

Source: Jeremy Kranowitz, 2008



"It could go badly, or it could go well, depending on whether it goes badly or well."

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Communicating CCS: Going badly or well?

P2009/1751
Peta Ashworth
IEF GCCSI Symposium
27th September, 2009



IEA WPPF March 2007 - Prioritised CCS Issues

- 1. Cost of deployment:** CCS projects are large compared to other low-carbon options (solar panels, hybrid cars) and are therefore perceived as expensive even though on a unit basis, their cost (per tonne of CO₂ avoided) is significantly lower.
- 2. Scale of deployment:** In common with other low-carbon options (wind generators and biofuels), small-scale CCS deployment will have little impact, but deployment at a scale that would make a significant difference to climate change, is not well understood.
- 3. Perceived risks (to local health and safety):** There are so few operational CCS projects in the world that the perception of local risks associated with catastrophic leakage of CO₂ from storage is immature, but very important to address.
 1. Risk of catastrophic leakage low but any evidence of such would have large negative impact
 2. Reduced property values – challenge of siting
 3. Even low risks can influence perceptions

IEA WPFF March 2007 - Prioritised CCS Issues

4. **Lack of accessible information:** There is relatively little information that is geared towards the public on CCS. Research has shown that focus groups become more supportive of the technology once they have basic information and better context.
5. **Supporting policies:** Views on this are the most dichotomous. Those who believe that fossil fuels will be required to raise living standards in the developing world advocate policies to support CCS. Others see CCS threatening to delay the deployment of renewables.
6. **Adequacy of regulatory frameworks to address the perceived risks:** No region has a comprehensive regulatory framework governing CCS, but several processes are now under consideration.

Wright, I., et al., *Public Perception of Carbon Dioxide Capture and Storage: Prioritised Assessment of Issues and Concerns.*, in *IEA Working Party on Fossil Fuels, ZETS Phase 2: Communication Strategy*. 2007, CO2 Capture Project, CCP2. : London: DTI.

IEA WPFF March 2007 - China

- Low familiarity with CCS technology
- Most key opinion leaders agree that climate change will become a serious problem in the future and CCS technology will be important over the long-term
- It is difficult to discuss the public acceptability because of the lack of information on CCS,
- The view that CCS is an immature technology and the current perception of high risks with regard to storage reliability and the environment are seen as the main hurdles for CCS.
- Financing CCS is seen as a major challenge. Industry will find it difficult to implement CCS without policy support or financial guarantees
- Competing issues such as water conservation or SO_x & NO_x control.
- Many believe that a focus on 'Capture Ready' plants is 'crucial', but some sort of policy or financial incentive support is necessary.
- EOR/EGR could serve as an early-opportunity project in China because, energy security is at the top of the Chinese agenda...

NGO Workshop, 2009 -Highest concerns

2	Whether the scale of infrastructure required for CCS is well understood.	6.33
30	CCS being oversold as a silver bullet to the detriment of renewable energy deployment	6.00
24	Whether information about CCS is readily available for all stakeholders	5.50
25	Whether information about CCS is of an appropriate quality, style and language for all stakeholders	5.50
26	Whether there has been enough communication about CCS to the range of stakeholders	5.50
22	The adequacy of regulatory frameworks for CCS in the developing world to address risks	5.33
27	Whether CCS can reduce the large amounts of GHG emissions required quickly enough	5.33

7= high concern

Banff (Sept 2007) Issues

- Are we making too much of the RISK aspect?
- Is CCS a bridge or sustaining the life of fossil fuels?
- Leakage into ground water
- Legacy issues – land use, genuine distrust from bad experiences
- What's in it for us? Compensation
- Empowerment levels of communities – cultural differences
- Disposal of waste - language
- Funding – social research & commercial projects

Banff (Sept 2007) What have we learnt?

- Trust & honesty is crucial
- Provide balanced, valid and accessible information – range of sources
- “Dialogue” “consultation” “discussion” not just one way information sharing
- Context matters
- NOT advocating or persuading
- NOT at the expense of renewables
- Compared to other technologies CCS is not popular
- Face to face, one on one....
- Technology diffusion
- Strong regulation and monitoring required – independent body?

C3, ISEEE, IISD Social Research Meeting Banff, 2007

Awareness versus Acceptance: Do we need both?

“I think it vital to continuously underline that the communication work that takes place at a local level is the tip of the communications pyramid, and that a wider lack of activity makes the job that much harder when attempting to dialogue with locals regarding a potential CCS project. “

Industry Communications Representative

“So, I don't know whether for successful implementation of CCS an informed and positive constituency and acceptance of CCS is needed. I guess that for the general public it goes that the majority is not motivated to process any information on CCS (and why should they?). For people living near CCS activities it might be that they are attentive at first (Is this safe?) and when they perceive reassuring cues (e.g. a highly credible source guarantees it is safe) they lose interest and don't oppose (note: this is not acceptance). However, when those cues are not reassuring (e.g. a source that is not trustworthy provides the same guarantee) residents perhaps search for more information and are probably susceptible for (also invalid) information on risks and this may result in opposition.”

Leading Psychologist researching CCS Perceptions

Target audiences

Influential Stakeholders Politicians Media Finance CEO's Insurance NGO's	\$\$\$\$ Large group process Special functions
Community	Energymark – round table discussions
Education	Schools Museums Libraries
Project specific <ul style="list-style-type: none"> • Influential others • Community • Education 	Local regions

The large group process



How strongly do you agree or disagree with CCS

1= strongly disagree 7= strongly agree

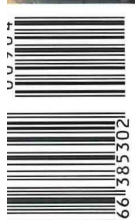
	Feb, 2008		Mar, 2008		Jun, 2008		Nov, 2008		Feb, 2009	
	Youth 29		Brisbane 60		Melbourne 47		Perth 62		Adelaide 131	
	Before %	After %	Before %	After %	Before %	After %	Before %	After %	Before %	After %
Strongly disagree	6.9	3.6	8.6	10.2	2.1	2.1	1.6	4.8	1.5	0
Moderately disagree	13.8	10.7	5.2	1.7	2.1	4.3	4.8	4.8	3.1	2.3
Disagree	0	14.3	6.9	5.1	14.9	4.3	1.6	6.5	5.3	3.8
Unsure	48.3	25	48.3	32.2	59.6	14.9	54.8	21	47.3	9.9
Agree	13.8	35.7	8.6	27.1	6.4	40.4	22.6	37.1	10.7	22.1
Moderately agree	13.8	7.1	17.2	13.6	8.5	19.1	9.7	17.7	13	38.2
Strongly agree	3.4	3.6	5.2	10.2	6.4	12.8	4.8	6.5	17.6	23.7
Missing responses	0	0	0	0	0	2.1	0	1.6	1.5	0
Total	100	100	100	100.1	100	100	99.9	100	100	100

Ashworth et al. (2008) *Engaging the public on Carbon Dioxide Capture and Storage: Does a large group process work?* GHGT9

als je het exact wilt weten

nwt

natuur-
wetenschap
& techniek



BLOW-OUT!

DE GEVAREN VAN CO₂-OPSLAG

Top nine journalists writing on CCS

Journalist	No.	CCS Focus			CCS Tone				Most cited expert/reference
		Prim.	Sec.	Inc.	+ve	Bal.	-ve	Neut.	
Matthew Warren	16	3	6	7	2	7	1	6	Al Gore, Nicholas Stern
Lenore Taylor	11	2	6	3	5	3	0	3	Kevin Rudd
Olga Galacho	10	5	3	2	0	1	8	1	Harry Schaap, Ralph Hillman
Chris Hammer	10	7	3	0	2	4	4	0	Ross Garnaut, Martin Ferguson, Greenpeace
Matthew Franklin	9	0	3	6	5	0	3	1	Kevin Rudd, Bob Brown (Greens)
Marian Wilkinson	9	4	3	2	1	4	3	1	Dr Peter Cook, Ben Pearson (Greenpeace)
Christian Kerr	8	2	3	3	3	3	2	0	Ian Macfarlane
Keith Orchison	7	2	0	4	3	0	2	2	No prominent source
Peter Boyer	6	2	2	2	0	0	4	2	None

THE BIG PICTURE

Session 1: W

Energy Transformed

National Research
FLAGSHIPS
Energy Transformed

Climate change may be due to natural inter-composition of the atmosphere or in land most of us now have some understanding of climate change, how we affect it, and how it affects us.

Discussion questions:

- What do you understand by climate change? What causes it?
- What climatic changes have you noticed over your life time?
- How would the types of changes mentioned above affect industry and communities in your region?
- What effect does climate change have on Australia? What are your views on Australia's carbon emissions?
- When thinking about climate change, what are your key issues and concerns?

We live in a greenhouse

In a greenhouse the glass prevents radiation from getting out. Similarly, some gases in the Earth's atmosphere prevent some of the heat the Earth receives from the Sun from radiating back out into space; hence their name, greenhouse gases (GHGs) – see figure below. GHGs are necessary to support life on Earth because they keep the planet within a habitable temperature range, without them Earth's temperature would be -18 degrees⁽¹⁾. Increasing or decreasing the volume of GHGs causes the planet to retain too little or too much heat, which over time changes Earth's average temperature and climatic dynamics⁽²⁾.

In the past, naturally occurring climate change caused by Earth's geographic dynamics has altered rainfall patterns, and has displaced or even destroyed

Energymark: Calculating your carbon footprint

Energy Transformed

Household Carbon Emission

Enter your **ANNUAL** household use in whole numbers

ENERGY			
Natural gas or LPG <small>Calculate using usage from your quarterly bill (units x 3.6)</small>	megajoules	x 0.07	kg
For LPG - if you buy it by the litre	litre	x 1.7	kg
Natural gas in WA – units in 3.6 megajoules	units	x 0.24	kg
Electricity	kilowatt hours	x 1	kg
Oil or kerosene	litre	x 2.3	kg
Wood – used in stove combustion heater	kilogram	x 0.25	kg
Wood – used in an open fireplace	kilogram	x 5	kg
TOTAL Household Energy CO₂ emission			kg
<small>Divide the total by the number of people in your household to obtain your individual CO₂ emission</small>			kg
TOTAL Individual Energy CO₂ emission			kg

Note: You will need to use a copy of a recent gas or electricity bill to assist you in this section

WASTE			
Food and garden waste (not recycled)	litre	x 0.9	kg
Garden waste (composted)	litre	x 1.3	kg
Paper (not recycled)	litre	x 2.5	kg
TOTAL Household Waste CO₂ emission			kg
<small>Divide the total by the number of people in your household to obtain your individual CO₂ emission</small>			kg
TOTAL Individual Energy CO₂ emission			kg

Note: A full fridge when full is 240 litre of waste. A full small dishwasher is 160 - 170 litre of waste.

SPENDING			
<i>Do not count transport costs in this section. Transport use and costs are addressed on the next page.</i>			
The amount spent on general products and services (e.g. new products, eating, drinking, pumping out, electricity)	AUD\$	x 0.7	kg
The amount spent on environmentally friendly products and services (e.g. energy or fuel efficient, recycled or recycled)	AUD\$	x 0.49	kg
TOTAL Individual Spending CO₂ emission			kg
<small>Divide the total by the number of people in your household to obtain your individual CO₂ emission</small>			kg
TOTAL Individual Spending CO₂ emission			kg

Note: On average, Australians spend about \$15,000 per year and produce 24 tonnes of CO₂ per year. The average world citizen produces 7 tonnes

BEEF CONSUMPTION – How much beef do you eat ANNUALLY (include your response)					
Never	Rarely	A few times a week	Average amount, most days	A lot (once a day)	Large amount (every meal)
Annual CO₂ emission (kg)					
0	200kg	800kg	1400kg	2100kg	3500kg

Discussions

SOLUTIONS

Existing renewable technologies (part 1)

One approach taken by the Australian Government to combat climate change is to increase the production of renewable energy. Many measures have been implemented to ensure this aim is achieved, including the establishment of a Mandatory Renewable Energy Target (MRET).

Buyers have a legal liability to contribute towards the generation of renewable energy certificate. Renewable technologies typically emit less and wholesale buyers meet MRET obligations set, and when Australia pursues Kyoto targets for reducing GHG emissions.

Your Action Plan

By saving behaviours are you going to commit to this week? Have a look at your energy audit and carbon footprint data you collected - what areas stand out where you could make a small change to reduce your carbon footprint? Your group will help you identify areas you would like to address and also detail how to change that behaviour. To assist you in developing your Action Plan, discuss with your Energymark group to address the issue of water heating. Since hot water heating accounts for about 16% of household GHG emissions, it may be a perfect opportunity to think about how your water is heated. Consider an alternative method which would be more carbon friendly and save in the long term!

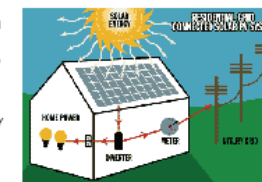
originally used in satellites, but their range of use has expanded dramatically, and they are now being installed in many active ways to provide both grid-connected electricity and in remote settings.

For instance, in remote settings, solar PV is used to power small businesses, schools, and homes. One of the few alternatives to fossil fuel power, solar PV is one of the few alternatives to fossil fuel power. In urban settings, solar PV is being installed on house roofs, buildings and connected to the electricity supply grid⁽³⁾. The long-term potential for solar PV is large, and costs are likely to continue to decrease as energy efficiency is expected and the potential for solar to be incorporated directly into buildings (rather than retrofitting) is expected to be high⁽⁴⁾.

Solar PV systems are currently more expensive than other electricity generation technologies, predominantly due to the high cost of efficient solar PV

cells. Rebates are available to assist with the payment of a new system, an extension to an old system, and community use buildings. For example, a new system will receive a rebate of \$8 per peak watt of output of the new photovoltaic component of the system up to a maximum of \$8,000. For further details, visit the Federal Solar Homes and Communities Plan: <http://www.environment.gov.au/settlements/renewable/pv/index.html>.

Source: Prosource



Education – not just schools



Is the time right for global campaign?

- Climate science is confirmed
- Global energy deprivation – human poverty
- Stern says early action through mitigation much less than the investment required if we wait to adapt
- Governments are investing in the following:
 - Energy efficiency
 - Carbon dioxide capture and storage
 - Alternative emerging technologies e.g. geothermal, solar thermal
- You can be good citizens and do your bit through your own energy use

Communicating for CCS projects. What have we learned in five years?

Wednesday 4th November, 2009

Le Meridien Etoile,
81 Boulevard Gouvion Saint-Cyr, Paris

The day's event will include:

- A keynote presentation from a leading risk communications expert
- Presentations of case studies from project developers and proponents that highlight their approaches to communicating and engaging with relevant stakeholders
- A panel discussion of representatives from current CCS projects
- An interactive session with leading social researchers to share and engage in questions about findings from their research
- An interactive session to define and identify work to be done from an industry perspective and gain insight into additional tools and information needed for the successful deployment of CCS.

RSVP: alice.miller@csiro.au

Some suggested reading

- Ashworth, P., Pisarski, A. & K. Thambimuthu (2009) Public acceptance of Carbon Dioxide Capture and Storage in a proposed demonstration area. Special Issue: **Proceedings of the Institution of Mechanical Engineers, Part A, Journal of Power and Energy**
- Simpson, P. & P. Ashworth (2008) Zerogen new generation power – a framework for engaging stakeholders. **Energy Procedia GHGT9 Conference** Washington.
- Ashworth, P., Carr Cornish, S., Boughen, N., & K. Thambimuthu (2008) Engaging the public on carbon dioxide capture and storage: Does a large group process really work? **Energy Procedia GHGT9 Conference** Washington. P2008/2485.
- Bradbury, J., Ray, I. Peterson, T., Wade, S., Wong-Parodi, G., & A. Feldpausch. (2008) The Role of Social Factors in Shaping Public Perceptions of CCS: Results of Multi-State Focus Group Interviews in the U.S. **Energy Procedia GHGT9 Conference** Washington.
- Wade, S. & S. Greenberg (2008) Afraid to Start Because the Outcome is Uncertain?: Social Site Characterization as a Tool for Informing Public Engagement Efforts. **Energy Procedia GHGT9 Conference** Washington.
- Reiner, D. (2008) *A looming rhetorical gap: A survey of public communications activities for Carbon Dioxide Capture and Storage Technologies*. Electricity Policy Research Group. Cambridge University. London:UK

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Source: Nick Otter, GCCSI March, 2008

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Thank you