Learning to Crawl?:
Surveys of Public
Attitudes towards Carbon Capture and Storage Technologies

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Why Survey the Public?

- Snapshot of understandings, attitudes, and mental models of representative sample.
- Explore subsample views in greater depth (gender, region, education, age, etc).
- Test hypotheses and reactions to information.
- Inform ongoing public debate.
- Develop time series that can link shifts in views to exogenous events.
• **Plan an information campaign - now**
  - Groups such as national and European parliamentarians, journalists, environmental pressure groups and representatives of civil society are particularly important targets.

• **Ensure communication is a dialogue, not one way**
  - We must use professional agencies to help define the message, the messenger, the medium used and the target public.

• **Assign a significant budget**
  - A well-organised outreach campaign is not cheap – around €250k per country.

• **Regularly monitor the public reaction & respond when necessary**
  - Both before and after the launch of any campaign, we will need to gauge public opinion, and listen to it regularly (Eurobarometer plus focus groups).
Past, Present, Future?

• Series of international surveys conducted in US, UK, Netherlands, Spain, Sweden, Canada, Australia, Japan from 2003 to 2007

• Swiss survey, new US survey, six current Fenco survey in UK, Germany, Greece, Norway, the Netherlands, Romania currently in the field

• **Takeaway Message:** Efforts to survey general publics to date have been piecemeal, sporadic, opportunistic and, to date at least, not especially illuminating
Some ‘Recent’ Data
<table>
<thead>
<tr>
<th>Answer</th>
<th>US 03</th>
<th>US 06</th>
<th>UK</th>
<th>SWE</th>
<th>SPN</th>
<th>OZ</th>
<th>JPN</th>
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</thead>
<tbody>
<tr>
<td>I believe that firms and government researchers will develop new technologies to solve the problem</td>
<td>21</td>
<td>19</td>
<td>26</td>
<td>37</td>
<td>26</td>
<td>25</td>
<td>22</td>
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<tr>
<td>I believe we will have to change our lifestyles to reduce energy consumption</td>
<td>32</td>
<td>35</td>
<td>27</td>
<td>22</td>
<td>26</td>
<td>45</td>
<td>66</td>
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<td>I believe we will learn to live with and adapt to a warmer climate</td>
<td>17</td>
<td>13</td>
<td>13</td>
<td>19</td>
<td>21</td>
<td>8</td>
<td>4</td>
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<tr>
<td>I believe global warming is a problem but [my country] won’t do anything about it</td>
<td>24</td>
<td>28</td>
<td>21</td>
<td>14</td>
<td>21</td>
<td>16</td>
<td>6</td>
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<td>I believe we will do nothing since global warming is not a problem</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Not sure</td>
<td>NA</td>
<td>NA</td>
<td>10</td>
<td>6</td>
<td>6</td>
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<td>Environmental Issue</td>
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<td>US06</td>
<td>UK</td>
<td>SWE</td>
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<td>Toxic Waste</td>
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<td>14</td>
<td>17</td>
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<td>Ozone depletion</td>
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<td>16</td>
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<td>Endangered species</td>
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<td>0</td>
<td>20</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Smog</td>
<td>11</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>23</td>
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<td>Urban sprawl</td>
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<td>Destruction of ecosystems</td>
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Public Awareness
(heard/read of the following in the past year)

US 2003

- Carbon sequestration
- Carbon capture and storage
- Bioenergy/biomass
- Hydrogen cars
- Nuclear energy
- More efficient appliances
- Wind energy

UK

- Carbon sequestration
- Carbon capture and storage
- Bioenergy/biomass
- Hydrogen cars
- Nuclear energy
- More efficient appliances
- Wind energy

Sweden

- Carbon sequestration
- Carbon capture and storage
- Bioenergy/biomass
- Hydrogen cars
- Nuclear energy
- More efficient appliances
- Wind energy

Japan

- Carbon sequestration
- Carbon capture and storage
- Bioenergy/biomass
- Hydrogen cars
- Nuclear energy
- More efficient appliances
- Wind energy

* know to some extent
Public Awareness
(heard/read of the following in the past year)

US 2006

- Carbon sequestration
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- Hydrogen cars
- Nuclear energy
- More efficient appliances
- Wind energy

Australia

Spain
How do the Following Contribute to Carbon Dioxide Levels?

US 2003

UK

Sweden

Japan

Increases   Decreases   No Effect   Not Sure
How do the Following Contribute to Carbon Dioxide Levels?

US 2006

Australia

Spain

In the US, coal power plants contribute significantly to carbon dioxide levels, while trees and wind turbines have a neutral effect.

In Australia, coal power plants are a major contributor, with homes heating having a neutral effect. Trees and wind turbines also have a neutral effect.

In Spain, homes heating and coal power plants are significant contributors, while trees and wind turbines have a neutral effect.

Legend:
- **Increases**
- **Decreases**
- **No Effect**
- **Not Sure**
Can CCS Reduce These Environmental Concerns?

**US 2003**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource depletion

**UK**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource depletion

**Sweden**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource Depletion

**Japan**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource depletion

- **Legend**: Green = Can reduce, Gray = Not sure, Red = Does not reduce
Can CCS Reduce These Environmental Concerns?

**US 2006**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource depletion*

**Australia**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource Depletion

**Spain**

- Global warming
- Ozone depletion
- Smog
- Acid rain
- Water pollution
- Toxic waste
- Resource depletion*

Legend:

- **Green** Can reduce
- **Gray** Not sure
- **Red** Does not reduce
Preferred Energy Technology to Address Global Warming

US 03

Solar energy
Energy efficient cars
Wind energy
Carbon sequestration
Bioenergy/biomass
Nuclear energy
Carbon capture and storage

0% 25% 50% 75% 100%

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

<table>
<thead>
<tr>
<th>0%</th>
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<th>50%</th>
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</table>

Sweden

Japan
WTP to Solve Global Warming

Willingness to pay extra on electricity bill per month

- Japan
- US 2003
- UK
- Sweden
- Australia
- Spain
- US 2006
So What’s Wrong with Opportunism?

- Complete absence of useful time series (only exception is MIT series of surveys)
- No sense of learning or shifts in opinion and inability to tie to events
- Dangers of inference drawn from snapshots and possible correlation with exogenous events
Reasons for Lack of Support?

• Classic public goods provision problem – No clear champion for conducting regular public surveys
• More recent focus on specific sites implies that a general representative sample is less relevant
• Concern over seeming lack of focus on CCS-specific questions
• Early evidence of almost complete lack of awareness may have discouraged interest in further surveys
Is this a bad thing?

• No. Clearly too little attention has hitherto been paid to communications, local siting, etc and relatively too much was being paid to general surveys of the public.

• Yes. CCS still remains a high-level policy topic and so monitoring public opinion in a consistent manner over time provides useful input for decision makers and other key stakeholders.