Factors Affecting Public Awareness and Acceptance of CO$_2$ Capture, Transport and Storage: A Transnational Comparison

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General information

• **The MOF4AIR Project**: Metal Organic Frameworks for carbon dioxide Adsorption processes in power production and energy Intensive industries

• This project has received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement No. 837975

• Coordinator: University of Mons

• MOF4AIR gathers 14 partners from 8 countries (including South Korea)

• Overall budget: 11M€

• Duration: 48 months (01/07/2019 – 30/06/2023)
# General information - Consortium

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<th>No</th>
<th>Participant organisation English name</th>
<th>Type of organisation</th>
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<td>Türkiye Çimento Müstahsilleri Birliği</td>
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Objectives

• Increase the cost effectiveness of CCS and decrease its energy penalty;
• Qualify and validate the most promising MOF materials for adsorption-based carbon capture;
• Fine-tune adsorption processes for high performance MOFs;
• Demonstrate the performance of MOF based carbon adsorption in real operation;
• Ensure the technology replication in other CO₂ and energy intensive industries and its sustainability;
• Increase stakeholder & public awareness of the challenges, benefits & issues related to carbon capture, transport, use & storage.
The MOF4AIR Methodology

• MOF4AIR is built on 11 WPs:
  • **WP1**: Identification of the most adequate processes and MOFs, led by CNRS
  • **WP2**: Validation of the best MOFs, led by CNRS
  • **WP3**: Validation of the shaped material in lab, led by UMONS
  • **WP4**: Modelling and techno-economic numerical optimization, led by SINTEF
  • **WP5**: Validation of the selected separation technology in relevant environment, led by SINTEF
  • **WP6**: Scale-up and demonstration in an industrial environment, led by TUPRAS
  • **WP7**: Techno-economic and environmental analysis, led by CRES
  • **WP8**: Transferability, replicability and social issues, led by CRES
  • **WP9**: Communication, dissemination and exploitation, led by EQY
  • **WP10**: Management of the project, led by UMONS
  • **WP11**: Ethics requirements, led by UMONS
Task 8.1: Study of social issues related to capture, transport and storage of CO$_2$
Literature review

- Social/ Societal acceptance
- Public acceptance
- Public engagement
- Public awareness
- Public knowledge
- Acceptability
- Willingness to pay
- Social support/ opposition/ resistance
- Perception
- Communication
- Social license
- Stakeholder
- Attitude
- Opinion
- Local community
- Benefit sharing mechanisms

After a first screening of this material, 50 articles have been identified to be more relevant to the themes examined and methods applied. These 50 articles are being assessed in detail.

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Based on statistically significant empirical findings of CCS-focused quantitative studies.
Questionnaire structure

1. CCS knowledge

PROVISION OF INFORMATION TEXT
2. Knowledge (climate change, CO₂)
3. Prior experience
4. Risk perception
5. Benefit perception
6. Sustainability concerns regarding CCS
7. Trust of relevant stakeholders
8. Affect (positive/negative)
9. Climate change concerns
10. Environmental behavior
11. Technophilia
12. General attitude towards risks and safety
13. Life-guiding values
14. Engagement activities
15. Fairness (procedural/distributional)
16. Place attachment
17. General/local acceptance intention
18. Demographic characteristics
Study’s innovative aspects

Innovative aspects compared to previous relevant studies:

• Transnational comparison;
• Comparison between different phases (capture, transfer, storage);
• Comparison between general and local acceptance;
• Emphasis on factors that have not been thoroughly examined yet: engagement activities, fairness;
• Creation of model examining the relations between all the above issues, in relation to acceptance and risk/benefit perceptions.
Thank you

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