CARBON CAPTURE AND STORAGE

COMMUNICATION WORKSHOPS

Final Report

UNIVERSITY OF CALGARY
INSTITUTE for SUSTAINABLE ENERGY, ENVIRONMENT and ECONOMY
iseee

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Climate Change Central

PRESIDENT'S MESSAGE

With the environment, specifically climate change, climbing to the top of Canadian opinion polls and media coverage, it comes as no surprise that discussions of Carbon Capture and Storage (CCS) are hot on its heels.

CCS presents Alberta with a tremendous opportunity for greenhouse gas emission management through the implementation of home-grown technological know-how. With its geological storage potential for vast quantities of CO_2, Alberta is also well situated to implement large-scale CCS projects.

Climate Change Central is uniquely positioned to take an active role in communicating the message about CCS to the Alberta public. It is in this capacity that we partnered with the Institute for Sustainable Energy, Environment and Economy (ISEEE) and the International Institute for Sustainable Development (IISD) to host a communications workshop on CCS.

We hope you will find the following report to be a valuable resource and look forward to future collaboration and continued discussions with all of our partners on carbon capture and storage.

Simon Knight
President & CEO
Climate Change Central


Eric
Frank
Nick

TABLE OF CONTENTS


WELCOME TO
CARBON
CAPTURE
AND STORAGE
COMMUNICATION WORKSHOPS

ACKNOWLEDGEMENTS

Climate Change Central (C3) would like to thank the following partners, advisors, speakers, sponsors and contributors for their commitment to making the Carbon Capture and Storage Communication Workshops a success. Their guidance, support and financial assistance were instrumental in the development and delivery of the September 2007 events. C3 would also like to thank Jeremy Kranowitz from The Keystone Center for his keynote address, and his assistance in the compilation of this final report.

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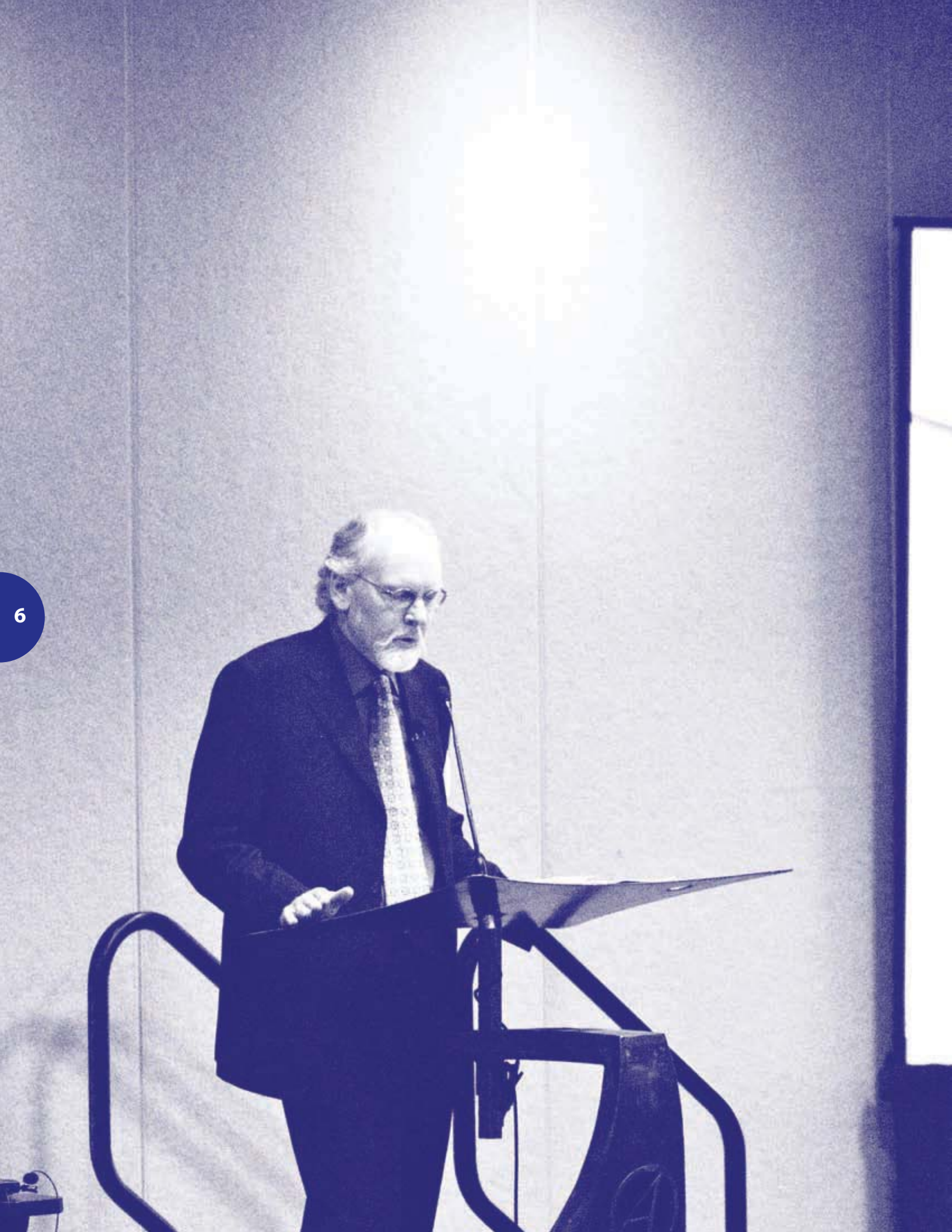

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Shell Canada's corporate goals are growth and profitability within an overarching commitment to sustainable development.

Alberta Environment manages the use of Alberta's diverse landscapes to sustain a healthy environment, a prosperous economy and strong communities. We are committed to protecting the province's air, land, and water. We also strive to be a leader in addressing climate change and waste management. Under the Government of Alberta's climate change plan, carbon management, or the underground storage of carbon dioxide (CO_2), plays a major role in the comprehensive strategy to reduce greenhouse gas emissions over the long term.

The British Columbia government is supportive of carbon capture and storage (CCS) as expressed in The BC Energy Plan: A Vision for Clean Energy Leadership presented in 2007. The Resource Development and Geoscience Branch, Ministry of Energy, Mines and Petroleum Resources is currently researching the many options for CCS within the province. The Ministry is exploring with industry the possibility of using CCS to reduce carbon dioxide emissions from major facilities.

ICO_2N stands for Integrated CO_2 Network and is a proposed system for the capture, transport and storage of carbon dioxide. Its members represent a group of industry participants that want to demonstrate climate change leadership by providing a framework for carbon capture and storage development in Canada. ICO_2N will ultimately consist of a CO_2 capture and storage policy framework and the construction of a physical CCS system.

< Allan Amey – Opening address to delegates


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EPCOR Utilities Inc. is a power and water company with operations across North America. Responsible for operating more than 3,400 MW of conventional, renewable, and recycled power, it co-owns and operates Genesee 3 – Canada's most advanced coal-fired power facility.

Building on this, EPCOR has joined with the Canadian Clean Power Coalition, the Alberta Energy Research Institute, and Natural Resources Canada, to develop a 500+ MW Integrated Gasification Combined Cycle (IGCC) plant, with carbon capture and sequestration, at its Genesee site. The combination of IGCC technology and CO_2 sequestration, at this scale, has not been undertaken anywhere else in the world.

Nexen Inc. is an independent, Canadian-based global energy company that explores for, develops, produces and markets crude oil and natural gas. Nexen has built a unique portfolio of assets and opportunities that provide high-quality production, sustainable development and long-term exploration potential. Operations are focused in key basins including the North Sea, Alberta oilsands, deep-water Gulf of Mexico, offshore West Africa, and Yemen.

Nexen conducts business in an honest, ethical manner and adheres to the highest standards of integrity when dealing with all stakeholders. Headquartered in Calgary, AB, Canada, Nexen employs 3,200 people worldwide.

CONTRIBUTORS

WORKSHOP OVERVIEW

Climate Change Central (C3) successfully hosted the first ever Carbon Capture and Storage Communication Workshops in Canada together with the Institute for Sustainable Energy, Environment and Economy (ISEEE) and the International Institute for Sustainable Development (IISD). Three days of back-to-back workshops linked the latest in international research on public perceptions of carbon capture and storage (CCS) to practical applications for Canadian industry, government and non-governmental organizations (NGOs).

Days one and two were an opportunity for the Carbon Capture and Storage Social Research Network (C2S2RN) to formally get together and discuss recent research in the field of risk communication with a focus on CCS activities. Over 25 international experts actively working in CCS communication research from 16 institutions in seven countries attended the event.

During day three over 50 representatives from industry, government and the NGO community convened in Calgary and were presented with a concise snapshot of the international research findings by David Reiner (University of Cambridge). Jeremy Kranowitz from the Keystone Center then lent his expertise with both a presentation on the components and stages for communicating a message, and an interactive, hands-on exercise in which delegates were able to develop clear communication strategies and messages.

The day also included two panel presentations chaired by John Drexhage (IISD) and Cheryl Arkison (C3) on Canadian experiences in communicating challenging topics and engaging the public as a participating stakeholder. The panel sessions allowed for open dialogue on the lessons learned and successes in communications.

This final report provides a brief summary of the presentations that were made during day three, which may be used as a reference for those who attended the event and others who may be interested in the topic.

< David Keith – CCS communications context setting

C2S2RN OVERVIEW

With increasing attention on climate change and reducing carbon dioxide emissions, a number of social research activities focused on CCS have recently been undertaken around the world. Addressing both public and stakeholder perception and understanding, in addition to the role of information and communications, these activities have employed a range of methodologies and each has produced a variety of results. In January 2006, a pre-meeting involving CCS social researchers was held in London. At that meeting it was agreed that it would be beneficial to establish a research network of individuals working in this area. As a result, the Carbon Capture and Storage Social Research Network (C2S2RN) was formed.

To date, there has been very little formal interaction between the members of the group, other than on a bilateral basis and two brief follow-up meetings; one held in the USA (May 2006) and the other in Norway at the GHGT8 Conference (June 2006). So, in collaboration with the Institute for Sustainable Energy, Environment and Economy and the International Institute for Sustainable Development, Climate Change Central took the opportunity to organize a workshop to provide a vehicle for members of the C2S2RN to meet and discuss their research. The workshop was scheduled to coincide with a meeting of Canadian industry, government and NGO representatives who had an interest in CCS. This was planned to enable a summary of the findings of the two-day social research network discussions to be shared with attendees of the CCS Communication Workshop.

< David Reiner – C2S2RN Overview

The C2S2RN workshop had three main goals:

1. To examine in greater detail the activities taking place around the world, assess successes and challenges, and provide an opportunity for peer review.
2. To facilitate a discussion among workshop attendees on the question of risk communication and the implications for CCS.
3. To identify any synergies and research opportunities between members of the C2S2RN group.

Participants from the United Kingdom, Australia, the Netherlands, United States Regional Partnerships, Canada, Japan and France delivered workshop presentations. One of the main themes recurring in the presentations was that "once formed, opinions can be slow to change." This solidified the need to keep the group together and to continue with social research in the area of CCS communications.

Some of the key research questions discussed over the two days included: the factors that shape public acceptability; how the range of NGOs perceive CCS technology; and the importance of language when communicating messages about CCS, such as the use of the terms "disposal" versus "waste," or "sequestration" versus "storage." Evidence from the research suggests that social science has a role to play in helping people make decisions, and the tools available for a common language information exchange requires further investigation.

Key research findings that were common across all countries included the need to provide balanced, valid and accessible information, and the reiteration that trust

TABLE OF C2S2RN PRESENTERS, ORGANIZATION AND TOPIC

Presenter	Organization	Topic
David Keith	ISEEE, University of Calgary, Canada	C2S2RN Welcome & Overview
David Reiner	Judge Business School, University of Cambridge, United Kingdom	Studying Communications & Public Attitudes Towards CCS Technologies
Peta Ashworth	CSIRO, University of Queensland, Australia	What's What in Australia's CCS Research
Carmel Anderson	CO2CRC, Australia	Applying Social Research to CCS Communications
Dancker Daamen	Leiden University, Netherlands	Overview of Social Research on CCS in the Netherlands
Marjolein de Best-Waldhober	Leiden University, Netherlands	Public Perceptions of CCS in the Netherlands
Emma ter Mors	Leiden University, Netherlands	Public Acceptance of CCS in the Netherlands
Fieke Harink		
Bart Terwel	Leiden University, Netherlands	Towards Implementation of CCS in the Netherlands
Judith Bradbury	PNNL / Battelle, USA	CCS Public Perception Research
Sarah Wade	AJW, Inc. , USA	RCSP Focus Group Interviews
Pamela Tomski	EnTech Strategies, LLC, USA	CCS Outreach Summary
Tarla Rai Peterson	Texas A&M University, USA	CCS Around NW New Mexico
Jennie C. Stephens	Clark University, USA	Diffusion of Emerging Energy Technologies Within a State Context
Elizabeth Wilson	University of Minnesota, USA	
Isha Ray	University of California, Berkeley, USA	Perceptions of Geologic Sequestration in California's Central Valley
Gabrielle Wong-Parodi		
Wändi Bruine de Bruin	Carnegie Mellon University, USA	Initial Public Perceptions of Deep Geological and Oceanic Disposal of Carbon Dioxide
Lauren Fleishman		
Jacqueline Sharp	M.K. Jaccard & Associates, Canada	Public & Stakeholder Perceptions of CCS in Canada
David Keith	ISEEE, University of Calgary, Canada	
Kenshi Itakoa	Mizuho Information & Research Institute, Japan	The 2nd Round Survey of Public Opinion on Acceptance of CCS in Japan
Makoto Akai	National Institute of Advanced Industrial Science & Technology, Japan	
Minh Ha-Duong	CIRED / CNRS, France	C2S2R Advances in France

and honesty are critical when sharing information. Information provided from a range of sources including NGO, industry and research organizations was also found to be more credible. Researchers noted that project proponents need to keep in mind that the most effective way to communicate such a complex issue is through dialogue and not just a one-way exchange of information. Face-to-face interactions are critical in creating a more positive attitude towards the technology. Finally, all research projects noted the importance of context. Any communication around CCS must be set in

the context of climate change and must be positioned as one of a potential suite of applications for mitigating greenhouse gas emissions.

One of the key issues raised at the two-day event was the role CCS would play either as a bridging technology between current and future energy supplies, or simply as a mechanism for sustaining the life of fossil fuels. In addition to the moral debate, industry may face considerable opposition with respect to land use legacy issues, and a general distrust due to the complicated nature of the subject matter and the existence of previously bad experiences. The lack of empowerment in communities with low socio-economic status was also identified as requiring careful consideration when planning communication activities to ensure project success.

Other findings suggested that strong regulation and monitoring will be an integral component for progressing any CCS project. In some cases, the issue of compensation may also need to be addressed with local landowners. In addition, the meeting highlighted that in the majority of polling data, CCS does not rate favourably when compared against other options for mitigating climate change. In almost all cases, the general public did not want to see CCS being implemented at the expense of investments in renewable energy.

C2S2RN Workshop – Exchanging research findings

While polling data provides many useful insights into public perceptions of CCS, in many cases the understanding of the issue remains low, and therefore, current opinions are not entrenched. This provides an opportunity for the social sciences and various communication activities to play a critical role in stakeholder engagement to advance the design and implementation of future CCS activities.

KEY RESEARCH FINDINGS

- Once formed, opinions can be slow to change.
- Understanding of CCS remains low.
- There is a need to collaboratively provide balanced, valid and accessible information from a range of sources (i.e. industry, government and NGO).
- Face-to-face dialogue is the most effective way to communicate.
- Communication must be set in the context of climate change.
- Stringent regulation and monitoring should be an integral component of any CCS project.
- CCS should not be implemented at the expense of investments in renewable energy.

RISK PERCEPTION AND CARBON CAPTURE AND STORAGE

A basic technical definition of risk is the probability of a hazard multiplied by the impact of that hazard. However, the human dimension, or how we perceive risk, cannot be overlooked and the definition of perceived risk thus becomes technical risk multiplied by the nature of the hazard and the context of the perceiver. Our perception can either amplify or reduce the extent to which risk is felt and it is impacted by two factors:

• ***The nature of the risk.*** That is, do we have control of it or not, is it created by mother nature or man-made, is it fairly distributed or not, does it involve adults or children, is it familiar or exotic, and is it personal or does it affect others? There are many distinctions such as these, which have an impact.

• ***The outrage factor.*** A second factor is the context, or what Peter Sandman at Princeton University calls "Outrage." This factor is dependent on life experiences, values systems, social context, culture, age, gender, etc. It can either mitigate or intensify perceptions (e.g. the experience of seeing a drilling rig by an oil field worker versus someone not experienced in seeing drilling equipment).

WAYS TO INCREASE RISK PERCEPTION

Understanding that risk perception can change depending on these factors, it is important that those communicating risks do not make the common mistakes that serve only to increase risk perception. Such mistakes can include providing wrong facts and then bluffing, hiding bad news and sharing only the good, using angry or defensive body language or statements such as:

- "Trust us. We're the experts!"
- "You don't understand."
- "Comparatively, this risk is miniscule."
- "You're irrational."
- "But the benefits are …."
- "Their science is junk, mine is good."
- "We are spending millions on protective measures."*

PROBLEM TYPING

Problem typing is an artificial method of distinguishing different types of issues, but it is important in helping direct how efforts are communicated to the public. There is great risk if problems are not handled well. Problem typing identifies problems as one of three types: technical, value or wicked. As indicated in the table, these categories, or types, are defined by two factors: a) the degree to which there seems to be a common and accepted definition for a problem, and b) the degree to which there is agreement on a list of possible solutions.

Type I Problems:

- Are routine, technical and bounded. Fixes exist and there is agreement on both the definition of the problem and a range of solutions.
- Tend not to require much consideration of values and beliefs.
- Are usually solved by resources and expertise, but may require complex organization and mobilization.
- Do not usually require high levels of participation and involvement by those who have the problem.
- Examples: How to construct a new air

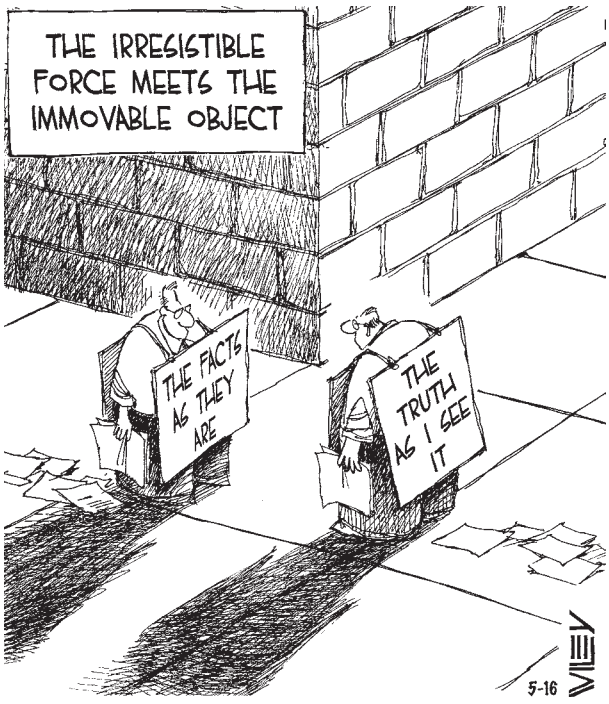
* Spending money on protection is important, but it should not be at the expense of empathy.

filter on Apollo 13 using available resources. How to drill a 10,000-foot well into a deep saline formation.

	Type I Technical Problems (Convergent)	Type II Value Problems (Divergent)	Type III Wicked Problems (Intractable)
Agreement on Definition of the Problem	Yes	Yes	No
Agreement on Possible Solutions	Yes	No	No

Type II Problems:

- Tend to be complex, more opaque and less bounded. No one fix seems exactly right. There is rough agreement on the problem but no agreement on solutions.
- Require great consideration of opinions, beliefs and convictions. At the core, these problems are driven by values.



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- Are usually not solved by resources and expertise alone.
- Require high levels of buy-in by those who have the problem.
- Examples: Stem cell research, physician-assisted suicide, or ***carbon capture and storage***, where there is still debate surrounding the issue.

Type III Problems:

- Are wicked, meaning they are diabolically complicated, not bad. They are full of emotion, politics and intensity, occupy huge amounts of time, and take a long time to dissipate or resolve.
- Have no definitive statement of the problem. There is broad disagreement on what the problem is, competing solutions that activate a great deal of discord among stakeholders, and diffused or contested power to define both problems and solutions.
- Like Type II problems they are driven by conflicting values, but they have deep, long, and often nasty histories that are remembered. Communication is extremely difficult, or non-existent.
- Example: Israeli – Palestinian peaceful coexistence.

A clear example of misinterpreting problem typing occurred with the deep ocean sequestration project in Hawaii (a Type II problem). This joint research effort between Japan, the United States and Norway was designed for carefully staged outreach—gathering information, one-on-one outreach with local authorities, forming a community advisory group and ongoing efforts to disseminate information. However, none of this had been accomplished when a slightly alarmist newspaper story appeared.

Despite internal calls for accelerating the stakeholder outreach, a public relations firm was hired instead. The PR firm addressed the issue as a technical (or Type I) problem and set out to inform the community that the issues were minor. To prove this they showed the results of an Environmental Assessment that had a "finding of no significant impact." However, by the time this official research was communicated, the surfer community had started a bumper sticker campaign "Stop CO_2 Dumping," and anger had been generated in the local population. This put a big damper on ocean research, not just in Hawaii, but everywhere, despite the fact that the ocean is the largest carbon sink on the planet.

John Drexhage >

THE PEMBINA INSTITUTE: COMMUNICATION AND STAKEHOLDER INPUT

Speaker – Mary Griffiths

Mary Griffiths of the Pembina Institute offered advice on ways to effectively engage with key environmental non-governmental organizations (ENGOs) and other informed publics, including the following:

- *The question of who communicates is important. Governments and private bodies engaged in CCS must communicate general information to the public, as well as provide layered learning at a suitable level of detail to those who want more information. It is also critical how the issues are communicated. There is a need for transparency and honesty about gaps in information, about how regulatory controls are being considered and about how monitoring and future liability issues will be addressed. Further, she noted that it is important to identify how ENGOs and other stakeholder groups will be included in this process, and how they can be called upon to address issues and gaps in knowledge, perhaps through multi-stakeholder dialogues.*
- *There is an important role for ENGOs to play, as they can help inform a wider public debate. It is critical to communicate well with ENGOs and to understand that varying views exist on CCS. Some accept CCS as a necessary evil to combat climate change, avoid nuclear power, and win time for an economy that is fully powered by renewable energy. Others are skeptical and see CCS as an entrenching technology that perpetuates the use of fossil fuels. All share the concern that CCS will divert resources from conservation and low-impact renewable energy.*

Outreach at the local level is also critical. Griffiths encouraged project developers to host local meetings in affected areas and to be conscious that meeting format is very important.

- *Provide poster displays with general information on CCS and its geological aspects prior to talks.*
- *Have an experienced facilitator and clear ground rules.*
- *Have speakers who are good communicators, but have technical experts available.*
- *Use relevant examples (e.g. the Weyburn Enhanced Oil Recovery project, or acid gas injection).*
- *Have opportunities for a question and answer session.*
- *Record the information and put posters, presentations, questions and answers on a website so that the wider public can learn as well.*

To ensure communication success, Griffiths suggested the following:

- *Provide funding for ENGO/public input, particularly in review of regulatory requirements and find out the issues that are likely to be stumbling blocks and how they can be best addressed.*
- *Timing is critical. Start as soon as possible, so that there are as few gaps as possible when the general public becomes more interested.*
- *Recognize the priority role that exists for conservation, energy efficiency and low-impact renewable energy.*
- *Keep the door open to CCS by incorporating it as part of a package of measures to address global climate change.*
- *Be prepared for a range of public and ENGO reactions to CCS.*

Potential questions that currently or likely will concern ENGOs and the public include the following:

- *What is CCS?*
- *What is the role of CCS in limiting GHG emissions?*
- *What are the risks, such as technical risks of leaks from pipelines, storage, faults, fissures or abandoned wells?*
- *What are the hazards associated with different types of storage (e.g. enhanced oil recovery versus deep saline aquifers)?*
- *Could CO_2 leak into my basement?*
- *How are risks minimized? Can stringent regulation and limits on storage to the safest possible geological reservoirs reduce risk?*
- *How are the hazards minimized? Can the hazard be reduced by installing a detector in my basement? Can mercaptans be added to pipelines to provide a noticeable smell if there is a pipeline leak?*
- *What are the regulatory requirements for capture, piping, injection, storage and long-term liability?*

In general, ENGOs do not want CCS (an end-of-pipe approach) to be subsidized by the taxpayer, and in the short term, CCS must not lead to a diversion of scarce resources that are needed for higher priority approaches, such as conservation and low-impact renewable energy. In the long term, CCS must not be a liability for taxpayers in future generations.

RISK COMMUNICATION AND CARBON CAPTURE AND STORAGE

Risk Communication is best described as an interactive exchange of information.

RISK COMMUNICATION HYPOTHESIS[1]

Vincent Covello at the Center for Risk Communication looked at questions frequently asked after disasters, by terminally ill patients and in response to the bird flu epidemic. He found great similarities.

- Many concerns and questions that upset people can be predicted in advance.
- When people are stressed or upset, they typically want to know that you care before they care what you know.
- When people are stressed or upset, they often have difficulty hearing, understanding and remembering information.

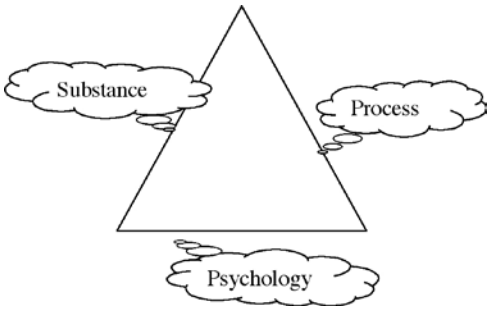
Common themes:

- What has happened? Who is in charge? How is it being contained?
- Are the victims being helped? What can we expect now? What should we do?
- Why did this happen? Did you have fore-warning? What did you know and when did you know it? What if the worst case scenario happens?

Similar themes that can be expected about CCS:

- Factual: What happens to the CO_2 once you inject it?
- Emotional: How can we trust it will be safe?
- Challenge: What about today's problems?

How does capturing CO_2 from a coal plant help kids with asthma?



THE TRIANGLE OF SATISFACTION

In mediation, there is frequent reference to the "Triangle of Satisfaction" (coined by Larry Susskind and Patrick Field at the Consensus Building Institute). The three legs of the triangle are Substance, Process and Psychology (Emotion). In mediation, conflict resolution efforts and risk communication, there is often much more to the conflict or risk than just the substance.

Risk communication can be successful if:

- It is accepted that the dialogue sometimes may be more about feelings than facts.

[1] From Vincent Covello, Director, Center For Risk Communication, New York. **www.centerforriskcommunication.com**

AVOIDING COMMUNICATION PITFALLS [2]

Pitfall	Do	Do Not
Jargon	Define technical terms	Use language that anyone in the audience does not understand
Negative Words / Phrases	Use positive or neutral terms	Refer to national problems (e.g. "This is not Love Canal")
Temper	Remain calm and use questions or allegations as a springboard to say something positive	Let your feelings interfere with your ability to communicate clearly
Clarity	Ask whether you have made yourself clear	Assume you have been understood
Abstractions	Use examples, stories, and analogies to establish a common understanding	Talk about new or unfamiliar topics without grounding the audience
Guarantees	Emphasize achievements made and ongoing efforts	Say there are no guarantees
Speculation	Provide information on what is being done	Speculate about worst cases
Money	Refer to the importance you attach to EH&S issues; your moral obligation to the public outweighs financial considerations	Refer to the amount of money spent as a representation of your concern
Organizational identity	Use personal pronouns (I, we)	Take on the identity of a large organization
Blame	Take responsibility for your share of the problem	Try to shift blame or responsibility to others
Technical details and debates	Focus your remarks on empathy, competence, honesty and dedication	Provide too much detail or take part in protracted technical debates

- Information is shared and concerns are acknowledged.
- All sides appreciate diverse opinions and perspectives and foster an atmosphere of consensus building.
- The communicators are proactively prepared and understand their roles.
- Consistent messages, open and accountable processes, and a solid understanding of the importance of good risk communication are made important.

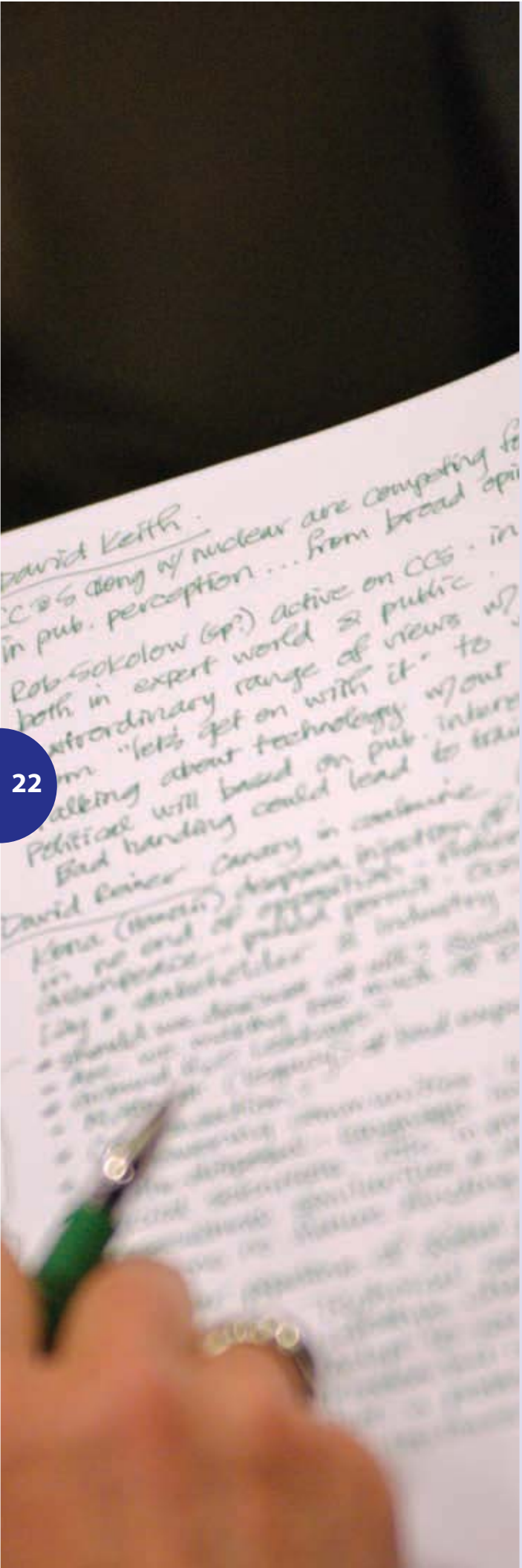
Communication can fail on a personal basis because:

- It does not take into account the psychological basis for the perception of risk.
- It fails to recognize why people respond to risks the way they do.
- It refuses to accept that this irrational behaviour is programmed into humans as a protection mechanism.
- It has the goal of making everyone see the risk as the communicator sees it.
- The "Decide-Announce-Defend" or "Just-the-Facts-Ma'am" approaches do not work.

Communication can fail on an organizational basis because:

- It is not done proactively, but rather reactively after public responses and ideas have already been formed.
- It is a lecture, not a conversation.
- It is done by people with a vested interest that conflicts with the audience, so it appears that the facts cannot be trusted.
- It focuses solely on the facts, which are not the real cause of the controversy.

[2] Covello, V. "Risk Communication, Trust, and Credibility," Health and Environmental Digest. Vol. 6, No. 1. 1992.



COMMUNICATING RISK OR RISKY COMMUNICATIONS

Speaker – Carolyn Preston

Carolyn Preston at the Petroleum Technology Research Centre noted that communication is essential to the overall success of moving CCS forward, but that understanding the audience is of critical importance. Specifically, she noted several audiences:

- *Technical audiences including geologists and others in academia that need to understand the technical aspects of the process.*
- *Political audiences such as policy makers who need to understand the technical ramifications of CCS as it applies to continued use of fossil fuels and how it might work within the confines of international treaties.*
- *The technologically-savvy public who seek to understand cartoons of the process, pictures, or actual rock samples that demonstrate the project.*
- *The general public, tax payer, or energy consumer for whom even simple graphics may create misunderstanding.*

It is also important to recognize that there will likely be a number of questions and and ready answers should be developed for them, including some listed in the "Risk Communication Hypothesis" section, such as:

- *You're going to put it where?*
- *How will your operations impact me?*
- *Will it stay there?*
- *How do I know it is safe?*
- *If it comes up, will it hurt me or my property?*
- *Who is responsible for damages?*
- *Can I trust you?*

We must be prepared to manage public communications to ensure we do not destroy years of hard work on CCS, and to help make it a reality. It is never too early to seek public acceptance.

STAKEHOLDER ENGAGEMENT AND CARBON CAPTURE AND STORAGE

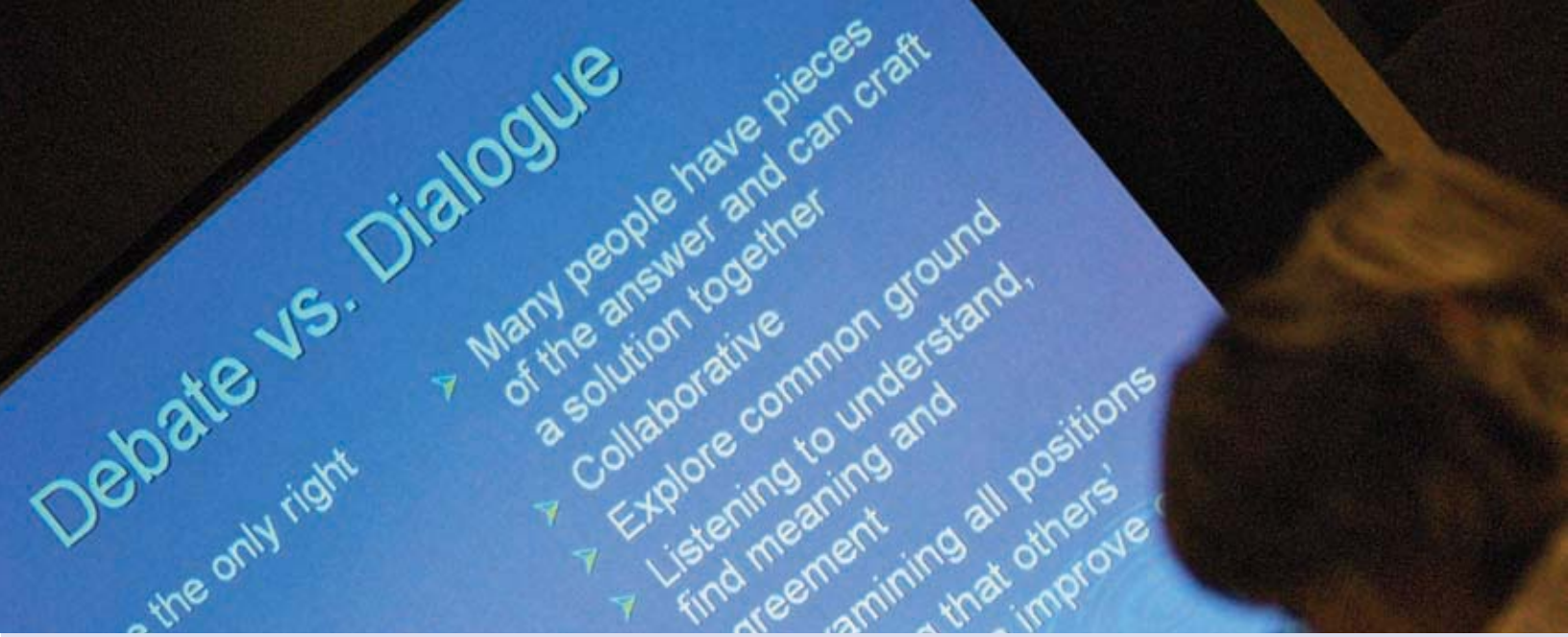
Communication and engagement are key elements of effective stakeholding. There are a number of tools that decision makers can use to increase their chances that stakeholders become part of the solution rather than part of the problem.

PUBLIC INVOLVEMENT SPECTRUM[3]

As part of the involvement of the public, and recognition of the role they can play in bettering decision-making, the International Association for Public Participation has developed a spectrum of involvement from basic informing to empowerment. While not every problem requires that the public, writ large, needs to be empowered, effective communication and stakeholding should err on the side of greater involvement. The full spectrum is as follows:

- **Inform:** Provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.
- **Consult:** Obtain public feedback on analysis, alternatives, and/or decisions.
- **Engage:** Work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.
- **Collaborate:** Partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.
- **Empower:** Place final decision-making authority in the hands of citizens.

[3] Adapted from the International Association for Public Participation (IAP2). **http://iap2.org/practitionertools/index.shtml**



SPECIFIC ACTIONS FROM THE INTEGRATED CO_2 NETWORK (ICO_2N)

Speaker – Stephen Kaufman

The ICO_2N initiative is an integrated system combining strong policy with infrastructure development to encourage CCS across Canada. It includes 15 major companies from a cross section of industries, each with the potential to capture CO_2. It offers an effective vehicle for governments to engage industry in an effort to overcome the challenges facing CCS. ICO_2N's goal is three-fold:

- *To influence government and move the discussion of why do CCS to a discussion of how, and to help shape the policy development and adoption of this technology.*
- *To provide in-depth analysis on CCS, including technology, economics and policy.*
- *To present a clear path forward in which ICO_2N is a Canadian CCS solution and a critical component of Canada's greenhouse gas (GHG) reduction strategy.*

ICO_2N has two primary communications needs:

- *First, to educate the government that ICO_2N can help develop the best CCS solution for Canada, with a targeted government relations approach.*
- *Second, to educate the general public and key influencers including academia, industry, NGOs, etc. on the safety, technology, and economic advantages of CCS versus other GHG reduction alternatives.*

The ICO_2N messages to be delivered are:

- *CCS is a strategic and critical component of Canada's GHG and energy strategies.*
- *CCS is a "made-in-Canada" solution.*
- *CCS can achieve large-scale reductions.*
- *CCS is safe and secure.*
- *A large-scale, integrated CO_2 network is essential to realize the full potential of CCS.*
- *Government has a key role in large-scale CCS, but industry will pay a significant share.*

As part of their communications planning, ICO_2N is identifying the communication tools needed, appropriate audiences, their potential issues, challenges and opportunities, and the timing of events. They are also planning messaging for different audiences including: internal audiences, policy makers, academics, ENGOs/NGOs, targeted business leaders, and the wider Canadian public. Successful implementation of this communication plan is evidenced through increased government engagement and public awareness of CCS and the potential role of ICO_2N.

MESSAGE MAPS

The latest tool in risk communication is that of message maps. The basic concept of a message map builds on Covello's hypothesis that people can have difficulty hearing and listening during a crisis. This tool is useful primarily in addressing the public after an event, but is also useful during preparation in case of an event and can help identify areas of concern that should be given more attention to mitigate potential issues.

A message map gives three key messages with three supporting statements to help people "Know, Do and Go." It first helps them understand or know the issue, further helps direct them on what to do, and finally on where to go.

Message Map Example – West Nile Virus[4]

Stakeholder – The Public

Question – How Can I Avoid Contracting West Nile Virus?

Key message 1: Remove standing water	Key message 2: Wear protective clothing	Key message 3: Use insect repellent
Supporting 1-1: Unused swimming pools	Supporting 2-1: Long sleeves	Supporting 3-1: Containing DEET
Supporting 1-2: Flower pots and bird baths	Supporting 2-2: Long pants	Supporting 3-2: At leat 23%
Supporting 1-3: Buckets and cups	Supporting 2-3: At dusk and dawn	Supporting 3-3: Medically proven efffective

DEBATE VERSUS DIALOGUE

The Keystone Center refers to its multi-stakeholder interactions as "Dialogues." It has become a term of art. In risk communication, it is important to distinguish between dialogue and debate. Debate is about vanquishing your opponent, belittling him, finding flaws in his logic and defending one's own views. Listening occurs only to find flaws and to make counter-arguments. On the other hand, dialogue is about collaboration, listening to understand, valuing differences and finding common ground.[5]

Debate	Dialogue
You have the only right answer	Many people have pieces of the answer and can craft a solution together
Combative	Collaborative
Winning	Exploring common ground
Listening to find flaws	Listening to understand, find meaning and agreement
Critiquing the other side's position	Re-examining all positions
Defending one's own views against those of others	Admitting that others' thinking can improve one's own

THE WISDOM OF CROWDS

Dialogue also differs from debate in that it puts trust in the "Wisdom of Crowds," as James Surowiecki writes in his book of the same title.[6] Surowiecki notes that crowds can be quite wise if there is:

- Diversity of knowledge
- Independence
- Decentralization (local knowledge/specialization)
- Aggregation (a method to bring it all together)

[4] Adapted from U.S. Centers for Disease Control (**www.pandemicflu.gov**) and the U.S. National Homeland Security Research Center (**www.epa.gov/nhsrc**).

[5] Yankelovich, Daniel. "The Magic of Dialogue: Transforming Conflict into Cooperation." Touchstone. New York, 1999.

[6] Surowiecki, James. "The Wisdom of Crowds: Why the Many are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations." Doubleday. New York, 2004.

On the other hand, Surowiecki notes that crowds can fail if they are too homogeneous, too hierarchical, too divided (in silos), and sometimes if they are too emotional (herd instinct). Recognizing that different people have different types of knowledge and intelligence that they can bring to the table can help benefit overall decision-making and can be a bridge toward building trust with the public.

BUILDING TRUST

Trust is difficult to create and easy to lose; once lost, it is extremely difficult to regain. If risks are identified properly and communicated effectively, those people or agencies creating risks can become an effective partner with the public.

There are several psychological elements of trust involved:

- **Commitment:** Creating or negotiating reciprocal and verifiable behaviour, and sharing responsibility (e.g. co-host meetings or forums).
- **Accountability:** Doing what you say you will, becoming predictable and transparent about decision-making. Identifying the rules of the road, the process for input on decisions and who makes the final choices.

David Keith and Simon Knight

- **Disclosure:** Sharing weaknesses, flaws, and challenges as well as strengths (e.g. go on field trips or fact-finding missions together).
- **Acknowledgement:** Being known, recognized and heard. Acknowledging different sources of power and knowledge, as well as the consequences of actions and their impacts on others.

These elements will build stronger trust and relationships, will provide the group with the ability to adapt to new information, and will provide the clarity and transparency that creates enduring solutions.

THE ALLIANCE PIPELINE PROJECT

Speaker – Paul Anderson

An example of effective communication and efforts to build trust were given by Paul Anderson of the Alliance Pipeline project. His group sought to consult environmental stakeholders with the following stated objectives:

- *Have information exchange with the public to ensure understanding of the project.*
- *Actively seek comments on route selection, potential environmental impacts, possible mitigation and enhancement measures.*
- *Identify and respond to public issues outside of the formal application and hearing process.*
- *Develop relationships and facilitate two-way dialogue.*

Alliance Pipeline created effective partnerships with ENGOs by consulting them in the following areas:

- *Design of the public involvement process.*
- *Issue scoping and resolution of issues.*
- *Collection of baseline environmental and socio-economic information for assessment.*
- *Environmental assessment methodologies.*

The benefits of this outreach, in the view of the company, were several:

- *It strengthened the quality and credibility of the environmental assessment.*
- *Overall improvements in project design and pipeline routing resulted in greater public acceptance.*
- *They did not encounter costly delays due to unresolved environmental stakeholder issues or concerns.*
- *It provided a broader view of issues.*
- *It reduced potential tension by ensuring thorough understanding of each other's positions.*
- *It developed trust and credibility with the environmental community.*

NEXEN'S COAL BED METHANE STAKEHOLDER INVOLVEMENT

Speaker – Bill Gourley

Bill Gourley of Nexen discussed efforts to conduct coal bed methane (CBM) production in Canada with the knowledge of the poor experiences in the Powder River Basin in the United States and the perceptions and concerns of groundwater contamination, noise, and other surface impacts such as access roads, power lines, and pipelines. The public was apprehensive, given past experiences and alarmist media reports, and some had called for a moratorium on CBM development.

Recognizing these challenges, Nexen is committed to the values and beliefs within the International Code of Ethics for Canadian Businesses and participates in the International Association for Public Participation (IAP2). These beliefs speak to stakeholder involvement being key to accomplishing the following:

- *Understand and respect other positions, interests and values.*
- *Search for common ground/vision.*
- *Be aware and understand complex issues.*
- *Acknowledge different priorities and values.*
- *Work towards trust, honesty, and transparency.*
- *Recognize that we are all part of the same "Social Fabric."*

Further, the Canadian Society for Unconventional Gas (CSUG) developed the following mission statement:
"To facilitate the factual and collaborative exchange of unconventional gas knowledge and challenges among government, regulators, industry and public stakeholders for the exploration and production of the resource in an environmentally sensitive and economical manner."

This explicitly calls for consistent messaging and a unified approach in their education and stakeholder presentations. It also calls for open, fair and honest dialogue, and continuous engagement with various stakeholders. By bringing these various interests to the table, Nexen created a shared vision and sense of responsibility, which made the project a success.

SEVEN GOLDEN RULES FOR RISK COMMUNICATION AND STAKEHOLDER ENGAGEMENT

> *"When you do not know a thing, to allow that you do not know it – this is knowledge."* - Confucius

Accept and involve the public as a legitimate partner. It is a two-way process, with participation now seen as an individual's or community's democratic right. This is successful if you increase the base of accurate information and reassure those involved that they are adequately informed. This may require a variety of communication formats before, during and after an event.

Plan carefully and evaluate performance. Aim communication at the concerns and needs of specific audiences. It may be prudent to start with small, representative groups and ask for input early and informally. They can help you invite others and make sure that the right people are made part of the process. You can also work to anticipate questions and plan your responses accordingly.

Listen to your audience. While you can anticipate some questions, don't make assumptions about what people may be worried about, or what they want done about risks. There may be hidden agendas or political considerations that underlie and complicate risk communication. You have to

Jeremy Kranowitz – Keynote address >

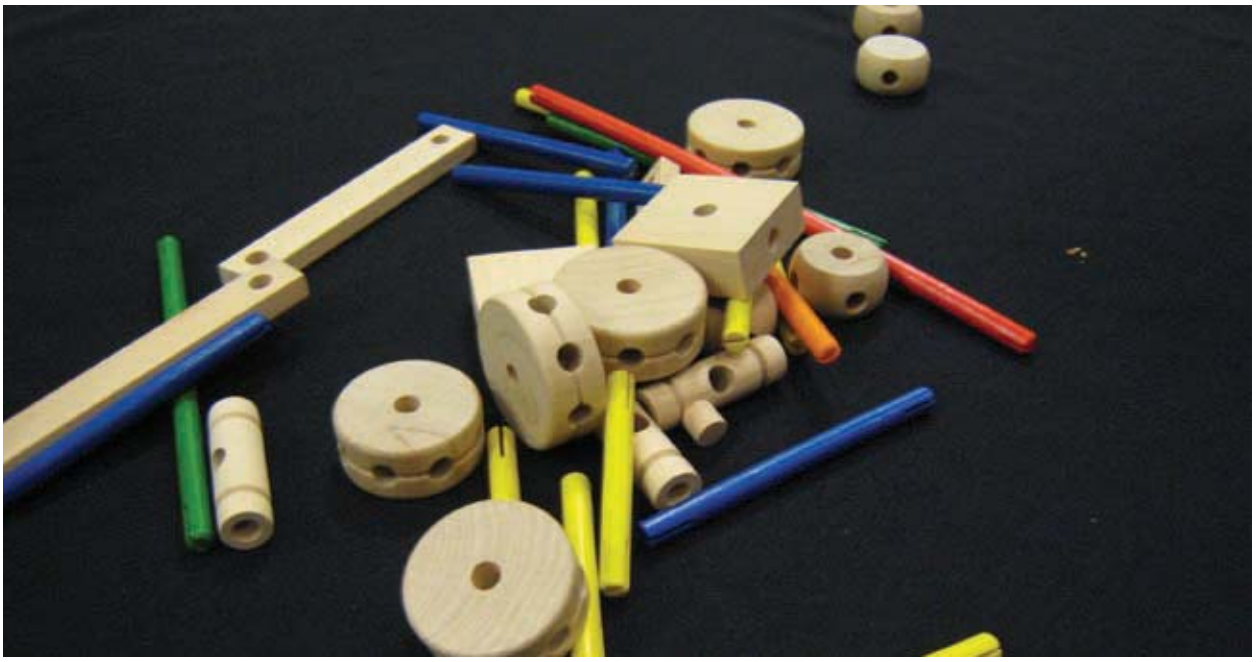
listen to individual needs. The public is not a unified, homogenous group.

Be honest, frank and open. The community is more interested in trustworthiness and credibility than the minute details of quantitative risk assessment. They want the person communicating to acknowledge, respect and share their concerns. If you are uncertain, say so right away, rather than being accused of covering up something later. If you don't know, say what you will do to find out, and what you'll do to reduce the risk in the meantime.

Coordinate and collaborate with local credible sources. There's a saying that "all politics is local." People care most about stuff that is closest to them. They understand the benefits and the negative aspects of what they are familiar with. Having a trustworthy, conscientious local collaborator that people view as credible may matter more than the risk itself.

Meet the needs of the media. Be available to the media. They will generally be more interested in politics and simplicity than risk and complexity. Respect their deadlines. Pick a few numbers and explain them well. It might help to establish relationships with editors and reporters built upon a foundation of openness and trust.

Speak clearly and with compassion. Communicate simply and be non-technical. Language about potential deaths or injuries make the risks seem abstract. On the other hand, anecdotes and real stories about real people can make data come alive. Comparisons can be useful in putting risks into perspective, but be careful to compare similar risks (e.g. both man-made, or both voluntary). The best analogies are those that compare the same risk in two different times (and to a lesser extent, different places), or comparing a risk with an existing standard. Poor analogies talk about cost-benefit ratios, or compare costs.



The Communications Exercise – Delegates were divided into teams and asked to build a structure identical in height, colour and shape to a template from these available construction materials. Teams were restricted to one 'viewer', one 'runner' and one 'builder' during the exercise. The task demonstrated the necessity for clear communication strategies.

EVALUATION SUMMARY AND NEXT STEPS

Climate Change Central undertook a web-based evaluation survey to gain an appreciation for conference logistics, value for attendees and suggestions for next steps.

Over ninety per cent of respondents felt the workshop met their expectations and that the presentations were informative. In general, with the exception of perhaps some additional lead-time in between the conference invitation and event, the logistics for the three-day workshops were well received. Specific comments were provided on each presentation and all were found to have provided valuable context with respect to CCS communications. Workshop attendees noted that the balance between keynotes, presentations and armchair panels was very well designed, and the benefits of having first-hand experience presentations such as those by Alliance Pipeline and Nexen struck a chord with many respondents.

A common suggestion for improvement which reflected both workshop logistics and value for attendees was the timing between the meeting of the C2S2RN group and the industry, government and NGO participants. A suggestion for a future event would be to allow for some additional lead time between the two events to allow for a more comprehensive overview of country and/or project specific results, and to have a number of presenters from the C2S2RN group present in a panel format at the day

three event. The day three attendees also look forward to the formalization of the C2S2RN social research network and the launch of an organizational website listing group members, links to formal publications and on-going projects/research.

Some respondents also noted that a follow-up workshop should include technical components of CCS and more discussion on emerging programs, such as actual communication activities related to a specific project. With time as a limiting factor in the introductory workshop, this is where further participation from members of the C2S2RN group could have provided additional value.

Another suggestion for improvement at a future event is the provision of additional networking opportunities including the suggestion of a 'speed schmooze' to lay the foundation for constructive dialogue. Survey results from the public communication priorities regarding CCS proved inconclusive as the majority of respondents selected a range of responses with no clear priority emerging. When indicating who should be involved in developing a communications strategy on CCS (in Canada), a similar pattern emerged as many of the same options were selected; however, the majority felt that an energy industry and environmental NGO partnership, in collaboration with their respective provincial and territorial governments, would provide the best results.

The appropriate venue for ongoing discussions selected by the majority of respondents was to follow this inaugural event with another formal workshop, supported by an energy industry consortium with fundraising efforts through an organizational body such as C3.

To this end, Climate Change Central looks forward to future collaboration with all partners and the organization of a follow-up event. ■

CARBON NEUTRAL EVENT

In collaboration with Green My Inc. and the Green My Flight/Green My Vehicle programs, Climate Change Central has taken the necessary steps to ensure the three-day Carbon Capture and Storage Communication Workshops were carbon neutral.

All greenhouse gas emissions associated with both international and domestic air travel, local road transportation, hotel rooms, venue and associated equipment were factored into the emission calculations. In total, Climate Change Central, through the generous contributions of its financial sponsors, retired 42.5 tonnes of CO_2e.

All Green My Inc. offset projects verifiably reduce emissions of greenhouse gases according to the standards set by the Environmental Choice Program from Environment Canada in the CCD-162 and CCD-164 criteria document. The quantification methodologies used to determine the required number of offsets follows the guidelines set by the Canadian Standards Association and Environment Canada.

Offsets for the Carbon Capture and Storage Communication Workshops were sourced from the Creststreet Kettles Hill wind energy project, located near Pincher Creek, Alberta. The project is EcoLogo certified under the Environmental Choice Program.

< Offset Certificate

Additional information is available at **www.greenmyinc.com**.

Climate Change Central

www.climatechangecentral.com/ccs