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The University of Texas at Austin
Stan Richards School of Advertising & Public Relations
Moody College of Communication

STAKEHOLDER CHALLENGES AND PERSPECTIVES

Understanding Public Perception of Carbon Capture and Storage in the Golden Triangle Area

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Background

Motivation

- Perception of benefit and risk can shape public response to CCS
- Constructing CCS messages that resonate with stakeholders

Stakeholders

Method

- Qualitative
  - Focus group interviews (N=12)
    - 3 focus groups at Beaumont & Port Arthur, TX Area
  - In-depth interviews (N=15)
    - Face-to-face while in Beaumont & Port Arthur, TX Area (N=8)
    - Phone Interviews (N=7)
- Quantitative
  - Online Survey, mTurk (N=81)
  - Online experiment, Gfk (N=900)

Participating Stakeholders

Federal government
- US Geological Survey (*Experts*)
- U.S Fish and Wildlife
- Texas Point Nat'l Wildlife Refuge
- McFadden Nat'l Wildlife Refuge

State government
- Coastal Fisheries (TPWD)
- Sea Rim State Park

Local Industries/Commerce (Non-oil and gas)
- Texas Shrimp Association
- Gerald Condon Properties, Ltd
- Local attorney

Environment/Community Impact Nonprofit Organization
- Big Thicket Association
- Community In-Power and Development Ass.
- International Seafarers Ass Port Arthur
- Environmental defense fund

Educational /Workforce Organization
- Lamar University
- Digital Workforce Academy

Oil & Gas Industry
- Chevron, Shell, BP, Total, Petra Nova (*Experts*)

Short Survey Report

48% of non-experts said…

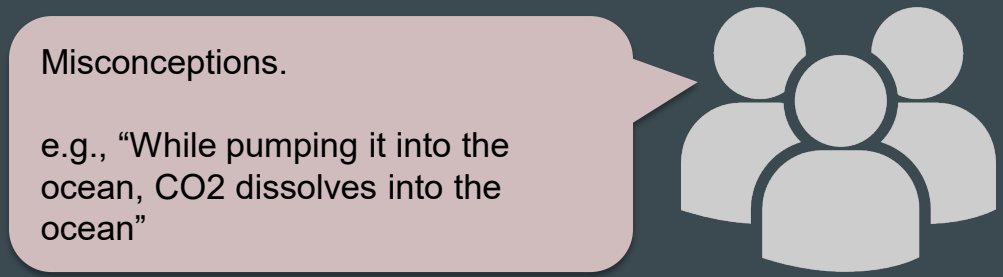
- “I have not heard about CCS deployment."

Interview Questions

Asked non-experts to describe how CCS works

- While describing…
  - *"I don't know enough"* → *low confidence toward* CCS benefit
  - *Misconceptions*

**Used experts' perspective to calibrate the description of the CCS process*



Result. Rank Order Perceived Benefit

No	Factors	N	M	SD
Ben 1	**Addressing climate change by reducing CO2 emissions into the atmosphere**	69	**2.96**	2.16
Ben 2	**Reducing air pollution**	79	**2.47**	1.33
Ben 3	Achieving environmental goals (e.g., Paris agreement)	56	3.96	2.24
Ben 4	Presenting economic opportunities for new businesses – sustains current jobs and creates new ones	57	5.00	2.01
Ben 5	Keeping the US at the forefront of energy technology rather than falling behind countries like Canada, China and Norway, which are also developing CCS facilities.	47	5.11	2.46
Ben 6	Being ready to go now; there's no need for extensive R&D	42	6.48	2.38
Ben 7	**Bringing about better air quality – reducing conventional air pollutants that threaten human health**	79	**2.81**	1.55
Ben 8	Reducing asthma rates	48	4.83	1.72
Ben 9	Effectively managing heavy metals (mercury) and particulate matter	44	4.84	2.03

Online Survey (collected from mTurk) N=81, General public in the US

**1- most important, 9- least important*

Result. Rank Order Perceived Risk

No	Factors	N	M	SD
Risk 1	**Well blow outs and CO2 leakage through caprock**	64	**3.88**	1.76
Risk 2	Uncertainty of demonstrating 1000 years CO2 storage security	47	4.23	2.37
Risk 3	Micro-seismicity (small earthquakes)	53	4.38	2.50
Risk 4	High cost (e.g., individuals might see added surcharges to their energy bills)	62	4.21	2.62
Risk 5	Unclear liabilities on managing geological storage sites. (e.g., Legal repercussions from using private land and legal liabilities)	48	5.38	2.12
Risk 6	**Uncertainty in long-term maintenance of facilities and stored CO2**	59	**3.86**	1.90
Risk 7	Delay in transition to renewable energy	45	5.20	2.71
Risk 8	**Affecting underground water from storage leakages**	72	**2.86**	1.73
Risk 9	**A large inadvertent release of CO2 and its effects on a local area**	72	**3.10**	2.03

Random Survey (collected from mTurk) N=81, General public in the US

**1- most important, 9- least important*

How they search for information

Non-experts says…

- How do you search: Google, find sources like…
  - Peer-reviewed journal articles
  - Industry reports
  - News articles
- How do you evaluate:
  - Info that matches their values
  - Not too political
  - Try to stay skeptical as they read environmental and technology-related information

Discussion & Implication

Findings suggest…

- Don't know much about CCS
  - Misconception
  - Low confidence on CCS benefit
- Search online to find CCS info

Communication insight…

- Websites or online tools that facilitate stakeholder education
  - Correct misconceptions
  - Communicate the benefit
    - Framing benefits relevant to the public

Spring 2020 Plan

Online Survey

- N = 900
  - General population adults, age 18+, English-language survey-takers, in designated 8 TX counties (i.e., Harris, Jefferson, Orange, Chambers, Liberty, Galveston, Brazoria, and Fort Bend)

- **Sources.** Industry vs. Non-profit vs. Government
- **Messages.** benefit vs. benefit-risk vs. risk-benefit vs. risk
- **DVs.** Attitudes toward deploying offshore CCS, perceived CCS concern/benefit, supporting CCS, intention to seek for CCS information

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Partnership for carbon capture & offshore geologic storage
GoMCarb

THANK YOU

APPENDIX

Study 1: Procedure

01

IRB

IRB protocol, consent (written or verbally)

02

Short Survey

CCS information search, Climate change belief, demographics

03

Interview Questions

A short description of CCS introduced to local stakeholders

04

Debriefed and Thanked

debriefed and thanked; a short Q&A session

Stakeholders

- Data Method
  - Focus group and In-depth interviews

In-depth interview
Phone Interviews

Focus Group interview
Beaumont & Port Arthur, TX Area

- Decision makers (Industry, government/local government officials):
- Influencers (e.g., Local media, preservationists, business/commercial Interest, community activists):
- Non-decision makers (e.g., Local Industries, state park, commercial fisheries, anglers, birders, shrimping, real estate, property owners, residents, educational organization):

Short Survey Report

- Psychological proximity of the climate change impact (close > distant; m=3.77)

  - My local area is likely to be affected by climate change. (m=4.15, sd=.93)
  - Climate change will mostly affect areas that are far away from here* (m=2.32, sd=1.42)
  - Climate change will mostly affect developing countries* (m=2.3, sd=1.17)
  - Climate change is likely to have a big impact on people like me. (m=3.6, sd=1.05)
  - The U.S. is starting feeling the effects of climate change. (m=3.74, sd= 1.05)

Short Survey Report

- Perceived certainty of climate change
  - I am uncertain that climate change is really happening. (m=2.55, sd=1.43)

- Perceived seriousness of climate change
  - The seriousness of climate change is exaggerated. (m= 2.8 , sd=1.40)

Short Survey Report

- Human as a contributor
  - Most scientists agree that humans are causing climate change. (m=**3.8,** sd=.89)

Community Concerns

- Air quality
- Health Issues
- Infrastructure
- Community retention

➢ *Climate change is not a priority concern*

Perceived CCS Benefit

- Reducing CO2 in the atmosphere
- Improving local air quality
- Job opportunities

"so to remove extra carbon dioxide, which **might improve the air quality**. But, um, that's the big ones."

Perceived CCS Risk

- Economical challenges

"I am not sure how to overcome the **hurdle of regulations**…"

"**potential costs** to the companies…"

"so now we're going **to pay an extra** whatever percent tax to do this here versus people in Utah are going to breathe this air eventually.."

Perceived CCS Risk

- Economical challenges
- Environmental concerns

"the CO2 .., um, you know, absorbed into the **ocean is changing the PH**"

"**a negative impact** to human or the wildlife"

Perceived CCS Risk

- Economic
- Environmental concerns
- Catastrophic events

"If we are going to have **big CO2**, I guess **leak into the ocean**"

"While fishing they can be **succumbed to gases**.."

Perceived CCS Risk

- Economic
- Environmental Issues (e.g., Ocean habitat)
- Catastrophic events
- Uncertainty
  - Long-term vs. Immediate

"keeping storage to a level that **cannot harm the next generation**"

"I want it to be **a benefit for my grandkids…."**

Overall, stakeholders…

- Low levels of knowledge on the technology
  - general concepts/processes

➢ *Making inferences to understand CCS*
  - e.g., “pipeline,” “injection,” “storage”

“How long are you going to keep it?”

“**I have no idea about** how it … some reason just like pushing it back to the ground..”

”I have concerned about infrastructure to **transport pipelines** ....”

“probably **completely unrelated**, … when you think about **fracking** and **injecting** things back into the earth…”

Overall, stakeholders…

- Low levels of knowledge on the technology
  - *Making inferences to understand CCS*
  - *Lacking confidence about the benefit*
- Desire to see tangible evidences
  - E.g., cost-benefit analysis
- Motivated to learn more about CCS

"it's gonna cut down 1%, but it's going to cost you $2 billion a year"
"If it **takes 10 years** to develop..."
"Hope to see **more measurable impact**"

"But.. I don't know enough about the technology of **how it's gonna work"**

"Where can we get more information about CCS?"

Next Step

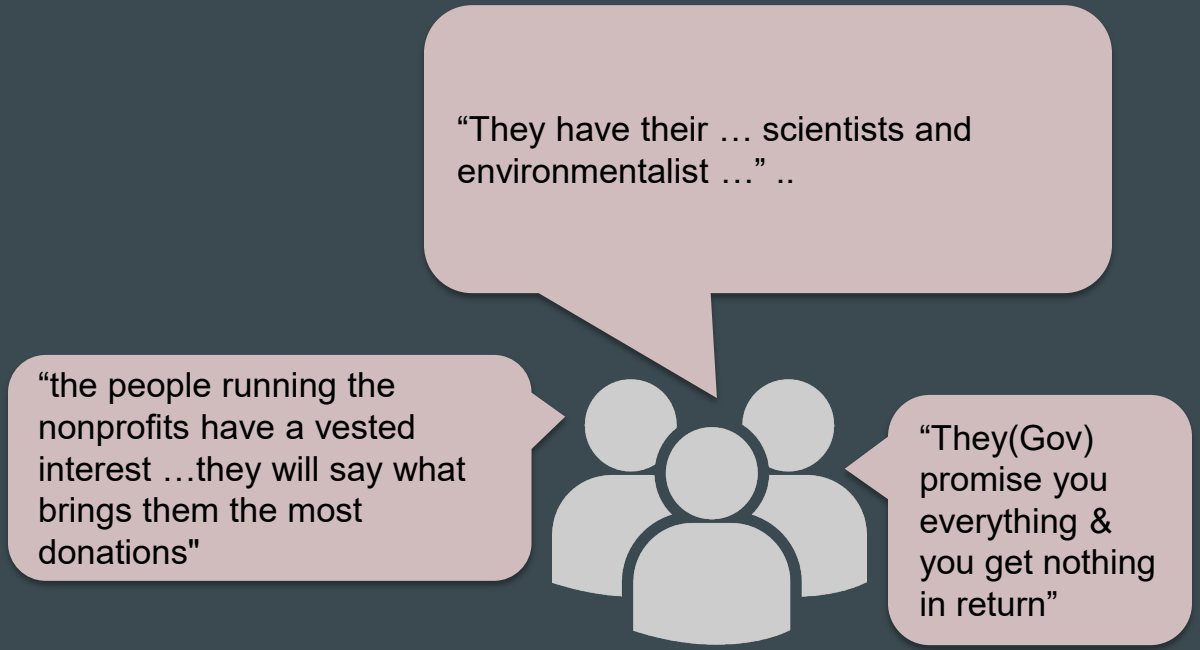
1. Developing a list of benefits & risks
   - Based on our interviews & collected several experts opinion on their perception of the risk
   - 9 each that is not too technical (easy to understand for a lay person)

2. Rank the order of a list of benefits & risks.
   - Rank benefit and risks by importance

3. Ask stakeholders CCS support intention, climate change belief, CCS concern and benefit

Reliable Sources of Information

- University Scientists
- Industry
- Non-profit Organization
- Government (neutral)
- Local Government



Perceived Benefit & Risk of CCS

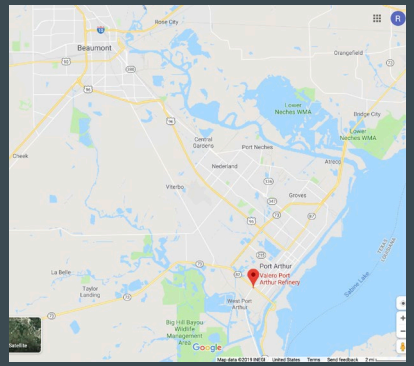
1. Qualitative data & experts perspective of benefit & risk
2. Created lists of CCS benefit & risk
3. Online survey
   - Random sample from the general population
   - Asked them to rank order the importance of CCS benefit & risk

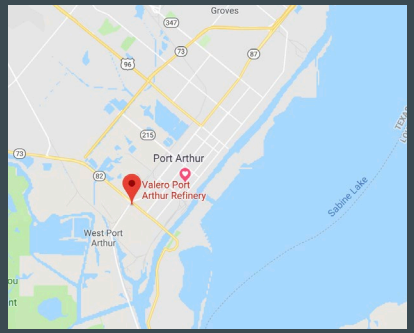
Regression Analysis

- Climate change belief & perceived concern on CCS predict CCS support.
  - The higher the climate change belief & lower the perceived concern on CCS

- What CCS perceived risk predict perceived concern?
  - When Risk 3 was high in the rank, it predicted concern to CCS technology
    - The higher risk 3 (e.g., small earthquakes) ranked in the importance of CCS list → higher CCS concern perception

West Port Arthur, TX Area





Port Arthur Downtown Area