

# Energy Communities and Energy Conservation



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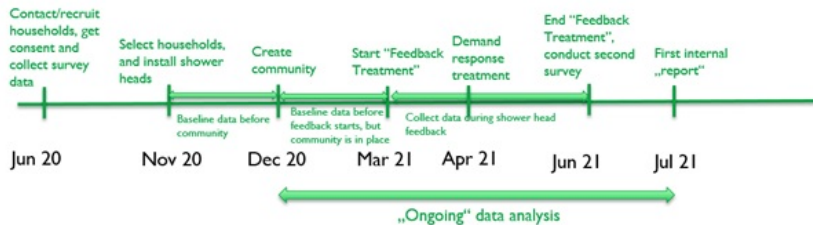
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# Background

- In recent years, citizen-led energy communities have emerged
- There is a growing literature on the effect of energy communities (Hoppe et al. 2019; Wörner et al. 2019)
- Yet, these might be subject to selection bias (Tiefenbeck et al. 2019)
- We exogeneously created an energy community, partnering with a Slovenian electricity supplier

# Research plan



## Data

In the baseline survey, we collected socio-economic characteristics, data on electrical equipment, and attitudes

	Control	Treatment	t-Statistic
Age	53.183	55.378	-0.628
Household size	3.148	3.129	0.121
Female	0.299	0.351	-0.913
University degree	0.319	0.336	-0.301
Retired	0.311	0.258	0.968
High income	0.130	0.168	-0.796
Electric boilers	0.430	0.379	0.844
Fridges	7.378	1.409	1.009
Freezers	0.815	0.818	-0.034
Dish washers	4.785	1.053	1.010
Tumble driers	4.341	0.598	1.012
Informed (consumption)	0.644	0.606	0.646
Environmental concern	14.415	14.242	0.793
Social identity	10.489	10.333	0.709

# Treatment

- In December 2020, the portal went online
- It entails i.a. a tab on electricity consumption and a community dashboard

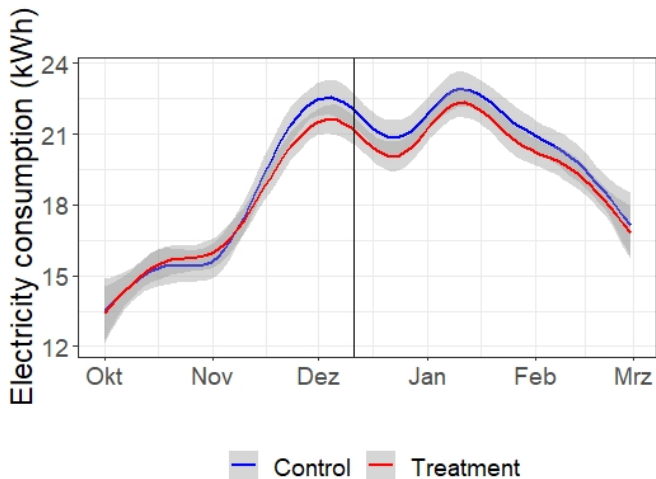


Electricity tab



Community dashboard

## Graphical results



## Difference-in-differences results

	(1) Coeff. / Std. Err.	(2) Coeff. / Std. Err.
Post	7.361*** (0.645)	7.360*** (0.645)
Community × Post	−0.209 (0.149)	−0.205 (0.149)
Env. concern × Post	−	0.237** (0.092)
Community × Env. concern × Post	−	−0.321** (0.156)
Individual fixed effects	Yes	Yes
Day fixed effects	Yes	Yes
Observations	37,762	37,717
No. of households	270	267

Note: \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

# Conclusion

- Ongoing decentralization in the electricity sector
- We tackle the often cited limitation of selection bias
- We find only tentative evidence for energy conservation
- This might call for policies that enhance group identity



# References I



Hoppe, Thomas, Frans HJM Coenen, and Maria T Bekendam (2019). “Renewable energy cooperatives as a stimulating factor in household energy savings”. In: *Energies* 12.7, p. 1188.



Tiefenbeck, Verena, Anselma Wörner, Samuel Schöb, Elgar Fleisch, and Thorsten Staake (2019). “Real-time feedback promotes energy conservation in the absence of volunteer selection bias and monetary incentives”. In: *Nature Energy* 4.1, pp. 35–41.



Wörner, Anselma, Arne Meeuw, Liliane Ableitner, Felix Wortmann, Sandro Schopfer, and Verena Tiefenbeck (2019). “Trading solar energy within the neighborhood: field implementation of a blockchain-based electricity market”. In: *Energy Informatics* 2.1, pp. 1–12.