



SOCIALRES

BEHAVE 2021 - Session 7a

23th April, 2021



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837758.



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Are EU Citizens Willing to Engage with Community-based Energy Cooperatives ? - Evidence from a Cross-country Choice Experiment

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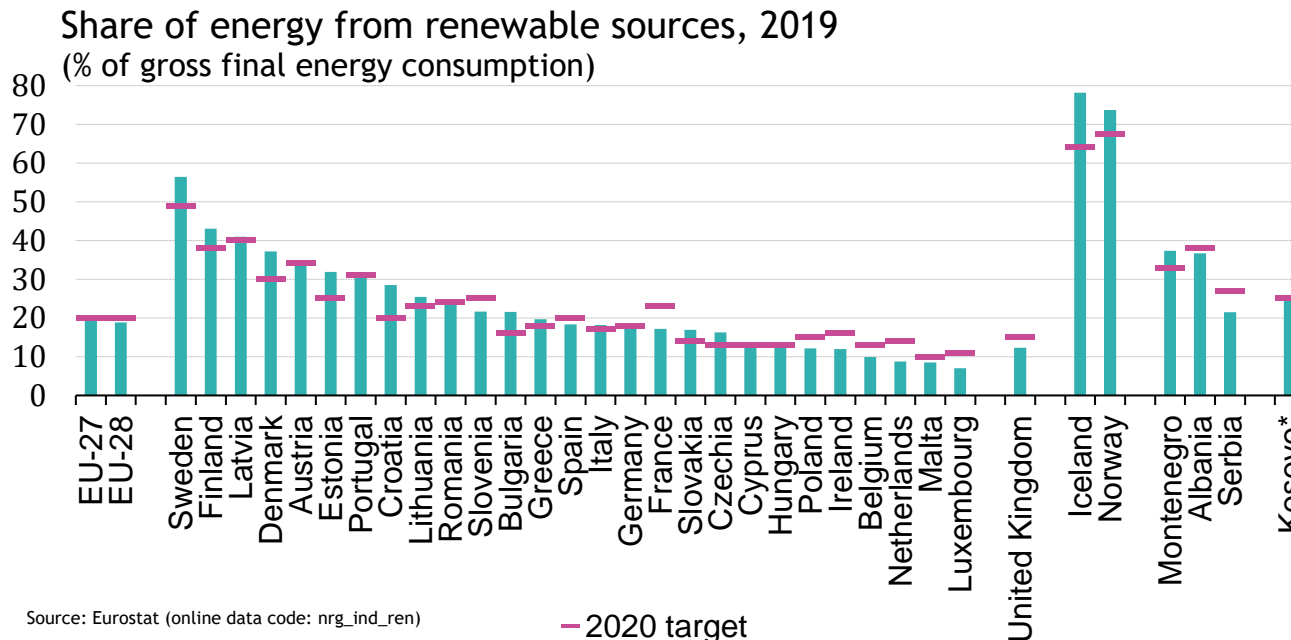
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Highlights

- We investigate citizens' intention to invest in energy cooperatives
- We conduct a large-scale choice experiment in different European countries for the **general public** and **cooperative members**
- Results suggest that citizens' investment choices are motivated by both **financial returns** and **environmental concerns**
- Cooperative members and general public are **different** regarding individual characteristics and investment motivations

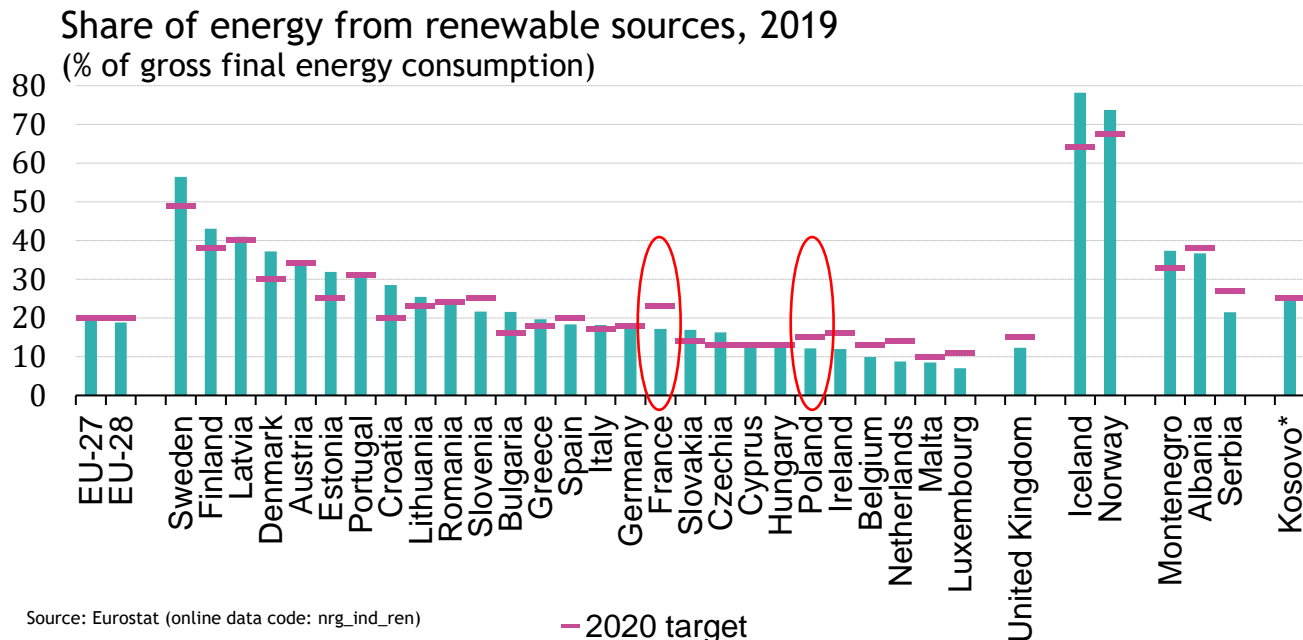
Motivations

- On average, the target of 20% share of energy from renewable source by the end of 2020 has been achieved, but many countries did not



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Motivations

- Energy transition needs multi-dimensional participation, especially citizens

□ Energy cooperatives

- A type of renewable energy communities characterised by energy localisation and commitment to energy democracy
- Members of energy cooperatives:
 - a) are local investors and collectively own the organisations;
 - b) receive investment returns;
 - c) can participate in the decision making of cooperatives' affairs;
 - d) in rare cases, consume renewables provided by the invested energy cooperatives

Contribution

- Key gap in previous literature on energy cooperatives

Predominantly focus on German population (Sagebiel et al., 2014; Salm et al. 2016; Kalkbrenner et al., 2017; Knoefel et al., 2018)



- We investigate citizens' willingness-to-engage with energy cooperatives by conducting a large-scale survey across multiple European countries

Research questions

- What aspects of energy cooperatives are important to attract investors ?
- How do cooperative members (early adopter) differ from the general public ?

Methodology - data collection

- General public sample
 - Germany, France, Spain, Sweden and Poland
 - 600 citizens surveyed in each country (3,000 in total)

- Cooperative members sample

- Members from 5 partnered energy cooperatives
- 259 respondents in total



- Online survey through *Qualtrics*

- General public sample is representative in terms of age, gender and regions

Methodology - choice experiment

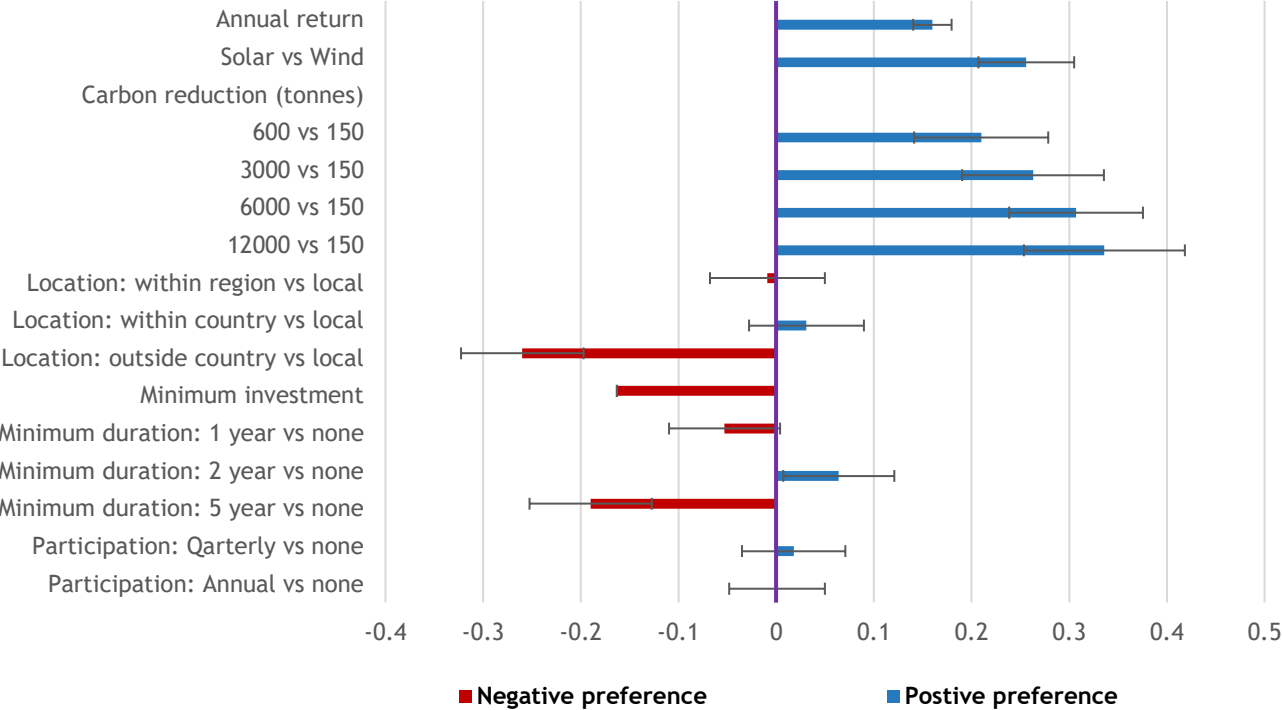
Which project would you like to choose ?

	Project A	Project B
Annual Return	2.5 %	5 %
Type	Solar	Wind
Annual CO2 Reduction	3,000 tonnes	12,000 tonnes
Land Cover	5 football pitches	20 football pitches
Location	Within your region	Outside your country
Minimum Investment	€ 100	€ 500
Minimum Duration	5 Years	2 Years
Participation	Quarterly meetings	None

- Project A
- Project B
- I would NOT choose either

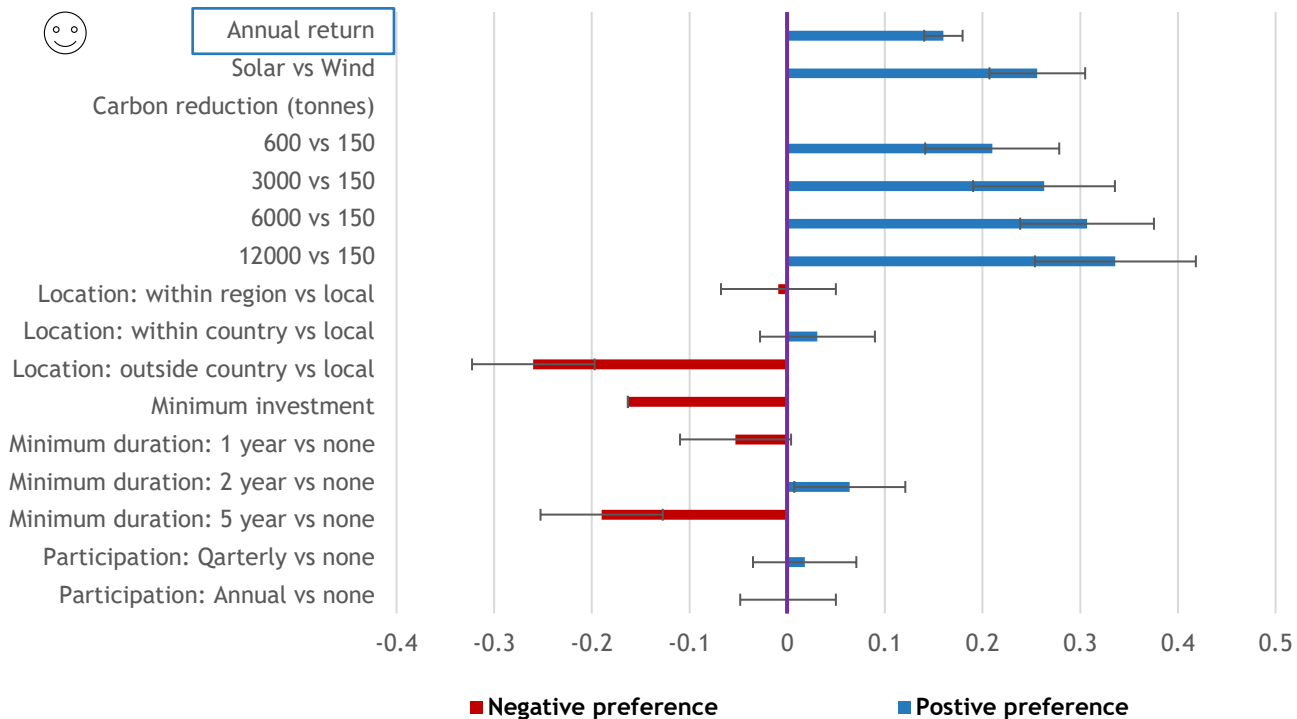
Results: general public

Relative utilities for energy cooperative features (means)



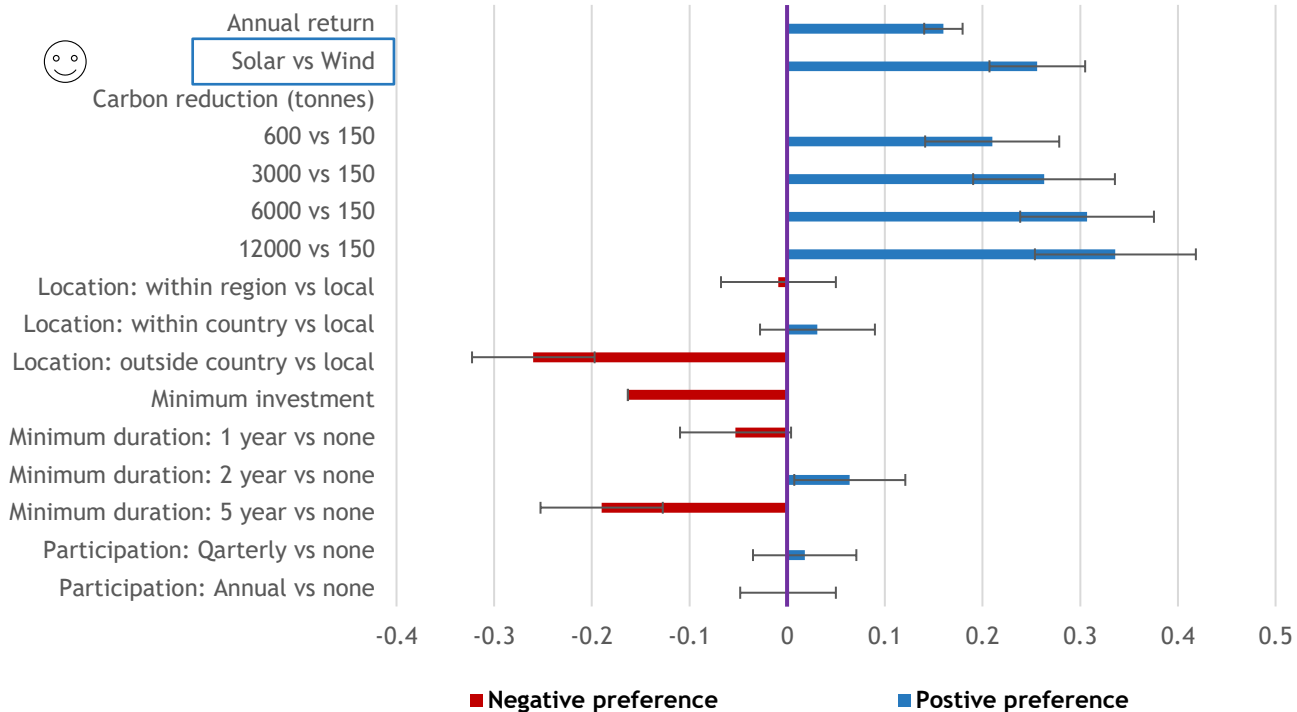
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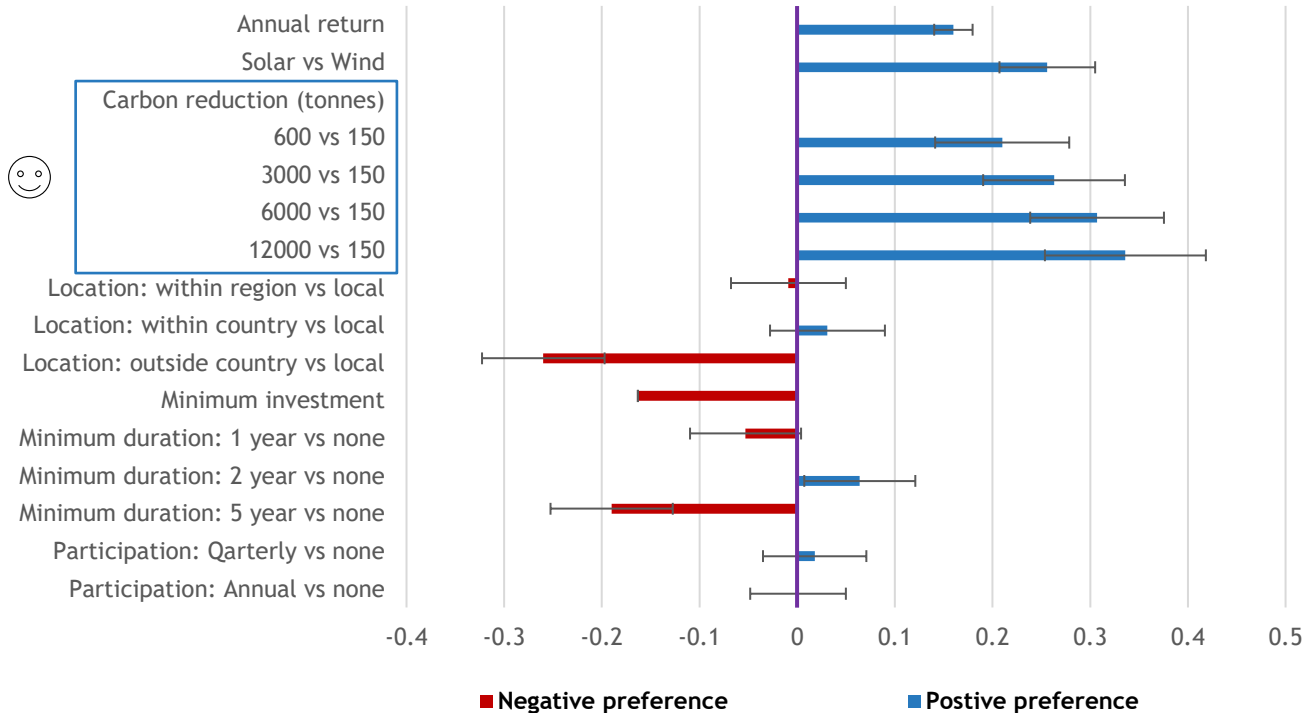
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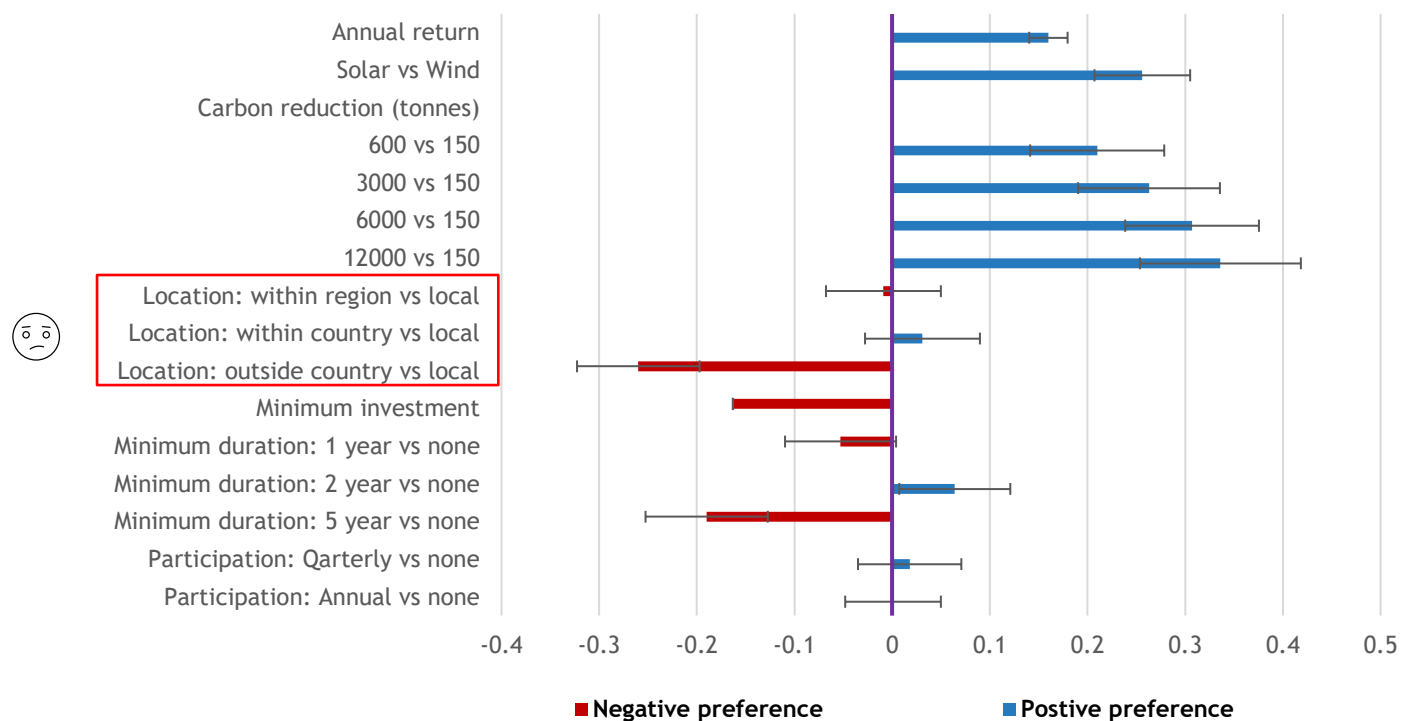
Results: general public

Relative utilities for energy cooperative features (means)



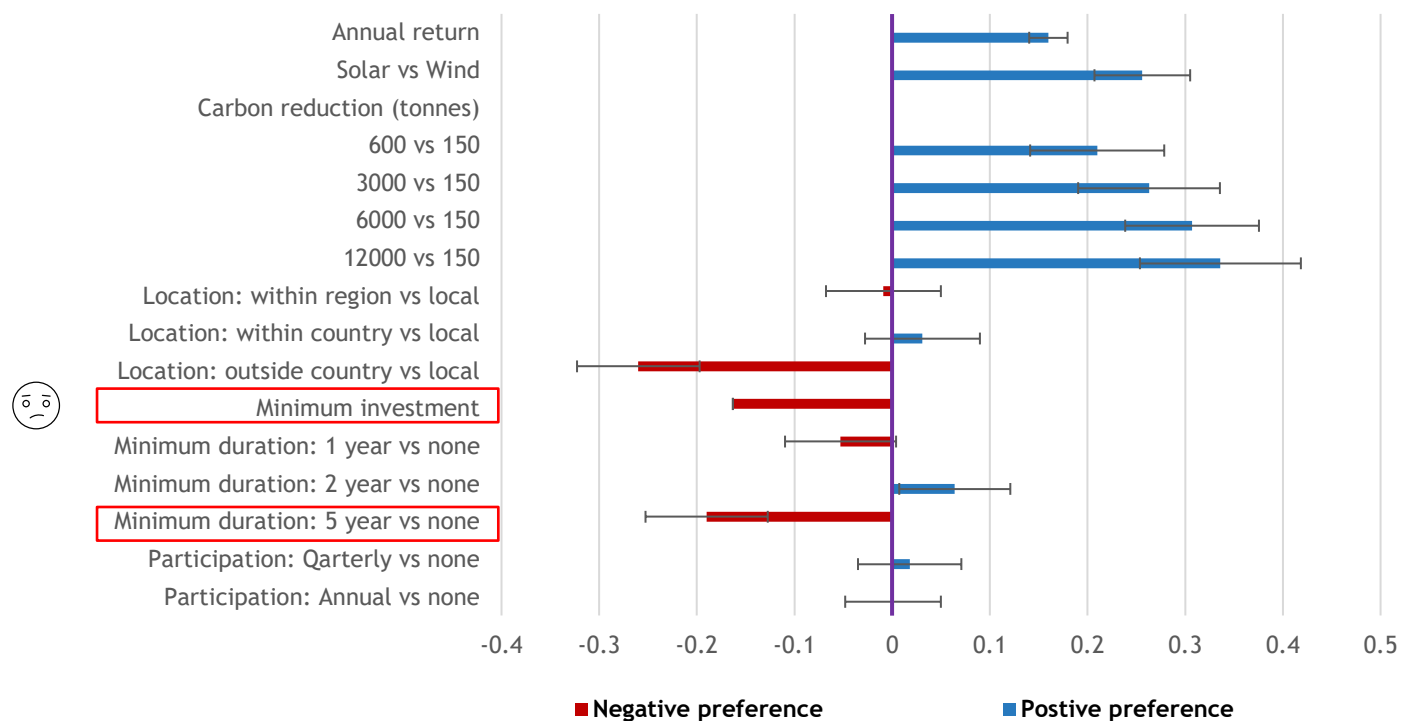
Results: general public

Relative utilities for energy cooperative features (means)



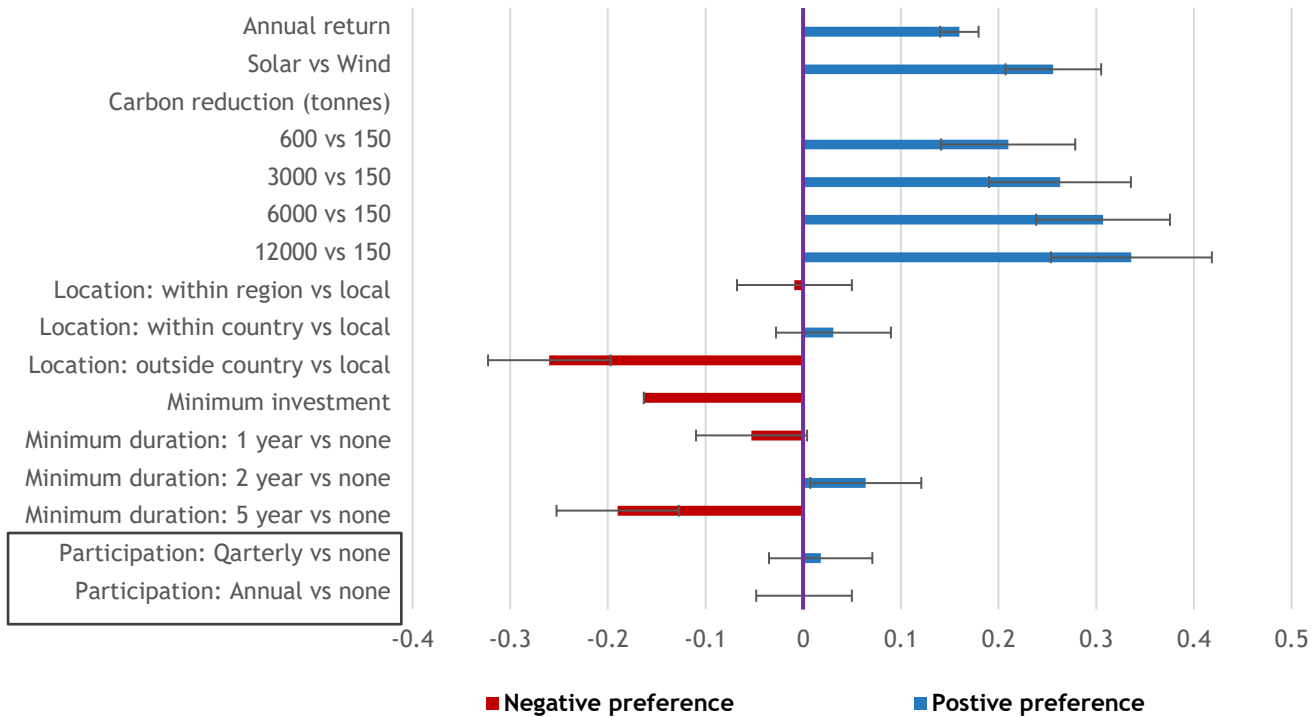
Results: general public

Relative utilities for energy cooperative features (means)



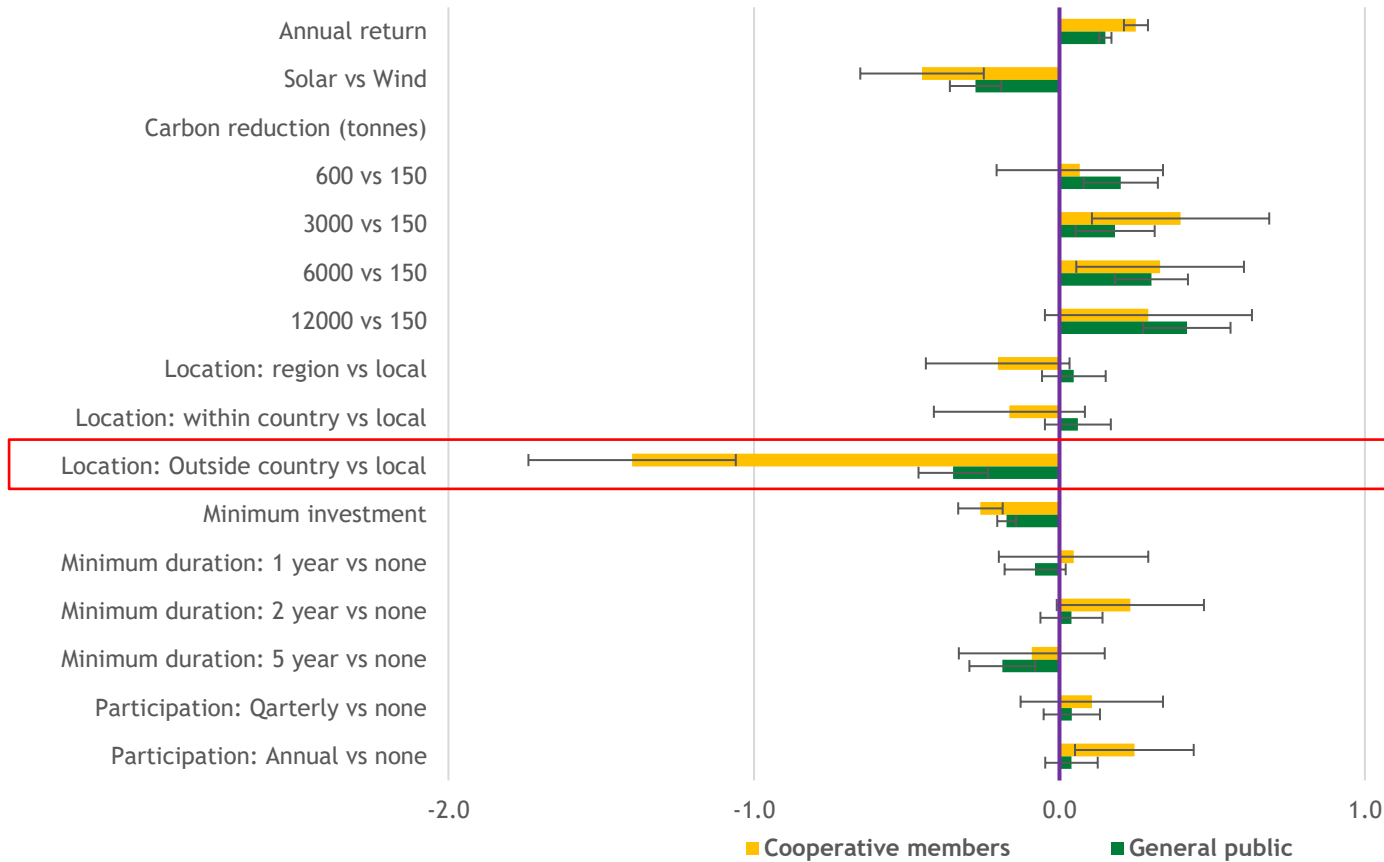
Results: general public

Relative utilities for energy cooperative features (means)



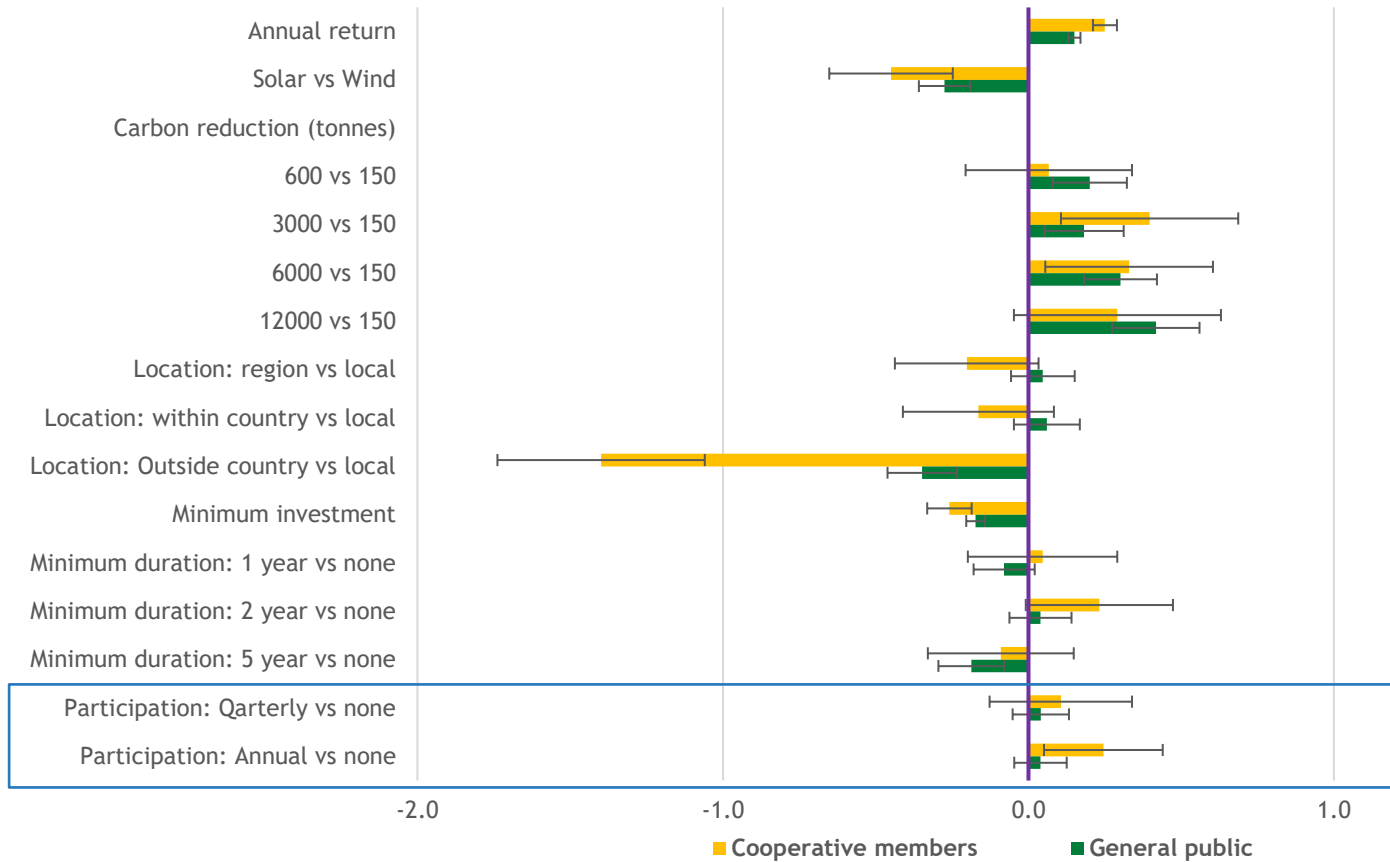
Results: members vs general public

Relative utilities for energy cooperative features (means)

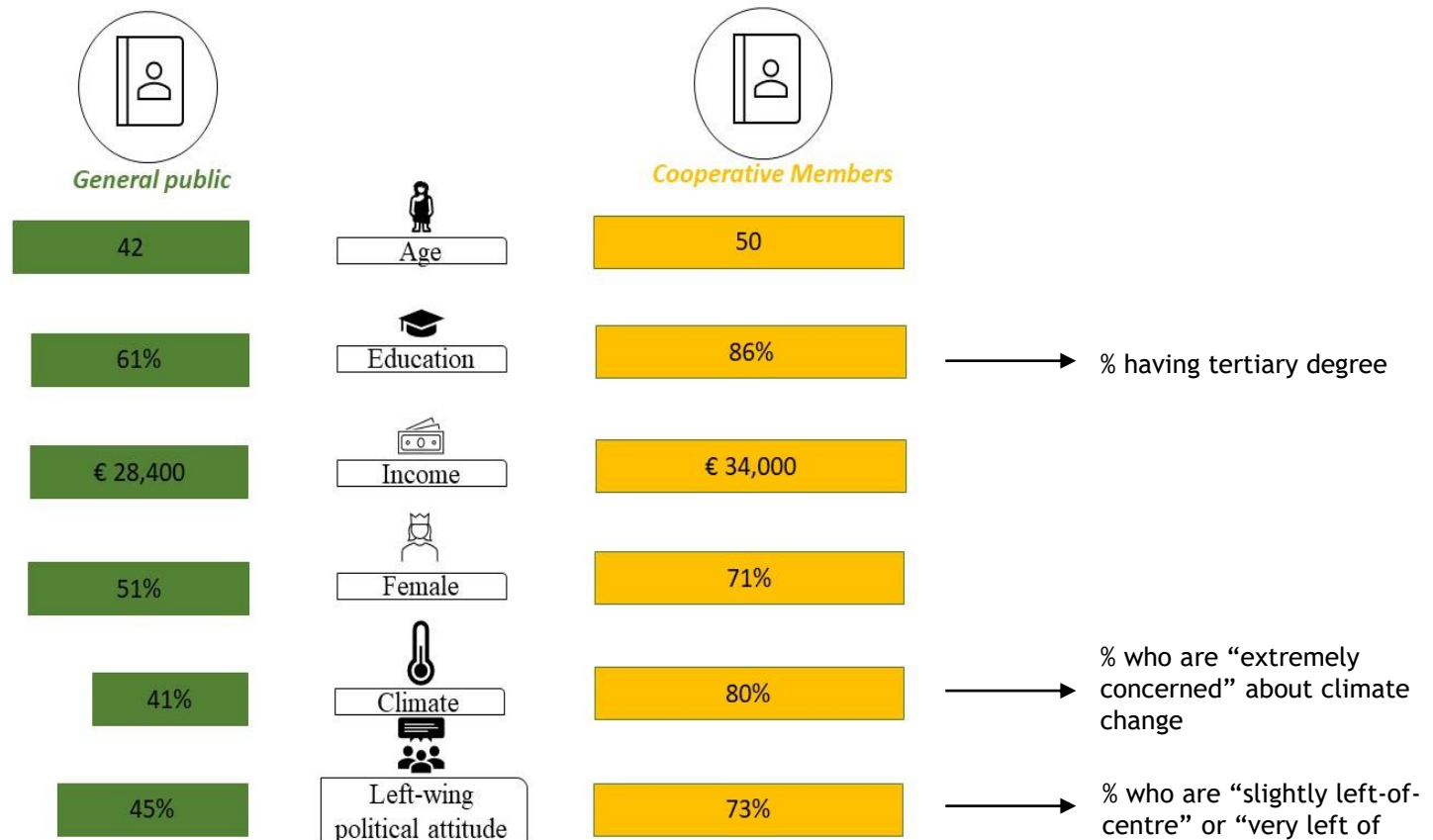


Results: members vs general public

Relative utilities for energy cooperative features (means)

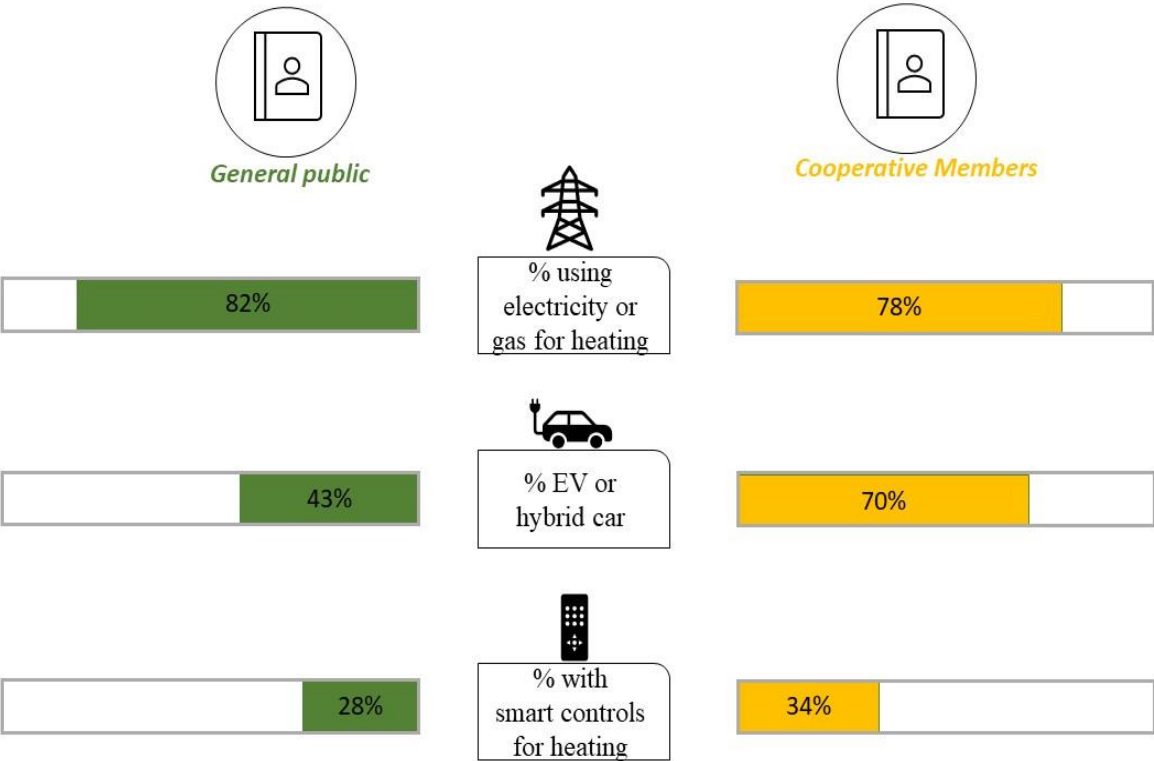


Results: members vs general public



Profile comparison between the general public and cooperative members regarding a series of socio-demographic indicators

Results: members vs general public



Profile comparison between the general public and cooperative members regarding selected indicators of energy behaviour

Results: members vs general public



Profile comparison between the general public and cooperative members regarding selected indicators of **attitudes towards energy products and services**

Key findings

❑ What aspects of energy cooperatives are important to attract investors

- motivated by both financial returns and environmental concerns
- dislike investment requirements (e.g., minimum amount of investment)
- not interested in participatory meetings

❑ How do cooperative members differ from the general public

- Differ in some socio-demographics, energy behaviors and attitudes towards energy-saving products/services
- Differ in preferences for energy cooperative characteristics

Cooperative members:

- have stronger opposition to projects that are built outside their countries;
- are more interested in participatory meetings

Thank you, questions?

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Attributes and levels

Attributes	Levels				
	0%	2.5%	5%	7.5%	
Annual return	0%	2.5%	5%	7.5%	
Type of the project	Solar energy	Wind energy			
Carbon emissions reduction and the corresponding size of the project	150 tonnes (a quarter football pitch)	600 tonnes (1 football pitch)	3,000 tonnes (5 football pitches)	6,000 tonnes (10 football pitches)	12,000 tonnes (20 football pitches)
Location of the project	Within your local area	Within your region	Within your country	Outside your country	
Minimum amount of investment	€50	€100	€500	€1,000	€5,000
Minimum duration of investment	No minimum duration	1 year	2 years	5 years	
Participation	None	Quarterly meetings	Annual meetings		

Technical details

Discrete choice experiment modelling

- The following respondents were excluded from DCE analysis: a) those who always chose Project A or Project B; b) those who chose the opt-out option constantly for the belief that it is not citizens' responsibilities to contribute to the development of renewable energy projects
- Mixed logit model run through the command *mixedlogit* in stata
- All attribute parameters are random with 500 halton draws and annual return is non-random

Robustness check

- Using MLHS draws (through *Apollo* package (Hess and Palm 2019)) show similar results

Energy cooperatives of SocialRES partners

- Bürger-Energie Bodensee eG; BürgerEnergiegenossenschaft Biederbach & Elztal eG - Germany
- Energética - Spain
- I-ENER - France
- Green Energy Cooperative - Croatia
- Coopérnico - Portugal