Specialists and Perceptions regarding Climate Change, Biofuels, and Cellulosic Ethanol

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Acknowledgements

- National Science Foundation Materials Use: Sustainability, Engineering, and Society (MUSES) Biocomplexity Program
- Willett Kempton, University of Delaware
- Nelson Manda and Tim Wong
Climate Change and Biofuels

- Transportation fuels ~ one third of US CO2 emissions (DOE EIA 2007)
- Biomass fuels as major alternative
Types of Biofuels

- **Biodiesel**
- **Grain ethanol**
- **Cellulosic ethanol (CE)**
  - woody plants, switchgrass, forest and ag residues, municipal/paper waste

- All upcoming CE plants use residues (Barnes 2006; Halvorsen et al 2007; Solomon et al 2007)

- CE can have >energy benefit, < environmental costs than grain ethanol (Farrell et al 2006; Hill et al 2006; Worldwatch Institute 2006).

IOGEN CEO, Jeff Passmore, Source: msnbc.com
Biofuels and US policies


- State level renewable portfolio standards are key

- State and federal subsidies are critical (Solomon et al 2007)

- Understanding public support (or lack thereof) for these policies is critical
US Public and Climate Change Perceptions

If efforts to address the effects of global warming are not increased, which comes closest to your view of what will happen in 50 years -- there will be extreme changes in climate and weather, with disastrous consequences in some parts of the world, there will be major changes in climate and weather, but most people and animals will be able to adapt, or there will be minor changes that will have little effect on the way people live?

<table>
<thead>
<tr>
<th>Changes</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme changes</td>
<td>28%</td>
</tr>
<tr>
<td>Major changes</td>
<td>38%</td>
</tr>
<tr>
<td>Minor changes</td>
<td>19%</td>
</tr>
<tr>
<td>No changes</td>
<td>11%</td>
</tr>
<tr>
<td>No opinion</td>
<td>3%</td>
</tr>
</tbody>
</table>

Do you think the effects of global warming can be controlled if most people take steps such as driving less, recycling, and turning down their thermostat, or will more drastic measures be needed?

<table>
<thead>
<tr>
<th>Measures</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be controlled this way</td>
<td>30%</td>
</tr>
<tr>
<td>More drastic action needed</td>
<td>58%</td>
</tr>
<tr>
<td>No opinion</td>
<td>11%</td>
</tr>
</tbody>
</table>

Mar. 23-25, 2007

Source: Gallup 2007
Cultural Models and Climate Change

- High US public climate change concern, uneven support for and understanding of best policies (Dietz et al 2007; Gallup 2007; Kempton et al 1995; Leiserowitz 2006)

- We apply old cultural models to the understanding of new information and problems (Kempton et al 1995)

- Misunderstanding of climate change causes (Bord et al 1998; Bostrom et al 1994; Kempton et al 1995)

- Misapplying old cultural models to climate change leads to confusion regarding effective policy solutions (Kempton et al 1995)

- Cultural models affect public support (or lack thereof) for policy solutions (Kempton et al 1995)
Research Design

- What climate change-related cultural models do people (key specialists, lay citizens, landowners) with the power to affect cellulosic ethanol development hold today? How do these understandings affect their support of climate change and biofuels policies?

- Phase I: Specialist Interviews (Fall 2006-Spring 2007)
  - 47 interviews with national and upper Midwest agriculture (10), energy (9), environmental (13), forestry (13), and taxpayer (2) organization staff

- Phase II: Lay Citizen and Landowner Interviews (Summer 2007)
  - 50 interviews with MI, WI, MN individuals

- Phase III: MI, WI, MN Statewide Choice Modeling Surveys (Fall 2007)
Preliminary Results: Climate Change

- ≈ 20% believe climate change is natural or misunderstand causes
- 25% not sure/don’t believe a serious problem
- ≈ 80% support policies to reduce risk + 15% state policy-specific support
- Some misapplication of pollution-type model
Preliminary Results: Climate Change Solutions

- 60% support 55 mpg fuel efficiency standard
- 53% support tripling fuel taxes to reduce demand if used to reduce climate change risk
- 96% supportive of renewable energy, including fuels
Preliminary Results: Renewable Fuels

- Benefits of renewable fuels = environmental, economic, energy security

- 45% specifically mentioned reducing climate change risk as a benefit
Preliminary Results: Cellulosic Ethanol

- 87% familiar with cellulosic ethanol
- 79% support federal ethanol subsidies
- 49% believe that cellulosic ethanol is more promising than grain ethanol and/or should receive more government funding (40% say fund equally)
Some continue to misapply pollution model (Kempton et al. 1995), most believe a serious problem and understand climate change causes and solutions (Dietz 2007; Leiserowitz 2006)

Strong support for renewable energy and fuels, much due to climate change risk, also many other reasons
Discussion

- High familiarity with cellulosic ethanol, strong support for funding its development

- Almost half believe cellulosic is more promising or should receive more support than grain ethanol

- Lack of concern/understanding of climate change may affect support for some policies, not others
Conclusions

- Encouraging to see strong concern about climate change among key upper Midwest and national specialists/groups.
- Their support for renewable energy and fuels will facilitate future development.
- Strong support for cellulosic ethanol → key organizations to facilitate future policies and development.
- Do lay citizens have as clear an understanding of climate change causes?
Questions?

Source: Encyclopedia Britannica.com, Global Warming Entry Illustration