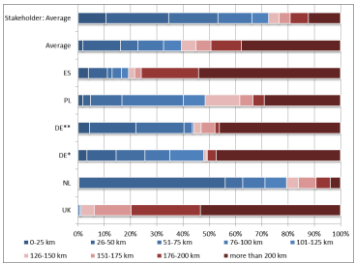
Descriptive statistics (2)

Respondents geographical position relative to local CCS

Geographical distribution of respondents relative to the capture site



Geographical distribution of respondents relative to the storage site



Notes: DE* – storage site near Neutrebbin and DE* - Beeskow

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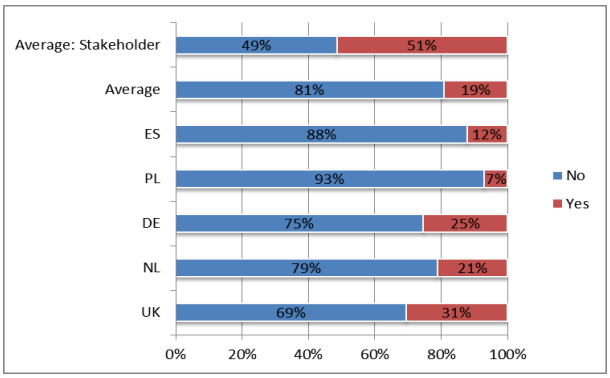
Genuine Knowledge of CCS



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Likely source of information regarding CCS

	UK	NL	DE	PL	ES
National/international NGOs	34%	40%	52%	44%	35%
Local NGOs/community groups, residents' associations	33%	42%	51%	42%	27%
Friends, neighbours, family	13%	26%	27%	36%	29%
National media	44%	57%	56%	51%	34%
Local/regional media	47%	57%	55%	48%	34%
National government	48%	61%	37%	35%	28%
Local/regional government	48%	62%	41%	45%	28%
Interactive websites	51%	55%	53%	78%	48%
University scientists	47%	54%	60%	59%	37%
Developers, energy companies	42%	28%	31%	27%	20%
European Union	20%	30%	23%	42%	25%

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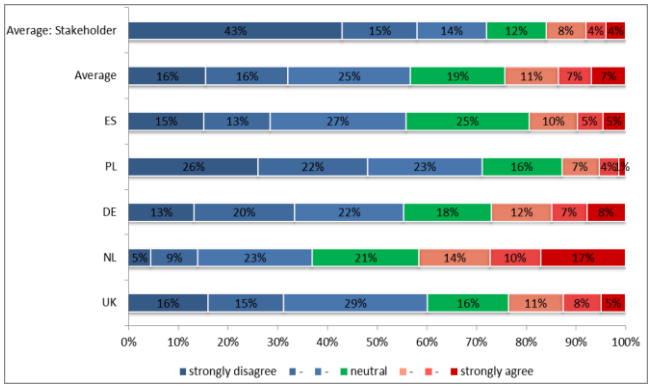
Likelihood to seek further information about project



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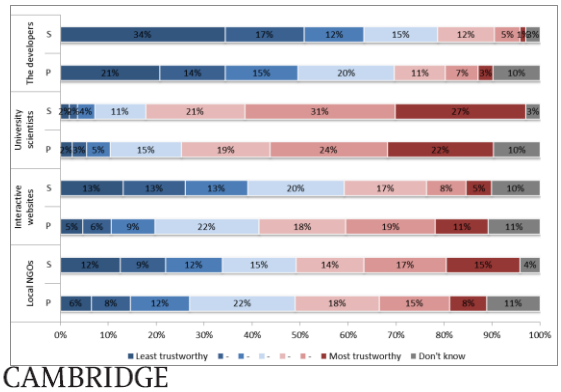
Trust to give you impartial information?



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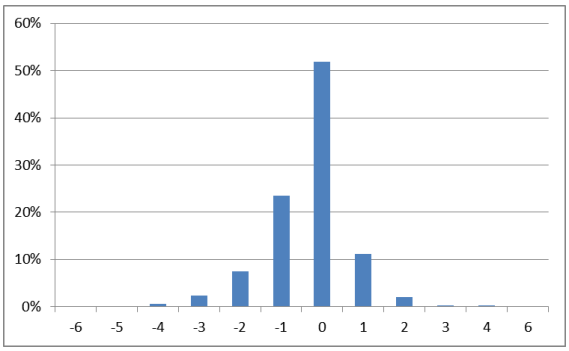
Shift in attitudes towards project after information was provided (1)



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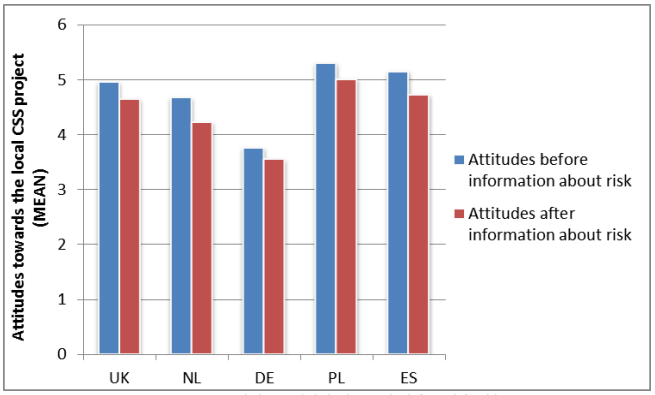
Shift in attitudes towards project after information was provided (2)



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Note: attitudes towards the local CCS project before and after giving information about risks were measured on a 1-7 scale, with the higher scores representing more positive view (1-"very unfavourable; 7-"very favourable"); Differences in means before and after sharing additional information related to risks of CCS are statistically significant for all 5 countries, p<.000.

Reactions of different groups to information

1. Those who are more knowledgeable about CCS reacted less negatively than those who are not
2. Male respondents reacted less negatively about risks of CCS

	Mean	SD
Genuine knowledge		
No	-.35	1.05
Yes	**-.18**	1.11
t value	-2.86[a]	
Gender		
Male	**-.19**	1.01
Female	-.46	1.11
t value	5.54[b]	

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Support for Project and Trust in Local Developers

Support for the local project	Trust in the project developers									
	UK		NL		DE		PL		ES	
	M[a]	SD	**M**[a]	SD	**M**[a]	SD	**M**[a]	SD	**M**[a]	SD
strongly opposed	**1.70**	1.34	**1.61**	1.39	**2.02**	1.46	**2.80**	2.17	**2.47**	2.00
-	**2.14**	1.17	**1.84**	.85	**2.34**	1.22	**2.67**	1.78	**1.93**	1.22
-	**2.15**	1.26	**2.40**	1.19	**2.56**	1.45	**2.32**	1.18	**3.00**	1.85
neutral	**3.13**	1.73	**2.76**	1.35	**3.39**	1.48	**3.20**	1.55	**3.39**	1.58
-	**3.41**	1.57	**3.13**	1.50	**3.50**	1.56	**3.54**	1.63	**3.87**	1.72
-	**3.65**	1.72	**3.25**	1.52	**4.11**	1.52	**3.48**	1.77	**4.48**	1.64
strongly supportive	**4.84**	1.37	**4.00**	1.85	**4.73**	2.33	**3.49**	2.03	**5.71**	1.61

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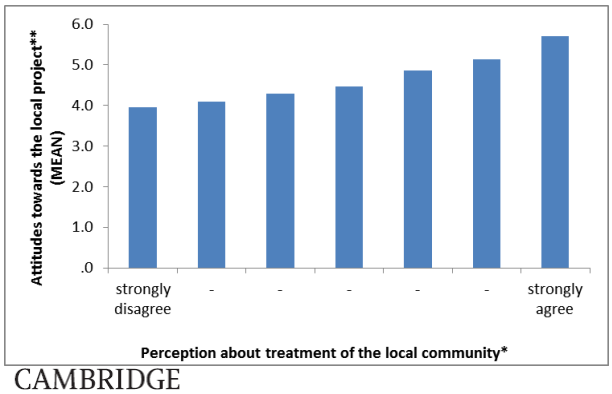
Support for Project and Perceived Past Treatment of Local Community



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Levels of Risk

Type of risk	Description of risk level	Survey questions[a]
Zero level risk	Uncertainty about the outcome	Current estimates of likelihood of leakage from underground storage sites are accurate;
First level risk	Uncertainty about the parameters and about the model	Experts disagree over the methods used in their risk assessment for CCS
Second level risk	Uncertainty about the implicit assumptions, or acknowledged inadequacies in the modelling process	Some of the scientific assumptions used for the risk assessment for CCS are wrong
Third level risk	Complete uncertainty, or uncertainty about unacknowledged inadequacies "unknown unknowns"	Completely unforeseen events can happen in relation with CCS projects that nobody can anticipate

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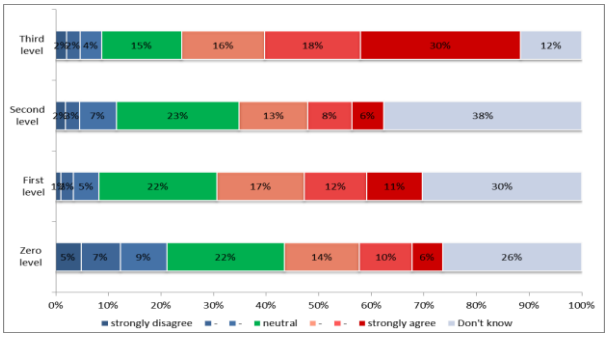
Public Perceptions of CCS Risks



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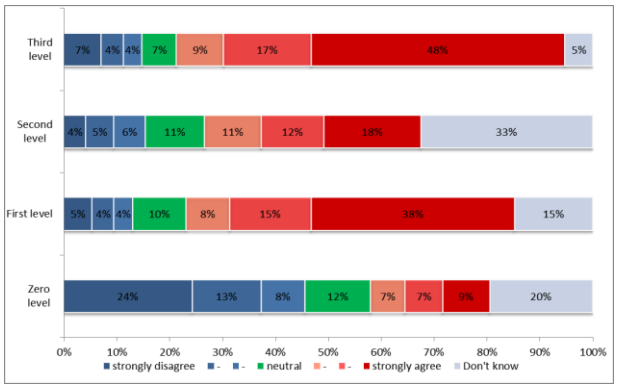
Stakeholder Perception of CCS Risks



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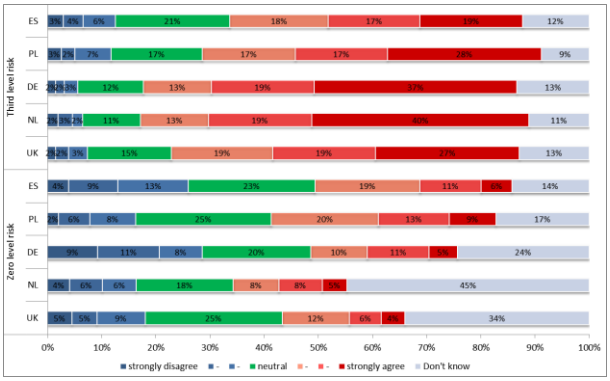
Cross-national Differences in Risk Perceptions



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Survey Open Questions

•Respondents were asked free-text questions on what they perceived as advantages, disadvantages of the project and CCS, and whether they had any further questions.

•The answers were analysed qualitatively for the most frequent themes

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Advantages

- Reduced CO_2 emissions
- Good for the environment
- Creates jobs
- It's offshore (in NL & UK)
- Energy security/ provision of clean energy
- Helps economy
- No advantages/risks outweigh benefits

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Disadvantages

Costs
Unforeseen problems, untested technology
Safety and risks:
- leakage, earthquakes, safe transport, others

Not solving the problem, short-term solution
Problems with public acceptance
Diverts attention/funds from renewables
No disadvantages

Further questions/statements

- Safety worries
- Costs
- What happens in the long-term?
- Risk to the environment
- Need more information
- We should look to alternatives
- Will it work?
- Practical questions (when, how, where exactly?)

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Dialogue Boards: Introduction

•Two "virtual focus groups" were held a month after the survey with around 50 selected survey respondents from Poland and Spain.

•Participants were asked about their opinions on CCS and specific projects, what images or metaphors they associate with it, how it fits into their general attitudes towards climate change, and whether/how the survey itself has influenced their opinions on CCS.

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Dialogue Boards:

Knowledge, information & participation

- Participants had not generally heard of CCS or the specific projects previously
- Though most participants sought more information after the survey, they were mostly dissatisfied with the available material
- Participants tried to talk to friends, colleagues and neighbours after the survey, but found that generally there was not much interest or knowledge
- The survey and DB were seen as positive experiences by participants who were pleased that their opinions were seen as important

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Dialogue Boards:
Risks and Safety

- Safety was seen as the most important factor influencing attitudes towards CCS: Even those participants generally in favour were insistent on safety standards being met adequately.
- Risks were also seen as problematic due to the long-term nature of CCS: adequate guarantees of safety cannot be made for an indefinite future – who knows what will happen in 100 years time?
- The DBs were held during the week after the Japanese earthquake: This episode demonstrated to many participants that even the best safety measures can be defeated by unforeseen events.

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Dialogue Boards:
Costs and Burdens

- Participants saw the economic benefits in terms of job creation and (in Poland) evading EU fines for not meeting emissions targets
- But CCS was also seen as possibly leading to a drop in tourism and driving out the local population which worried about the risks.
- Participants were concerned about who will meet the costs of CCS –seen as either taxpayers or the energy consumers.
- Expectation that politicians and energy companies will profit from CCS, and a general feeling of industry benefiting at the expense of ordinary people.

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Presentation overview

- Aims
- Methods and introduction to DVD
- Results
- Explanations
- Implications for communications
- Conclusions

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Work-package description

Task 4.1 Development of a multi-media presentation on CCS

Task 4.2 Test the multi-media presentation in focus groups

Aim: to observe and compare public responses and opinion change in response to introductory and contextualised information on CCS

Credits

The NearCO2 team: Elisabeth Duetschke, Marjolein de Best, Mariette Pol, Sylvia Breukers, Jane Desbarats, Aleksandra Ola, Suzanne Brunsting, Christian Oltra, Paul Upham, Xi Liang

Survey instrument design: LinksChina

Survey implementation : TNS-NIPO

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Back-up slides

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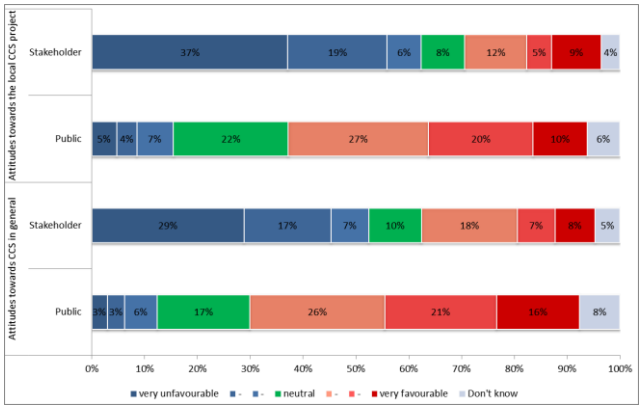
Attitudes towards CCS



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Differences in respondents' perception concerning conceptualized risk levels

- Respondents are more risk-averse about first level risk (uncertainty about the parameters and about the model) than about zero level risk (Uncertainty about the outcome) and more than about second level risk (Uncertainty about the implicit assumptions);
- They are more risk-averse about third level risk ("unknown unknowns") than about second level risk

		UK		NL		DE		PL		ES	
		M	SD	M	SD	M	SD	M	SD	M	SD
Contrast N1	Zero level risk	3.97	1.88	3.87	2.07	4.17	2.10	3.05	1.65	3.58	1.77
	First level risk	**4.85**	1.66	**5.20**	1.76	**5.92**	1.22	**5.01**	1.62	**5.18**	1.39
	t value	-3.23[a]		-4.90[a]		-10.61[a]		-10.21[a]		-7.88[a]	
	effect size	.30		.45		.59		.57		.53	
Contrast N2	First level risk	**4.81**	1.72	**4.98**	1.85	**5.88**	1.19	**4.93**	1.68	**5.10**	1.52
	Second level risk	4.76	1.70	4.66	1.75	5.48	1.45	4.78	1.70	4.78	1.67
	t value	.48[b]		2.32[a]		4.29[a]		1.28[b]		2.24[a]	
	effect size	.05		.25		.31		.09		.20	
Contrast N3	Second level risk	4.79	1.65	4.69	1.79	5.34	1.57	4.73	1.69	4.56	1.69
	Third level risk	**5.55**	1.53	**5.89**	1.63	**5.96**	1.52	**5.47**	1.72	**4.95**	1.76
	t value	-5.26[a]		-6.55[a]		-5.68[a]		-6.10[a]		-2.98[a]	
	effect size	.43		.54		.38		.37		.25	

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Note: [a] statistically significant at $p<0.05$; [b] statistically insignificant ($p>0.05$).

Risk perception and Trust in politicians and developers

	Trust in national politicians[b]		Trust in the project developers[b]	
	M	SD	M	SD
UK				
risk averse[a]	2.60	1.57	2.51	1.66
risk lover[a]	**3.61**	1.72	**3.80**	1.73
t value	-4.01[c]		-5.05[c]	
effect size	.29		.36	
NL				
risk averse[a]	3.43	1.70	2.34	1.39
risk lover[a]	**3.62**	1.55	**3.11**	1.75
t value	-.72[d]		-3.03[cd]	
effect size	.06		.24	
DE				
risk averse[a]	2.56	1.42	2.33	1.45
risk lover[a]	**3.39**	1.74	**3.64**	1.73
t value	-4.36[cd]		-6.88[cd]	
effect size	.26		.39	
PL				
risk averse[a]	2.73	1.75	3.15	1.71
risk lover[a]	**3.32**	1.69	**3.56**	1.69
t value	-2.71[c]		-1.81[d]	
effect size	.15		.11	
ES				
risk averse[a]	2.92	1.64	3.14	1.93
risk lover[a]	**4.09**	1.74	**4.44**	1.69
t value	5.35[c]		5.63[c]	
effect size	.27		.34	

- Risk-averse respondents tend to trust national politicians and the project developers less than those who are generally more risk-loving

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Notes: [a] risk averse (lover) respondents are those who agree (disagree) on the following statement: "Current estimates of likelihood of leakage from underground storage sites are accurate"; [b] Respondents' trusts in national politicians and in project developers (as actors who care about local concerns when it comes to citing CCS) was measured on a 1-7 scale, with the higher scores representing higher trust; [c] equal variances not assumed; [d] statistically insignificant; [e] statistically significant at p<0.05.

ECN

Energy research Centre of the Netherlands

NearCO$_2$ WP3: Development of participation strategies

Sylvia Breukers and Mariëtte Pol with the NearCO2 team

UCL, London, June 23rd 2011

Near CO$_2$ Participation and communication near CO$_2$ capture and storage operations

ECN Near CO$_2$ Participation and communication near CO$_2$ capture and storage operations

Credits

The NearCO2 WP3 team:

- Sylvia Breukers, Mariëtte Pol, Suzanne Brunsting, Marjolein de Best-Waldhober (ECN)
- Paul Upham, Thomas Roberts (Tyndall)
- Jane Desbarats, Aleksandra Lis (IEEP)
- Christian Oltra (CIEMAT)
- Elisabeth Duetschke (Fraunhofer)

ECN Near CO$_2$ Participation and communication near CO$_2$ capture and storage operations

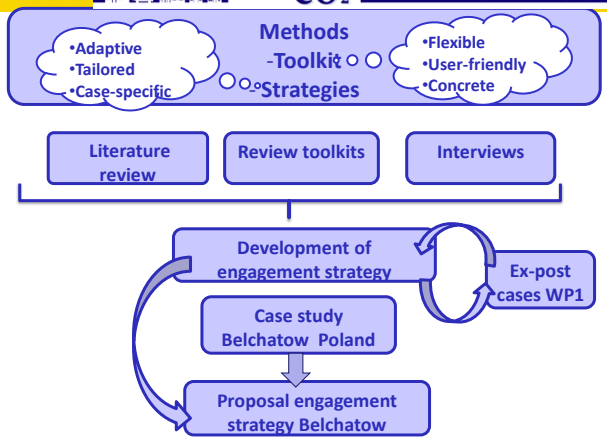
Presentation WP3 overview

- Aims
- Methods and results
  - Review of engagement tools
  - Interviews
  - Strategy development
- Conclusions

Aim:

To develop effective strategies to involve stakeholders in local planning of and decision making on CCS projects.

- Effective: Meeting the needs of the involved stakeholders (incl. general public).
- From the perspective of the end-users (CCS-developers).
- Not devising a new toolkit but addressing how existing toolkits can be improved.



Review of toolkits: Aim

To see what the existing toolkits have to offer on effective strategies

- To provide help to the developer in choosing which toolkit fits best
- Identify similarities and differences between toolkits
- Assess which lessons learned in the CCS engagement and communication literature are addressed

Reviewed toolkits and guidelines

- **ESTEEM**: The ESTEEM Toolkit (www.esteem-tool.eu; Jolivet et al, 2006; Raven et al, 2009)
- **CSIRO**: Communication/Engagement Toolkit for CCS projects (2010), Commonwealth Scientific and Industrial Research Organisation (CSIRO). (Ashworth et al, 2010; Ashworth, 2010; Ashworth et al 2009)
- **WRI**: CCS and Community Engagement. Guidelines for Community Engagement, World Resources Institute, 2010. (WRI, 2010).
- **NETL**: Public Outreach and Education for CCS projects from the National Energy Technology Laboratory (NETL). (NETL,2009)
- **IISD**: Carbon Capture and Storage Communication Workshops, International Institute for Sustainable Development (IISD). (IISD, 2010)

Review toolkits: Criteria

1. Focus & scope
2. Background theory & aims of participation
3. Empirical basics
4. View on prospective end-user
5. Architecture of the toolkit
6. Timing issues
7. Type and concreteness of proposed tools
8. Distinguishing features
9. Existing lessons/ knowledge
10. Wide societal debate

Review toolkits -1

WRI, NETL and IISD are comparable guidelines

- Relevant knowledge and examples
- Helpful frameworks
- Directions on how to prepare and devise a strategy

- No concrete and ready-to-use tools
- No advice on how to deal with unexpected situations
- Less attention to later phases of engagement
- No mechanisms to (better) share costs and benefits

➔ Relevant on strategic and general level while giving concrete recommendations

Review toolkits: ESTEEM

- Concrete and ready-to-use tools and techniques
- Quality goal; Local knowledge is valuable
- Integrate with project management cycle
- Openness in communications
- Clear and non-disputed mandate for negotiations

- Not pick and mix
- Less attention to later phases of engagement
- No advice on how to deal with unexpected situations
- No mechanisms to (better) share costs and benefits

Review toolkits: CSIRO

- Concrete and ready-to-use tools and techniques
- Attractive and user-friendly
- Instrumental goal
- Pick and mix
- Integrate with project management cycle

- Not complete
- Internal coherence is not clear
- Less attention to later phases of engagement
- No advice on how to deal with unexpected situations
- No mechanisms to (better) share costs and benefits

Review toolkits: Conclusions -1

- All: practical advice
- WRI, NETL and IISD: frameworks/ guidelines
- CSIRO and ESTEEM: toolkits
- ESTEEM is most comprehensive and elaborate
- CSIRO is more tailored to CCS projects.
- Issues earlier research are addressed
  - Relevance of process dynamics
  - Relevance of particular context

Review toolkits: Conclusions -2

Not in toolkits nor in literature:

End-users come in many kinds. With different backgrounds, skills, knowledge, recourses and cultures

- Little attention to diversity of implementing organizations

Interviews with developers: Aim

To better understand end-user practices, formal policy positions and the beliefs and attitudes of company personnel to improve existing toolkits and guidelines.

Interviews with developers: Method

- 15 interviews in 5 countries
- Communication managers, consultants, project managers
- Face-to-face and by telephone
- Semi structured
- Anonymity

Interviews with developers: Topics

Focus on relation between external messaging & engagement and organisational practice.

- Communication and engagement strategy
- Attitude to communication and goal of communication
- Differences between the partners
- Collaboration within consortium
- Encountered needs
- Existing toolkits
- Room for input from stakeholders

Interviews with developers: Results

- CCS-consortia are no unitary actors
  - Differences in visions on engagement
  - Different partners on different sites
  - ➔Effort needed to align internal perspectives and messages
  - ➔Shared vision needed
- Instrumental goal: to gain acceptance
- Toolkits are not actively used
- Communication skills are crucial

Conclusions interviews

Toolkits can be improved by tailoring engagement strategy to specific characteristics of the project developer's organization

- There is sometimes a lack of shared vision on engagement and communication strategy between partners
- The internal alignment of visions and expectations is left unaddressed in toolkits.

Strategy development: Aim

Develop a strategy which is:

- tailored to the specific characteristics of the project developer organization
- is in line with the organisational values and norms.

Effective engagement strategy starts with addressing the internally

- available organisational resources and competences
- views and values

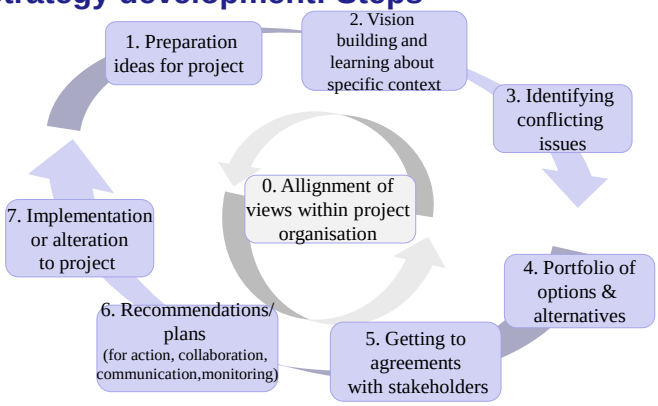
Development of strategies: Method

Based on:

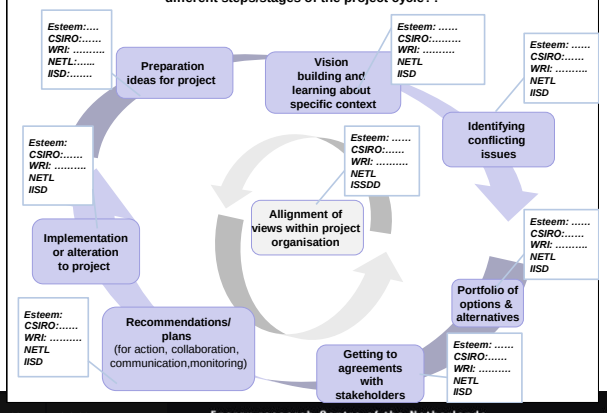
- The steps of project preparation, planning, implementation and evaluation
- Six-step process methodology in ESTEEM tool

- Added: The internal organisational learning process.

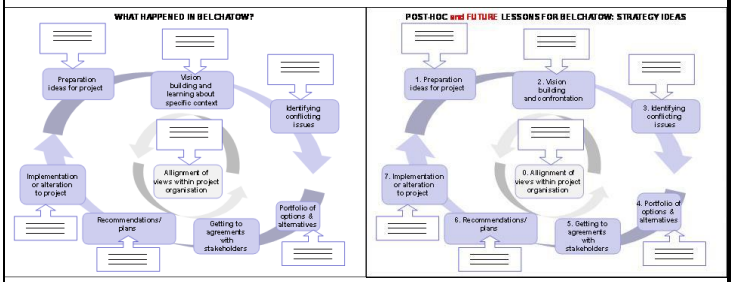
Strategy development: Steps



How do the toolkits offer help to improve engagement and communication during the different steps/stages of the project cycle??



Ex-post and ex- ante evaluation



Conclusions WP3

- All reviewed toolkits provide practical advice
- Little attention in toolkits to diversity of implementing organizations
- Shared vision between partners on communication strategy is sometimes missing
- The internal alignment of visions and expectations is left unaddressed in toolkits.
- Steps to strategy development is proposed tailored to the project developer organization
  - In which existing toolkits can contribute

www.communicationnearco2.eu/

NearCO2 focus groups: themes and implications for CCS communication

Dr Paul Upham and Dr Thomas Roberts
With the NearCO2 team

UCL, London, June 23rd 2011

Near CO_2 Participation and communication near CO_2 capture and storage operations

Presentation overview

- Aims
- Methods and introduction to DVD
- Results
- Explanations
- Implications for communications
- Conclusions

Work-package description

Task 4.1 Development of a multi-media presentation on CCS

Task 4.2 Test the multi-media presentation in focus groups

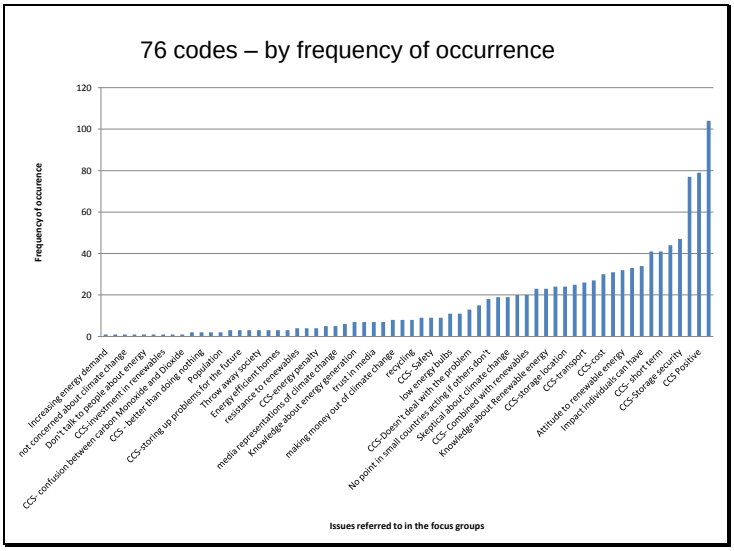
Aim: to observe and compare public responses and opinion change in response to introductory and contextualised information on CCS

Method

- One focus group in each of: Spain, Germany, Belgium, UK, Netherlands, Poland; pre/post questionnaire
- 15 minute DVD divided into 4 chapters: climate change, energy options, introduction to CCS, differing opinion on CCS
- Discussion facilitated but not tightly controlled
- Thematic coding of results and pre/post comparisons

Coding process

- Software: Atlas TI, for qualitative data management and analysis
- Purpose: to facilitate cross-focus group comparison in standardised terms
- Process: load English focus group transcripts into Atlas TI and allot one code per discussion theme/topic
- Researcher judgement involved
- Perform coding for each group



Results overview

- Issues and concerns raised are largely similar across countries
- Many of these issues are contextual, not CCS-specific
- Re CCS, the issues most frequently raised are:
  - more information wanted
  - Concern about the storage/leakage risk
  - CCS seen as short term only / doesn't deal with problem
- Renewable energy technologies are preferred
- Shift from undecided on CCS to negative and pro-nuclear

Illustrative quotations (1)

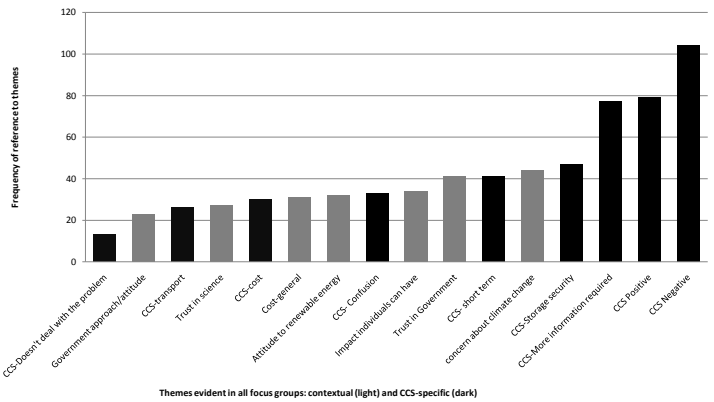
- *How poisonous is CO2? How poisonous is it in high concentrations. And what does that mean when it is transported?*
- *Is it possible that the gas escapes? Or that the underground water is polluted?*
- *In Yellowstone park CO2 was stored in a natural way in a big lake and everything in the surroundings was dying.*
- *1Km is too little if we think about it*
- *Sooner or later the point is reached where you have to ask yourself where to put all that stuff, everything is full.*
- *I would trust the people who tell me that I can live in that area. I don't think that they will risk so many human lives.*

Illustrative quotations (2)

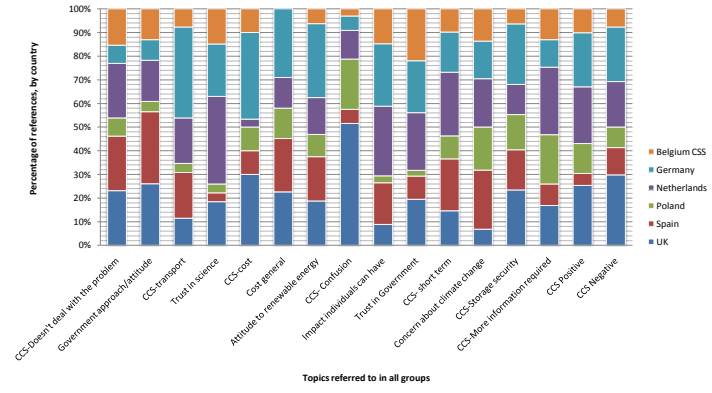
Discussion sequence

- *I would trust the people who tell me that I can live in that area. I don't think that they will risk so many human lives.*
- *I also trust them but if I could live somewhere else I would prefer that.*
- *I trust the government but what if the price of the houses will go down*
- *I don't like it if it only happens in my own area. But if it happens in more places it is no problem.*
- *I'm against it.*

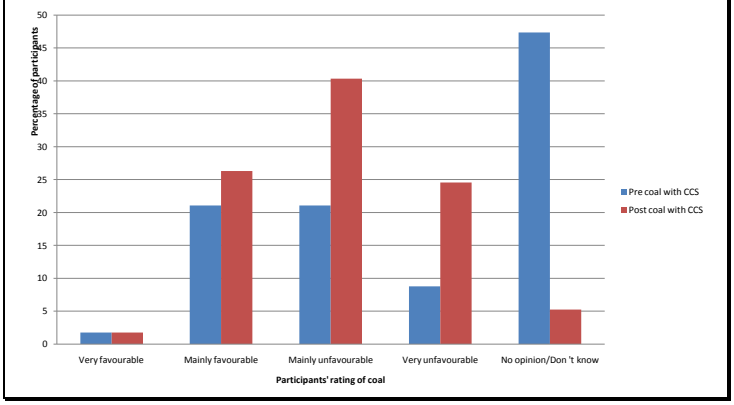
Frequency of topics referred to in all groups: contextual and CCS-specific



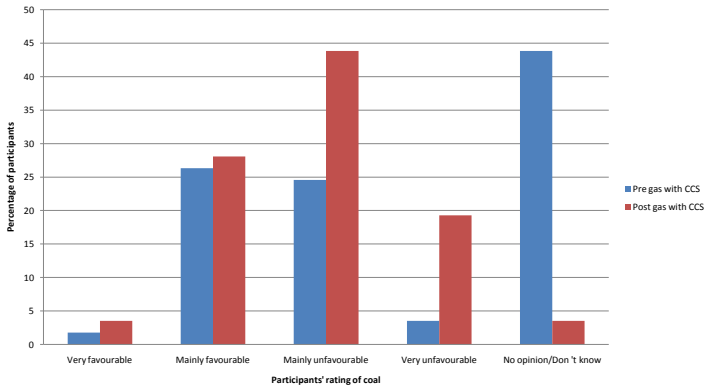
Relative contribution of each focus group to topic reference frequency



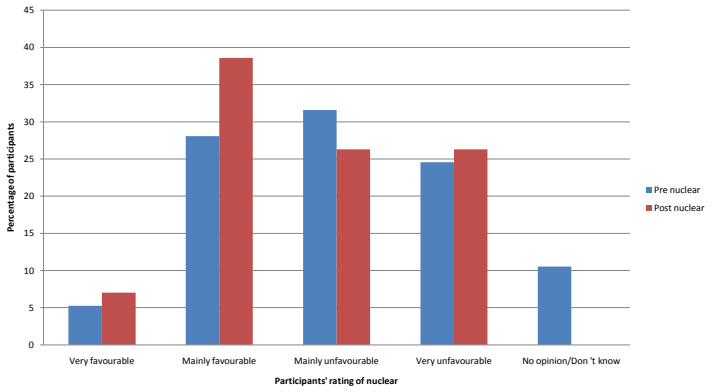
Coal CCS: a shift from undecided to negative opinion after film and discussion



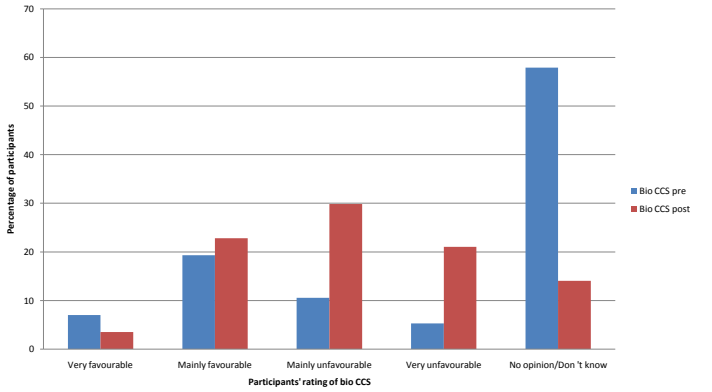
Gas CCS: a shift from undecided to negative opinion after film and discussion



Nuclear: a shift from undecided/negative to positive opinion after film and discussion



Bio CCS: a shift from undecided to negative after film and discussion



Why don't people accept a summary case for CCS?

- Low level of trust in the messengers: CCS is perceived as a solution originating with vested commercial interests
- Lack of familiarity and tangible evidence of safe operation – CCS as unknown and untried
- CCS perceived as an end-of-pipe, temporary solution
- Explanatory theory: communications, social representations, risk perception, trust in science and its relationship with government and commerce

Conclusions: implications for communications

- Communicating the case for CCS may need to turn around associations with polluting fossil fuels, vested interests and uncertain industrial hazards
- People will likely need key questions answered and the involvement of trusted parties
- Local engagement & dialogue efforts should assist, but ultimately cannot guarantee positive attitudes

Credits

The NearCO2 team: Marjolein de Best, Jane Desbarats, Suzanne Brunsting, Elisabeth Duetschke, Christian Oltra, David Reiner and Hauke Riesch

Film production: Creative Concern Ltd, Manchester

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Dr Thomas Roberts is affiliated with DICE, the Durrell Institute of Conservation and Ecology at the University of Kent.