

November 14th, 2023
Brussels, Belgium



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PUBLIC PERCEPTION AND BUSINESS MODELS JOINT EVENT

Organised by the Carbon Capture,
Utilisation and Storage (CCUS) &
Alternative Fuels Horizon 2020/
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Public perception of CCU-based products

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Baseline

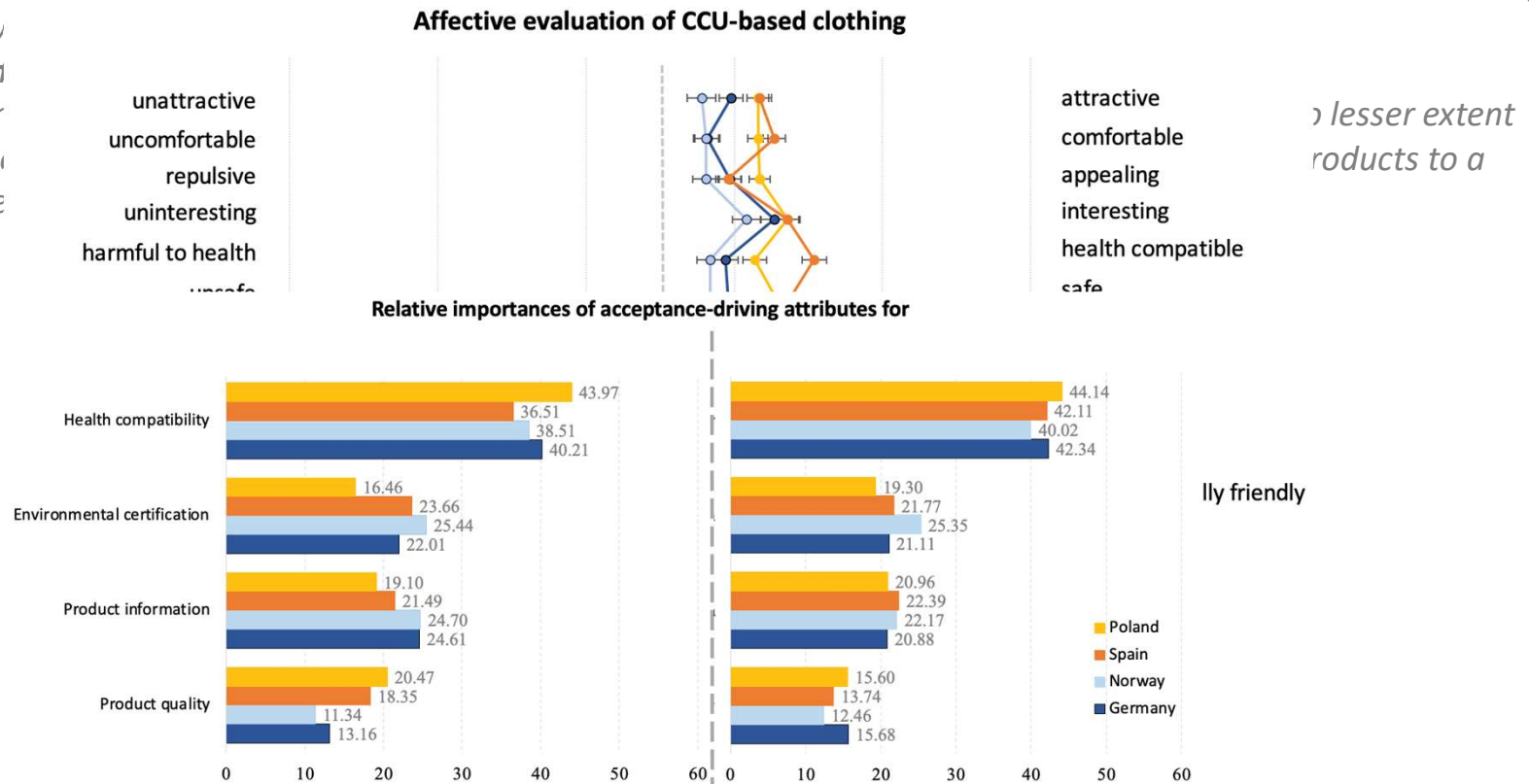
- ***Aim of CO₂SMOS project:** help bio-based industries convert CO₂ emissions into added-value chemicals for the production of sustainable bioproducts by combining biotechnological and intensified electrochemical/catalytic conversion processes along with renewable sources*
- ***RWTH's Contribution:** social perception and acceptance of the CO₂SMOS innovations & bio-products*
- *CCU technologies often involve complex processes which likely are unfamiliar to the general public → assessing public perception is needed for identifying potential **motivators & barriers**, **perceived risks** associated with the technology & ultimately allows the development of **user group specific guidelines** for a successful adoption*
- ***Previous research:***
 - ***Cognitive and affective assessments** of risk perceptions reliably predict & are significantly related to CCU acceptance (Arning et al. 2020)*
 - ***Consumers** do not only **consider** the final products but try to gauge **the way it is produced** → risk perceptions should be launched early in developmental process to incorporate social factors & usage requirements in the life-cycle assessment of the production process & the final product (Simons et al. 2021)*
 - *Frequently observed perceived risks in this context are **health concerns in direct contact** with the human body due to the notion that **CO₂ can evaporate from CCU products**, although this does not correspond to scientific reality (van Heek et al. 2017)*

Methodology

- **Research questions:**
 - *What are barriers & motivators regarding CCU acceptance?*
 - *How do context-related factors influence consumers' decisions for or against the usage of CCU-based products?*
 - *Do consumers from different European countries differ in acceptance related assessments of CCU-based products?*
- **Target group:** *census-representative samples from Germany, Norway, Poland & Spain*
- **Research tool:** *mixed-methods approach of qualitative pre-study & quantitative validating study*
 - I. *explorative focus group study with experts & laypeople → generating first insights*
 - II. *validating online survey (conjoint measurement) → assessing demographic data, personal attitudes & trade-offs regarding CCU-based product acceptance (by example of CCU-based clothing & cosmetics)*

Summary

- **Low initial knowledge** levels regarding CCU technology but **rather high general acceptance** after introduction
- Overall **positive affective evaluation** of all CO₂SMOS products (small outlier: price)
- Potential **environmental impact** & conservation of fossil fuels perceived as **major benefit** of adopting CCU technology
- **Uncertainty**
- **Health compatibility**
- **Environmental certification**
- **Evaluation of product quality** to a certain extent
- **Significant**



Policy impact

- *Currently at the halfway point of our participation in the project → identification of adopter profiles and recommendations of target group specific actions still pending*
- *Discovered **need for information** among all samples → no assumptions should be made about what the public should or should not know ; information must be tailored to existing knowledge, be understandable to laypeople & risks need to be communicated honestly so that trust can develop*
- *Significant differences in between countries → **country specific communication strategies** needed*

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Thank You

For Your Attention

GET IN TOUCH

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