



# Report on Japan CCS Stakeholder Day

Peta Ashworth, Shelley Rodriguez and Hylton Shaw

EPI12091

**Global CCS Institute**

Peter Grubnic

SUPPORTED BY



**Enquiries should be addressed to:**

**Peta Ashworth**

**Peta.Ashworth@csiro.au**

### **Copyright and Disclaimer**

© 2011 CSIRO To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

### **Important Disclaimer**

CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

The views expressed herein are not necessarily the views of the Global CCS Institute (the Institute), and the Institute does not accept responsibility for any information or advice contained therein.

### **Acknowledgement**

CSIRO acknowledges the financial and other support provided by the Institute. CSIRO also acknowledges the informal but critical role played by international research partners and their individual contributions to the research being completed for the Institute.

CSIRO acknowledges its Japanese collaborators, colleagues and associates and thanks them for their contributions toward ensuring the success of the Japan CCS Engagement Day.

The researchers from CSIRO offer their most sincere sympathy and condolences to Japan for the loss and hardship the nation is enduring in the wake of the 10 March, 2011 earthquake and tsunami.

# CONTENTS

<b>Executive summary</b>	<b>5</b>
<b>1 Introduction</b>	<b>6</b>
<b>2 Welcome</b>	<b>7</b>
<b>3 Theoretical considerations</b>	<b>8</b>
3.1 Local acceptability of CCS: Beyond fear and risk	8
3.2 Professor van der Pligt's Presentation	9
<b>4 Local context</b>	<b>14</b>
4.1 Overview of public perceptions of CCS in Japan and a comparison with international research	14
4.2 Dr Itaoka's Presentation	15
<b>5 International comparison case studies</b>	<b>20</b>
5.1 Carson Case Study	20
5.2 FutureGen Case Study	21
5.3 Barendrecht Case Study	22
5.4 CO2CRC Otway Case Study	23
5.5 ZeroGen Case Study	24
<b>6 Overview report and evaluation factors</b>	<b>25</b>
<b>7 Communication/Engagement Toolkit for CCS Projects</b>	<b>26</b>
<b>8 Knowledge sharing update</b>	<b>27</b>
<b>9 Thematic analysis of discussion</b>	<b>28</b>
9.1 Cultural identity and public acceptance in Japan	28
9.2 Offshore - onshore issues	29
9.3 Potential benefits - schemes	30
9.4 The role of NGOs in the debate	30
9.5 Transparency of technical information	30
9.6 Case studies and knowledge sharing	31
9.7 Educational materials and imagery	31
9.8 Participant queries	32
<b>10 Conclusions and recommendations</b>	<b>33</b>

<b>References</b>	<b>34</b>
<b>Appendix A – Invitation and Agenda</b>	<b>35</b>
<b>Appendix B – Attendees</b>	<b>39</b>
<b>Appendix C – Carson Case study</b>	<b>41</b>
<b>Appendix D – FutureGen Case Study</b>	<b>43</b>
<b>Appendix E – Barendrecht Case study</b>	<b>45</b>
<b>Appendix F – CO2CRC Otway Case Study</b>	<b>48</b>
<b>Appendix G – ZeroGen Case Study</b>	<b>51</b>
<b>Appendix H – Overview presentation</b>	<b>53</b>
<b>Appendix I – Knowledge sharing</b>	<b>56</b>
<b>Appendix J – Evaluation</b>	<b>59</b>

List of Figures

Figure 1 The Global CCS Institute Strategic Framework	7
---	---

List of Tables

Table 1 Breakdown of participant organisations represented at the day	6
---	---

## EXECUTIVE SUMMARY

Sponsored by the Global CCS Institute (the Institute), the Commonwealth Scientific and Industrial Research Organisation (CSIRO) convened a one day Carbon Capture and Storage (CCS) Stakeholder Day in Tokyo, Japan on Friday 19 November, 2010. In total, 75 participants attended the workshop with the majority of participants from Japan. Eleven (11) representatives from the International Energy Agency Greenhouse Gas Social Research Network (IEAGHG SRN) also attended representing a variety of countries including the United States of America, the Netherlands, Australia, Spain, and England.

To accommodate language differences real-time translators were used to facilitate sharing and understanding. Participants were seated at round tables with a member of the IEAGHG SRN. Attention was also given to ensure that there was at least one person at each table who was fluent in Japanese and English to help with translations during table discussions.

The focus of the day was around communication and public awareness of CCS projects, particularly concentrating on the results from earlier work sponsored by the Institute – namely, the “International Comparison of Public Outreach Practices Associated with Large Scale CCS Projects” project. Professor Joop van der Pligt from the University of Amsterdam provided a keynote address focusing on issues relating to risk and risk perception of the lay public in the face of uncertain technologies. Dr Kenshi Itaoka then presented an update on the local Japanese context for CCS based on results from his longitudinal research on public perception and awareness.

Five international case studies were then highlighted by social researchers from the IEAGHG SRN which included:

- **The Carson Case Study, United States of America – Sarah Wade**
- **The FutureGen 1.0 Case Study, United States of America – Gretchen Hund**
- **Barendrecht Case Study, the Netherlands – Suzanne Brunsting**
- **CO2CRC Case study, Australia – Anna Carr**
- **ZeroGen Case Study, Australia – Peta Ashworth.**

Following the individual case studies an overview of the synthesis of findings that arose from all case studies was then shared with the participants. This included information of key evaluation factors that projects are likely to find to be critical considerations when trying to progress their project management, communication and local engagement activities. In addition, time was spent to walk participants through a Toolkit of ideas for project planning and communication for CCS projects to use in the field.

Thematic analyses of the discussions that occurred over the course of the day revealed a number of considerations that were relevant to the theme of communication and public acceptance of CCS. The major themes included: a) the importance of cultural identity and its influence on public acceptance in Japan; b) issues relating to the different considerations for offshore and onshore storage particularly because of Japan’s potential for earthquakes; c) considerations around the potential benefits that CCS projects may bring and whether there were any likely compensation models that may be applicable in the Japanese context; d) the role of NGOs in Japan; e) the importance of transparency of information that is communicated; f) the value of case studies for knowledge sharing; and g) the need for education materials and more consideration and priority to be given to developing a positive image for CCS.

There were a number of recommendations arising from the day, particularly:

- R1** The Institute to consider convening similar days on an annual basis in the Asia Pacific region – for example, in Japan, China or Korea.
- R2** Use social researchers to develop a case study of the Japanese communication and outreach experiences to date and share this via a knowledge broking portal.
- R3** Develop more case studies on active European Union research projects.
- R4** Consider what might constitute appropriate imagery for CCS that can help to create more positive memories of the technology and what it represents.
- R5** Release the Toolkit and continue to collect case studies for it as well as expand it as new information comes to hand.

## I INTRODUCTION

Following the success of the “Communicating for CCS Projects” day held in November 2009 in Paris, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) convened a one day CCS Stakeholder Day in Tokyo, Japan. The Global CCS Institute (the Institute) sponsored the day which was held at the Prince Park Tower Hotel on Friday 19 November, 2010. Mike Miyagawa, Angus Henderson and Kerry Brooks from the Institute provided substantial input into the overall organization of the day to assist CSIRO, and their efforts are acknowledged and appreciated. For detailed agenda information see Appendix A.

In total, 75 participants attended the workshop and a breakdown of the types of organizations represented is shown in Table I below. As was expected, the majority of participants were from Japan. However, two industry representatives came from LEMIGAS in Indonesia; and a small number of representatives (11) from the International Energy Agency Greenhouse Gas Social Research Network (IEAGHG SRN) representing a variety of countries (the United States of America, the Netherlands, Australia, Spain, and England) also attended. A complete list of participants can be found in Appendix B.

**Table I Breakdown of participant organizations represented at the day**

INDUSTRY	PERCENT
CCS Pilot/Trial	1.37%
Coal Industry	1.37%
Consultant	1.37%
Electricity Industry	12.33%
Engineering Industry	12.33%
Gas Industry	2.74%
Government	9.59%
Integrated Trading	2.74%
Manufacturing	5.48%
Oil Industry	5.48%
Research	41.10%
Science & Technology Agency	4.11%

To accommodate language differences real-time translators were used to facilitate sharing and understanding. Participants were seated at round tables with a member of the IEAGHG SRN. Attention was also given to ensure that there was at least one person at each table who was fluent in Japanese and English to help with translations during table discussions. Overall respondents were able to communicate and the translators helped to encourage participants to ask questions of the group where appropriate.

The focus of the day was to present the results of case studies conducted for the CSIRO project “An International Comparison of Public Outreach Practices Associated with Large Scale CCS Projects.” The case studies examined the communication activities that were undertaken in Barendrecht in the Netherlands, the Carson and FutureGen Projects in the United States of America, and the work done to date on both the ZeroGen Project and the CO2CRC Otway Project in Australia. This report provides an overview of the day.

## 2 WELCOME



Dr Makoto Akai, Global CCS Institute Director

The day commenced with an official welcome from Dr Makoto Akai, Director of the Global CCS Institute and principal research scientist at the National Institute of Advanced Industrial Science and Technology. Dr Akai invited participants to contribute to the discussion. As part of his welcome Dr Akai presented the strategic framework of the Institute and where public awareness fits as one of five enabling strategies that have been identified by the Institute as illustrated in Figure 1.

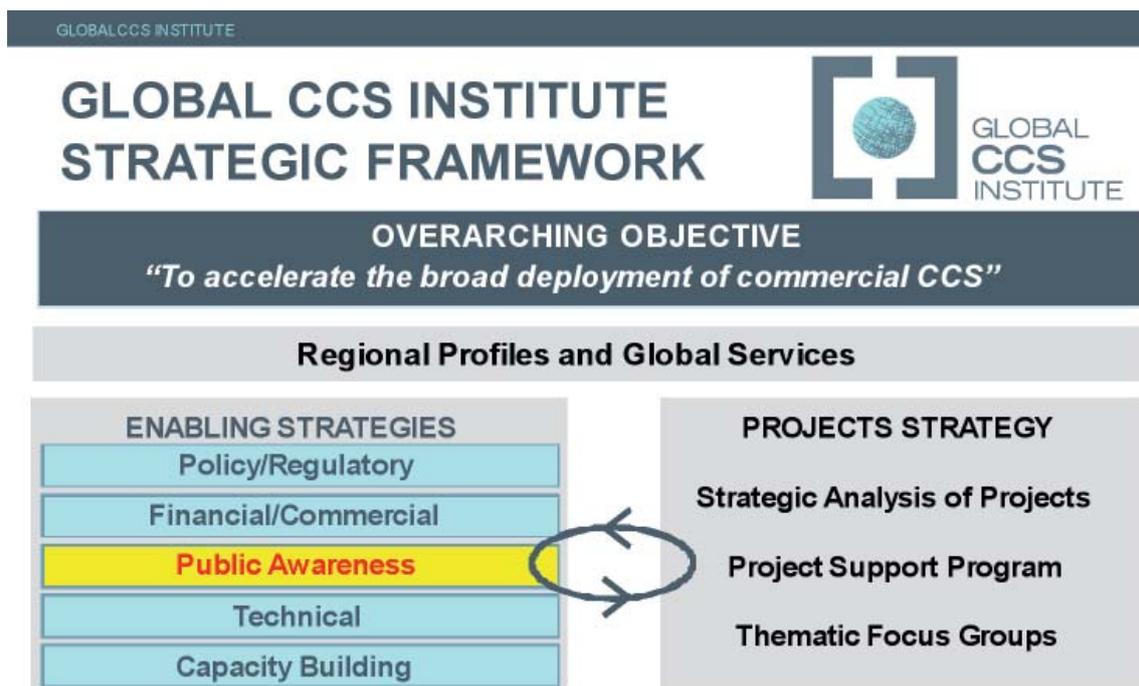


Figure 1. Global CCS Institute Strategic Framework

### 3 THEORETICAL CONSIDERATIONS

#### 3.1 Local acceptability of CCS: Beyond fear and risk



Professor Joop van der Pligt, University of Amsterdam

#### *Professor Joop van der Pligt, University of Amsterdam*

To set the scene for the day, Professor Joop van der Pligt from the University of Amsterdam gave a keynote presentation entitled “Local Acceptability of CCS: Beyond Fear and Risk”. After presenting some facts around public perceptions of CCS, mainly from Europe, van der Pligt focused on the issue of risk. He stated that, in terms of public acceptability, risk is not determined by the product of probability and severity, but rather it is influenced by the subjective dimensions of risk. These include various characteristics identified by Fischhoff et al. (1978) such as whether the risk is known or unknown, likely to be catastrophic, voluntary or involuntary, or controllable.

Using a classic two dimensional matrix, van der Pligt provided an overview of where many technologies and innovations sit in most minds of society when identifying the various levels of risk presented by each technology (refer slides 7- 10 in section 3.2 below). He highlighted that the perception of risk can be exacerbated when experts publicly disagree on a particular topic; and this can have a dramatic impact on the public perception of a technology or initiative. The issue can be complicated further because most of the public have difficulty distinguishing between “real experts,” “semi-experts” or “not-so-real experts.”

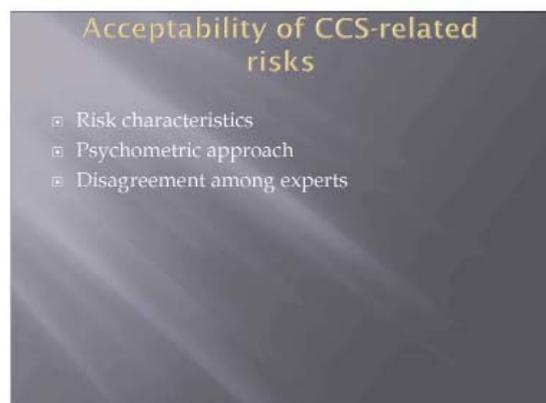
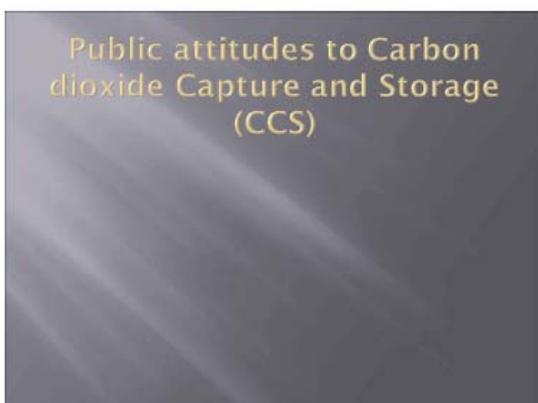
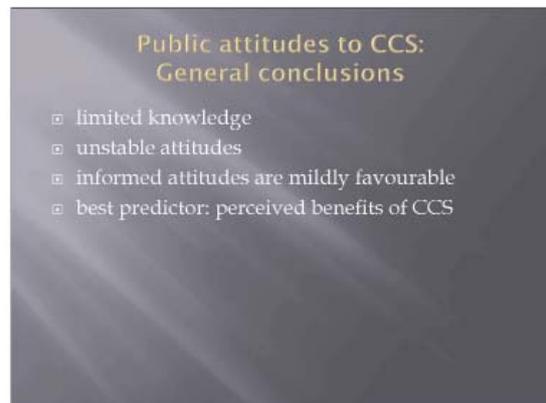
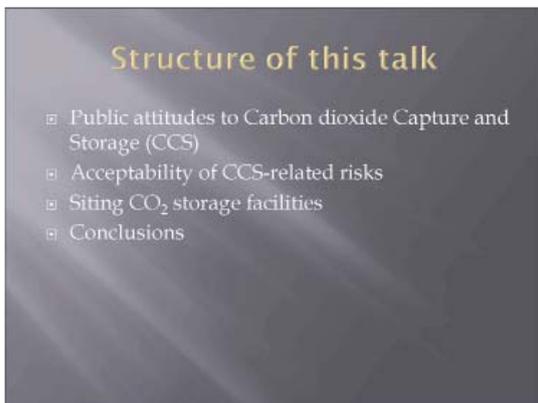
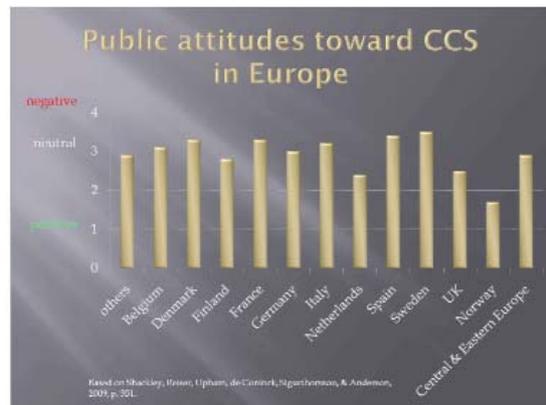
In relation to CCS, once discussions around siting are brought to bear on a community, further issues are likely to arise. These tend to be related to the social amplification of risk, as before the project was proposed there was no risk at all, but community members are now suddenly confronted with a new risk. Any uncertainty associated with a project, either through experts disagreeing or a lack of knowledge will tend to bring about emotionally charged discussions that often rely more on intuition rather than rational thought. As a result, project proponents bear the burden of proof – that is, it is up to them to demonstrate to community members that risks are minimal and acceptable.

Moral issues are also an important consideration for siting of CCS projects. Often the risk-benefit ratio can be seen to be unfair, given that many of the benefits are more global in nature while much of the risk will be at the local level. As such, issues of equity and fairness are brought into question, leading to the “not in my backyard” (NIMBY) syndrome. Van der Pligt reported that there is a vast literature which demonstrates that such issues lead to more

extreme attitudes and more extreme debates, therefore making it even more difficult to reach consensus within the local community. This is particularly the case if emotions dominate the debate. Anger is the emotion that then often comes into play once community members determine that the proposal is a risky business and not to their liking.

To overcome the potential for these risk reaction scenarios to play out, van der Pligt suggests the importance of shared decision making for all new projects – that is, the community must become an equal partner in decisions about the project. All consultation needs to be done in a transparent manner and attention to procedural justice issues is paramount. This includes ensuring that the risk presented is perceived to be controllable; and acknowledging the importance of trust in building the processes for engagement.

### 3.2 Professor van der Pligt's Presentation

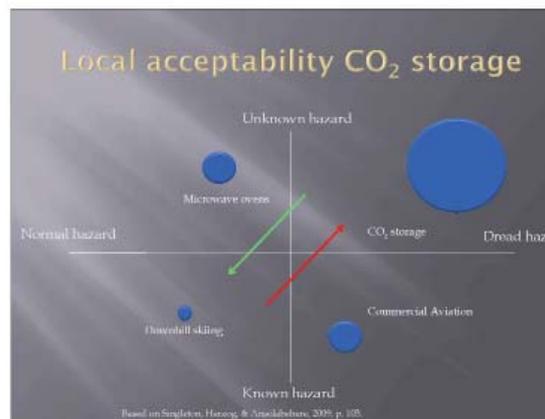
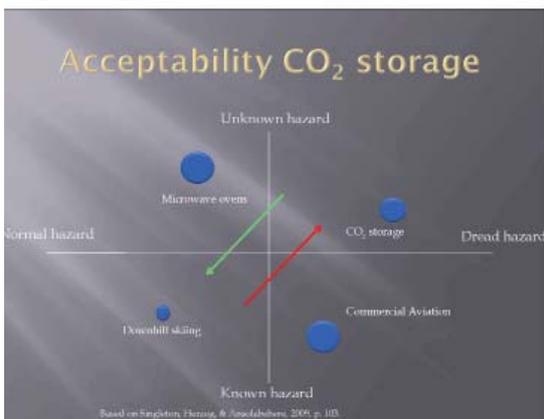
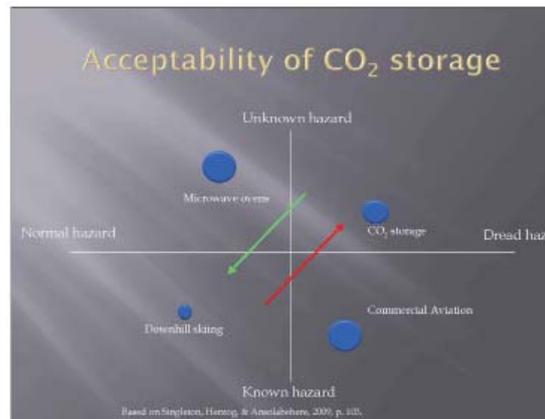
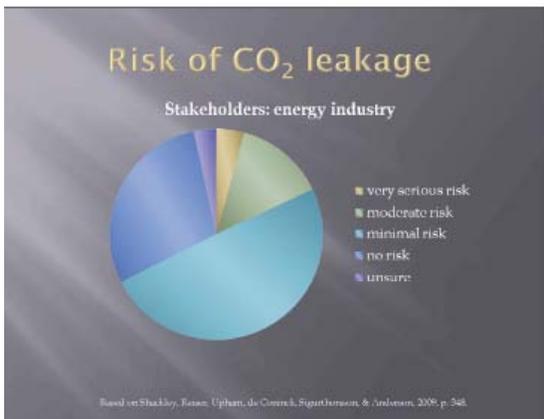






### Siting CO<sub>2</sub> storage facilities

- ☐ amplification of risk
- ☐ moralization
- ☐ polarization
- ☐ solutions



### Siting CO<sub>2</sub> storage (Netherlands)



### Emotions, intuition and rationality

- uncertainty gives room to intuition
- lack of consensus → precautionary principle  
i.e., burden of proof is with those taking action
- both also induce emotions

### Siting CO<sub>2</sub> storage (Netherlands)



### Moralization

- risk-benefit ratio: local versus global
- perceived fairness and equity
- Not-in-my-Backyard syndrome

### Amplification of risk

- local perspective: risk versus no risk
- uncertainty: expert disagreement
- emotions, intuition, and rationality

### Polarization

- moral convictions and attitude extremity
- the role of emotions revisited
  - fear
  - anger
  - contempt
- the role of the media

## Solutions

- ▣ transparency
- ▣ procedural justice
- ▣ shared decision making
- ▣ the importance of control
- ▣ the role of trust

## 4 LOCAL CONTEXT

### 4.1 Overview of public perceptions of CCS in Japan and a comparison with international research



Dr Kenshi Itaoka, Mizuho Information and Research Institute

#### *Dr Kenshi Itaoka, Mizuho Information and Research Institute*

Following Professor van der Pligt's presentation, Dr Kenshi Itaoka of the Mizuho Information and Research Institute gave a presentation on the local Japanese context and the results of his social CCS research. Dr Itaoka focused on the themes of awareness and perception, the potential acceptability of CCS, the implications of the risk of CCS and whether it matters, and communicating for CCS.

Key conclusions included that in relation to public awareness and perception of CCS, most of the Japanese public is relatively unaware of CCS. However, the number of individuals who do know something about it appears to be increasing. Further, although the Japanese public are rather positive towards promoting CCS in general as part of a climate portfolio, they tend to be more neutral toward its implementation. The research indicated that the public focused on the two concerns of general risks and the potential for leakage. It was suggested that a public communication and engagement strategy should specifically address these concerns. It was also suggested that helping to improve the public's understanding of the effectiveness of CCS would help to positively influence public acceptance.

Dr Itaoka also reported that overall opinions for implementation are favourable only if they are well informed through credible information. This included ensuring that media coverage was positive and well informed to allow the Japanese public to understand that CCS would cause no local environmental impacts. Critical to achieving this was to make certain that transparency in relation to CCS projects is paramount.

The major implications from the Japanese research include the recognition of a need for a coordinated and well elaborated communication program for CCS; the need for credible information sources (both scientific and independent) to discuss CCS in Japan; and the need for information and education kits to address the benefits and risks of CCS.

**MIZUHO**

**Overview of public perception to CCS in Japan**  
and a comparison with international research

Stakeholder day  
Carbon dioxide Capture and Carbon Storage

November 19, 2010

Kenshi Itaoka,  
Mizuho Information & Research Institute, Inc.

**Contents**

- Awareness and perception
- Potential acceptability
- Does risk of CCS matter?
- Communicating CCS
- Conclusion

Stakeholder Day/Itaoka 2

**Awareness and perception of CCS**  
CCSについての認知状況

Stakeholder Day/Itaoka 3

**Awareness about CCS**

• Do you know about CCS?  
Q: あなたはCCSについて知っていますか

Year	I know about it (%)	I have heard or read about it (%)
2003年	9%	22%
2010年	13%	19%

• In the US, the fraction of people recognizing the term “CCS” was 4% in 2003, 5% in 2006, and 17% in 2009.

Stakeholder Day/Itaoka 4

Europe                      Japan

(Courtesy of ECN)

?

Stakeholder Day/Itaoka 5

**Awareness about CCS**

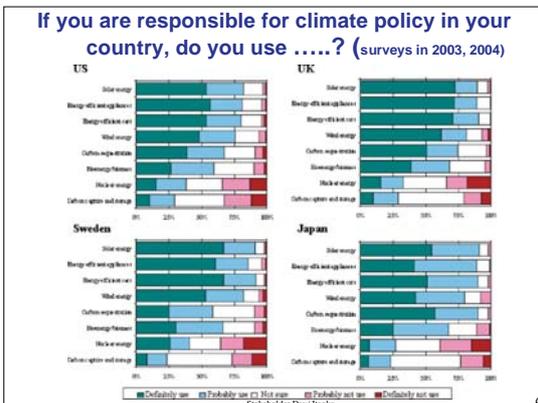
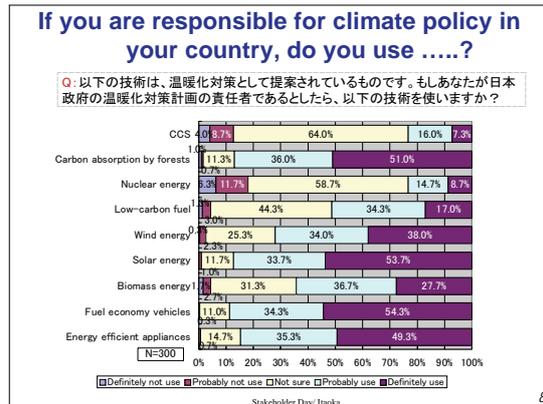
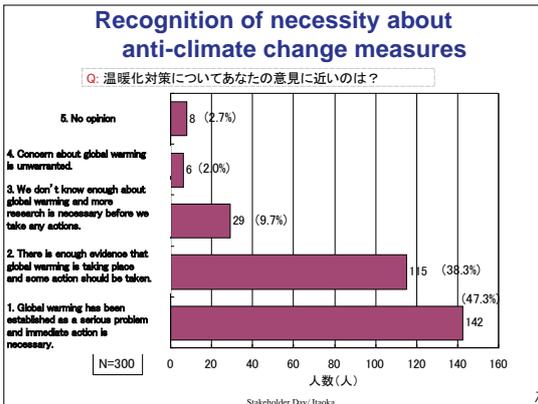
• Do you know about climate mitigation measures?  
Q: あなたは、以下の温暖化対策技術について知っていますか

Measure	Europe (%)	Japan (%)
Wind energy	25.7%	71.0%
CCS	67.3%	19.3%
Solar energy	22.0%	76.3%
CO2 sink & fixation	15.0%	34.0%
Biomass energy	26.3%	33.0%
Nuclear energy	60%	33.3%
H2 vehicles	17.7%	34.0%
Fuel economy vehicles	24.7%	75.3%
Energy efficient appliances	12.0%	40.7%

N=300

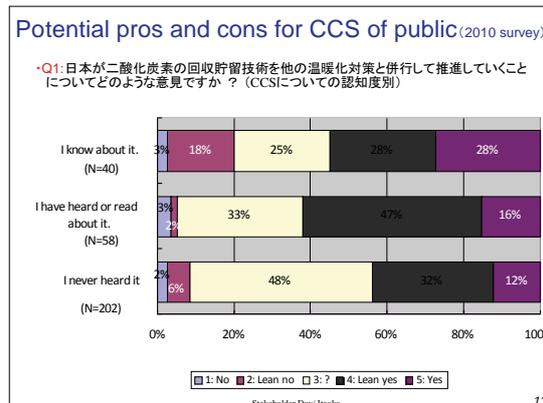
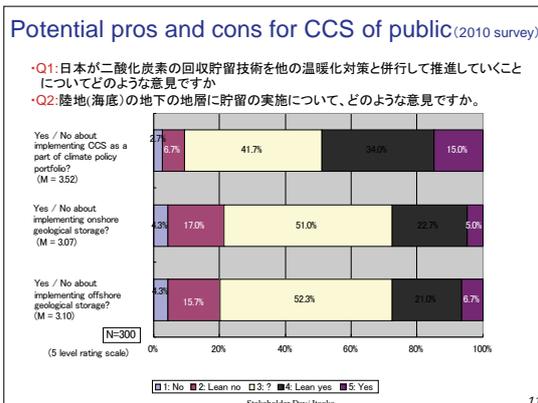
Legend: [ ] I have never heard of it. [ ] I have heard of or seen it. [ ] I know to some extent.

Stakeholder Day/Itaoka 6

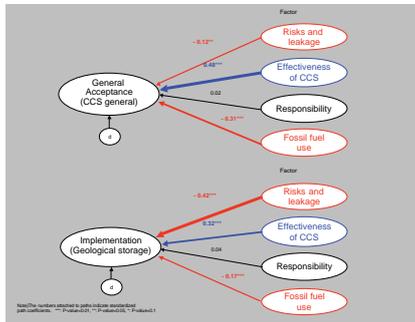


## Potential acceptability 潜在的な社会受容性

Stakeholder Day/ Itaska



### Influence of the factors on public acceptance of CCS



Stakeholder Day/Itaska

13

### FGs in potential demonstration sites (in 2008)

- Predominant opinion is neutral (most of participants have no awareness)
- After providing info, still "further information is necessary"
  - How does it work?
  - What is danger? What is safe?
  - Why this area is chosen?
  - Environmental impact in surrounding area
  - Measures to earthquake
  - Remediation if leakage or accidents happen
  - Noise and congestion in project installation
- Favorable only if they are well informed through credible information sources including media coverage to understand that CCS would cause no local environmental impacts
- Local economic benefits would be hoped but not expected to last for a long time

Stakeholder Day/Itaska

14

### Focus groups reveal... opinions on CCS implementation considering specific location: typical voice

- Consideration of benefits and risks
  - "I came across some benefits from CCS: it will bring certain money which would activate local economy; and this can be a key measure that will largely contribute to mitigate global warming. On the other hand, there is a concern if CO2 would not really leak or blasted from underground at the time of earthquakes."
- System to ensure transparency in project implementation
  - "I want the operators to establish a system to report to the residents in the region, in order to ensure transparency in project implementation. Without such system, I think we will be left behind from the project at some point."

Stakeholder Day/Itaska

15

### Does risk of CCS matter? リスクが問題か？

Stakeholder Day/Itaska

16

### Characteristics of CCS risk

- Low probability and small hazard
- Super long-term risk and high uncertainty
- Manmade risk
- + Natural risk
  - Intrinsic uncertainty and unknown of the geological systems
  - Difficulty of the verification

Stakeholder Day/Itaska

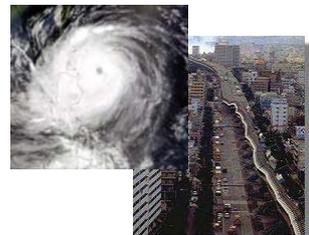
17

### Different types of the risk



**Manmade risks**  
No or little unknown uncertainty but there is known uncertainty. The probability should be minimized.

**Natural risks**  
Broad unknowns and known uncertainty. The damages should be minimized.



Stakeholder Day/Itaska

18

### What is CO2?

- Property
  - Not flammable
  - Not explosive
  - Non toxicity in low concentration.
- CO2 exist around us.
- CO2 is used in....



Stakeholder Day / Itaska 19

## Communicating CCS

### CCSのコミュニケーションをどうするか？

Stakeholder Day / Itaska 20

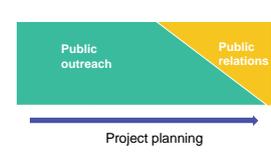
### Why assessment of public opinion and public communication are needed?

- To avoid / reduce misperception
- To promote good understanding
- To prepare materials and strategy
- To empower public and help public decide
- To reduce social cost

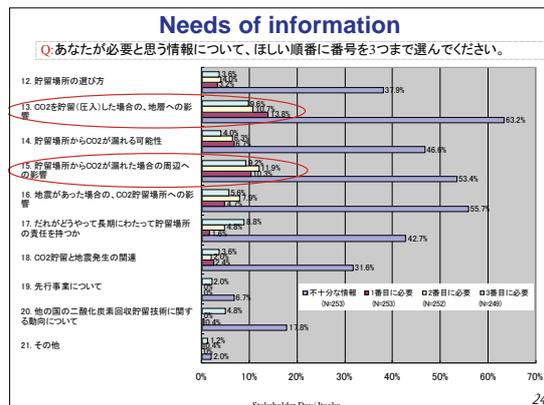
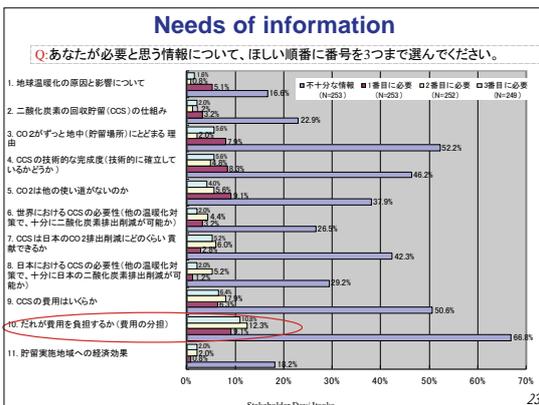
Stakeholder Day / Itaska 27

### Public Outreach / Public Relations

- Bottom up / Top down
- Not decided / Decided
- Empower / Persuade
- Public engagement / Public acceptance



Stakeholder Day / Itaska 22



### Conclusion

- Awareness and perception of CCS
  - Most of Japanese public is still not aware about CCS but knowledgeable people about CCS might be increasing.
  - Japanese public are rather positive toward promoting CCS in general as a part of climate portfolio but neutral toward real implementation.
  - "Concern about risks and leakage" and "Understanding of effectiveness" would influence public acceptance.
- Opinions for implementation
  - Favorable only if they are well informed through credible information sources including media coverage to understand that CCS would cause no local environmental impacts
  - Transparency of project is prioritized.
- Implication
  - Need coordinated and elaborated communication program of CCS
  - Need credible information providers in Japan (scientific and independent )
  - Need information (education) kits to address benefit and risks of CCS.

Stakeholder Day/ Itaoka

25

### Conclusion

- Awareness and perception of CCS
  - Most of Japanese public is still not aware about CCS but knowledgeable people about CCS might be increasing.
  - Japanese public are rather positive toward promoting CCS in general as a part of climate portfolio but neutral toward real implementation.
  - "Concern about risks and leakage" and "Understanding of effectiveness" would influence public acceptance.
- Opinions for implementation
  - Favorable only if they are well informed through credible information sources including media coverage to understand that CCS would cause no local environmental impacts
  - Transparency of project is prioritized.
- Implication
  - Need coordinated and elaborated communication program of CCS
  - Need credible information providers in Japan (scientific and independent )
  - Need information (education) kits to address benefit and risks of CCS.

Stakeholder Day/ Itaoka

26

**Thank you!**

Contact: [kenshi.itaoka@mizuho-ir.co.jp](mailto:kenshi.itaoka@mizuho-ir.co.jp)

Stakeholder Day/ Itaoka

27

## 5 INTERNATIONAL COMPARISON CASE STUDIES

### 5.1 Carson Case Study



Sarah Wade, AJW Inc, USA

#### **Sarah Wade, AJW Inc, USA**

Sarah Wade of AJW Inc presented a case study overview of the Carson project in California in the United States of America (USA). Intended to be commercially viable, the Carson project was to use CCS for Enhanced Oil Recovery (EOR) and to sequester 4 million tonnes of CO<sub>2</sub> per year sourced from a 500 MW "hydrogen from combustion" pet coke power plant (Bradbury and Wade, 2010). Located 20km from downtown Los Angeles, the project was stood down in 2009.

Although the decision to stand down the project was a business decision based on an inability to finalize a deal for the storage component, it took place at the same time that several factors were coming to the fore. Some of these might have been predicted by project developers, others could not have been. The Los Angeles Basin, a highly industrialized area with a history of air quality issues, is renowned for being culturally, ethnically and economically diverse. Further, the state of California's is energy constraints; it sources a significant amount of its energy from out of state and has faced threats of rolling power blackouts to the region. From a regulatory perspective, there were nascent efforts to develop federal regulations for CCS. At the same time, some legislative proposals to require California to develop its own CCS regulations were unexpectedly introduced. Although some of the NGOs with influence in California cautiously supported the use of CCS to address climate change, several others did not, favoring instead increased reliance on renewable energy. Some incorrectly saw the proposed legislative activity on CCS as linked to the project and this fostered distrust.

Several factors were identified as potentially contributing to an environment that made it more difficult to resolve some of the developer negotiations to finalize project details. A significant tax credit program was announce

shortly after the project was announced and the project team put a good amount of effort into developing what was ultimately a successful proposal for this program. Also, although the project was hailed as a 'first-of-its-kind' climate change solution and the developer had begun to build support in the local community, some vocal members of the larger California environmental justice (EJ) community opposed the project on the grounds of potential air pollution impacts (Bradbury and Wade, 2010).

The Carson project outreach program included extensive use of a "tiered approach" (Bradbury and Wade, 2010) to communication. This included many small meetings with local officials and key stakeholders throughout 2006 and 2007; the developer identified and contacted hundreds of stakeholders through these small meetings. As the project progressed, it was found that there was a complicated ownership structure of the intended storage field (it was owned by municipalities and operated by private entities) that made it much more challenging to finalize an agreement for storage. Although not specifically at cause, the background concerns raised about air quality, EJ issues, CCS safety and costs did not appear to help negotiations.

## 5.2 FutureGen Case Study

### **Gretchen Hund, Pacific Northwest National Laboratories, USA**

The FutureGen case study was presented by Gretchen Hund from Pacific Northwest National Laboratories. The case study report is about what has become known as FutureGen 1.0. After the case study was completed, the USA Department of Energy (DoE) reconfigured the project into what is known as FutureGen 2.0, a different iteration of the project that will be located in a new community. The summary of this presentation is about the original configuration of FutureGen, which was a DoE and FutureGen Alliance (Alliance) proposed “near-zero” emission IGCC and CCS integrated plant with CO<sub>2</sub> capture in deep saline formations. Applying a competitive approach, the Alliance called for proposals in March 2006 receiving 12 responses from seven states from which four semi-finalists were chosen – two in Illinois and two in Texas. Mattoon in Illinois eventually secured the tender in December 2007. Mattoon maintained interest in the project through August 2010 when the DoE determined that costs associated with developing a new IGCC and CCS plant were too high and reconfigured the project to include an oxy-combustion retrofit of an existing power plant with offsite storage and a connecting pipeline. Later in the same year the DoE issued the RFP for FutureGen 2.0 using a competitive tendering process.

Local benefits highlighted for Mattoon included a perceived opportunity to be seen as a global leader in the field of CCS technology, to lead innovation, and the potential of local gains in the form of “spin off industries, research opportunities,” tourism, and investment in the local community. Local primary concerns included “health and safety, water quality,” and “subsurface conceptions of stored CO<sub>2</sub>” (Hund and Greenberg, 2010). Several influencing factors noted included that communities tendering for the project were eager to win, while early adopter communities considered there was substantial value to be gained by being “at the forefront of energy research” (Hund and Greenberg, 2010). The competitive process used for tendering brought about never before seen cooperation in a tendering process between two tendering organizations within the same state which worked together to assure ultimate success for the state as a whole not just the individual tendering organization.

Critical factors considered vital in the ongoing success of the FutureGen project include the perception by stakeholders of “seamless” cross geographic/political boundaries resulting from the use of “collaborative, unified working teams” (Hund and Greenberg, 2010). Appointing strong leadership to manage and co-ordinate from initiation, and an understanding of the particular and diverse project stakeholders were considered vital to successful stakeholder engagement. Also important was the need to ensure an understanding of the “background, generational influences, and social characteristics of the community” (Hund and Greenberg, 2010). Encouraging stakeholder input to assist in understanding what interests them; ensuring timely provision of information; permitting time for information reflection and digestion; maintaining open lines of communication; and ensuring a quick turn around between when a question is posed and when it is responded to, were also considered essential to maintaining effective stakeholder relations. Information provision provided “early and often” and via multiple media is essential; while information dissemination must be “accurate and consistent” and factually indisputable to avoid misconceptions (Hund and Greenberg, 2010). Another critical success factor identified is to ensure stakeholder access to credentialed, unbiased technical experts/scientists from recognised scientific research institutions to promote questioning and develop trust. The use of unhurried information sessions was stressed as important for providing stakeholder opportunity to obtain a technical understanding of the project. Such meetings should bring together people from similar backgrounds as a means of encouraging open and frank idea exchange while building a “shared understanding of the project” (Hund and Greenberg, 2010). The use of different forums for engaging with stakeholders was another important factor highlighted, with emphasis placed on maximizing the opportunity for reaching more diverse sets of stakeholders. Finally, the need to ensure transparency was highlighted in the presentation as a means for building trust, encouraging input and engaging stakeholders through information provision that is timely and open.



Gretchen Hund, Pacific Northwest National Laboratories, USA

### 5.3 Barendrecht Case Study

#### **Suzanne Brunsting, Energy research Centre of the Netherlands**

Presented by Suzanne Brunsting of the ECN, this case study is an example of a CCS project that failed to progress. The presentation focused on the findings of the Netherlands' case study report "What happened in Barendrecht: Case study on the planned onshore carbon dioxide storage in Barendrecht, the Netherlands" authored by Ynke Feenstra, Tom Mikunda and Suzanne Brunsting of the ECN (2010).

Public participation in a CCS project was found to be largely reliant on the "timing of public involvement" and an "ability to influence project decision-making," along with an imperative precondition for the need for relevant and fitting "policy and regulations" to support successful public outreach. Highlighted in the research was that the "how" and "when" of conducting public meetings had the potential to be a primary contributing factor in the downfall of a project. What process was applied to disseminate information to stakeholders and the public, and the timing of its application, were seen as critical public outreach successes. In the case of Barendrecht, the principal issues of concern focused on "safety discussions," "independent research" and "organised public protest" (Feenstra et al., 2010).

Proponents of the Barendrecht project were seen to follow a not unfamiliar path in the Netherlands when launching a new project development – that is, they applied the process of "decide, announce," and "defend." This technique is recognised for its attention to gaining permits, meeting regulatory requirements, destabilizing opponent power, preventing dialogue around options, using persuasive information, and excluding participatory processes. Such techniques often result in progressive and greater public opposition, barriers and impasses (Feenstra et al., 2010).

Opponents to the Barendrecht project quickly assembled, prepared and secured a toehold through public gatherings, and dissemination of information through popular media which progressively increased public awareness of their opposition. Oppositional exposure increased until finally the project was stopped (Feenstra et al., 2010).



Suzanne Brunsting, Energy research Centre of the Netherlands

## 5.4 CO2CRC Otway Case Study

### Anna Carr, CSIRO, Australia

After the final site announcement in December 2007, the DOE withdrew financial support for FutureGen, citing The CO2CRC Otway case study was presented by Anna Carr from the CSIRO. CO2CRC Otway is a pilot project designed to demonstrate the technical and environmental safety of geological CCS in operation. CO<sub>2</sub> sequestration to 2010 achieved 65,000 tonnes from CO<sub>2</sub> rich gas (80% CO<sub>2</sub> and 20% methane) extracted from an existing natural gas well. The project is located in an area described as a close knit rural farming community, with the local and surrounding districts of Nirranda South and Warrnambool in Victoria's south west supporting dairy, sheep and cattle grazing as well as various service and tourism industry ventures.

Research indicated local community perceived benefits as the ability to make a scientific and international impact, as well as image benefits from being perceived as a centre for sustainable projects in Victoria and nationally. Perceptions that the project had potential to put Australia in the forefront of CCS technology were also strong. The opportunity to blend with existing renewable technology in the area was also a consideration, as was the potential for job creation. From an individual perspective, minimal direct benefits were perceived other than negotiated on a case-by-case basis with landowners directly impacted by the project.

Certain pitfalls were highlighted around landowner relations with an initial seismic test noted as poorly managed. Intended use of dynamite, distortion to land surfaces from vibrating platforms used for seismic testing, fencing wire cut instead of entry gained via property gates, gates left open causing safety issues to livestock, and flag pegs left in the ground creating hazards for land owners and livestock, reinforced the perceptions of locals that the process had been poorly communicated. Other pitfalls included the need for a compulsory land acquisition where one particular landowner adamantly remained anti to, and aloof from, the project. The use of compulsory land acquisition caused local landowners considerable surprise and concern in regard to possible similar future situations. Relations between landowners and the developer improved considerably upon the appointment of a local Liaison Officer whose communication efforts proved to be highly successful in gaining the trust of the landowners. Another pitfall involved local planning conflicts with project objectives resulting in zoning issues which were later addressed effectively.

Critical successes of the project included the successful completion of a seismic survey in 2009, the establishment of a local community reference group, and regular community meetings that were well attended at the local level. The April 2009 launch of CO<sub>2</sub> injection into CRC-I Well was also a success, with federal, state, industry and other dignitaries in attendance and the corresponding global attention the launch achieved including extensive international media coverage. An open day in October 2009 which included a tour, informal meetings and a sausage sizzle at which 35 members of public attended proved to be an important relationship building activity. The unique communication approach taken by the CO2CRC chief executive officer to conduct regular visits to the Nirranda district was received positively, providing local community members with a face to the project and a direct source of information. This resulted in a perception, and comfort in the belief, that they were speaking with the "right" person.



Anna Carr, CSIRO, Australia

## 5.5 ZeroGen Case Study

### Peta Ashworth, CSIRO, Australia



Peta Ashworth, CSIRO, Australia

Peta Ashworth presented the case study of the ZeroGen project, a proposed commercial scale IGCC with CCS project. In its pre-feasibility stage at the time the research was conducted, the project is anticipated to commence its build program in 2015 for completion in 2017. Anticipated CO<sub>2</sub> sequestration over the lifetime of the project is expected to be 60 million tonnes. The region in which the pre-feasibility study was undertaken has a combined population of 29,244. The area is primarily rural and includes several regional townships. Presently in its feasibility stage, the location for the project is yet to be announced.

Research indicated minimal benefits perceived by the local community with only minor economic gains noted as resulting from project specific contractual and visitor activity. Perceived long-term benefits included population increases, growth in housing, job creation, and improvements to local infrastructure including roads and transport.

Poor landowner relations early in the project's development around property access and respect for landowners' rights were identified as a pitfall for the project, with claims of damage to property and local infrastructure resulting from poor management. A disparity across stakeholder perceptions was highlighted around the level and visibility of project developer engagement and communication, local community lack of awareness of public engagement by the developer, and lack of knowledge of meeting notices, advertisements or invitations. A belief that community engagement did not appear to be a project priority seemingly reflected a lack of priority on the part of the local community. Perceived lack of awareness of competing local events when planning engagement meetings suggests a need for more intimate local knowledge.

A highlighted project success in gaining access to a key landholder's property through careful engagement and demonstrated respect toward the landowner and his property were observed and discussed at length

within the local community. By not attempting to access the property without meeting the landowner first, and doing so at the property gate, the representative gained the landowner's respect and trust, as well as that of his peers. Critical success factors highlighted included: a clearly defined stakeholder management plan; ongoing evaluation and regular review to ensure effective stakeholder engagement; developer awareness of the current political climate; knowledge of extraneous issues that may impact communication and engagement; stakeholder requests to be positively addressed; and, where appropriate, ensuring requests are included in project decisions.

## 6 OVERVIEW REPORT AND EVALUATION FACTORS

Following the presentation of the individual case studies, Sarah Wade (AJW Inc) provided an overview of the case study comparison addressed in CSIRO's report "Communication, project planning and management for carbon capture and storage projects: An international comparison." Focusing on lessons learned and best practices identified as a result of use, or otherwise, of a participatory approach, a series of 39 evaluation factors were developed against which each case study was assessed. Central to the evaluation factors was a traffic light system used to assess each of the factors: 'green' indicating a factor as addressed and/or resulting in a positive outcome; 'amber' indicating a factor was not fully addressed, not considered, or the cause of concern; and 'red' indicating a factor as problematic and considered to have contributed to the project's downfall. Where a factor was unable to be evaluated, the corresponding box was left 'blank.' The evaluation factors focused on project communication programs, project design, and project management.

From a communication best practice perspective, the importance of recognising that no one prescription fits all was stressed. A project's ability to adjust its planning and management to the social context was noted as a major contributing factor towards achieving positive outcomes. This also included ensuring flexibility to address changing factors such as political elections and other events that could change the local dynamic. Successful projects sought to integrate effective communication and outreach at the very beginning and throughout the project's life. Stakeholder perspectives of a project (e.g. that it is believed to be an experiment) can adversely affect acceptance. The need to factor in time was stressed for determining how best to frame a project in the context of the beliefs and values of the local community. Considered critical to a project's success, the use of a social site characterisation process was emphasised for providing insight into how a project might best be designed to better fit the local community. Thorough investigation of the local community permits identification of stakeholders and their concerns, informs on interaction preferences, and identifies how locals source information, as well as providing an understanding and awareness of what information is important.

Consideration must also be given to the messenger of information. Affiliations and source are critical integrity issues that have the potential to negatively impact a project's acceptance if not properly addressed in the communication plan. Different perspectives and perceptions arise dependent upon the deliverer of a message. Government and project developer information is perceived differently to information provided by environmental organisations and academics or renowned experts.

Through understanding how different spokespeople and messengers are perceived, a project can expand its team to ensure it includes these appropriate and effective voices in its communication plan. Where information comes from can often affect the perceived value of the information received. Misinformation is a major issue in projects such as CCS development and deployment. When stakeholders question the validity of information provided to them, they seek alternative information. When this information is inaccurate and misinformed, the potential to negatively shape opinion is strong; such opinions, once established, are extremely difficult to change. Being aware of and understanding where stakeholders source information, and ensuring accurate information is available via these channels, is an important factor in information delivery. Such methods may include mainstream television, the internet, flyers and posters, and via school curricula.



Reviewing evaluation factors, Japan CCS Stakeholder Day, 19 November 2010.

## 7 COMMUNICATION/ENGAGEMENT TOOLKIT FOR CCS PROJECTS

Peta Ashworth provided a brief overview of the "Draft Communication/Engagement Toolkit for CCS Projects," a copy of which was provided to each participant at the workshop. Linking back to the evaluation factors discussed in the five case study comparison presentation, it was emphasised that the Toolkit was developed from lessons learned as a result of these case studies. The driving force behind the document's development was to assist in the design and management of communication and engagement activities specific to CCS projects; and for application as a universal guide for CCS implementers which provides practical and informative methods and examples designed to make the process as simple as possible.

Designed as a three phase document, the Toolkit focuses on the gathering of social data, stakeholder engagement and the communication plan. The gathering of social data hinges on local context and benefits; while recommended methods for engaging stakeholders provides information and suggestions around communication planning. Offering suggestions for identifying project stakeholders, the Toolkit assists in the prioritisation of stakeholders for engagement purposes. It also provides practical tips such as a SWOT analysis to determine project specific strengths, weaknesses, opportunities and threats for different stakeholder groups.

Participants spent time examining the Toolkit. The Toolkit was thought by many to be a very practical and useful guide. However, some points were raised in relation to ensuring that the Toolkit can be adapted to specific projects. Along with the issue of adaptability, the question was raised whether the Toolkit has been applied to real projects, and if so, has feedback been provided on its use? This would be seen to be useful in keeping the Toolkit up to date and current. Another suggestion was that a glossary of terms would be most helpful for those not familiar with social science and communication terminology; also a translated version of the Toolkit in Japanese would be beneficial. Suggestions for improvement have been incorporated into the final Toolkit which is available at the Institute's website.



Draft Communication/Engagement Toolkit for CCS Projects, Japan CCS Stakeholder Day, 19 November 2010.

## 8 KNOWLEDGE SHARING UPDATE

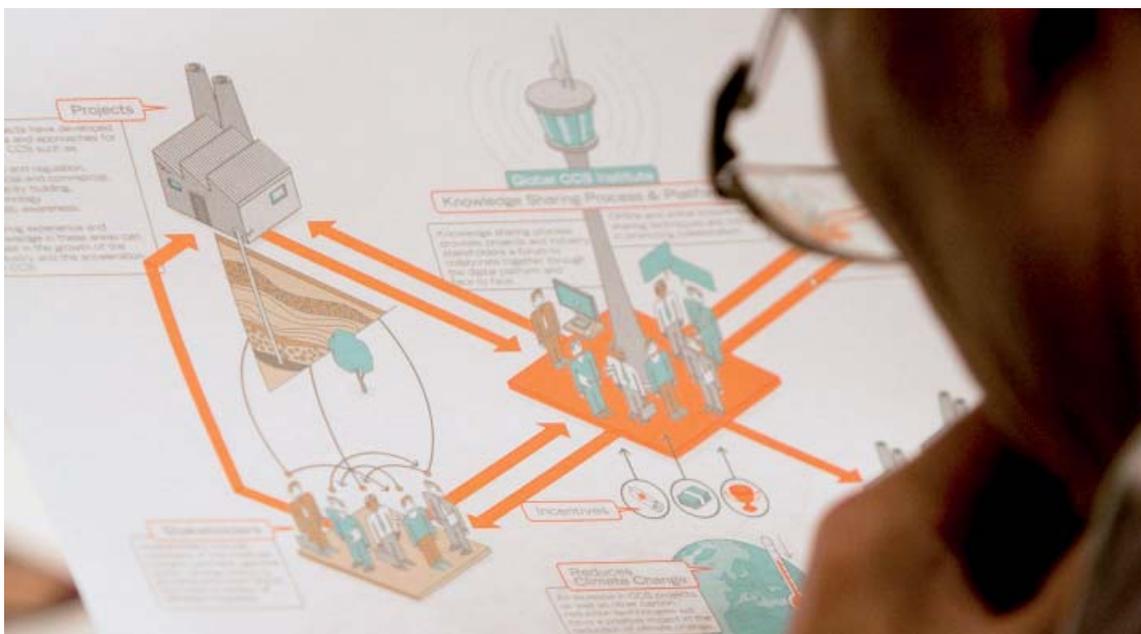
### Angus Henderson, Global CCS Institute, Australia

The Institute's Angus Henderson's presentation focused on providing an update on the developments across the knowledge sharing domain. Henderson outlined that a major focus of his role is to determine different stakeholder requirements, and from this to create communities of practice via online and face-to-face interaction, citing as an example a Wikipedia-style feature on the website that permits users to access community generated comment.

Henderson noted the required rapid development of CCS projects globally, with some 3,500 projects needing to be operational by 2050 to meet CO<sub>2</sub> reduction targets. With this level of projected rapid increase in projects major challenges were anticipated, with a lack of information sharing between projects perceived to be the most significant issue. Challenges around information management, intellectual property and organisation of information were cited, focusing on issues relating to search ability, useability, and audience targeting. Through the development of project information gathering processes, valuable knowledge products collected from projects, content partners and research, sourced internally and externally and via consultants and other knowledge organisations, the Institute had accumulated a vast resource pool to assist CCS industry members.

Part of this is the development of a sophisticated online communication tool, unique in the CCS industry, which permits stakeholders to communicate effectively online. Encouraging membership engagement that assists institutions and stakeholders to meet and work collaboratively, is essential to the Institute's aims. Knowledge sharing is a means for enabling projects to deliver effectively, with up-to-date information and case studies surrounding technologies, methodologies, decision making and regulatory systems being perceived as the most beneficial information available for knowledge sharing. Through communicating lessons learned from case studies, other projects may avoid similar problems.

Participants viewed a short film produced by the Institute that highlighted a newly released set of digital platforms designed by the Institute. The platforms are intended to promote knowledge sharing across the CCS industry, accelerate deployment of CCS, and to assist industry through information and idea sharing, and in solution development and global networking. Intended as a means for educating, engaging and enabling stakeholders, the platforms are supported by a social site homepage with online mail connection for registered users, latest CCS news and events, access to expert opinion via blogs, information resources such as reports, frameworks and case studies, and an interactive map for viewing details of existing CCS projects worldwide. In addition, an extranet (restricted) platform assists the Institute and its members in their collaboration efforts and provides a digital environment that assists in supporting problem solving and knowledge sharing interactions.



Global CCS Institute's "New Approach for Knowledge Sharing," Japan CCS Stakeholder Day, 19 November 2010.

## 9 THEMATIC ANALYSIS OF DISCUSSION



Discussion and reflection periods encourage information assimilation and questioning around information presented.

Throughout the day time was allocated for discussion and reflection on what had been presented, reactions to the information, and further questioning. This section documents the main themes that arose as a result of those discussions, which are in no order of priority.

### 9.1 Cultural identity and public acceptance in Japan

A key theme that emerged in discussions was the importance of recognising that Japan holds very different cultural views to those of other nations. These attitudes and views lie deep in the nation's history and can directly influence the way CCS is accepted. For example, it was noted that in Japanese culture, local pride is very important and communities care a great deal about image and the way they are perceived. A suggested method to consider this issue is for developers to focus on local benefits.

Engagement needs to include meaningful social time through consultations and discussions with stakeholders that include "wet" time; for example, time spent in tea houses, bar, and in other social settings that allow interaction. The important role of the fishing community as influential was also noted. Environmental issues are also seen to be extremely sensitive within Japanese culture and more specifically within certain regions. This can ultimately make consultation more difficult. It was noted that a country's historic and cultural values cannot be altered; and that this needs to be taken into consideration when determining the best methods of engagement. Strategies need to be adaptable to be able to apply in different cultures.

Another issue that was seen to hamper engagement is that good relationships do not exist between project developers and journalists. This was seen to be an area that was presenting challenges in forming good working relationships to help disseminate information in regard to CCS. When examining the history of public acceptance of energy in Japan, nuclear was accepted because people benefited economically. Public acceptance of the technology has also been hampered by a view that the earthquakes that have occurred within the last six years have been caused by injection of CO<sub>2</sub> and that significant leakage could occur. Media reports on the topic have only increased anxiety and negative perceptions of CCS within communities.



Requirement identified was for the Toolkit to take into account differences in cultural views.

## 9.2 Offshore - onshore issues

In 2007, media coverage was still quite positive or balanced, with negative stories representing less than 10 per cent of the total (Figure 3). The positive and balanced reports emphasised the same benefits as described in 2006. However, with only two states in the running for hosting FutureGen, there was less coverage and outward support from other states. The coverage was local or national. By the second quarter, the media reported on the public hearings as part of the EIS. By the fourth quarter, the final EIS was released and the Alliance selected Mattoon as the site (December 2007).

Also during this time were the United Nations climate talks in Bali, Indonesia. The new themes reported in 2007 included urgency of schedule, DOE concerns about costs and cost sharing with the Alliance in general, and DOE's decision not to issue the Record of Decision that declares that there are no environmental issues of concern associated with the site – a necessary document to allow the project to proceed. Also raised were issues concerning regulatory uncertainty and liability concerning CCS.

Given that this was a period of candidates running for President of the United States, there was also coverage of candidates' position on advanced coal technologies. During this time, there were reports on investors being reluctant to back IGCC technology given the high cost, and some utilities were cancelling their plans to build such plants. *The New York Times* published a report: "New type of coal plant moves ahead, haltingly" which said that DOE is making ambiguous statements about its commitment to FutureGen (Wald, 2007). *The Chicago Tribune* published a report: "Digging deep for a carbon emission solution" where FutureGen was mentioned in an overview of the interest in CCS and how it can help reduce carbon emissions (Goering & Greising, 2007).

The coverage around Mattoon being selected as the site was largely positive, with only 1 per cent negative. One article from the local Mattoon newspaper, *The Journal Gazette and Times-Courier*, ran the headline "*FutureGen could end up like '80s supercollider*", referring to concerns that the increase in cost could put the project in jeopardy (Riopell, 2007). International coverage increased during the second quarter of 2007 to between 12-15 per cent and held steady throughout the year and through the second quarter of 2008.

The natural seismic activity that occurs in Japan is a challenge when discussing onshore injection. Leakage is seen to be a real threat, and for this reason offshore opportunities have been examined. However, offshore injection is strongly disputed by fisherman and they are seen as the key stakeholder when examining this type of capture and storage. Historically, the fishing industry has been seen to hold strong views in regards to environmental issues and they present many challenges to developers. Specific fishing areas have property rights and many fisheries are moving closer to land due to climate change issues.

Other concerns raised in relation to onshore issues included that infrastructure is highly developed with little room for pipelines. Also, there is no current regulatory framework for onshore CCS. The pilot plant that was in operation applied a mining law; and although new laws are being considered, developing and enacting such laws can be an arduous and drawn out process. This will need to be addressed.

### 9.3 Potential benefits - schemes

It was acknowledged in discussions that to be able to identify local benefits, a close examination of the local community is necessary. This is not new information; however, the importance of recognising that each country is different was seen to be a key factor, especially when discussing Japan owing to its cultural beliefs and views. It was noted that some economic benefits may work well in some countries but not in others. Japan was said to need specific benefits that take into consideration that the fishing industry would ultimately be the most important stakeholder. Economic benefits were seen to be the number one factor that could lead to support for the technology. A suggestion that CCS follow in the footsteps of nuclear with financial compensation to affected communities was suggested as a means for gaining support; however, each community would need to assess this on its own merits.

### 9.4 The role of NGOs in the debate

NGOs appear to be active within Japan although no original Japanese NGOs seem to exist. Greenpeace is the most dominant group and is in strong opposition to CCS. Their presence and viewpoints strongly influence the general public in relation to CCS activities. An example of this is the Greenpeace proclamation that the earthquakes that have occurred in the last six years are due to the injection of CO<sub>2</sub> taking place at the Nagaoka storage site. The only NGO reported to be showing some support of CCS in Japan is Friends of the Earth, and they do not appear to have a strong presence in Japan.

### 9.5 Transparency of technical information

It was very clear in discussions that although many Japanese people support mitigation actions for climate change, not many people have knowledge about CCS technology. Risks and issues associated with CCS are poorly understood by the lay person. Therefore, discussions revolving around the transparency of technical information were mainly focused on the fact that clear and concise information is needed. The terminology used needs to be approached from a lay perspective and should revolve around the rationale for why CCS is needed. A change in attitude needs to occur within the Japanese people to conserve energy (just as Australia and Europe have done with water usage). Transparency was seen to be important in communication efforts; but it was stressed that disseminating information too early in the process can cause confusion.

## 9.6 Case studies and knowledge sharing

The Carson and Barendrecht presentations provided a rare chance to hear about the negative aspects of CCS projects. Participants found it very useful to hear about what went wrong. It was claimed that this is because when visiting websites of the developers none of the grievances or problems that existed are reported. Examining lessons from these projects was seen to be extremely valuable and to go forward armed with this new knowledge was viewed as beneficial. One question that did emerge was whether there was a difference between pilot projects and commercial projects, and whether this had an influence on the success of the project.



Gretchen Hund, Pacific Northwest National Laboratory (USA), sharing knowledge from the FutureGen Case Study.

## 9.7 Educational materials and imagery

Education was seen to be an issue that needed attention with a requirement expressed to educate the public about CCS at basic levels within primary and secondary schools. Along with focussing on local communities, there was a suggestion of rolling out national educational materials as well. One researcher suggested that photos and images were also seen as builders of trust for communities, raising the idea that currently no image exists when people think of CCS. Recommendations relating to this were made, as shown in the quote below.

*"But the question I would then raise, is if you think about the public and CCS, what is the visual image of CCS that it produces in your minds? What does it look like? Is it simple? Does it have a strong visual component? Because there is a lot of talk about information, what information do we give to the public? But information is more effective and attention-seeking if it is visually clear. So what image does CO<sub>2</sub> - does carbon sequestration and carbon capture and storage evoke in the public mind? This might be an interesting topic for social research to look at. If you find that there is no image, then you might want to think, well, what should the image be? Many people think in a visual way, not in a numerical way or a verbal way".*

### 9.8 Participant queries

Participants' were provided with an opportunity to pose questions to the key speakers immediately following the presentations. Examples of the types of questions posed throughout the day are provided below.

*"What actually happened [in the Netherlands] and why were the people against the project?"*

*"So it occurs to me that the location of Barendrecht, which is near the Rotterdam Harbour is quite close. So as the Rotterdam Harbour is developing a CO<sub>2</sub> hub, for industrial hub which will pipe CO<sub>2</sub> out to the North Sea, do you think the perception or the perception in Barendrecht community will be effected by a successful demonstration nearby?"*

*"What was the law in which a CCS project was approved by the Government in [the] Netherlands...?"*

*"In your presentation, Mister Itaoka, CCS is compared to nuclear energy. CCS technology is used for mitigation technology, but the majority of the people said that they're not quite sure and the ratio was 64 per cent. Nuclear energy, the not sure population also accounted for 58.7 per cent, nearly 60 per cent. So basically, do they have the same attitude?"*

*"It is something that is attached to the power generation plant. So is that the reason why CCS - the perception is still low? Is that part of your analysis?"*

*"The need for [a] leader is also important and the Government involvement as well as the interface. Sorry, well in Europe – Australia was doing well and Europe, perhaps because of dense population it has been difficult and here in Japan as well there are some candidate sites that are selected. But according to the current information, the information is not sufficient or are there any other potential candidate sites that could be available?"*

*"So ultimately, the Government [in the Netherlands] made a decision .... It's not just shouting and yelling but legally, is there a legal process through which the community would be able to voice their concern?"*

*"There are some EU flagship projects that were not covered today, but if follow up on those projects as well can be provided in the future it will be very useful."*

*"...concerning Otway...who funded the work at Otway and my guess - and you need to answer this - was out of my memory was that it was the Australian Government?"*

*"The very fact or injecting CO<sub>2</sub> underground, is it really going to make contribution in addressing the global warming? Is that the right message? Is it going to be effective?"*



Draft Communication/Engagement Toolkit for CCS Projects, Japan CCS Stakeholder Day, 19 November 2010.

## 10 CONCLUSIONS AND RECOMMENDATIONS

Participants were invited to provide an on-line evaluation of the workshop. Only sixteen responses were received; but overall the responses were complementary and positive (see Appendix J).

During the reflections at the end of the day feedback showed that the day was perceived by many as, first and foremost, a meaningful way to share knowledge. The fact that debate was often started around discussions was also seen as extremely valuable as this is not common practice within Japan. It was also quite unique to have a day dedicated to the issue of public acceptance, given that much of the work in Japan is technology driven, although this did not discount the importance of public acceptance. This was reflected in the evaluation that was completed by some of the participants on-line after the event. One participant remarked

*“Small group discussion was great. We, Japanese are generally so shy, that allocation of the facilitator was an excellent idea. And simultaneous translation was really helpful for my English ability.”*

It was also suggested that this type of meeting could occur yearly in Japan, Korea or China to maintain a focus on the Asia Pacific region; and further, that the Institute might consider such an event on an ongoing basis as new information comes to hand, reinforcing the knowledge sharing component of the Institute.

The case studies were seen to be very useful especially the findings from the projects that were seen to have been unsuccessful. It was suggested that perhaps a similar discussion could be proposed around the CCS demonstration projects in the European Union as they may be more applicable to Japan.

*“The reports of case studies were very useful to understand actual situation of CCS Project especially in CO<sub>2</sub> storage portion. It is appreciated that the cases of EU Flagship Projects be included to your future Case Studies.”*

Given the status of Japan CCS projects and prior experience with consultation and engagement there was a request that the social research group complete a case study of the Japan experience to date to see what lessons could be learned and transferred to others. Overall, the case study approach was seen as particularly valuable for projects.

One social researcher highlighted the absence of a positive visual image for CCS and suggested that this should become a priority for those working in CCS in general. The idea was likened to the image of wind which is generally seen as clean and green, where as CCS currently tends to have a more negative image leaning towards extension of the fossil fuel industry or drawing analogies to nuclear waste based on the concept of storage.

Finally, participants were supportive of the Toolkit being made available, and if possible, translated into Japanese. Participants were keen to see additions made to the Toolkit, in particular more examples of case studies which would highlight some of the approaches being suggested.



Participants provide feedback on round table discussions.

### Recommendations therefore include:

- R1 Consider convening similar days on an annual basis in the Asia Pacific region – for example, in Japan, China or Korea.
- R2 Use social researchers to develop a case study of the Japanese communication and outreach experiences to date and share this via knowledge broking portal.
- R3 Develop more case studies on active European Union research projects.
- R4 Consider what might constitute appropriate imagery for CCS that can help to create more positive memories of the technology and what it represents.
- R5 Release the Toolkit and continue to collect case studies for it as well as expand it as new information comes to hand.

### REFERENCES

- Ashworth, P., Bradbury, J., Feenstra, C.F.J. (Ynke), Greenberg, S., Hund, G., Mikunda, T., and Wade, S. (2010). *Communication, project planning and management for carbon capture and storage: An international comparison*. CSIRO: Australia. EPI04273. Source: [http://www.globalccsinstitute.com/sites/default/files/Overview%20Summary%20CCS%20Projects-incl%20append\\_1.pdf](http://www.globalccsinstitute.com/sites/default/files/Overview%20Summary%20CCS%20Projects-incl%20append_1.pdf)
- Ashworth, P., Bradbury, J., Feenstra, C.F.J. (Ynke), Greenberg, S., Hund, G., Mikunda, T., Wade, S. and Shaw, H. (2011). *Communication/Engagement Toolkit for CCS Projects*. CSIRO: Australia. EPI05893. Source: [http://www.globalccsinstitute.com/sites/default/files/publication\\_20110324\\_communication-engagement-toolkit.pdf](http://www.globalccsinstitute.com/sites/default/files/publication_20110324_communication-engagement-toolkit.pdf)
- Ashworth, P., Rodriguez, S., and Miller, A. (2010a). *Case Study of the CO2CRC Otway Project*. Prepared for Sarah Clarke, Global Carbon Capture and Storage Institute. CSIRO: Australia. EPI03388. Source: <http://www.globalccsinstitute.com/sites/default/files/OtwayCCSProjectCaseStudy.pdf>
- Ashworth, P., Rodriguez, S., and Miller, A. (2010b). *Case Study of ZeroGen Project*. Prepared for Sarah Clarke, Global Carbon Capture and Storage Institute. CSIRO: Australia. EPI03387. Source: <http://www.globalccsinstitute.com/sites/default/files/ZeroGen%20CCS%20Project%20Case%20Study.pdf>
- Bradbury, J. and Wade, S. (2010). *Case Study of the Carson CCS Project*. In fulfilment of Task 1 for CSIRO on behalf of the Global CCS Institute: International Comparison of Public Outreach Practices Associated with Large Scale CCS Projects. Pacific Northwest National Laboratory and AJW Inc., USA. Source: <http://www.globalccsinstitute.com/sites/default/files/Carson%20CCS%20Project%20Case%20Study.pdf>
- Feenstra, C.F.J., Mikunda, T. and Brunsting, S. (2010). *What happened in Barendrecht? Case study on the planned onshore carbon dioxide storage in Barendrecht, the Netherlands*. Energy research Centre of the Netherlands. Source: <http://www.globalccsinstitute.com/sites/default/files/Barendrecht%20CCS%20Project%20Case%20Study.pdf>
- Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S. & Combs, B. (1978). *How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits*. Policy Sciences, 9(2), 127-152.
- Goering, L. and Greising, D. (2007). *Digging Deep for a carbon emissions solution*. The Chicago Tribune. October 14, 2007. Chicago: USA. Retrieved from: <http://royaldutchshellplc.com/2007/10/14/chicago-tribune-digging-deep-for-a-carbon-emissions-solution/>
- Henderson, A. (2010). Accelerating CCS through knowledge. *Global CCS Institute*. Presented at the Japan CCS Stakeholder Day, 19 November 2010, hosted by the Global CCS Institute and CSIRO in Tokyo, Japan.
- Hund, G. and Greenberg, S. (2010). *FutureGen Case Study*. In fulfilment of Task 1 for CSIRO on behalf of the Global CCS Institute: International Comparison of Public Outreach Practices Associated with Large Scale CCS Projects, Pacific Northwest National Laboratory and the Illinois State Geological Survey, USA. Source: <http://www.globalccsinstitute.com/sites/default/files/FutureGen%20CCS%20Project%20Case%20Study.pdf>
- Itaoka, K. (2010). Overview of public perceptions of CCS in Japan and a comparison with international research, *Mizuho Information and Research Institute*, Japan. Presented at the Japan CCS Stakeholder Day, 19 November 2010, hosted by the Global CCS Institute and CSIRO in Tokyo, Japan.
- Riopell, M. (2007). Durbin: FutureGen could end up like '80s supercollider, *The Journal Gazette and Times-Courier*. December 8, 2007. Mattoon: USA. Retrieved from: <http://jg-tc.com/>
- van der Pligt, J. (2010). Local acceptance of CCS: Beyond fear and risk, University of Amsterdam. Presented at the Japan CCS Stakeholder Day, 19 November 2010 hosted by the Global CCS Institute and CSIRO in Tokyo, Japan.
- Wald, M.L. (2007). New type of coal plant moves ahead, haltingly. *The New York Times*. December 18, 2009. New York: NY. Retrieved from: <http://www.nytimes.com/2007/12/18/business/18coal.html>

## APPENDIX A – INVITATION AND AGENDA

www.csiro.au

# INVITATION CCS Stakeholder Day

Energy Transformed National Research Flagship

National Research  
**FLAGSHIPS**  
Energy Transformed



**CSIRO**

**Friday 19th November, 2010**  
The Prince Park Tower Tokyo  
4-8-1 Shiba-koen, Minato-ku  
Tokyo, 105-8563 Japan



**GLOBAL  
CCS  
INSTITUTE**

You are invited to attend a CCS Stakeholder Day to be held in Tokyo, Japan on November 19.

The focus of the day will be to present the results of an International Comparison of CCS Communication Case Studies. The case studies examined the communication activities that were undertaken in Barendrecht in the Netherlands, the Carson and FutureGen Projects in the USA, and the work done to date on both the ZeroGen Project and the CO2CRC Otway Project in Australia.

A keynote address will be given by Professor Joop van der Plight. An international expert on decision making and public perception of technological risk. For further information about Professor van der Plight, please [click here](#).

The agenda follows – and further information regarding the venue will be provided at a later date.

In the meantime, if you wish to attend, please send an email to [Alice.Miller@csiro.au](mailto:Alice.Miller@csiro.au) by Friday November 12.

**DATE:** Friday 19th November, 2010

**VENUE:** The Prince Park Tower Tokyo  
4-8-1 Shiba-koen, Minato-ku  
Tokyo, 105-8563 JAPAN

# Agenda CCS Stakeholder Day

## Energy Transformed National Research Flagship

National Research  
**FLAGSHIPS**  
Energy Transformed



**Friday 19th November, 2010**  
The Prince Park Tower Tokyo  
4-8-1 Shiba-koen, Minato-ku  
Tokyo, 105-8563 Japan



09:15 – 09:25	Welcome: <b>Dr Makoto Akai</b> National Institute of Advanced Industrial Science and Technology
09:25 – 9:50	<b>Keynote Address: Professor Joop van der Pligt</b> <i>University of Amsterdam</i> <i>Local acceptability of CCS: Beyond fear and risk</i>
9:50 – 10:15	<b>Keynote Address: Kenshi Itaoka</b> <i>Mizuho Information and Research Institute</i> <i>Overview of public perception to CCS in Japan and a comparison with international research</i>
10:15 – 10:35	Combined Discussion Session
<b>10:35 – 11.05</b>	<b>MORNING BREAK</b>
11.05 – 11:55	International Comparison of CCS Communication Case Studies <b>The Carson Case, USA</b> Sarah Wade, <i>AJW, Inc.</i> <b>The FutureGen Case, USA</b> Sallie Greenberg, <i>University of Illinois</i> Gretchen Hund, <i>Pacific Northwest National Laboratory, USA</i> <b>The Barendrecht Case, the Netherlands</b> Dr Suzanne Brunsting, <i>Energy research Centre of the Netherlands</i> <b>The Otway Case, Australia</b> Dr Anna Carr, <i>CSIRO</i> <b>The ZeroGen Case, Australia</b> Peta Ashworth, <i>CSIRO</i>
11:55 – 12:15	Combined Discussion Session
<b>12:15 – 13:15</b>	<b>LUNCH BREAK</b>
13:15 – 13:45	An overview of key findings from the case studies: Sarah Wade, <i>AJW, Inc.</i>
13:45 – 14:15	Evaluation factors: Small group discussion <i>What do these case studies key findings mean for CCS projects?</i>
14:15 – 14:30	Introduction to Communication and Engagement Toolkit for CCS Projects: Peta Ashworth, <i>CSIRO</i>
<b>14:30 – 14:40</b>	<b>AFTERNOON BREAK</b>
14:40 – 15:10	Application and feedback on the toolkit for projects: Small group discussion
15:10 – 15:40	Global CCS Institute Knowledge Sharing Approach: Angus Henderson, <i>GCCSI</i>
15:40 – 16:15	Final questions and answers, reflections on the day, where to from here?
<b>16:15</b>	<b>CLOSE</b>
<b>NOTE</b>	All sessions will have simultaneous translation services provided

## Agenda: CCS Stakeholder Day cont'd

### Presenter Profiles



#### **The Carson Case, USA**

Sarah Wade, *AJW, Inc.*

Sarah M. Wade's expertise is in air quality issues including acid rain, ground-level ozone, and addressing climate change by reducing carbon dioxide emissions. Since 2000, she has focused on issues related to the development and deployment of CCS technologies.



#### **The FutureGen Case, USA**

Sallie Greenberg, *University of Illinois*

Sallie Greenberg is the Sequestration Communications Coordinator for the Illinois State Geological Survey (ISGS) and Midwest Geological Sequestration Consortium (MGSC), one of the U.S. Department of Energy's seven regional sequestration partnerships. As the Assistant Director for the ISGS's Advanced Energy Technology Initiative, she helps lead a team of scientists working on several CCS projects.



#### **Gretchen Hund, Pacific Northwest National Laboratory, USA**

Gretchen Hund assesses stakeholder perception in support of several CCS projects. She designed, implemented, and manages the plan for engaging stakeholders for the FutureGen Alliance. Similarly she manages this effort for the Wallula basalt project under the US Department of Energy's Big Sky Carbon Sequestration Partnership.



#### **The Barendrecht Case, the Netherlands**

Dr Suzanne Brunsting, *Energy research Centre of the Netherlands*

Dr Suzanne Brunsting is a social scientist at the Energy Research Centre of the Netherlands (ECN), department of Policy Studies. She is involved in several national and international research consortia to study communication and participation issues in CCS projects.



#### **The Otway Case, Australia**

Dr Anna Carr, *CSIRO*

Dr Anna Carr is a social scientist with the CSIRO Science Into Society Group. She focuses on innovation and engagement related to technology assessment/acceptance and emerging technologies. Anna has a background in communication studies, economic development, natural resource management, and science and technology studies, and has an emerging interest in horizon scanning and futures' studies.



#### **The ZeroGen Case, Australia**

Peta Ashworth, *CSIRO*

Peta Ashworth is the Group Leader of the Science into Society Group at the CSIRO's Division of Earth Science and Resource Engineering. Peta is a sociologist who has a keen interest in understanding the social processes to enhance information delivery. Peta has been researching public attitudes to climate change and low emission energy technologies including CCS for the past seven years. Peta is currently Chair of the IEA GHG Social Research Network.



#### **Knowledge Sharing, Global CCS Institute, Australia**

Angus Henderson, *Global CCS Institute, Australia*

Angus Henderson is the Principal Manager of Knowledge Communities and Content at the Global Carbon Capture and Storage (CCS) Institute. In this role, Angus designs and implements on-line and face-to-face communities and coordinates the flow of relevant knowledge and key learnings between demonstration projects and the diversity of other CCS stakeholder groups.

## Agenda: CCS Stakeholder Day cont'd

### Energy Transformed National Research Flagship

National Research  
**FLAGSHIPS**  
Energy Transformed



**Friday 19th November, 2010**  
The Prince Park Tower Tokyo  
4-8-1 Shiba-koen, Minato-ku  
Tokyo, 105-8563 Japan



#### Keynote Address



**Professor Joop van der Pligt**  
*University of Amsterdam*

*Local acceptability of CCS: Beyond fear and risk*

Professor Joop van der Pligt's research focuses on attitudes and decision-making. His current work on attitudes focuses on the role of affect in attitude formation and change, ambivalence, and on how people deal with counter-attitudinal information. His research also addresses more applied issues such as the perceived risks of technological developments, dietary behaviour, compliance, intergroup relations, fundamentalism and terrorism, and risk and insurance.

#### Keynote Address



**Kenshi Itaoka**  
*Mizuho Information and Research Institute*

*Overview of public perception to CCS in Japan and a comparison with international research*

Kenshi Itaoka is a senior researcher with the Mizuho Information and Research Institute in Japan where he carries out research which investigates the economic effects and feasibility of carbon dioxide capture and storage (CCS) in Japan. He is also interested in policy analysis on Climate Change and air pollution with a particular focus on cost benefit analysis, risk-benefit analysis and assessment of social acceptability of new energy technology. Kenshi has published peer reviewed journal articles in the academic literature.

## APPENDIX B – ATTENDEES

FIRST NAME	LAST NAME	ORGANISATION
Sarah	Wade	AJW Inc
Derek	Brown	Australian Embassy, Tokyo
Seiya	Ishii	Australian Embassy, Tokyo
Gretchen	Hund	Battelle Pacific Northwest National Laboratory
Atsushi	Kurosawa	Center for Low Carbon Society Strategy, JST
Hiroshi	Nakamura	Center for Low Carbon Society Strategy, JST
Akira	Omata	Chiyoda Corporation
Motohiko	Maeno	Chubu Electric Power Company
Monica	Lupion	CIUDEN
Hideo	Kodama	Coal Resources & Mining Engineering Co., Ltd. (Japan)
Peta	Ashworth	CSIRO
Anna	Carr	CSIRO
Seiji	Hongo	Electric Power Development Co. LTD. (J-POWER)
Nobuhiro	Misawa	Electric Power Development Co. LTD. (J-POWER)
Hiroshi	Sasatsu	Electric Power Development Co. LTD. (J-POWER)
Suzanne	Brunsting	Energy Research Centre of the Netherlands
Kerry	Brooks	Global CCS Institute
Angus	Henderson	Global CCS Institute
Akira	Masunaga	Global CCS Institute
Mike	Miyagawa	Global CCS Institute
Mat	Norton	Global CCS Institute
Hirotsada	Bessho	Global Environment Technologies Office, Ministry of Economy, Trade and Industry, Japan
Takahiro	Ishii	Global Environment Technologies Office, Ministry of Economy, Trade and Industry, Japan
Tadashi	Nakashima	Global Environment Technologies Office, Ministry of Economy, Trade and Industry, Japan
Tatsuro	Kikuchi	Hitachi
Atsushi	Suzuki	Hitachi
Kan	Kobayashi	Idemitsu Kosan Co., Ltd.
Ameena	Camps	IEAGHG
Tim	Dixon	IEAGHG
Takashi	Kiga	IHI Corporation
Masanori	Abe	Japan CCS Co., Ltd.
Yoshio	Hirama	Japan CCS Co., Ltd.
Yoshifumi	Kanamori	Japan CCS Co., Ltd.
Tsuneharu	Shimoe	Japan CCS Co., Ltd.
Yoshinori	Yamanouchi	Japan CCS Co., Ltd.
Michiaki	Harada	Japan Coal Energy Center (J-COAL)
Takuma	Mohri	Japan NUS Co., Ltd.
Chiaki	Shinohara	Japan NUS Co., Ltd.
Satoshi	Suzuki	Japan NUS Co., Ltd.
Hidemitsu	Shimada	JGC Corporation

## APPENDIX B – ATTENDEES

Kenji	Kamei	Kawasaki Heavy Industries, Ltd
Yusep	Kartiwa Caryana	LEMIGAS
Ego	Syahrial	LEMIGAS
Jiro	Ozono	Mitsui & Co. Ltd.
Kenshi	Itaoka	Mizuho Research Institute
Makoto	Akai	National Institute of Advanced Industrial Science & Technology
Satoshi	Someya	National Institute of Advanced Industrial Science & Technology
Masao	Sorai	National Institute of Advanced Industrial Science & Technology
Akira	Naito	Nippon Steel Engineering Co., Ltd.
Kazushige	Sasaki	Nippon Steel Engineering Co., Ltd.
Katsuhito	Hasuike	Nomura Research Institute, Ltd.
Motoshi	Muraoka	NTT Data Institute of Management Consulting, Inc.
Takashi	Honjo	Research Institute of Innovative Technology for the Earth
Tsuneo	Kusuda	Research Institute of Innovative Technology for the Earth
Kimiko	Nakanishi	Research Institute of Innovative Technology for the Earth
Tetsuo	Ohmura	Research Institute of Innovative Technology for the Earth
Lori	Gauvreau	Schlumberger Carbon Services
Tomoyuki	Yamada	Sumitomo Corporation
Toyokazu	Ogawa	Taisei Corporation
Takuya	Sakemi	Taisei Corporation
Hiroyasu	Tanaka	Taisei Corporation
Koji	Kagawa	The Federation of Electric Power Companies (FEPC)
Yayoi	Murase	Tokyo Electric Power Company
Hiromitsu	Ota	Tokyo Electric Power Company
Hiromichi	Kameyama	Tokyo Gas Co., Ltd.
Koji	Yoshizaki	Tokyo Gas Co., Ltd.
Kensuke	Suzuki	Toshiba Corporation
Kazuo	Shoji	Toyo Engineering Corporation
Joop	van der Pligt	University of Amsterdam
Patrick	Devine-Wright	University of Exeter
Sallie	Greenberg	University of Illinois

*\*The above may not accurately reflect the full list of participants - several confirmed participants were unable to attend while additional participants were welcomed on the day.*

## APPENDIX C – CARSON CASE STUDY



**Case Study of the Carson CCS Project**  
Energy Transformed Flagship

Judith Bradbury, & Sarah Wade  
Tokyo, Japan, November 19, 2010  
Presented by Sarah Wade (AJW)

National Research  
**FLAGSHIPS**  
Energy Transformed



### Project Characteristics

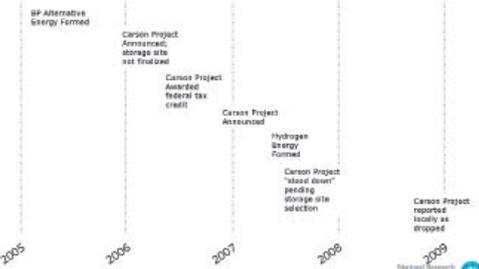
- Nature: Commercial project
- Technology: CO2 capture and storage through EOR
- CO2 Sequestration: ~4MTPY originally planned
- Source of CO2: 500 MW plant producing hydrogen from combustion of pet coke; storage planned in nearby oil fields through EOR
- Status: Dropped
- Location: Los Angeles Basin, California, USA
- Scale: Commercial



National Research  
**FLAGSHIPS**  
Energy Transformed



### Carson Project Timeline



- 2005: BP Alternative Energy Formed
- 2006: Carson Project Announced; storage site not finalized; Carson Project Awarded Federal tax credit
- 2007: Carson Project Announced
- 2008: Hydrogen Energy Formed; Carson Project "Island Owner" pending storage site selection
- 2009: Carson Project reported locally as dropped

National Research  
**FLAGSHIPS**  
Energy Transformed



### Local Community

- **CO2 Source: Carson**
  - 20 KM from downtown Los Angeles
  - Highly industrialized
  - One of most culturally, ethnically, and economically diverse areas in USA
  - Historic air quality problems (PM and Ozone)
- **CO2 Storage: Wilmington Oilfield off Long Beach (on border of 2 communities)**
  - Larger population and more ethnically diverse than Carson

National Research  
**FLAGSHIPS**  
Energy Transformed



### Project Context - National

- **Political**
  - Growing polarization in US and internationally about US efforts to address climate change
  - Significant federal funding for clean energy R&D (CCS)
- **Regulatory**
  - EPA launched internal taskforce to need for CCS regulations
  - Interstate Oil and Gas Compact Commission convened taskforce to develop CCS regs for EOR
  - At issue: is CO2 a commodity or a waste?
- **Civil Society**
  - Few national ENGOs cautiously support CCS; many do not
  - Industry participating in CCS R&D but raising concerns about cost
  - At issue: Is CCS a real option?

National Research  
**FLAGSHIPS**  
Energy Transformed



### Project Context - State

- **Air Quality**
  - Historic pollution problems dating to 1940's exacerbated by atmospheric conditions and growing population
  - LA basin routinely one of ten worst areas for air pollution in USA
- **Environmental Justice (EJ)**
  - 2001 CA passed new EJ provisions to ensure the fair treatment wrt/ race, culture and income

National Research  
**FLAGSHIPS**  
Energy Transformed



Project Context - State

- **Energy**
  - Constrained system – rolling blackouts a threat; significant supplies obtained from out of state
  - CA Energy Commission had some ability to override local concerns to site energy projects
- **Climate Change**
  - History of legal efforts to address climate change culminating in Global Warming Solutions Act of 2006, mandating statewide CO2 reductions and a second bill requiring all power USED in state meet CO2 requirements (including out of state purchased power)



So What Happened?

- Focus on commerciality of project economics – team focused on tax credit application
- Delay in finalizing storage location due to business arrangements and site characteristics
- Project hailed by many as first of kind climate solution
- Some in EJ community grew vocal in opposition
  - Close timing of AB 1925 and AB 705 suspect
  - Concerns about NOx and PM emissions from petcoke combustion



Communication Approach

- Focus on local officials and key stakeholders beginning 2006 and into 2007
- Several hundred stakeholders identified; small informational meetings with many of them
- Local official support in Carson, not finalized around Wilmington Oilfield
- Outreach curtailed in 2007 when project “stood down”



Factors Affecting Outcome

- Extensive communication and outreach using a tiered approach
- Concern about air quality and environmental justice trumped concern about climate change, the safety of CCS and the economy
- The high visibility focus on a first-of-a-kind project perhaps made it more difficult to recognize strength and impact of air pollution concerns
- Efforts by others to clarify regulatory framework complicated perceptions
- Connections to the national and international debate on climate both good and bad



Sarah Wade  
swade@ajwgroup.com



Thank you



## APPENDIX D – FUTUREGEN CASE STUDY

**FutureGen 1.0 – Lessons Learned**  
 November 19, 2010  
 Tokyo, Japan

Gretchen Hund<sup>1</sup> and Sallie Greenberg<sup>2</sup>  
<sup>1</sup>Pacific Northwest National Laboratory and Stakeholder Involvement Manager for FutureGen Industrial Alliance  
<sup>2</sup>Illinois State Geological Survey – Advanced Energy Technology Initiative





CSIRO acknowledges the financial and other support provided by the Global Carbon Capture and Storage Institute through the Commonwealth of Australia as represented by the Department of Resources, Energy and Tourism.

**Project Characteristics**

- Public – private partnership
- Competitive approach taken

12 Sites Proposed in 7 States  
 4 Sites in 2 States are Semi-finalists

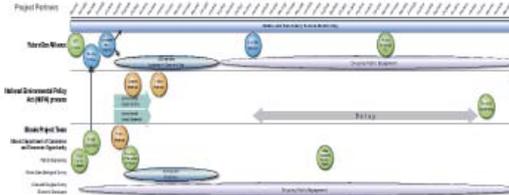


**Integrated Plant:**  
 Near-zero emissions IGCC plant with 90 % CO<sub>2</sub> capture  
 in deep saline formation



**Timeline**

- March '06 Alliance issued RFP
- July '06 semi-finalist sites announced
- December '06 Mattoon selected, DOE withdrew support



### Host Community Description

- Rural agricultural community, 50,000 residents in county
- Community has gone through various stages of growth, stability, and instability in the past 30 years
- Strong sense of civic pride in the community
- Educational resources valued

### Communication Approach

- The Alliance collected media reports daily
- Illinois for FutureGen Team met with various communities to help inform them about the opportunity
- The Mattoon local site proponent became a conduit to stakeholders for the Alliance – organized meetings
- The Alliance conducted stakeholder interviews and small focus groups with stakeholders from similar backgrounds (>100)
- DOE required public hearings held with little opposition
- Stakeholder meetings resulted in a better designed site plan for the facility – site layout and surface water management

### Perceived Benefits

- **Global Leader**
  - Spotlight on Mattoon – pride factor
- **Innovation**
  - Viewed as a research project – prestige factor
  - Lead to decrease in foreign fuel imports
- **Local**
  - Spin off industry and research opportunities
  - Use of Illinois coal
  - Local and regional cooperation emerged
  - Brought about a new level of regional coordination

### Common Questions about the CCS Component

- Is CO<sub>2</sub> safe to bury this underground?
- Is CO<sub>2</sub> coming back up?
- Is CO<sub>2</sub> going to contaminate my water?
- How are they going to keep the CO<sub>2</sub> underground?
- Will the CO<sub>2</sub> leak back up through wells or cracks?
- Could the State get agreement from landowners to inject?
- How dangerous is this going to be for us?
- What kind of environmental changes are we going to have?
- What happens in the event of an earthquake?
- Will we have a Lake Nyos-type event?

### Lessons Learned – Success Factors

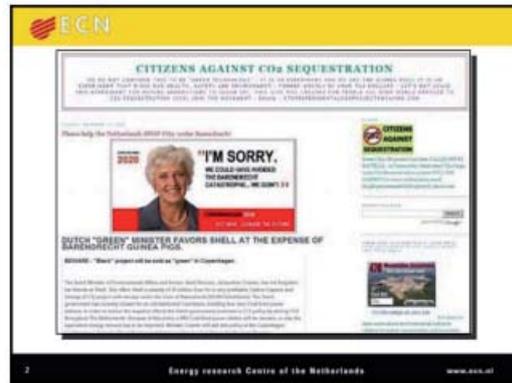
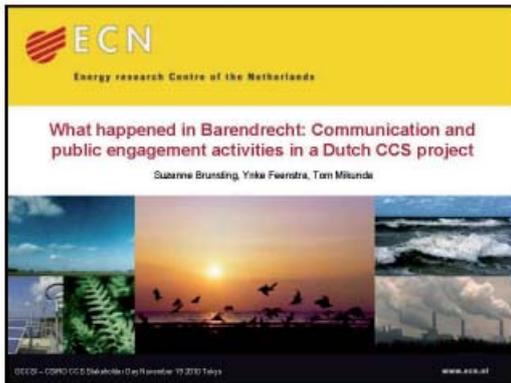
1. Competition served as a motivation
2. Community pride and altruistic benefits
3. Cooperation and coordination critical
4. Understanding Specific and Varied Audiences
5. Understanding Where People Get Information and Providing Accurate and Consistent Information
6. Ensuring Access to Experts
7. Using Different Engagement Approaches
8. Transparency is Critical
9. Demonstrating Community Presence

### Contact info:

Gretchen Hund  
[hund@pnl.gov](mailto:hund@pnl.gov)  
206-528-3338

Sallie Greenberg  
[greenberg@jsgs.illinois.edu](mailto:greenberg@jsgs.illinois.edu)  
217-244-4068

## APPENDIX E – BARENDRECHT CASE STUDY



## APPENDIX E – BARENDRECHT CASE STUDY

**ECN**

### Ability to Influence Decision-Making?

- Safety discussion
- Demand for additional independent research
- Organized public protest



7 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

**ECN**

### Facilitating Policy and Regulations?

Stimulate Decide-Announce-Defend pattern:

- Permitting procedure complex and costly
- Public reviewing period as legally required
- Additional discussions and research reactively/defensively

Role of National Government:

- Tender for CCS projects
- Settlement to speed up large projects

8 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

**ECN**

### Public Information Provision



9 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

**ECN**

### Increasing Local Public Opposition



10 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

**ECN**

### Deadlock: Proponents vs Opponents



11 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

**ECN**



12 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

 ECN

**Main Conclusions**

Outcome of public participation mainly depends on:

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

Prerequisite:

- Facilitating policy and regulations

14 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

 ECN

***We don't want this! Period!***



14 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

 ECN

**Common Project Development:  
Decide-Announce-Defend**

- Focus on permitting procedure
- Concerns addressed as legally required
- Powerless opponents
- No discussion of alternatives/adaptations
- Information/persuasion, no participation
- Increasing public opposition
- Project delay
- Deadlock

15 Energy research Centre of the Netherlands [www.ecn.nl](http://www.ecn.nl)

## APPENDIX F – CO2CRC OTWAY CASE STUDY



**Communication in CO2CRC Otway Project**

Energy Transformed Flagship

Anna Carr  
Science into Society  
EP 103388  
19 November 2010

National Research  
**FLAGSHIPS**  
Energy Transformed  
CSIRO

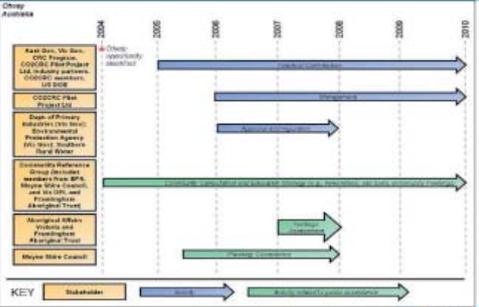
### Project characteristics

- Nature**
  - Pilot project to demonstrate technical & environmental safety of geological CO<sub>2</sub> capture & storage
- Technology**
  - Carbon dioxide capture and storage (CCS)
- Budget** AU\$40 million
- CO<sub>2</sub> sequestration**
  - 85,000 tonnes currently stored from CRC-1 Well
- Source of CO<sub>2</sub>**
  - CO<sub>2</sub>-rich gas (80% CO<sub>2</sub> and 20% methane) extracted from existing gas well
- Current status**
  - Operational
- Location**
  - Nirranda South, Victoria
- Scale**
  - Demonstration project



National Research  
**FLAGSHIPS**  
Energy Transformed  
CSIRO

### CO2CRC Otway Project timeline of activities



CSIRO Australia

2004 2005 2006 2007 2008 2009 2010

Baseline, Victorian CCS Program, CO2CRC Peak Project, CO2CRC Peak Project

CSIRO Australia

National Research  
**FLAGSHIPS**  
Energy Transformed  
CSIRO

### Local community

- Farming settlement**
  - Portland one of earliest Victorian townships
  - Local and surrounding districts
    - Dairy, sheep, cattle grazing
  - Industries
    - Service and Tourism
- Close-knit rural community**
  - Historical land ownership
  - Community activities
  - Knowledgeable about land and local environmental issues
  - Active researchers

National Research  
**FLAGSHIPS**  
Energy Transformed  
CSIRO

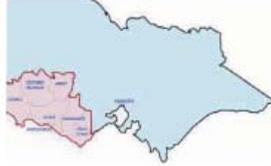
### Knowledge of CCS

- Limited prior knowledge in community
- Prior knowledge source**
  - Media in general
    - Magazines, journals, other media
  - Scepticism of the media (i.e. TV)
    - Potential for distortion
    - Disconcerts rather than informs
- Project involvement**
  - Knowledge gained through exposure/experience
  - Research, reading and face-to-face

National Research  
**FLAGSHIPS**  
Energy Transformed  
CSIRO

### Establishing a baseline

- Local community baseline CCS knowledge survey**
  - Seven shires surrounding Nirranda
  - 300 participants
- Focus groups and in-depths interviews**
  - Nirranda and Warrnambool (closest large regional centre)



National Research  
**FLAGSHIPS**  
Energy Transformed  
CSIRO



### Successes

- 2009 Seismic survey
- Community reference group and community meetings
  - Good attendance levels
- April 2009 launch of CO<sub>2</sub> injection into CRC-1 well
  - Federal, state, industry and other dignitaries in attendance
  - Global attention
    - 80 page media coverage
- October 2009 open day
  - Tour, informal meeting and sausage sizzle
  - 35 members of public attended
- Lack of evidence of problems
- CO<sub>2</sub>CRC CEO regular visits (unique approach)
  - Community comfort in speaking with the "right" person



CSIRO Earth Science & Resource Engineering  
Anna Carr  
Science into Society

Phone: +61 2 6242 1524  
Email: [anna.carr@csiro.au](mailto:anna.carr@csiro.au)  
Web: <http://www.csiro.au/org/CESRE.html>

### Thank you

Contact Us  
Phone: 1300 363 400 or +61 3 9545 2176  
Email: [Enquiries@csiro.au](mailto:Enquiries@csiro.au) Web: [www.csiro.au](http://www.csiro.au)

National Research  
**FLAGSHIPS**  
Energy Transformed



## APPENDIX G – ZEROGEN CASE STUDY



**Case Study of ZeroGen Project**

Energy Transformed Flagship

Peta Ashworth  
Group Leader, Science into Society  
EP 103387

National Research  
**FLAGSHIPS**  
Energy Transformed

CSIRO

**Project characteristics**

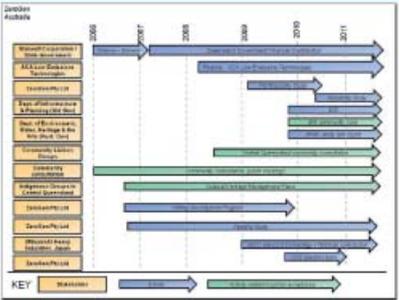
- Nature**
  - Commercial scale IGCC with CCS
- Duration**
  - 2015-2017 anticipated build completion
- Technology**
  - IGCC 400 MW (530 MW gross) power generation plant and CCS facility
- CO<sub>2</sub> sequestration**
  - 60 million tonne over lifetime of project
- Source of CO<sub>2</sub>**
  - 400 MW (530MW) power generation plant
- Current status**
  - Feasibility stage
- Location**
  - Not as yet announced
- Scale**
  - Operational site approximately 300 hectares with access to water pipelines, rail transport, conveyor and power lines



National Research  
**FLAGSHIPS**  
Energy Transformed

CSIRO

**ZeroGen timeline of activities**



Case Study of ZeroGen Project

National Research  
**FLAGSHIPS**  
Energy Transformed

CSIRO

**Local community**

- Vibrant, close knit and diverse
- In growth stage
- Rural with regional townships – population 29,244
  - Emerald - regional hub (12,000 plus)
  - Blackwater (6,000 plus)
  - Springsure (1,150 plus)
- Large mining industry presence (coal and gas)
- Electricity source (local coal fired)
- Local industry (citrus, cotton, grapes, cattle and sheep)

Case Study of ZeroGen Project

National Research  
**FLAGSHIPS**  
Energy Transformed

CSIRO

**Perceived benefits**

- Local community**
  - Minimal benefits perceived to date
  - Small economic gains through contractual/visitor activity
  - Long-term benefits anticipated if project goes ahead
    - Population increase
    - Housing and industry growth
    - Job creation (direct/indirect)
    - Infrastructure improvements (roads and transport)
    - Improved health services (dedicated doctors)
- Indigenous**
  - Limited financial or tangible benefit
    - Native title extinguished
  - Cultural heritage - respect
- Social impact**
  - Construction and earthworks
  - Base-load electricity supply
  - Increased local investment
  - Sustainability of local coal industry
  - Improvements to local economy
- Skill development**
  - Enhance knowledge and qualifications
- Environmental development**
  - International kudos
  - Lead the work in CCS technology
  - Global technology hub

Case Study of ZeroGen Project

National Research  
**FLAGSHIPS**  
Energy Transformed

CSIRO

**Grievances**

- Property access
- Lack of respect for landowner's rights
- Damage to property (land and livestock)
- Damage to local infrastructure (roads and thoroughfares)
- Property acquisitions
- Lack of compensation
- Uncertainty of project outcome
- Security and safety concerns (current and future)
- Increased population
- Housing access (reduced availability/increased pricing)
- Lack of integration into local community
  - Independent mining communities
- Poor timing for community meetings
- Fear resulting from natural and man-made disasters (overseas)

Case Study of ZeroGen Project

National Research  
**FLAGSHIPS**  
Energy Transformed

CSIRO

# APPENDIX G – ZEROGEN CASE STUDY

## Common questions

1. What is CCS?
2. What is the technology behind it?
3. What can you do with CO<sub>2</sub>? What other uses?
4. Is it safe? What are the safety issues associated with the technology?
5. How do you capture clean CO<sub>2</sub>?
6. How deep will the CO<sub>2</sub> need to be stored?
7. How do you safely transport CO<sub>2</sub>?
8. What if there is an accident?
9. Can the CO<sub>2</sub> come back up?
10. Does the project have support of environmental groups?
11. Is the project a 'new asset'?
12. Is it going to proceed?
13. How much will it cost?
14. How will it be funded, where are you going to get the money from?
15. Will any (international) laws apply in the operation of the project?
16. What will be the impact on the community?
17. How will indigenous land rights and any agreements/cultural issues be dealt with?
18. What compensation will be offered? What form will this take?
19. How often will the community be engaged?
20. Who is doing the project?
21. Who are the decision makers?
22. Who will manage the project?
23. Will decision makers and management be accessible?
24. What are the timeframe for the project?
25. What are the steps towards approval?
26. How much will the payments for the pipeline be?
27. What are the steps in terms of approval?
28. How high will the volume of the proposed ship?
29. Will construction be used to acquire land?
30. From where will materials be sourced for construction?
31. Will locals be employed? If so, where?
32. How many will be employed? When can we plan for it?
33. Will outside labour be brought in?
34. What will be done about housing?
35. Will the developer be paying for accommodation to be built?
36. How will access to properties be managed?
37. What will be the impact to the land?
38. How will traffic be managed?
39. Will rigs be used on the land?
40. How many rigs will be used?
41. What HSE plans will be used in relation to rigs?
42. Will facilities be used in its capacities as worked down?
43. Could we use the site as well for water?
44. What is the profile of the project going to be in relation to the region?
45. Will it impact carbon emissions significantly if at all?

Case Study of ZeroGen Project



## Successes

- **Key landholder's property access**
  - Engagement approach successful
  - Observed and discussed within the community
  - Perceived as a demonstration of respect for landowner and property
    - No access attempted without meeting the landowner first
    - Met landowner at his property gate
    - Gained the respect and trust of the landowner and his peers
- **Compensation negotiated for water access**
- **Landowner's input and services acquired to:**
  - Construct a road on the property
  - Locate a drill pad and pipeline on the property
  - Build drill pad (negotiated to retain pad for private use once the drill demolished)
- **Key stakeholder relationship management**
  - Positive and effective response to council request for repairs to damaged public roads.



## Pitfalls

- **Disparity across stakeholders' perceptions**
  - level and visibility of project developer engagement and communication
- **Lack of awareness by local community of any community or public engagement by the developer**
- **Lack of knowledge of meeting schedules**
- **Lack of knowledge of advertisements or invitations to meetings**
  - Suggests community engagement not a project priority
  - However, may also suggest not seen by the community as a requirement or priority
- **Lack of planning**
  - Competing local events
  - Project team may benefit from local knowledge contributed by member of community on team



## Critical success factors

- **Clearly defined stakeholder management plan**
- **Ongoing evaluation and review of stakeholder plan**
- **Stakeholder political climate awareness**
- **Communication and engagement**
  - Extraneous issues
- **Stakeholder requests**
  - Positively addressed
  - Included in project decisions where appropriate



CSIRO Earth Science & Resource Engineering  
Peta Ashworth  
Group Leader, Science into Society

Phone: +61 7 3327 4145  
Email: [peta.ashworth@csiro.au](mailto:peta.ashworth@csiro.au)  
Web: <http://www.csiro.au/org/CSIRESI.html>

Thank you

Contact Us  
Phone: 1300 363 400 or +61 3 9545 2176  
Email: [Enquiries@csiro.au](mailto:Enquiries@csiro.au) Web: [www.csiro.au](http://www.csiro.au)



## APPENDIX H – OVERVIEW PRESENTATION



**Comparison of communication and public engagement in CCS projects worldwide**

Energy Transformed Flagship  
Peta Ashworth, Judith Bradbury, Ynke Feenstra, Sallie Greenberg, Gretchen Hund, Thomas Milkunda & Sarah Wade  
Tokyo, Japan, November 19, 2010  
Presented by Sarah Wade (AJW)

National Research **FLAGSHIPS**  
Energy Transformed

CSIRO

**This presentation**

- Introduction of the 5 case studies
- Evaluation of cases
- Main findings
- Take home message



National Research **FLAGSHIPS**  
Energy Transformed

CSIRO

**5 case studies worldwide**



- ZeroGen Project
- Otway Basin Project
- FutureGen Project
- Barendrecht Project
- Carson Project



Check the case study reports for all the details

National Research **FLAGSHIPS**  
Energy Transformed

CSIRO

**Current project status**

- Zerogen, AU**  
Pre-feasibility study completed; selection final plant site to be announced
- Otway, AU**  
Completed first phase of injection; monitoring to continue to 2015
- FutureGen, USA**  
On hold for period -> now new format, re-opened site selection process
- Barendrecht, NL**  
After period of uncertainty, cancelled last week
- Carson, USA**  
Project dropped



National Research **FLAGSHIPS**  
Energy Transformed

CSIRO

**How were sites selected?**

- Zerogen, AU**  
Queensland Government backed initiative, investigating best storage sites
- Otway, AU**  
Research based selection; geological site characterisation
- FutureGen, USA**  
Competitive process using extensive siting criteria to select from interested potential host communities
- Barendrecht, NL**  
Private industry selection, supplemented by grant award
- Carson, USA**  
Private industry selection, based on commercial advantage of proximity to feedstock



National Research **FLAGSHIPS**  
Energy Transformed

CSIRO

**Communication, outreach & engagement**

- Zerogen, AU**  
Building trust; identifying risks in stakeholder communication & responding to them; commitment to transparency
- Otway, USA**  
Early focus on community acceptance & trust; consultation plan including education, community liaison and reference group
- FutureGen, USA**  
Competition for siting (fostered community pride); access to technical experts; in-depth knowledge of community; multiple methods
- Barendrecht, NL**  
Top down approach; no engagement in project design; reactive to opposition
- Carson, USA**  
Extensive small meetings and low-key efforts, but (social) context not taken enough into account



National Research **FLAGSHIPS**  
Energy Transformed

CSIRO

# APPENDIX H – OVERVIEW PRESENTATION

### Evaluation of case studies

- Translation *lessons learned* of individual case studies into list of 39 evaluation factors
- Evaluation factors = success factors
- Categorized in:
  - Context
    - National / state
    - Local
  - Communication
    - General
    - Informal
    - Formal
  - Project design
  - Project management



	Context	Communication	Project design	Project management
Context	Green	Green	Green	Green
Communication	Green	Green	Green	Green
Project design	Green	Green	Green	Green
Project management	Green	Green	Green	Green

- **Green** – Addressed; positive impact
- **Amber** – Not fully addressed; could have been important
- **Red** – Not addressed or considered; negative impact, possibly a show-stopper
- **Blank** – not enough data available or not applicable



### Main Findings

- Best practice in communications and outreach alone are not sufficient to ensure successful CCS project deployment.
- A project's ability to adjust its planning and management to its social context is more likely to ensure a positive outcome for all involved.
- Successful projects integrate communication and outreach as a critical component of the project from the beginning.



### Lessons learned Project planning & management




### Planning & Management Questions

- To what extent are the **key government** (national, state, local) and project team members **aligned**?
- Can the project developer affect the situation and **enhance coordination** and a **shared agenda**?
- Are communication experts/staff included as an **integral part** of the project team from the **outset** of the project?



### Planning & Management Questions

- To what extent are factors related to **social context** included in:
  - Selection of a specific site
  - Project design and implementation
- What degree of **flexibility** does the project developer have in **framing** the project?
- What degree of **flexibility** does the project developer have in **adjusting** the implementation strategy?



### Lessons learned

#### Communication, engagement and outreach

- Investigate**
  - Know community well
  - Identify local benefits
  - Identify all stakeholders
- Adapt**
  - message & channels to community & stakeholders
  - Include local benefits
- Engage**
  - Engage early!
  - Two-way communication
  - Unique factor - competition



### Areas of Best Practices

- Timing – Engage Early
- Know Your Community
- Identify Local Benefits
- Information – What to Communicate
- Information – How to Communicate
- Sources of Information
- Black Swan? Engendering Competition for Siting



### Take home message

1. The public will accept CCS, but not always
2. Communication, engagement and outreach alone is not enough
3. Ability to adjust planning & management to social context is crucial



### THANK YOU!

The report is available at:  
[www.csiro.au/resources/CCS-Comparison-report.html](http://www.csiro.au/resources/CCS-Comparison-report.html)

The individual case studies are available at:  
[www.csiro.au/resources/Chwan-case-study.html](http://www.csiro.au/resources/Chwan-case-study.html)  
[www.csiro.au/resources/Zoro-Gen-case-study.html](http://www.csiro.au/resources/Zoro-Gen-case-study.html)  
[www.csiro.au/resources/Barendrecht-case-study.html](http://www.csiro.au/resources/Barendrecht-case-study.html)  
[www.csiro.au/resources/FutureGen-case-study.html](http://www.csiro.au/resources/FutureGen-case-study.html)  
[www.csiro.au/resources/Carson-Case-Study.html](http://www.csiro.au/resources/Carson-Case-Study.html)

**Acknowledgment**  
 CSIRO acknowledges the financial and other support provided by the Global Carbon Capture and Storage Institute through the Commonwealth of Australia as represented by the Department of Resources, Energy and Tourism.

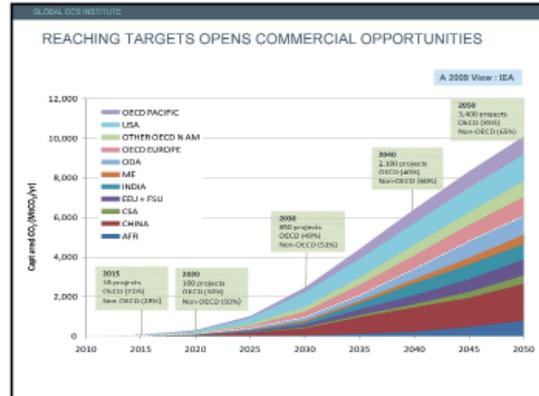



## APPENDIX I – KNOWLEDGE SHARING

**ACCELERATING CCS THROUGH KNOWLEDGE**

DR ANGUS HENDERSON  
PRINCIPAL MANAGER – KNOWLEDGE COMMUNITIES

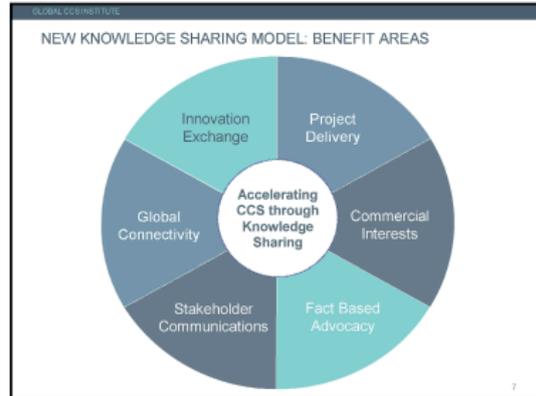
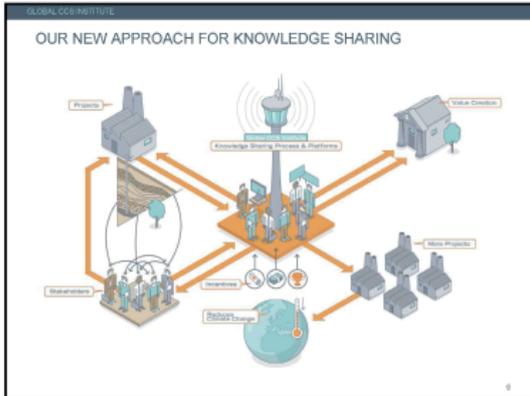
WWW.GLOBALCCSINSTITUTE.COM



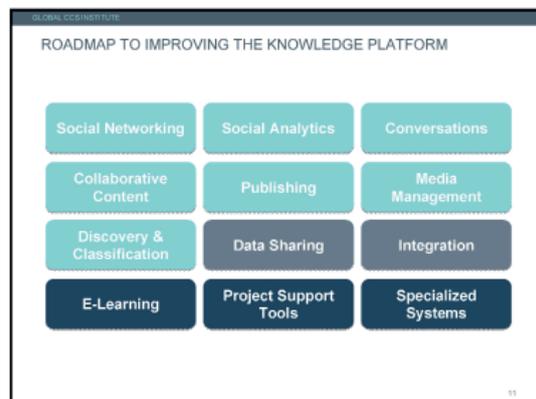
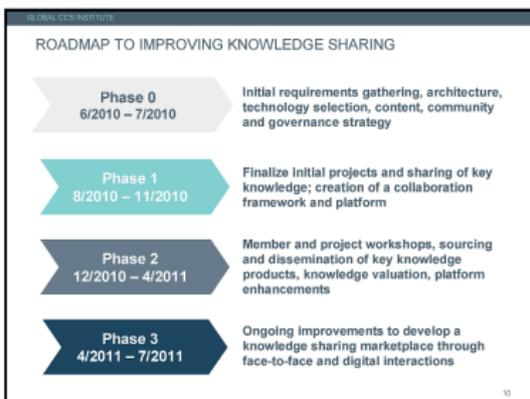
GLOBAL CCS INSTITUTE

A NEW SOCIAL AND COLLABORATIVE APPROACH TO HELP PROJECTS

- Framework**  
We have created and are executing on an advanced knowledge framework
- Products**  
We have valuable knowledge products to share from projects, content partners and the Institute
- Platform**  
We have developed sophisticated digital platforms to enhance knowledge sharing
- Member Engagement**  
We need your participation to make this work



- GLOBAL CCS INSTITUTE
- ### IMPROVING PROJECT DELIVERY THROUGH KNOWLEDGE SHARING
- Project updates and case studies** - practical project experiences, detailed updates and summarized case studies from early-mover projects
  - Knowledge sharing reports** - detailed assets for projects to use that include methods and best practices
  - Collaborative Discussions** - so projects can engage with key questions
  - Structured Focus Groups** - enabling projects for key topical areas in a face-to-face and online fashion
  - Fact sheets** - project detail against key criteria providing a standardized view of the industry
  - Data** - detailed analytical data and information to support a process of evidence-based decisions
- 9



## APPENDIX I – KNOWLEDGE SHARING

GLOBAL CCS INSTITUTE

**NEXT STEPS**

**Framework**  
We'll continue to improve on our approach based on your feedback

**Products**  
Our library of knowledge products and expertise will grow with your participation

**Platform**  
We are piloting the knowledge platforms and will be making many improvements

**Community Engagement**  
Success requires broad and tailored community engagement.

12



[www.globalccsinstitute.com](http://www.globalccsinstitute.com)

## APPENDIX J – EVALUATION

What type of organization do you represent?

Answer Options	Response Percent	Response Count
Industry	87.5%	14
Government	12.5%	2

Which country are you from?

Answer Options	Response Percent	Response Count
Japan	93.75%	15
UK	6.25%	2

The Quality of the Sessions –

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

Please indicate how satisfactory you found the following sessions:	Rating Average*	Response Count
Welcome & Key Notes	3.66	15
The whole room discussion sessions	4.08	12
Communication Case Studies	4.64	14
The session on International Comparison of CCS	4.07	14
The session and discussion on the overview report	3.61	13
The session relating to the draft toolkit	3.15	13
The knowledge sharing session	3.46	13
Final reflections and discussion	3.92	13
The small group discussion sessions	4.23	13

The Quality of the Presenters –

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

Please indicate how satisfactory you found the following presenters:	Rating Average*	Response Count
Joop van der Pligt, University of Amsterdam	3.81	16
Kenshi Itaoka, Mizuho Information and Research Institute	3.81	16
Sarah Wade, AJW, Inc.	3.75	16
Sallie Greenberg, University of Illinois	3.93	16
Suzanne Brunsting, Energy Research Centre of the Netherlands	3.68	16
Anna Carr, CSIRO	3.68	16
Peta Ashworth, CSIRO	3.87	16
Angus Henderson, Global CCS Institute	3.46	15
The small group discussion sessions	4.23	13

## APPENDIX J – EVALUATION

### Other Factors in the Workshop –

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

Answer Options:	Rating Average*	Response Count
The suitability of the venue	3.81	16
The catering provided throughout the day	3.68	16
The opportunities provided to interact with other participants	3.5	16
Simultaneous translating service	3.81	16
The total package of the day's activities	3.93	16

### Recommendation

Answer Options:	Yes	Response Count
Would you attend another event like this if given the opportunity?	94%	16
Would you recommend a similar event to a colleague given the opportunity?	94%	16

### OPEN ENDED COMMENTS

Was there anything else that you would have liked to see included? If so please explain in the space below.

*"It would be better to take more time for tea/coffee break so as to make much communications with members of other groups".*

*"Real feelings and thoughts of the project developer (BP, Shell) of the cancelled project"*

Do you have any specific feedback on the draft toolkit that you would like to provide?

*"Component of the tool kit may vary by the stage of the project, i.e. planning, construction, operation and post-closure"*

Are there any further comments or suggestions you would like to make? Please enter these in the space below.

*"The reports of Case Studies were very useful to understand actual situation of CCS Project especially in CO<sub>2</sub> storage portion. It is appreciated that the cases of EU Flagship Projects be included to your future Case Studies".*

*"I think you had better hand out the sheets of the presentations projected during the sessions before the meeting starts. So, we will be able to write in some comments on the sheets while listening to what speakers are saying".*

*"Small group discussion was great. We, Japanese are generally so shy, that allocation of the facilitator was an excellent idea. And simultaneous translation was really helpful for my English ability".*