Public Perception of Coal and the Myths of Nature

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Outline of the talk

- Point of departure
- Research questions
- Cultural theory & the myths of nature
- Assumptions
- Methods
- Results
- Implications
Point of departure
Are you in favour or opposed to the use of coal in Germany?

Source: IEK-STE Panel Survey 2009-2014
Point of departure (II)
Are you in favour or opposed to the use of these sources of electricity in Germany?

Research questions

1. What explains public perception of coal?

2. How can the explanation of the public perception of coal contribute to understanding public acceptance of low carbon technologies, such as CO₂ capture and storage (CCS)?
Cultural theory

- Cultural theory claims that how people perceive and act upon the world around them is determined by social aspects and cultural adherence [Oltedal et al., 2004]

- Douglas’ grid-group typology is the basis of cultural theory which illustrates that variation in social participation can be explained by the dynamics between the two dimensions *group* and *grid*:
  - “*Group* refers to the extent to which an individual is incorporated into bounded units. The greater the incorporation, the more individual choice is subject to group determination.
  - *Grid* denotes the degree to which an individual's life is circumscribed by externally imposed prescriptions. The more binding and extensive the scope of the prescriptions, the less of life that is open to individual negotiation” [Thompson et al., 1990:5].
Worldviews according to Douglas’ grid-group model

Source: Oltedal et al., 2004
The myths of nature

According to the dimensions group and grid, four different myths of nature can be differentiated [Thompson et al., 1990]:

1. **Individualistic myth of nature**: The environment is very adaptable and will recover from any harm caused by people [Nature benign]

2. **Hierarchical myth of nature**: With expert management, we can prevent environmental disasters. [Nature tolerant]

3. **Egalitarian myth of nature**: The environment is very fragile and the slightest human interference will cause a major disaster. [Nature ephemeral]

4. **Fatalistic myth of nature**: No matter what we do, the environment will change in unpredictable ways both for the better and the worse. [Nature capricious]
Assumptions

1. Public perceptions of energy sources are related to interest in policy and political participation as well as to myths of nature.

2. The public perception of coal is related to a different myth of nature than the one relating to public perception of renewable energies.

3. The attitudes towards and reactions to the demonstration and application of CCS are linked to the myths of nature.
Methods

- Data of a representative survey of the German citizens, carried out 2011/12; 1000 respondents
- Correlation analyses including:
  - attitudes towards coal/renewables,
  - interest in policy and political participation,
  - myths of nature,
  - attitudes towards CCS and towards a CCS demonstration plant,
  - willingness to protest against a CCS demonstration plant, CO₂ transport or CO₂ storage near the own home.
## Rank correlations between attitudes towards coal/renewables, interest in policy and political participation

<table>
<thead>
<tr>
<th>Attitude towards</th>
<th>Interest in policy</th>
<th>Political participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>-.074*</td>
<td>-.111**</td>
</tr>
<tr>
<td>Solar energy</td>
<td>.089**</td>
<td>.101**</td>
</tr>
<tr>
<td>Wind energy</td>
<td>.077*</td>
<td>.082**</td>
</tr>
<tr>
<td>Hydroelectric energy</td>
<td>.177**</td>
<td>.112**</td>
</tr>
<tr>
<td>Biomass energy</td>
<td>.023 n.s.</td>
<td>.049 n.s.</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). n.s. = not significant. n=1000.

Values of the correlation coefficient Spearman’s rho can range from -1 (=perfect negative correlation) to +1 (=perfect positive correlation).
## Rank correlations between attitudes towards coal/renewables and myths of nature

<table>
<thead>
<tr>
<th>Attitude towards</th>
<th>Perception of nature as</th>
<th>&quot;benign&quot;</th>
<th>&quot;tolerant&quot;</th>
<th>&quot;ephemeral&quot;</th>
<th>&quot;capricious&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td></td>
<td>.134**</td>
<td>.005 n.s.</td>
<td>-.086**</td>
<td>.029 n.s.</td>
</tr>
<tr>
<td>Solar energy</td>
<td></td>
<td>-.106**</td>
<td>.077*</td>
<td>.180**</td>
<td>.046 n.s.</td>
</tr>
<tr>
<td>Wind energy</td>
<td></td>
<td>-.132**</td>
<td>.043 n.s.</td>
<td>.175**</td>
<td>.022 n.s.</td>
</tr>
<tr>
<td>Hydroelectric energy</td>
<td></td>
<td>-.123**</td>
<td>.093**</td>
<td>.153**</td>
<td>.053 n.s.</td>
</tr>
<tr>
<td>Biomass energy</td>
<td></td>
<td>-.017 n.s.</td>
<td>.084**</td>
<td>.044 n.s.</td>
<td>.032 n.s.</td>
</tr>
</tbody>
</table>

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Values of the correlation coefficient Spearman’s rho can range from -1 (=perfect negative correlation) to +1 (=perfect positive correlation).
Rank correlations between myths of nature and attitudes towards and reactions to the demonstration and application of CCS

<table>
<thead>
<tr>
<th>Perception of nature as</th>
<th>Attitude towards</th>
<th>Willingness to protest against… near the own home</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CCS</td>
<td>CCS demo plant</td>
</tr>
<tr>
<td>&quot;benign&quot;</td>
<td>.134**</td>
<td>.052 n.s.</td>
</tr>
<tr>
<td>&quot;tolerant&quot;</td>
<td>.015 n.s.</td>
<td>.034 n.s.</td>
</tr>
<tr>
<td>&quot;ephemeral&quot;</td>
<td>-.064*</td>
<td>-.059 n.s.</td>
</tr>
<tr>
<td>&quot;capricious&quot;</td>
<td>-.014 n.s.</td>
<td>.022 n.s.</td>
</tr>
</tbody>
</table>

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Values of the correlation coefficient Spearman’s rho can range from -1 (=perfect negative correlation) to +1 (=perfect positive correlation).
Implications for energy systems transformation

- Public perceptions of energy sources are related to interest in policy and political participation as well as to myths of nature.
- Public perceptions of coal and renewables are linked to different myths of nature: proponents of coal perceive nature as benign, proponents of renewables perceive nature as ephemeral.
- The perception of the nature as ephemeral is related to the willingness to protest against a CCS demonstration plant, CO$_2$ transport or CO$_2$ storage.
- One important reason for individuals who perceive the nature as ephemeral to protest against CCS might be their perception of CCS as a risk technology.
- Thus, promoting CCS as technology for helping to “save the climate” will not convince the opponents, especially because they prefer other low carbon technologies, such as solar panels, wind mills and hydroelectric power stations.
Implications for future research

- Results of other studies from our institute have shown that the myths of nature and other worldviews also influence public attitudes towards CO\textsubscript{2} offshore storage, CO\textsubscript{2} onshore storage and CO\textsubscript{2} transport via pipeline.
- However, for a reliable assessment of the relevance of worldviews for public acceptance of the energy system transformation, further studies which systematically investigate in-depth the relations between worldviews and public perception of transformation strategies are necessary.
Thank you very much for your attention!
References
