

The MOF4AIR European project: Exploring the determinants of social acceptance of Carbon Capture and Storage (CCS)

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Carbon Capture and Storage (CCS) is the process of capturing CO₂ from power plants or energy-intensive industries and transferring it to long-term geological storage systems, therefore assisting climate change mitigation efforts. Considering this, the technology continues to be questioned, with local opposition frequently encountered when individual projects are approved. As a result, societal acceptance is a critical component of the technology's continued development and diffusion. In light of this, the MOF4AIR (Metal Organic Frameworks for Carbon Dioxide Adsorption in Power Production and Energy Intensive Industries) Horizon project (2019-2023) includes specific tasks linked to the investigation of CCS-associated societal concerns.

In this regard, a quantitative survey was conducted in seven European countries (Belgium, France, Greece, Italy, Norway, Turkey, and the United Kingdom) in January 2022, resulting in a sample of 1750 respondents (250 per country). Through the survey, the factors influencing sociopolitical and local acceptance of CCS facilities were examined, including:

- demographic characteristics;
- self-perceived environmental behavior;
- CCS, climate change, and CO₂ knowledge;
- prior experience;
- technology optimism;
- place attachment;
- benefit and risk perceptions;
- trust towards relevant stakeholders;
- fairness (procedural/distributive);
- engagement activities.

A transnational comparison, a comparison between the distinct steps of the CCS process (capture, transfer, storage), a comparison between sociopolitical and local acceptance, and a special focus on elements (such as engagement activities and fairness issues) that have not been thoroughly investigated yet in relation to CCS are among the novel aspects of this work with respect to past research.

The findings of this study will be used to create public engagement scenarios that will help decision-makers and project developers/operators plan customized public awareness and engagement activities to increase public acceptability of various types of CCS infrastructure.

Keywords: CCS; transport; storage; social acceptance; public engagement