



Nick Otter, Interim CEO, GCCSI, April, 2009

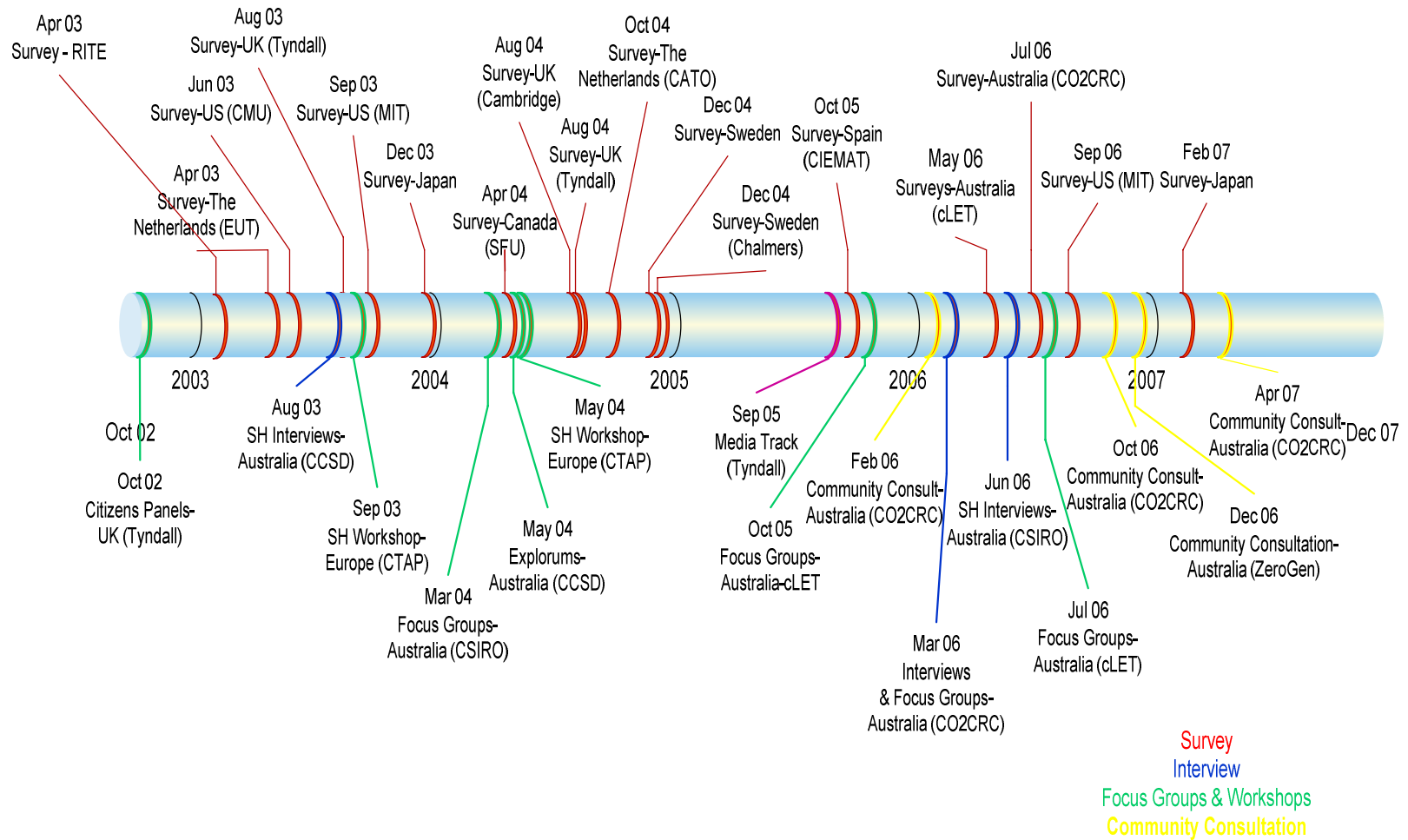
www.csiro.au

An overview of public perceptions to CCS

Peta Ashworth
Presentation to UCL, 12th June 2009



Timeline of Communication Research Activities 2002 - 2007



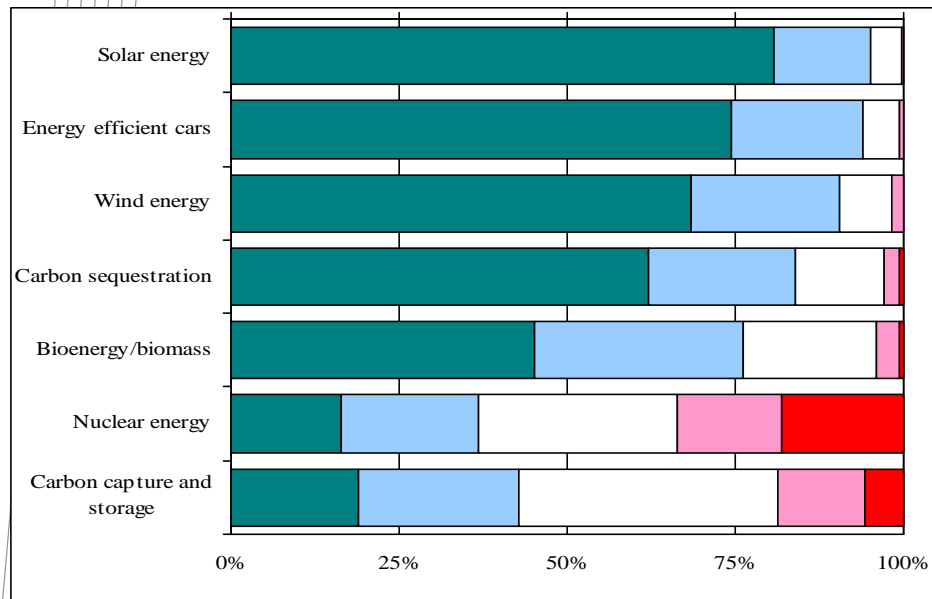
The value of social research and communication

- **From CLET Scoping Study - 2003**
- A major risk to technology adoption is if there is no appropriate engagement with stakeholders during the development process.
- Public attitudes to new technologies can change over time however, once formed they can be slow to change
- Social research can
 - enhance technology outcomes through a better knowledge of the end user environment,
 - identify societal issues and suggest strategies for addressing them
 - increase the awareness of new technology development

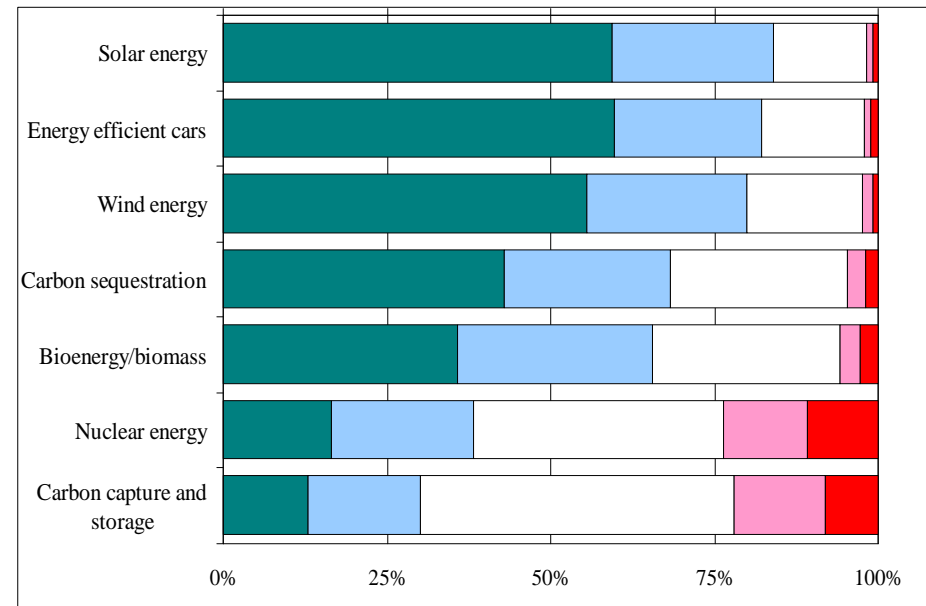


Preferred energy technology to address global warming

Australia



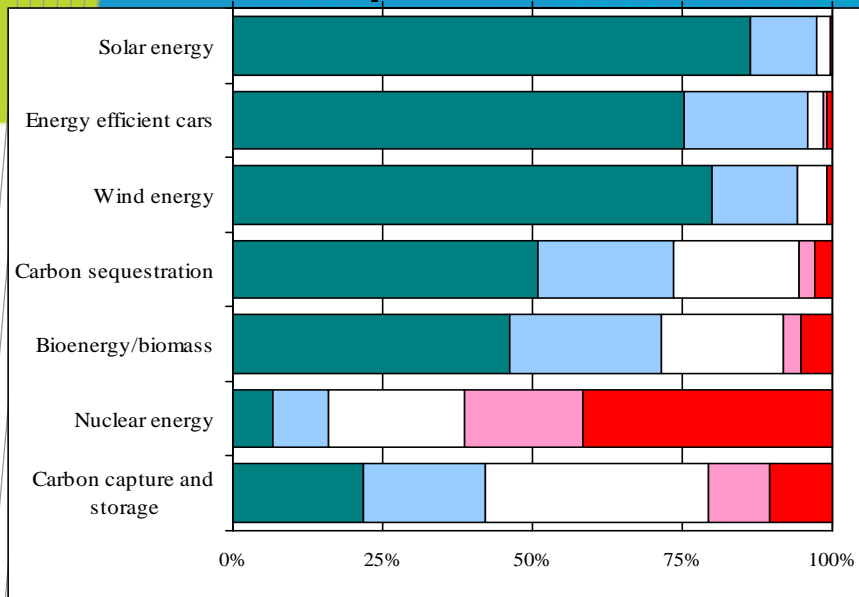
US



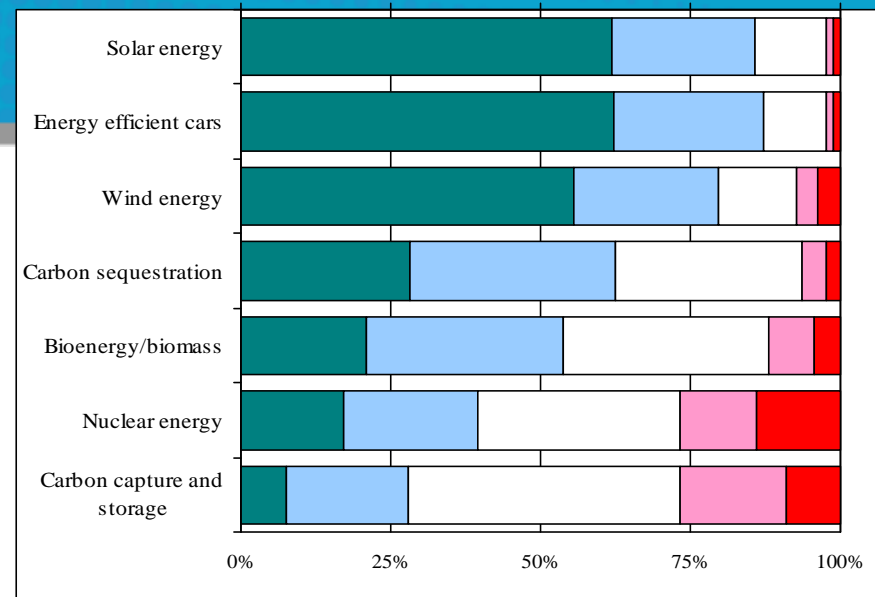
Definitely use
 Probably use
 Not sure
 Probably not use
 Definitely not use

D. Reiner et al., (2007) *An international comparison of public attitudes towards carbon capture and storage technologies. GHGT-8*

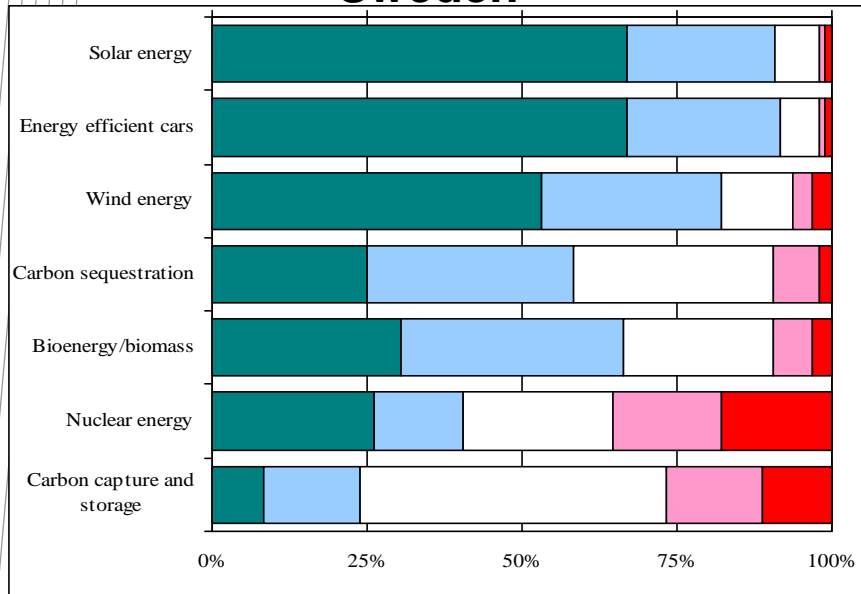
Spain



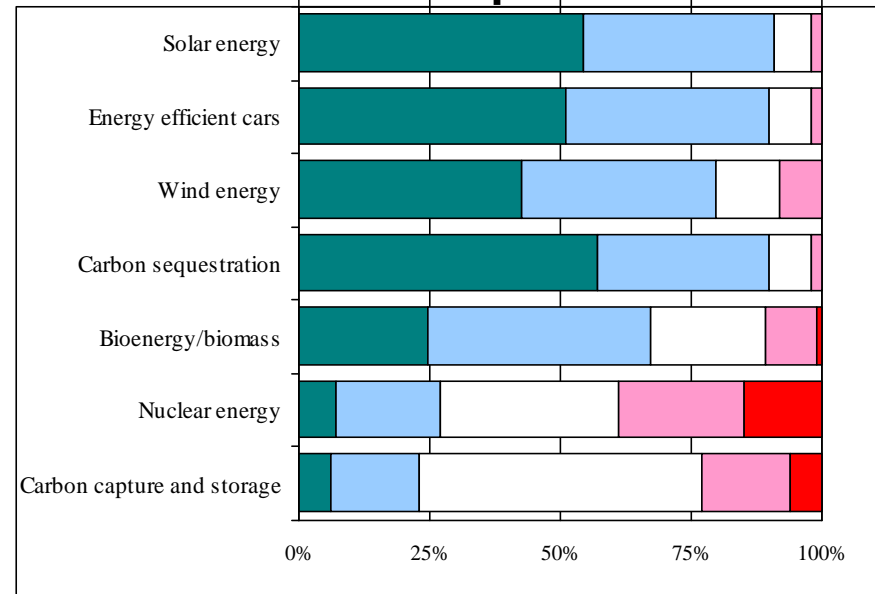
UK



Sweden



Japan



■ Definitely use
 ■ Probably use
 Not sure
 ■ Probably not use
 ■ Definitely not use

Preferred energy source/technology

1 = high preference 11 = lowest preference

	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 %
Solar	1.7	1.8	2.1	1.9	1.9	2.1	3.0	2.1	2.1	2.5
Wind	2.9	2.4	3.1	3.3	2.6	2.7	2.5	2.8	3.1	3.6
Wave/Tidal	4.3	4.6	4.3	4.7	4.4	5.3	4.4	4.1	5.2	6.8
Geothermal	4.2	4.0	4.9	5.2	6.1	6.7	5.5	6.1	4.8	3.8
Nat. Gas	6.6	6.2	6.5	6.0	5.6	6.1	6.6	6.4	5.8	6.0
Hydro	5.6	5.9	5.2	5.3	5.5	5.6	5.1	6.5	5.7	6.3
Biofuels	5.8	5.9	6.2	5.5	7.0	6.4	7.2	6.7	6.7	6.7
CCS	6.5	6.2	6.7	7.0	7.1	5.7	6.9	7.2	6.5	4.3
Coal	9.6	9.6	8.8	8.7	8.6	8.4	9.0	8.6	8.7	8.4
Nuclear	8.7	9.4	8.8	9.1	8.5	8.2	6.9	6.6	7.7	8.3
Oil	9.9	9.8	9.2	9.1	8.8	8.8	9.2	8.9	9.1	9.0

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

Questions about CCS

- *“Have any studies been done on ways to use CO2 emissions for practical uses thereby creating a recycling effect rather than just bury it?”*
- *We need to know more about it before widespread application - Is it safe? What are the long-term effects? Is it a cover-up operation – will it give companies that invest in this technology the appearance of looking green without actually doing anything?*
- *CCS is not an answer but can be a bridge for other technologies. I thought it was bad but now I have changed my opinion.*
- *What is payback period for building CO2 sequestration, brings jobs and progress but how many emissions?*
- *CCS is a pipedream; there is not concrete evidence of it working*
- *How far down the track is carbon sequestration? How soon can we implement? How long can we use the special sequestration spots?*

US DOE Regional Partnerships – Predominance of Social Concerns

- Among all groups, most strongly expressed concerns were:
 - trust in authority
 - concern about the fairness of CCS implementation procedures
- Domination of technological risk issues in CCS discussion may be misplaced. Rather, social processes are key.
- Public perceptions of the risk of technology do not occur in a vacuum. People bring to their evaluation of a particular technology their cultural frame of reference: differing values, experiences, way of interpreting and responding.
- Technology and decisions about risk (level and acceptability) are essentially social in origin and effect.
- Resolution of safety issues related to leakage, seismicity and containment are essential to successful deployment of CCS.
- But, *management* of these risks is the critical factor for public acceptance
 - How can we **have a say** in what happens?
 - Will the process be **fair** and will anyone **listen** to us?
 - Can we **trust** the project developers and government to take care of problems
 - What have our **previous relationships** with these entities shown us?
 - What is the **benefit** to the community
 - How does the project fit or **improve** our way of life?

Bradbury, J., et al. *The Role of Social Factors in Shaping Public Perceptions of CCS: Results of Multi-State Focus Group Interviews in the U.S*



Stated Risks From California EJ Group!

- CO2 liquid's acidic nature is **corrosive** to the underground environment, **contaminating** the ground and would eventually leach to the surface.
- When CO2 escapes from underground to the surface it also changes from liquid to gas, it is 1.5 times heavier than air, does not readily disperse in the atmosphere, stays close to the ground and **will kill every living human, animal and plant within 20 miles from asphyxiation.**
- When CO2 leaches up to the surface it will **contaminate underground fresh drinking water aquifers, lakes, rivers and the ocean.**
- Southern California is in **earthquake country** with numerous faults. To sequester the volume of CO2 the distance underground will require large dangerous high pressure equipment.
- The CO2 will **not be transported by pipelines to a safe location** away from the population. The plan is to sequester the CO2 in the Wilmington Oil Field which is located under the City of Los Angeles, City of Long Beach, City of Carson and other neighboring cities.
- Over 500,000 people and **children will be placed in danger.**

als je het exact wilt weten

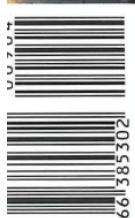
nwt

natuur-
wetenschap
& techniek



BLOW-OUT!

DE GEVAREN VAN CO₂-OPSLAG



Environmental NGOs' perceptions - Australia

- The urgency of the problem of climate change
- A preference for a portfolio approach
- Privileging of CCS interests and a “silver bullet syndrome”
- Technological feasibility and the absence of trustworthy information
- Whether other stakeholders, including the lay public, appreciate the scale of infrastructure required for CCS
- The importance of communication – for now seems to be an absence of accurate and easily accessible information for individuals

And from the 11 year olds' perspective!

Dear Mr Bradshaw,

We are two year six students from the International Baccalaureate School, Red Hill Primary. We are currently inquiring into the relationship between population growth and energy use. **We are convinced that Geosequestration would provide a solution to carbon dioxide emissions** produced from coal energy plants and would like to know more about it.

After viewing an episode of Catalyst on geosequestration, we have recorded your name down as an expert on geosequestration and hope that you will share some information on it with us. If you would be able to help us answer these questions or give us some useful websites to look at we would be very thankful.

- Do you think Geosequestration is a practical and achievable solution towards CO₂ emissions from coal energy plants? And why?
- What steps would we, as Australians have to take to ensure the success of geosequestration as a permanent solution?
- Is there another country or city that is already using geosequestration successfully?
- What would it cost to install geosequestration?
- Would it be worth us visiting Geoscience Australia on Hindmarsh Drive to see any other information on this? Or to talk with any other experts?

We thank you in advance for your time and professional opinions.

What have we learnt

- CCS is less positively evaluated when compared with other mitigation options
- The evaluation of capture and storage could be influenced by the technology it is associated with
- Influenced by individual's strength of existing opinions – does the new information create dissonance
- Quality and objectiveness of information
- Need for a trusted and knowledgeable expert as the messenger
- Greater emphasis needed on procedural and management concerns
- Associated need for upfront social analysis and planning
- One-way outreach after site selection is not the same as prior consultation, two-way exchange of communication between developers and potentially affected community

Conclusions

- Varying levels of knowledge about climate change and its causes – need this to accept CCS
- Still limited knowledge about CCS

“The only overarching solution to long term mitigation of greenhouse gas emissions is to forge collaborative relationships with policy makers in all countries across the planet in order to ensure the appropriate mix of technologies is deployed. At this stage all the modelling tells us CCS must be a part of that mix...”

Dr John Wright, Energy Transformed Flagship, Australia

- Information on natural/industrial analogues will assist risk perception
- Communication about how other people or organisations view CCS will influence acceptance – what are the messages