THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

What people *don't* want to know about Carbon Capture and Storage (CCS)

Ph.D. candidate: Amy Hodson BEng, MBA, GradCertES [a.hodson@uq.edu.au],

The University of Queensland School of Chemical Engineering & The University of Queensland School Surat Deep Aquifer Appraisal Project
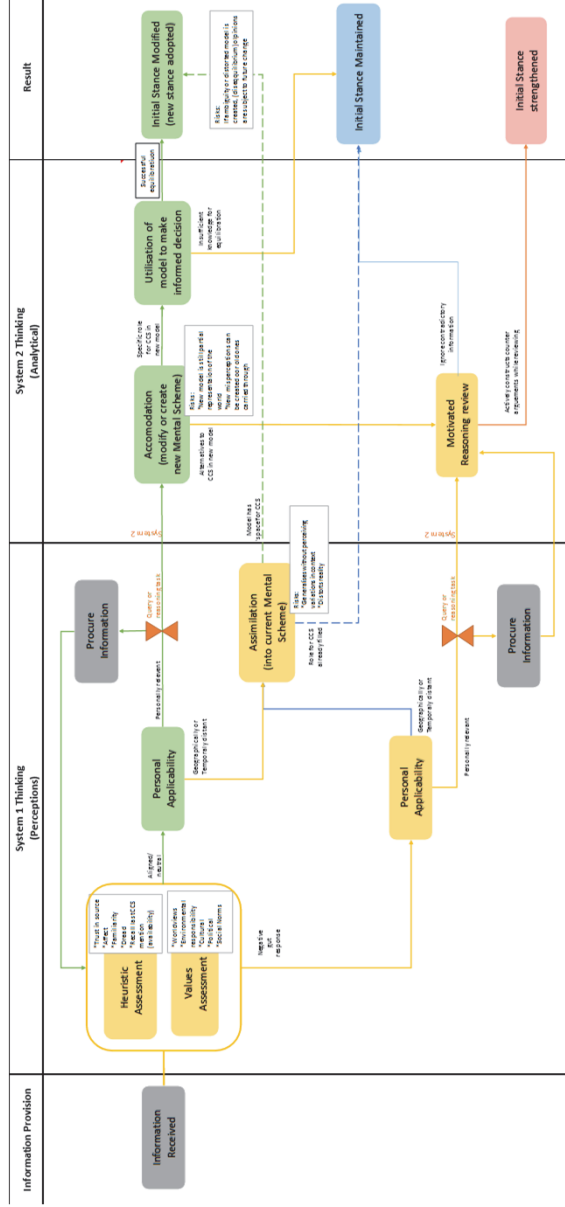
Problem

- Knowledge and acceptance of CCS is low [1] so project communications seek to create positive attitudes
- Studies on how information processing impacts CCS acceptance have conflicting results
- Studies on CCS acceptance neglect the changing role of CCS (from a 'fossil fuels transition' to 'CO2 removal' technology [2]) and the impact of legacy information

Research Question

How do information processing and information seeking behaviors influence support for a CCS Project?

A new theoretical framework for processing CCS information

Implications of the framework

- A negative "gut response" triggered by the System 1 assessment (heuristics, values and personal applicability) makes persuasion is more difficult.
- A sense-making activity or personal trigger is required to initiate cognitive System 2 processing and achieve long-term attitude change.
- Related mental models are used to process CCS information. These may include models of the energy industry, climate change or economics (e.g. capitalism).
- Mental model selection is influenced by context and information should seek to create role for CCS within that model.
- Influence points to change peoples' attitudes are identified.
- The "CO2 Removal" role of CCS is likely to trip different system 1 triggers, to generate different information seeking behaviour and to create different mental models than CCS projects associated with fossil fuels.
- Legacy 'pull' information will also be subject to heuristic assessments and may trigger values that are not associated with the CCS project (push) information.

Methodology - Data collection to verify framework

Theoretical Basis

- *Technology Acceptance Model* [3]: acceptance = personal motives + context + technical familiarity (knowledge and experience).
- *Elaboration Likelihood Model* of Persuasion [4]: High personal applicability leads to high levels of relevant thought (elaboration) and resultant attitude changes have greater longevity than heuristic-based persuasion.

Additional Elements:

- *Mental Models*: People create internal maps of knowledge and experience that can be 'run' to make predictions [5]. New information is either assimilated (slots into existing models) or accommodated (the model is modified) [6].
- *Dual Processing Model*: People default to simplified heuristics (system 1 thinking) unless analytical processing (system 2 thinking) [7] is triggered.
- *Motivated Reasoning*: People may seek information that confirms their own view, ignore contradictory information or actively construct counter arguments while reviewing contradictory information [8].
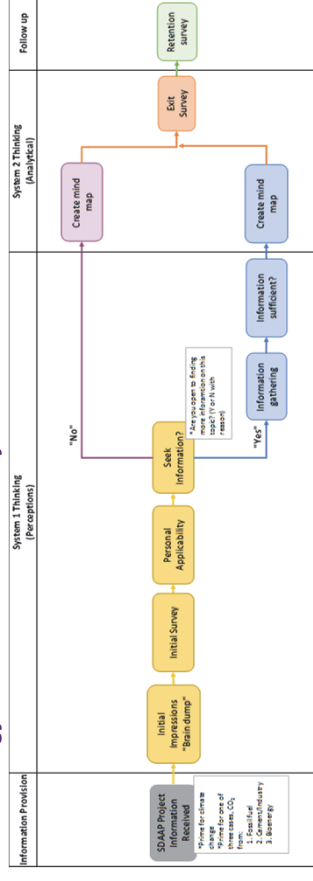
References

1. Bruine de Bruin, W., L.A. Mayer, and M.G. Morgan, *Developing communications about CCS: three lessons learned.* Journal of Risk Research, 2015. 18(6): p. 699-705.
2. UNEP, *The Emissions Gap Report 2017*, in *UN Environment Synthesis Report*, A. Olhoff and J. Christensen, Editors. 2017, United Nations Environment Programme (UNEP): Nairobi.
3. Huijts, N.M.A., E.J.E. Molin, and L. Steg, *Psychological factors influencing sustainable energy technology acceptance: A review-based comprehensive framework.* Renewable & Sustainable Energy Reviews, 2012. 16(1): p. 525-531.
4. Petty, R. and P. Briñol, *The Elaboration Likelihood Model*, in *Handbook of Theories of Social Psychology: Volume 1*, P. Van Lange, A. Kruglanski, and T. Higgins, Editors. 2012, Sage UK: London. p. 224-245.
5. Wood, M.D., et al., *Cognitive Mapping Tools: Review and Risk Management Needs.* Risk Analysis, 2012. 32(8): p. 1333-1348.
6. Watson, M., *Theories of Human Development Course Guidebook: The Great Courses.* 2002, Virginia, USA: The Teaching Company.
7. Barrouillet, P., *Dual-process theories of reasoning: The test of development.* Developmental Review, 2011. 31(2): p. 151-179.
8. Kahan, D.M., *Ideology, motivated reasoning, and cognitive reflection.* Judgment and Decision Making, 2013. 8(4): p. 407-424.

Acknowledgements