NEGEM

# Stakeholder perception of NETPs: The effects of discussion and framing

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This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 869192.

*16th June 2022*

*2nd International Conference on Negative $CO_2$ Emissions*

*Gothenburg, Sweden*

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# Study Objectives

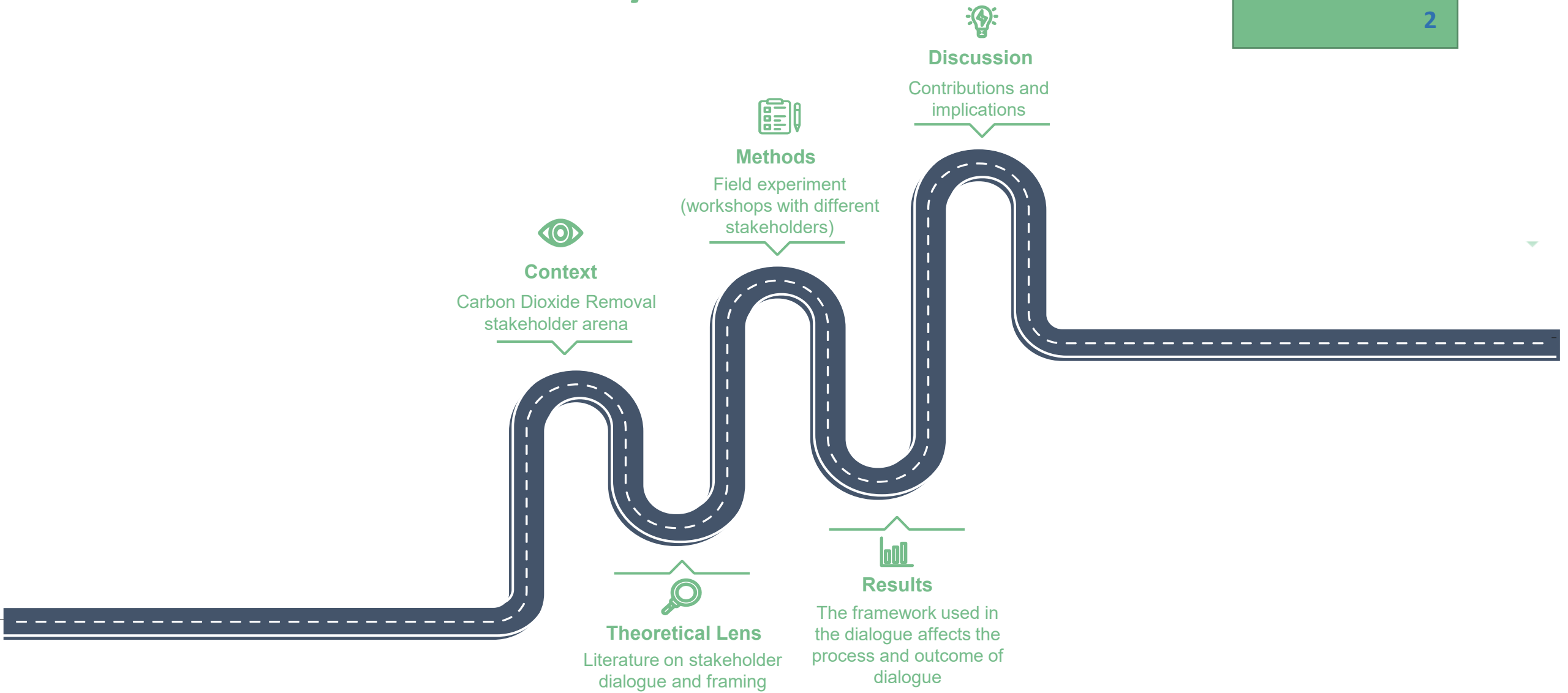
- The development and deployment of Negative Emission Technologies and Practices (NETPs) increasingly require the **concerted efforts and support of multiple stakeholders** (Liu et al., 2018; Zimmermann et al., 2021)
- However, their deployment remains **contested** (Cox et al., 2020; Carton et al., 2020) and recent evidence underlines the **difficulties in reaching constructive dialogue** between these different parties (e.g. Dentoni et al., 2018; Ferraro et al., 2015; Gray & Purdy, 2018; Reinecke & Ansari, 2015)
- Stakeholders often hold **different frames** (i.e., schemes to interpret the world, as per Gofman, 1974), but we know little about how the adoption of one frame over another affects the process and outcome of stakeholder dialogue regarding NETPs



**Assess perceptions of different NETPs among environmental NGOs and companies in Europe and the relevance of framing (moral vs scientific) to determine perceptions and the dialogue between stakeholders.**

# Study Overview





# Stakeholder Perceptions of NETPs

- NETPs deployment is highly contested by some stakeholders → Risk of **moral hazards** due to barriers in their effectiveness and scalability (Anderson & Peters, 2016) and risk of **negative externalities** (Cox et al., 2020; Carton et al., 2020; Dowd & James, 2014; Dowd et al., 2015)
- New topic → Stakeholders are **forming their opinion** and adjusting based on new information (O'Bierne et al., 2019; Wolske et al., 2019)
- Stakeholders have **divergent opinions** on which policies the European Union should adopt as well as on specific NETPs (Dowd & James, 2014) which impede dialogue (Dentoni et al., 2018; Ferraro et al., 2015; Gray & Purdy, 2018; Reinecke & Ansari, 2015 )

**How stakeholder perceptions of NETPs develop through the interaction with other stakeholders, and what affects this process**

# Stakeholder Dialogue

- **Stakeholder dialogue** is defined as a "two-way interactive process of stakeholder engagement that involves breaking down existing assumptions and developing new ways of learning" (Burchell & Cook, 2006, p. 213) and helps overcoming the limits of other forms of collaborative governance (Gilek et al., 2006; Turcotte & Pasquero, 2001)
- No consensus oriented, but **constructive criticism** and confrontation based on listening and learning→ Leads to an "agreement in diversity of voices" (Klitsie et al., 2018)
- Especially concerning climate change, **different frames** characterize public opinion (Hoffman, 2011) creating fragmentation that results in social conflicts (Dewulf et al., 2011; Purdy et al., 2019).

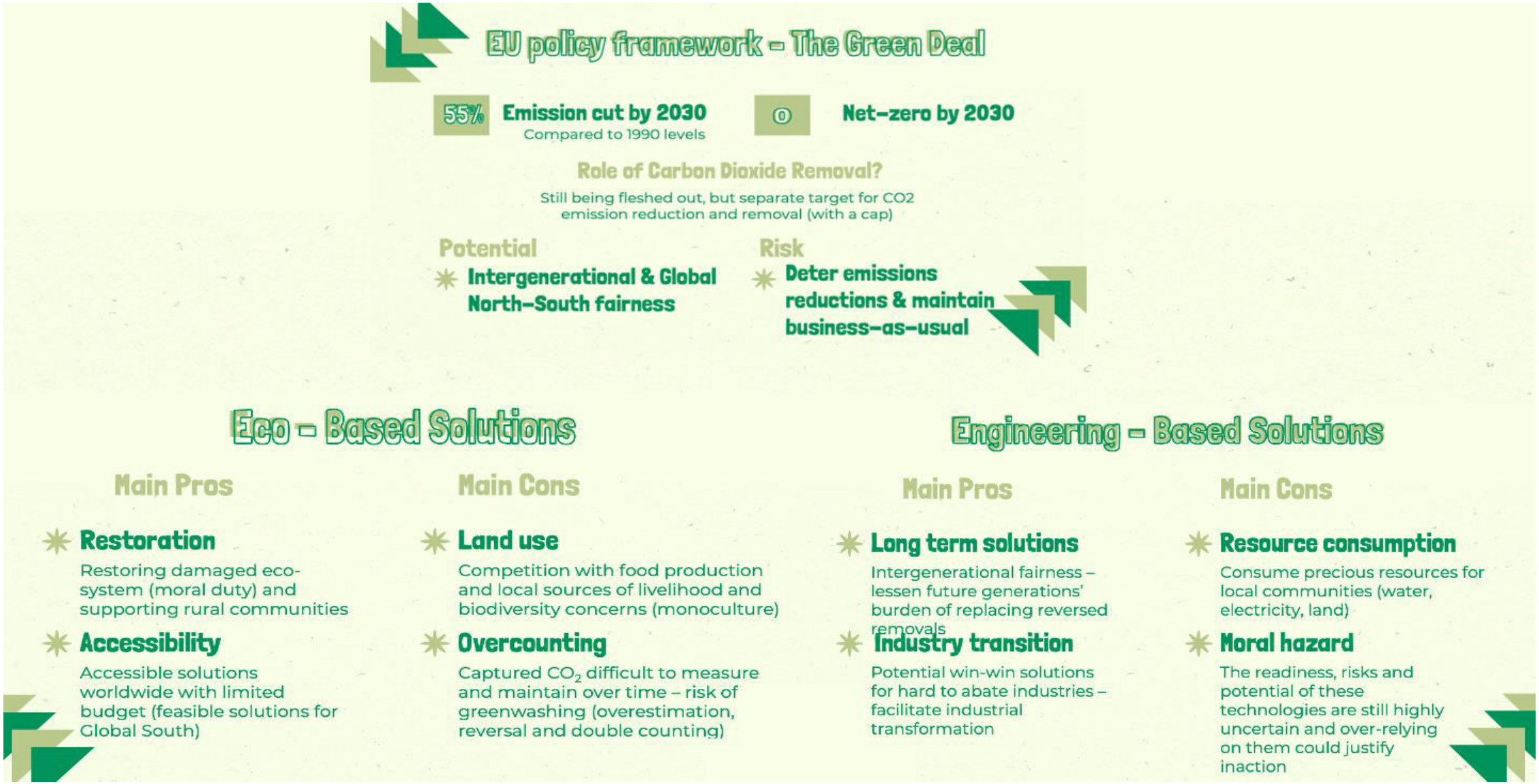
**How different frames affect the process and outcomes of stakeholder dialogue and their perceptions of NETPs.**

# Field Quasi-Experimental Design

- Compiled database of **over 1000 key stakeholder contacts** (NGOs and companies) to invite to the virtual workshops
- **5 workshops organized** (pilot workshop in June 2021 and 4 further workshops in October 2021) – involving a total of **103 participants** (86 with complete data: 46 NGOs and 40 companies)
- Structure (2 hours):
  - Keynote video from Dr. Sabine Fuss (employing **either moral or scientific frame**)
  - Homogeneous group discussion for allocation task (moderated and recorded)
  - Heterogenous group dialogue (moderated and recorded)
  - Q&A with representatives from DG CLIMA/ENER
- Conducted surveys pre-event, during event (manipulation check), and after-event

# Manipulation Summary: Scientific Video

# Manipulation Summary: Moral Video



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# Negative Emission Technologies and Practices

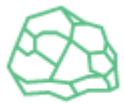


**DACCS**

Direct Air Carbon Capture and Storage

**BECCS**

Bio-energy with Carbon Capture and Storage



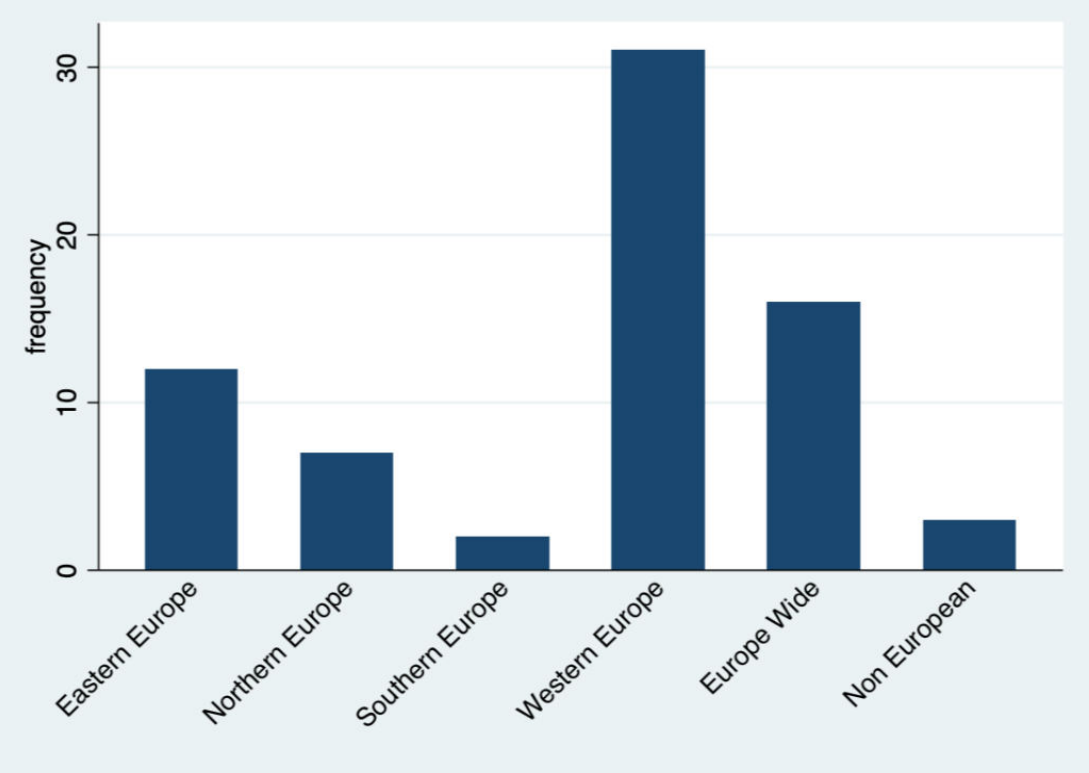
**Enhanced weathering**

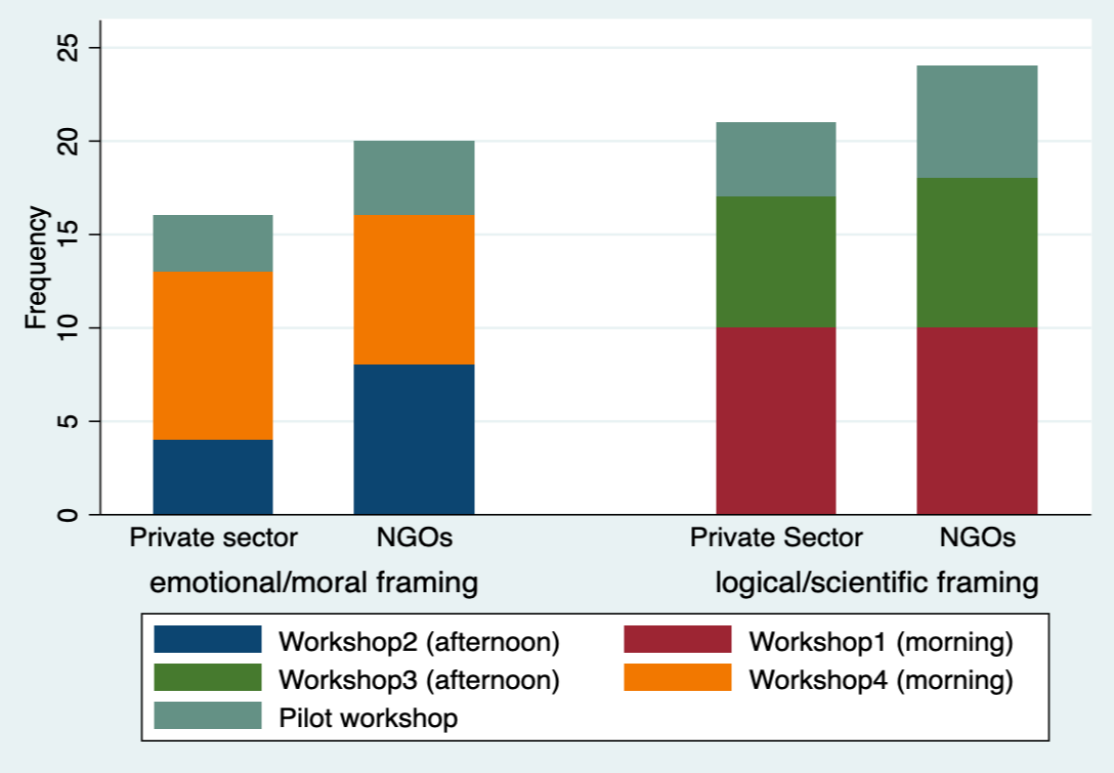
**Afforestation / reforestation**

**Soil carbon sequestration**

# Sample Distribution

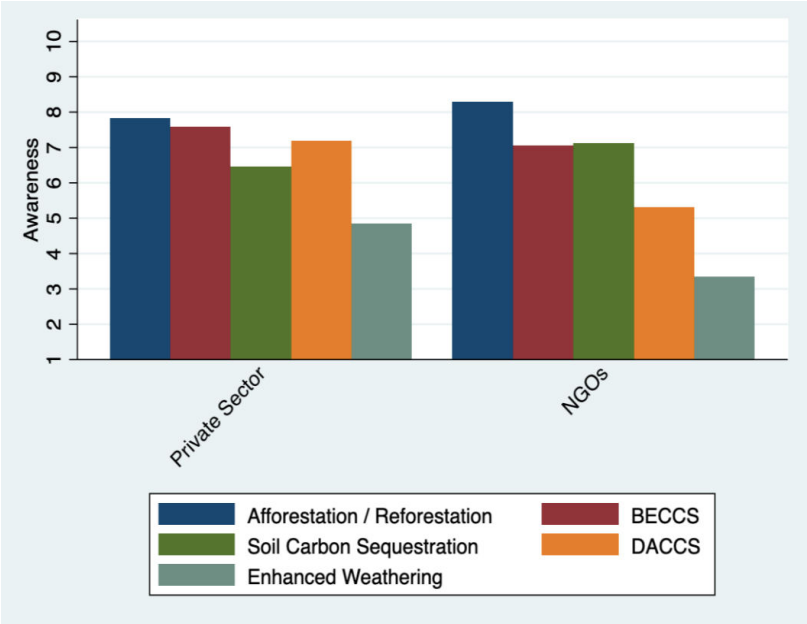


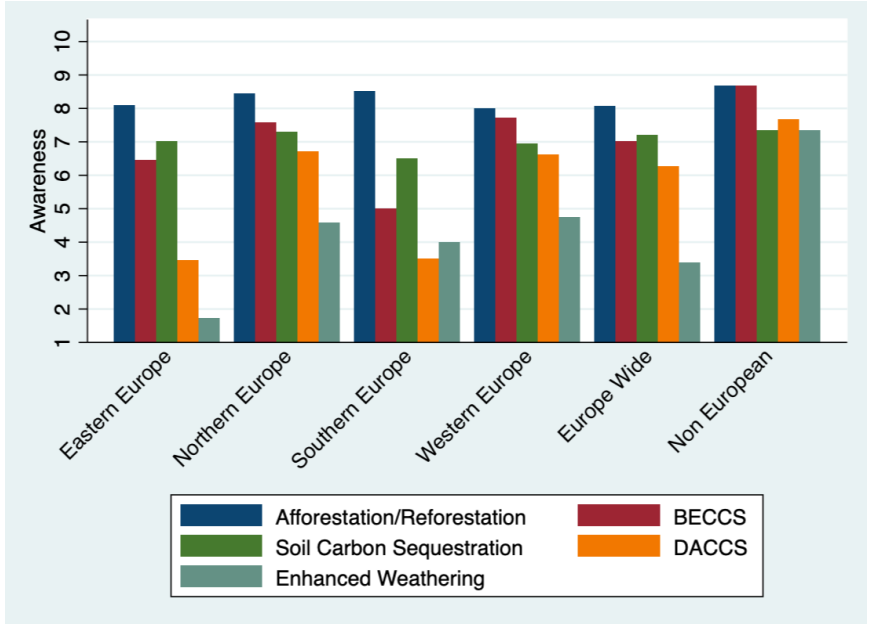


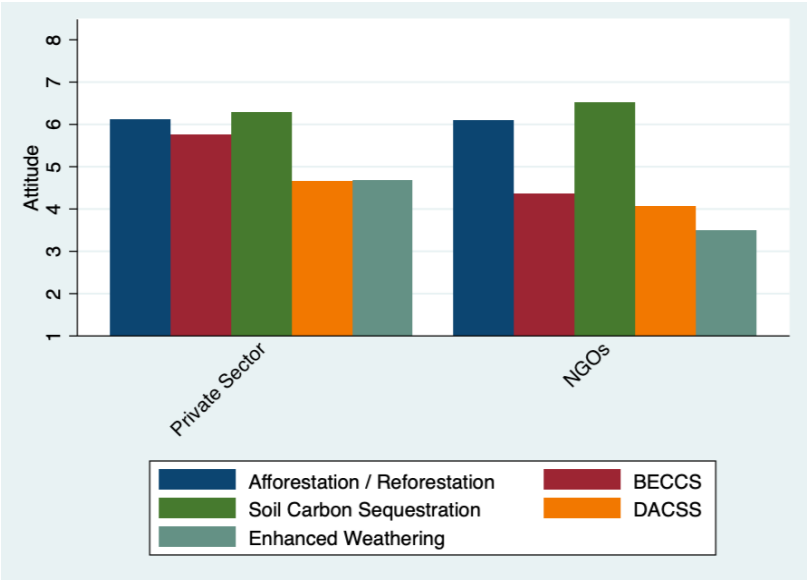



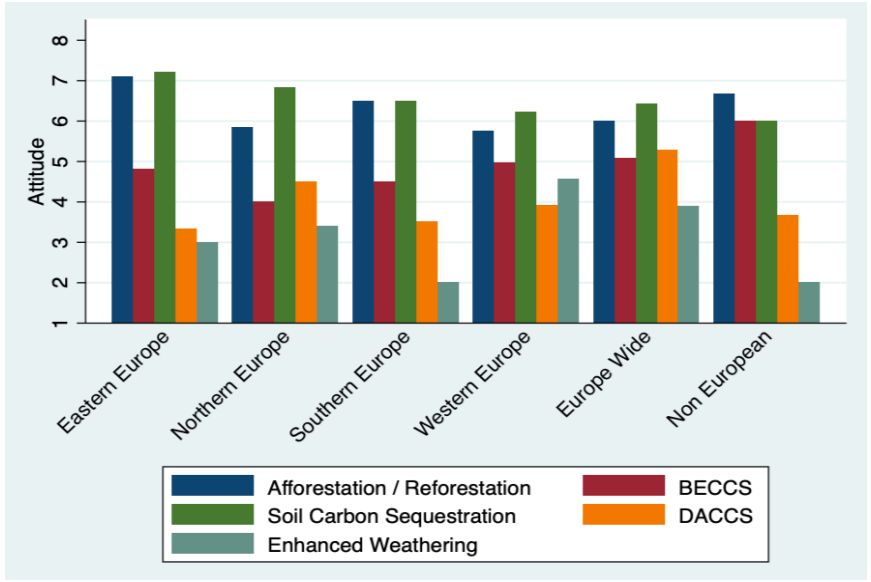
# Stakeholder Awareness and Attitude






**Notes:**

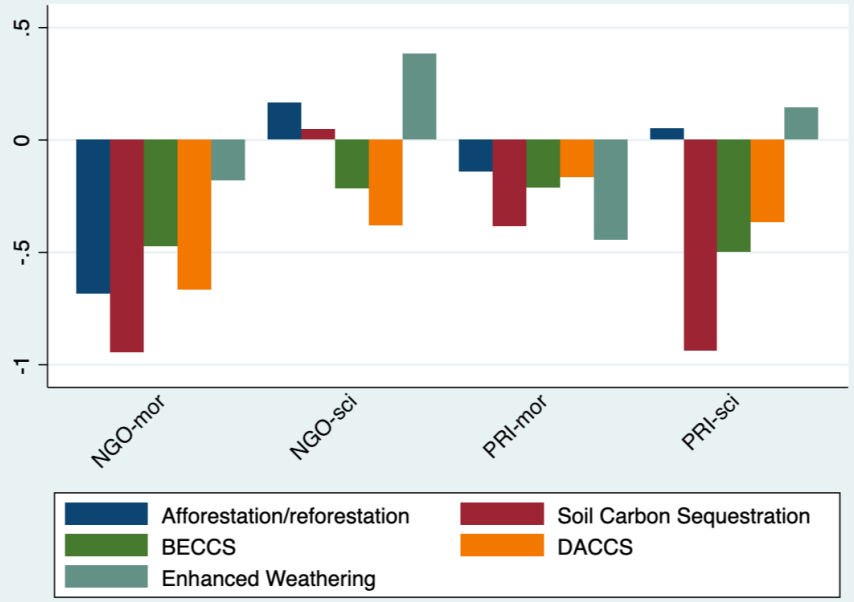
Underrepresentation of Southern Europe and non European

**Awareness**: For all CDR, awareness is not a significant predictor of attitudes (but it is for confidence!), except for DACCS and EW

**Attitude**: Private sector participants more positive towards BECCS, Eastern Europe more positive toward nature-based options

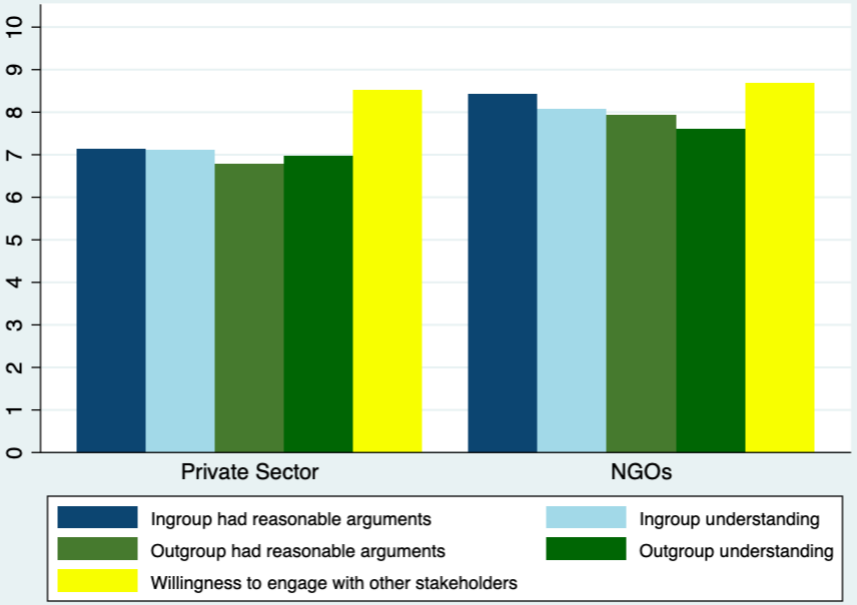
# Effects of Frames on Attitudes and other Stakeholders






Opinions became more negative, especially when an emotional/moral frame is adopted and for ecological solutions, in particular.

Attitudes towards a/reforestation and EW increased following discussion for both groups when using logical/scientific arguments.




NGO participants provide a significantly higher assessment of other stakeholder group's reasonableness and understanding, especially when primed using emotional/moral frame (unlike when asked in abstract terms).

By contrast, adopting an emotional/moral frame made private sector reps significantly more negative about both heterogenous and homogenous groups.

→ dialogue is more effective when the frame used is aligned with the stakeholder group values.

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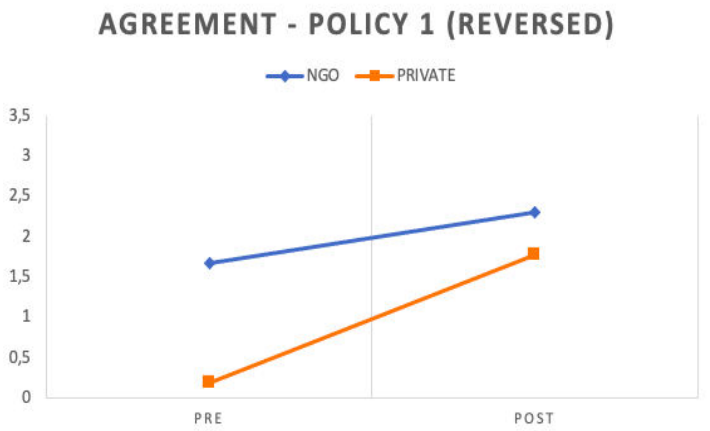
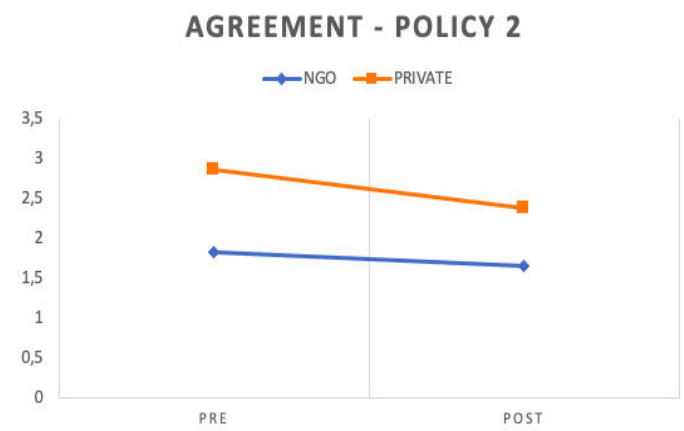
# Dialogue reduces polarization of opinion

| | |
|---|---|
| Policy 1 | The European Union policies should focus on reducing carbon dioxide emissions instead of removing it from the atmosphere |
| Policy 2 | Carbon dioxide removal mechanisms should complement reducing emissions in order to achieve more ambitious targets |
| Policy 3 | The targets set by the European Union (55% greenhouse gas emission reduction by 2030 and carbon neutrality by 2050) should not rely on carbon removal and offsetting mechanisms |
| Policy 4 | The European Union target of reducing greenhouse gas emissions by 55% by 2030 and achieving carbon neutrality by 2050 can only be achieved by including carbon removal and offsetting mechanisms |

**The logic/scientific frame** reduces polarization more than the emotional/moral frame –> Significant (ANOVA) for policies 2 and 4




Significant difference*




Not significant difference*

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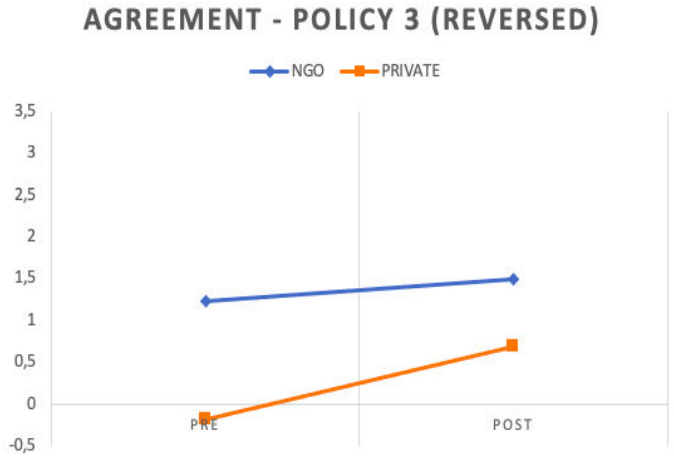
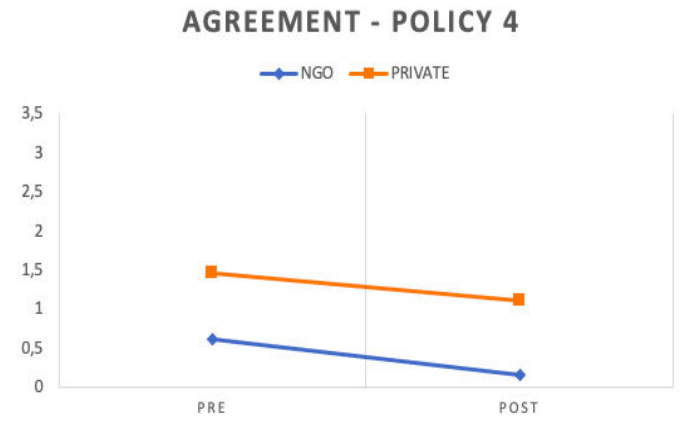



Significant difference*

Not significant difference*




Not significant difference*

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* Based on ANOVA

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# Dialogue increases stakeholder scepticism

| | |
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| Policy 1 | The European Union policies should focus on reducing carbon dioxide emissions instead of removing it from the atmosphere |
| Policy 2 | Carbon dioxide removal mechanisms should complement reducing emissions in order to achieve more ambitious targets |
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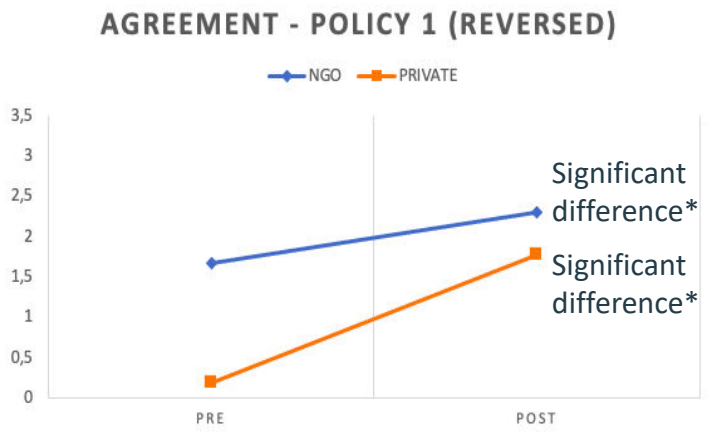


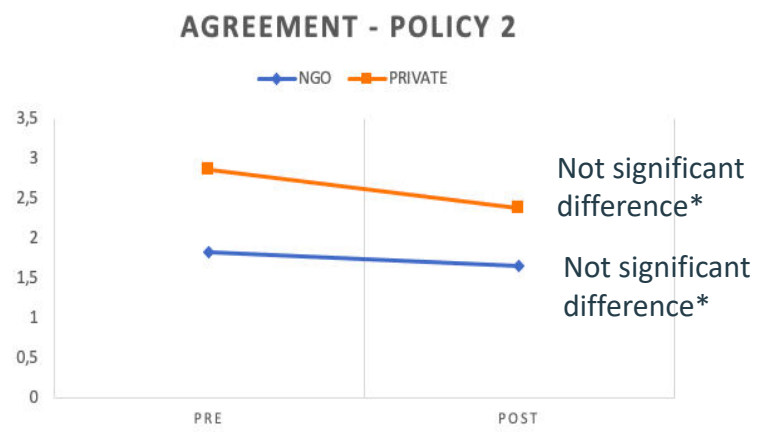


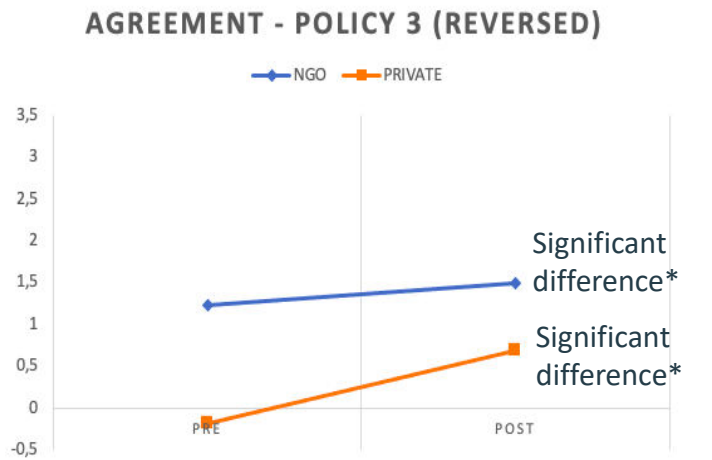


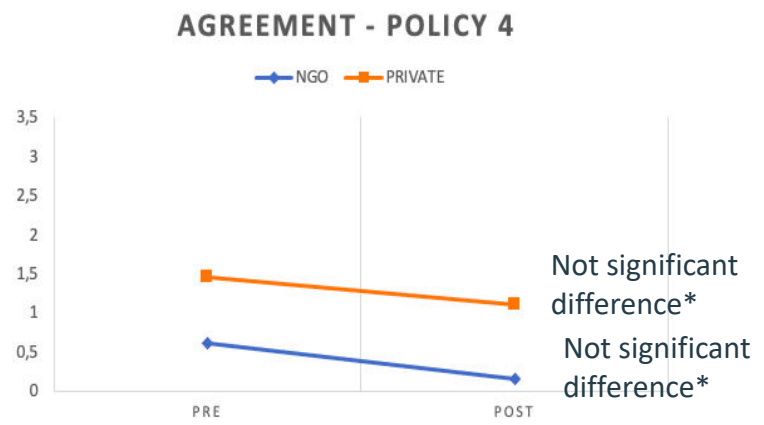


Dialogue **adopting a frame reflecting the values of a stakeholder group** increases scepticism more–> Significant (paired t-test) for private sector with logic/scientific

* Based on paired t-test

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# Main Policy Implications

- Different **stakeholder groups vary** in their assessment of different NETPs
- The **dialogue** among different stakeholders has an effect in changing perceptions (increase skepticism and convergence)
- The **frame adopted** in the discussion of different NETPs and (potential) policies has an effect on perceptions. Adopting a logical/scientific framing seems to foster a positive change in attitude towards NETPs and reduces polarization. The moral framing has an effect for NGOs perceptions of NETPs, policies and stakeholders
- Policy might be more effective if they communicated using the appropriate framing with each stakeholder, which requires **moving away from a one-size-fits-all approach** to communications

# Thank you!

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