

IEAGHG 5th Social Research Network Meeting
Energy Transformations and the Role of Social Sciences

Public Perception of CCS and Shale Gas in Germany: Similarities and Differences

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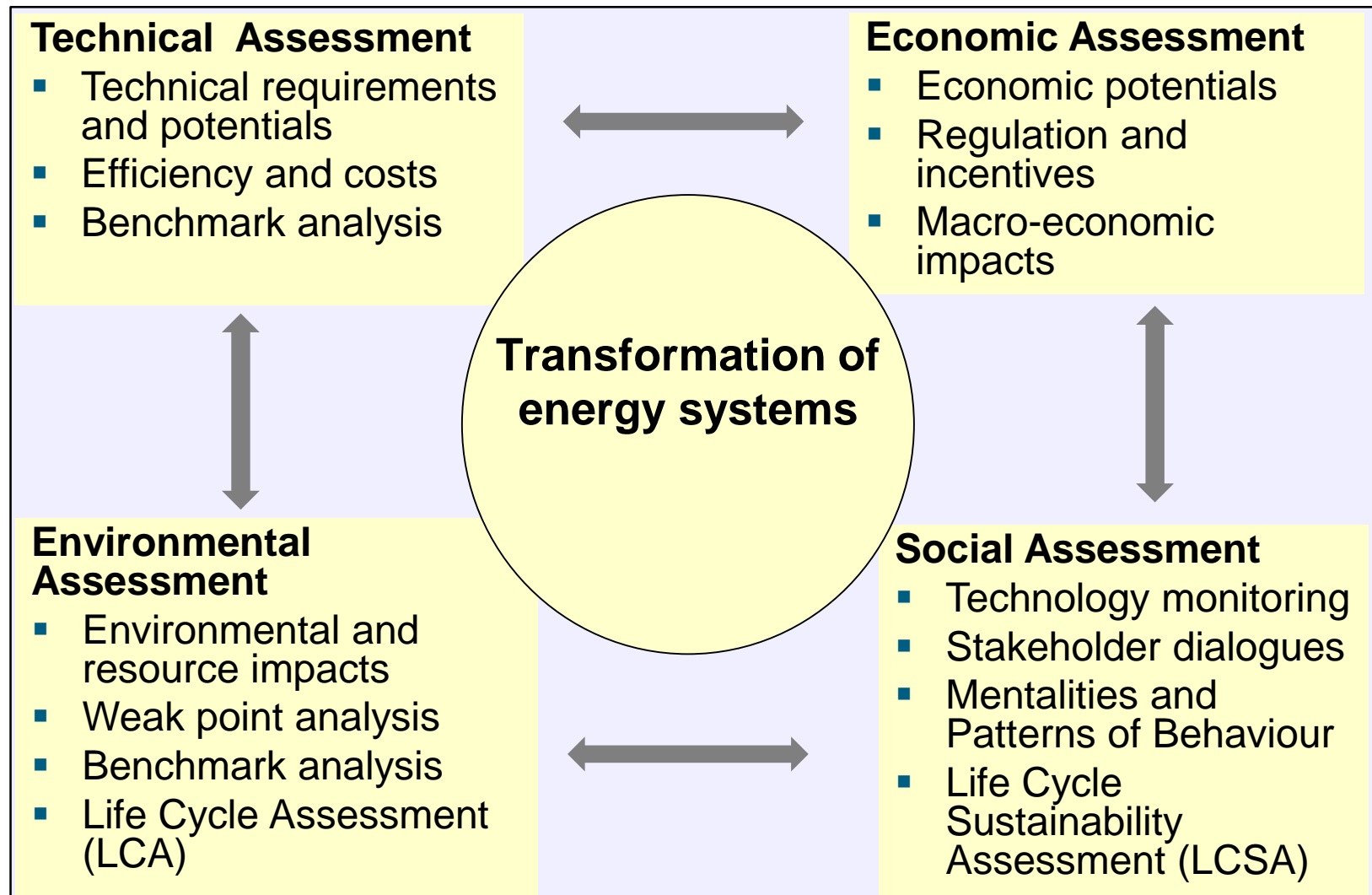
Cambridge, July 6, 2015

Outline of the talk

- Research context
- Aim of the study
- Methods and data base
- Results
- Conclusions

Research context

Integrated assessment of energy systems transformation



Technology monitoring

Aim

Survey of the awareness, knowledge and attitudes amongst the German public regarding technologies, instruments and impacts of energy systems transformation

Methods

1. Panel survey = representative survey of the German public carried out annually since 2011/12 and including 1000 respondents
2. Specific representative surveys of the German public performed only once in order to investigate research questions related to research projects focussing on specific energy technologies, e.g. CO₂ storage, energy storage, vehicle to grid

Aim of the study, methods and data base

Aim of the study

Comparison of the public perception of CCS and shale gas extraction in Germany in order to identify the similarities and differences and to draw conclusions

Methods and data base

Methods:

- Comparison along the indicators self-reported awareness, factual knowledge, risk perceptions, benefit perceptions and general attitudes
- Investigation which factors determine general attitudes
- Descriptive statistical analyses
- Regression analyses

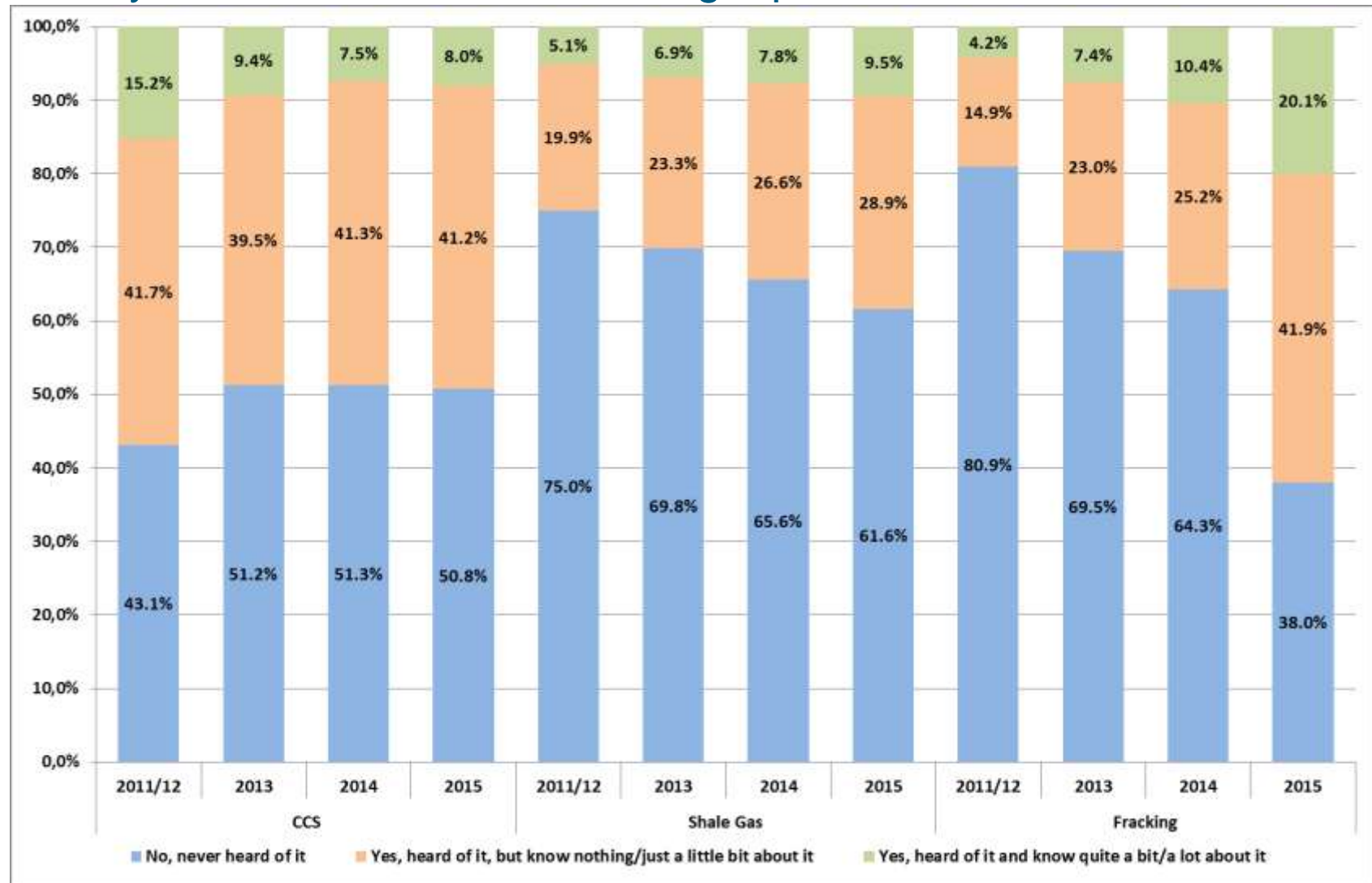
Data base:

- Data from the IEK-STE panel survey from 2011/12 – 2015
- Data from the nationwide survey performed in the project “CCS-Chances” in 2013

Results

Self-reported awareness of CCS, shale gas and fracking over time

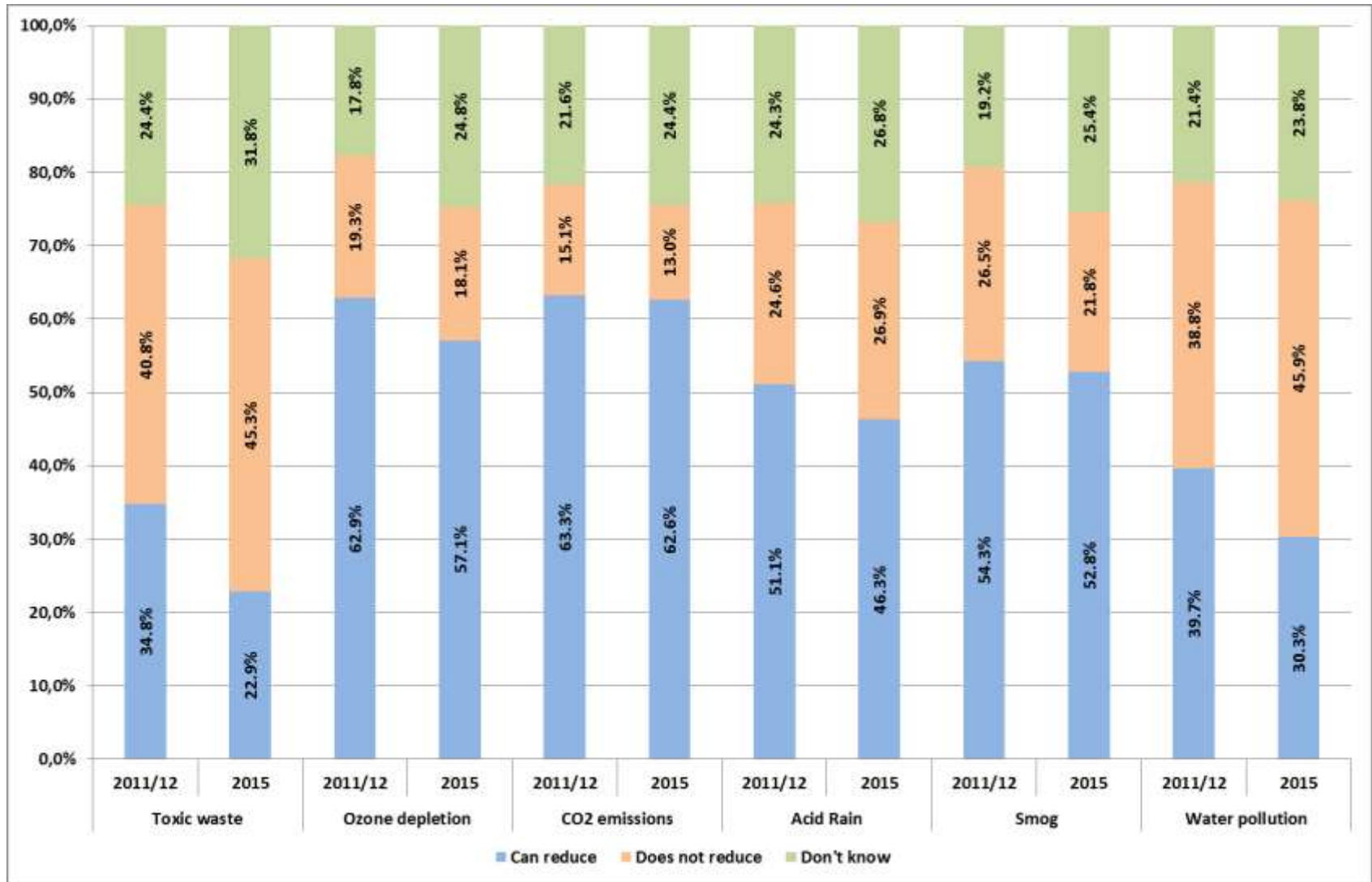
Have you heard about the following topics?



Data sources: IEK-STE Panel Survey 2011/12 (n=1000), 2013 (n=1034), 2014 (n=1006), 2015 (n=1000)

Factual knowledge about CCS

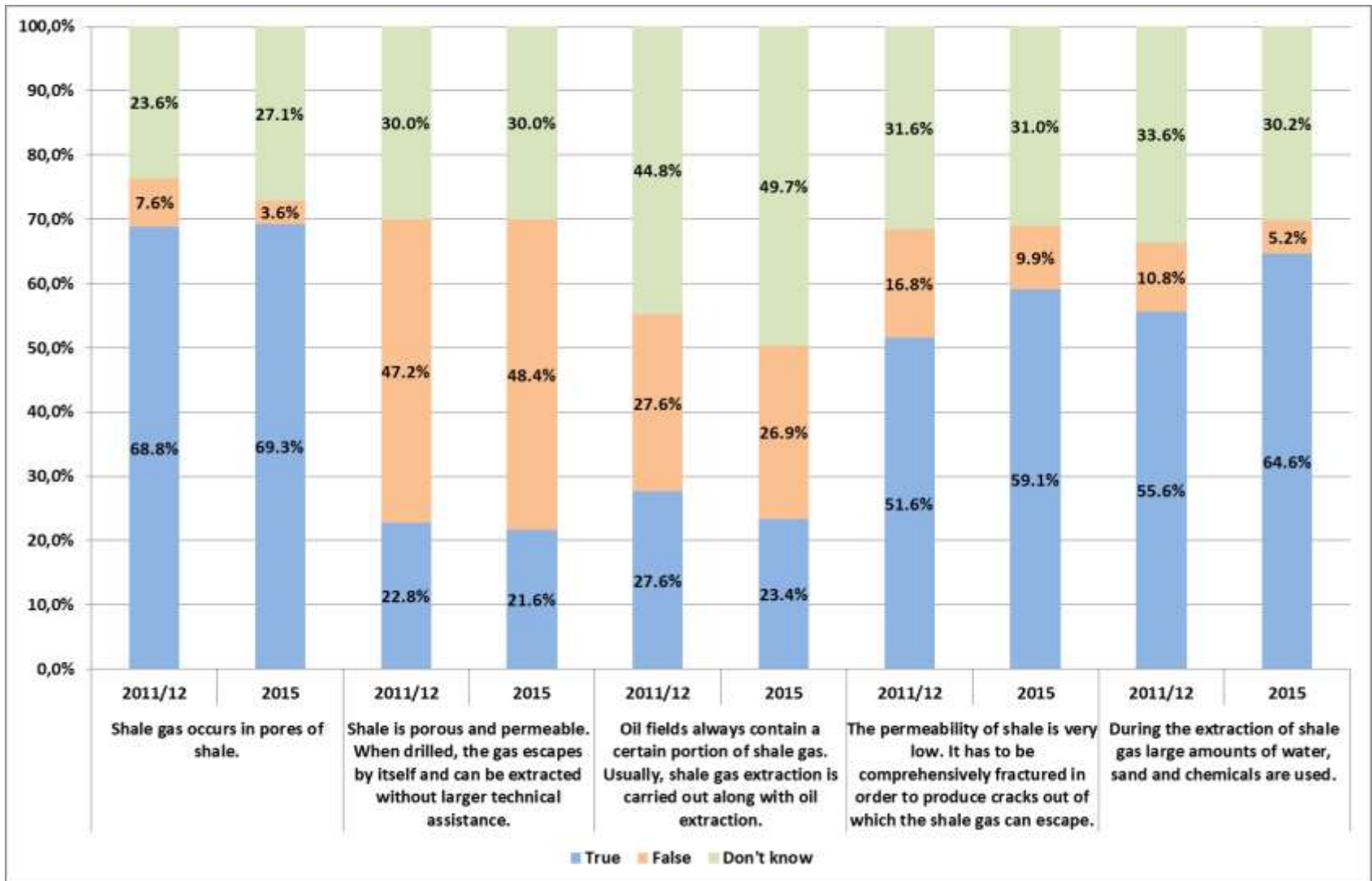
CCS can reduce which of the following environmental concerns?



Only respondents who had heard about CCS. Data sources: IEK-STE Panel Survey 2011/12 (n=569), 2015 (n=492)

Factual knowledge about shale gas

Please tell me to the best of your knowledge whether each statement is true or false.



Only respondents who had heard about shale gas. Data sources: IEK-STE Panel Survey 2011/12 (n=250), 2015 (n=384)

Risk perceptions

How risky do you think CO₂ transport via pipeline/CO₂ onshore storage/CO₂ offshore storage/the extraction of shale gas would be to you and your family/to society in general?”

| | Personal risk | | Societal risk | |
|----------------------------------------|-------------------|-----------------|-------------------|-----------------|
| | Mean ¹ | SD ² | Mean ¹ | SD ² |
| CO ₂ transport via pipeline | 3.7 | 1.8 | 4.1 | 1.6 |
| CO ₂ onshore storage | 4.3 | 1.6 | 4.5 | 1.6 |
| CO ₂ offshore storage | 3.9 | 1.8 | 4.2 | 1.7 |
| Shale gas | 4.2 | 1.7 | 4.7 | 1.6 |

¹ Scale from 1 (= very low) to 7 (= very high). ² SD = Standard deviation. Data sources: Survey “CCS Chances” 2013 (n= 1000); IEK-STE Panel Survey 2015 (n=1000)

Benefit perceptions

To what extent do you think CCS/the extraction of shale gas would benefit you and your family/society in general?

| | Personal benefit | | Societal benefit | |
|-----------|-------------------|-----------------|-------------------|-----------------|
| | Mean ¹ | SD ² | Mean ¹ | SD ² |
| CCS | 3.4 | 1.6 | 3.9 | 1.7 |
| Shale gas | 2.8 | 1.4 | 3.4 | 1.5 |

¹ Scale from 1 (= very low) to 7 (= very high). ² SD = Standard deviation. Data sources: Survey “CCS Chances” 2013 (n= 1000); IEK-STE Panel Survey 2015 (n=1000)

General attitudes

Overall, how do you assess the idea of CO₂ transport via pipeline/CO₂ onshore storage/CO₂ offshore storage/CCS/the extraction of shale gas?

| | General attitude | |
|----------------------------------------|-------------------|-----------------|
| | Mean ¹ | SD ² |
| CO ₂ transport via pipeline | 3.9 | 1.6 |
| CO ₂ onshore storage | 3.3 | 1.7 |
| CO ₂ offshore storage | 3.6 | 1.8 |
| CCS | 3.8 | 1,7 |
| Shale gas | 2.9 | 1.6 |

¹ Scale from 1 (= very negative) to 7 (= very positive). ² SD = Standard deviation. Data sources: Survey “CCS Chances” 2013 (n= 1000); IEK-STE Panel Survey 2015 (n=1000)

Determinants of general attitudes

Most important direct determinants of general attitudes towards CO₂ transport via pipeline, CO₂ onshore storage, CO₂ offshore storage and the extraction of shale gas:

- **The perceptions of the personal and societal risks**
 - ⇒ the higher the perceived personal or societal risk, the more negative the general attitudes towards CO₂ pipelines, CO₂ onshore storage/CO₂ offshore storage or the extraction of shale gas
- **The perceptions of the personal and societal benefits**
 - ⇒ the higher the assessed personal or societal benefit, the more positive the general attitudes towards CO₂ transport via pipeline, CO₂ onshore/CO₂ offshore storage or the extraction of shale gas

In all regression models the estimated parameters are higher for the perceptions of societal risk or societal benefit than for the perceptions of personal risk or personal benefit

Conclusions

- Public awareness of energy technologies is closely related to the public debate and media coverage of the technologies
- Knowledge about energy technologies increases over time, particularly with regards to aspects about which the media are frequently reporting
- However, misconceptions about energy technologies also exist and persist over time
- Most important direct determinants of general attitudes towards energy technologies: perceived risks and perceived benefits
- The perceived risks or benefits of an energy technology for the society seems to be more important for general attitudes than the perceived personal risks or benefits

Acknowledgement

Parts of the data used in this study were collected within the project “Chances for and limitations of public acceptance of CCS in Germany (CCS chances)” for which we gratefully acknowledge funding from the Federal Ministry of Education and Research.

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Thank you very much for your attention!

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