DRIVING TRANSFORMATION

Behavior, Energy & Climate Change (BECC) / November 12-15, 2023 / Sacramento, CA

Co-Convened by

Stanford | Environmental and Energy Policy Analysis Center

ciee California Institute for Energy and Environment

CITRIS AND THE BANATAO INSTITUTE

ACEEE

Climate change needs behavior change

Smart thermostats
Methane digesters
Micro wind

Household recycling & recycled paper
Household water saving
Solar water
LED lighting
Rooftop solar
Electric bicycles
Telepresence
Bicycle infrastructure
Walkable cities
Hybrid cars
Mass transit
Ridesharing
Electric vehicles

Farmland irrigation
Nutrient management
Farmland restoration
System of rice intensification
Managed grazing
Tree intercropping
Conservation agriculture

Reduced food waste
Plant rich diets
Clean cookstoves
Composting
Silvopasture
Regenerative agriculture
Tropical staple trees

PROJECT DRAWDOWN.

Climate Change Needs Behavior Change
Making the Case for Behavioral Solutions to Reduce Global Warming

CENTER FOR THE BEHAVIOR & THE ENVIRONMENT
rare

RARE KNOWLEDGE
Sharing learnings, lessons and insights from behavioral science and conservation around the world
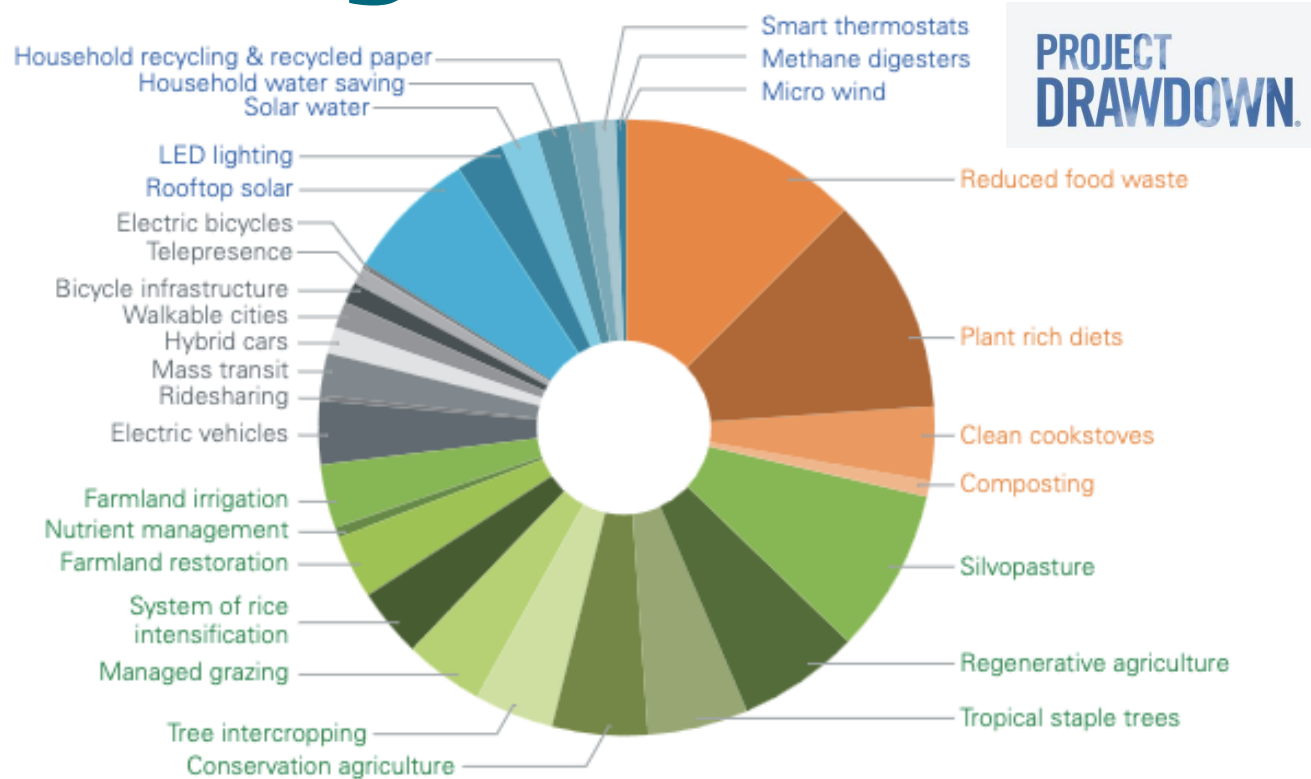
"Therefore, large-scale adoption of these thirty behavioral solutions could mitigate **19.9–36.8%** of [global GHG] emissions between 2020 and 2050."
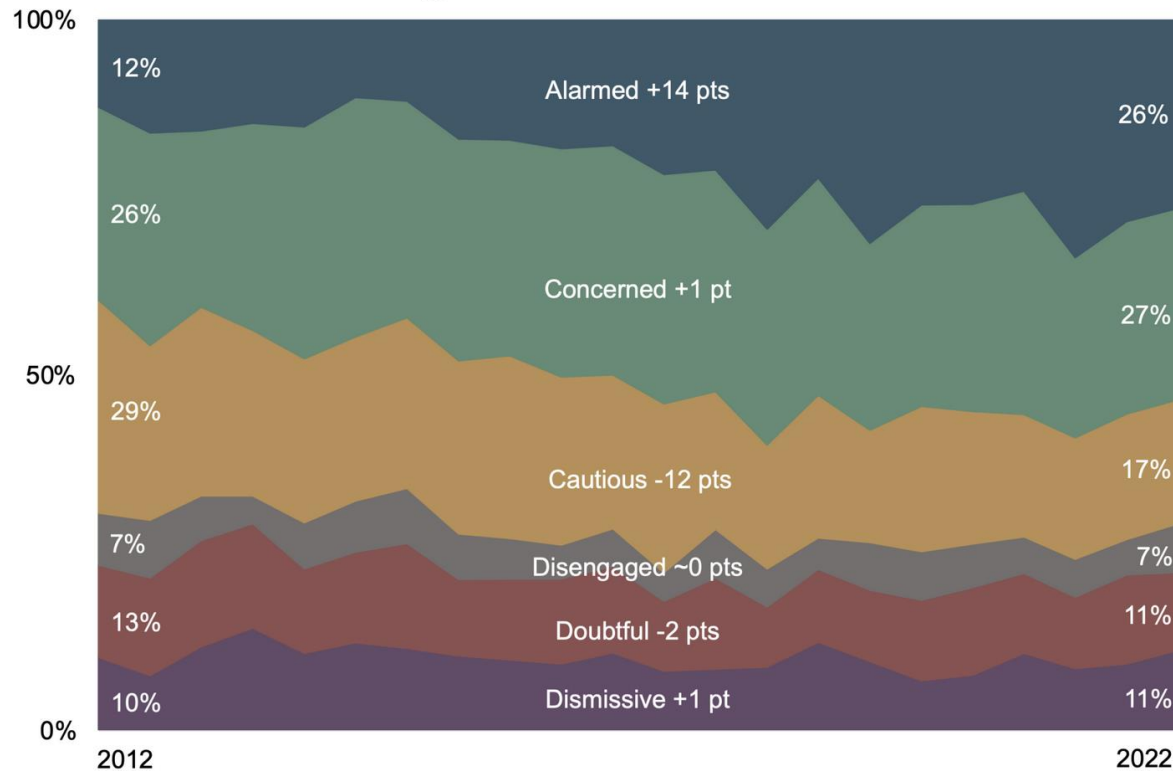
Williamson, K., **Satre-Meloy, A**., Velasco, K., & Green, K., 2018. Climate Change Needs Behavior Change: Making the Case For Behavioral Solutions to Reduce Global Warming. Arlington, VA: Rare.

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Engaging the public in climate discourse

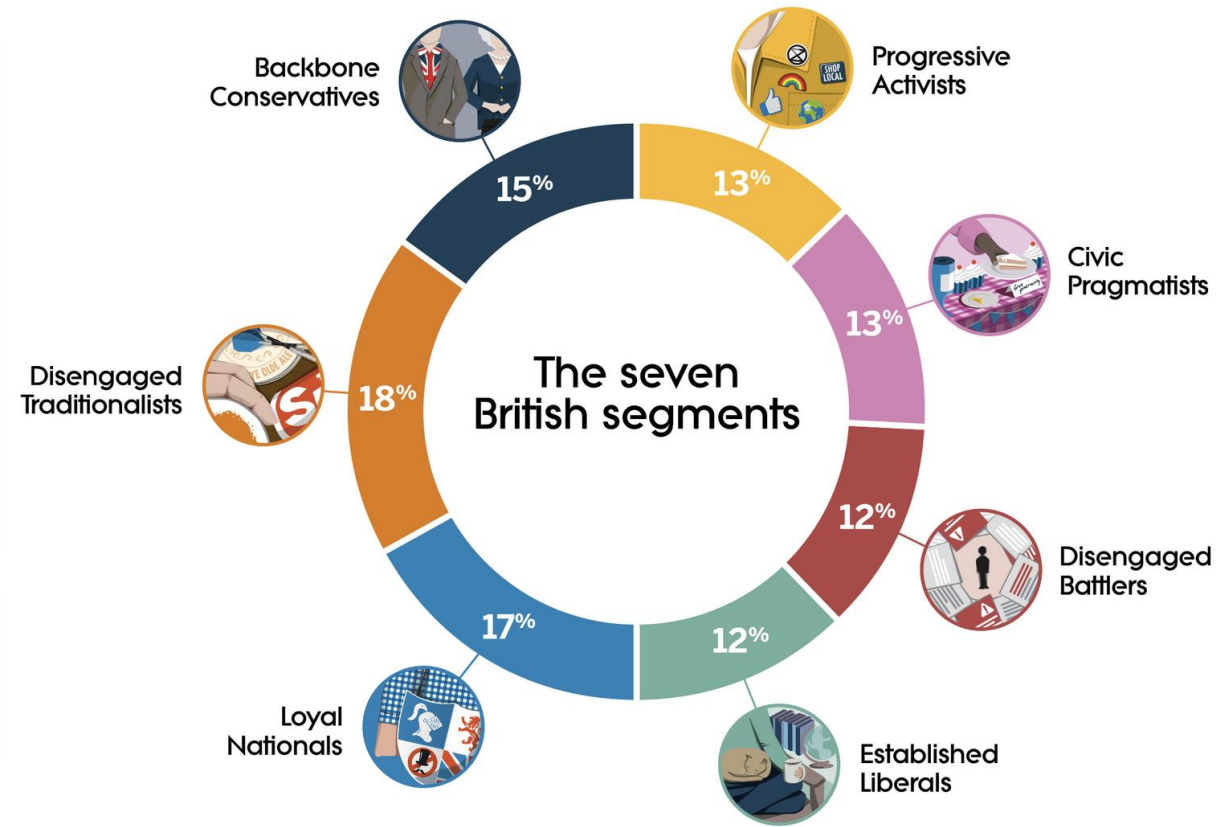## Global Warming's Six Americas Over the Last Decade

100%
- 12% — Alarmed +14 pts — 26%
- 26% — Concerned +1 pt — 27%
50%
- 29% — Cautious -12 pts — 17%
- 7% — Disengaged ~0 pts — 7%
- 13% — Doubtful -2 pts — 11%
- 10% — Dismissive +1 pt — 11%
0%
2012 — 2022

Data from 22 national surveys (n = 25,393)
April 2012 – December 2022

YALE PROGRAM ON
Climate Change
Communication

GEORGE MASON UNIVERSITY
CENTER for CLIMATE CHANGE
COMMUNICATION

The seven British segments

- Backbone Conservatives 15%
- Progressive Activists 13%
- Civic Pragmatists 13%
- Disengaged Battlers 12%
- Established Liberals 12%
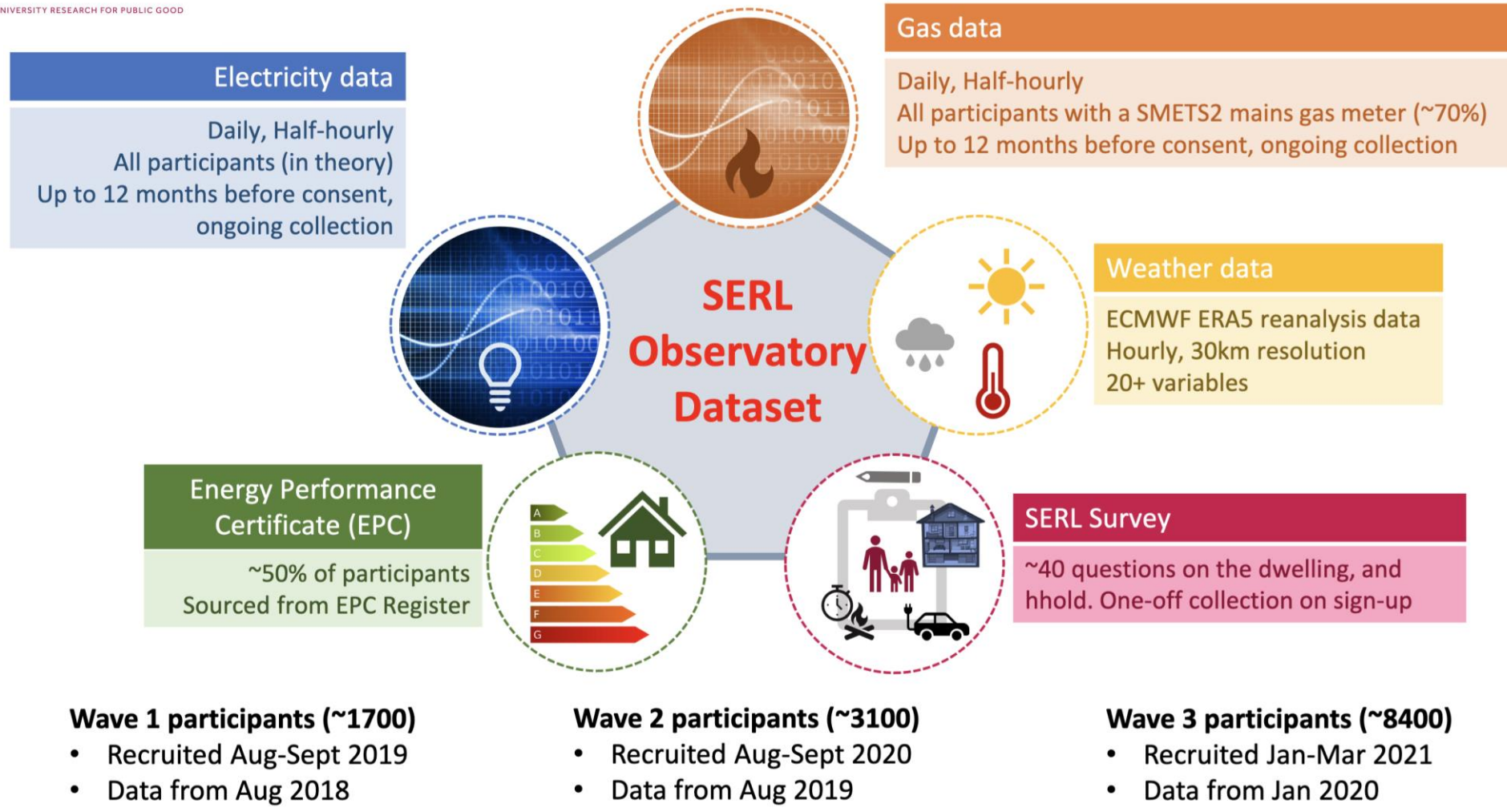- Loyal Nationals 17%
- Disengaged Traditionalists 18%

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UK Smart Energy Research Lab (SERL)

SMART ENERGY RESEARCH LAB
UNIVERSITY RESEARCH FOR PUBLIC GOOD

Gas data

Daily, Half-hourly
All participants with a SMETS2 mains gas meter (~70%)
Up to 12 months before consent, ongoing collection

Electricity data

Daily, Half-hourly
All participants (in theory)
Up to 12 months before consent, ongoing collection

Weather data

ECMWF ERA5 reanalysis data
Hourly, 30km resolution
20+ variables

SERL Observatory Dataset

Energy Performance Certificate (EPC)

~50% of participants
Sourced from EPC Register

SERL Survey

~40 questions on the dwelling, and hhold. One-off collection on sign-up

Wave 1 participants (~1700)
- Recruited Aug-Sept 2019
- Data from Aug 2018

Wave 2 participants (~3100)
- Recruited Aug-Sept 2020
- Data from Aug 2019

Wave 3 participants (~8400)
- Recruited Jan-Mar 2021
- Data from Jan 2020

Few, J., Pullinger, M., McKenna, E., Elam, S., Webborn, E., Oreszczyn, T., 2022. Smart Energy Research Lab: Energy use in GB domestic buildings 2021. London, UK: Smart Energy Research Lab. http://www.serl.ac.uk/

UK national household survey

- April 2022, conducted by Dynata

- Nationally representative of age, region, gender, education, ethnicity

- Over 250 questions, spanning "Six domains":
  - Knowledge of, and attitudes towards, climate change
  - Consumption of energy, food, transport and products, and openness to change
  - Social capital measures
  - Personality traits and socio-demographic variables
  - Political opinions and support for climate policies

- 2 surveys conducted over 2 weeks
  - *N=1,001* (completed both surveys)
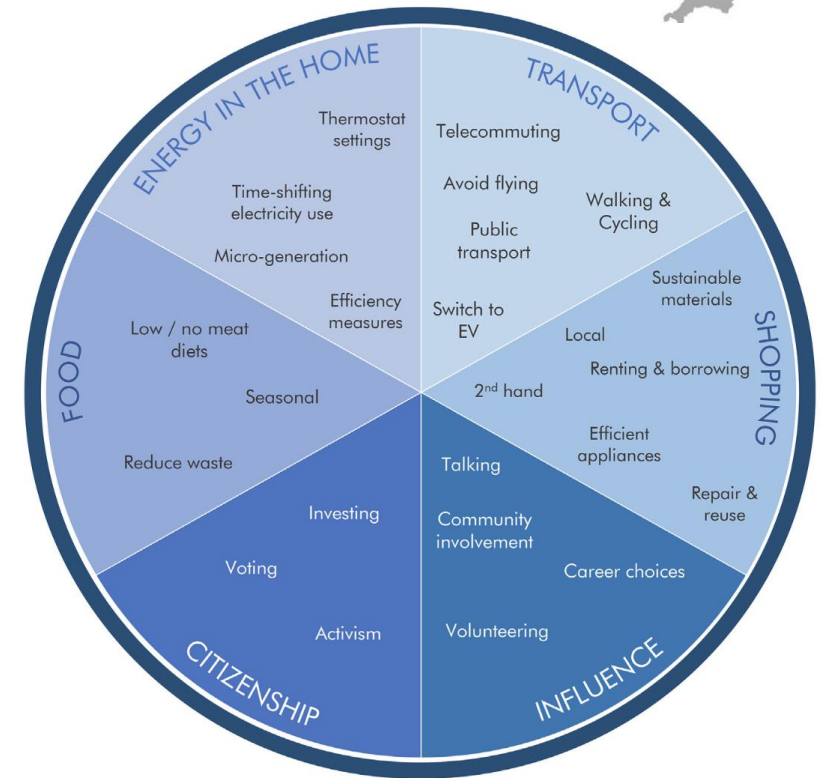
Analysis approach
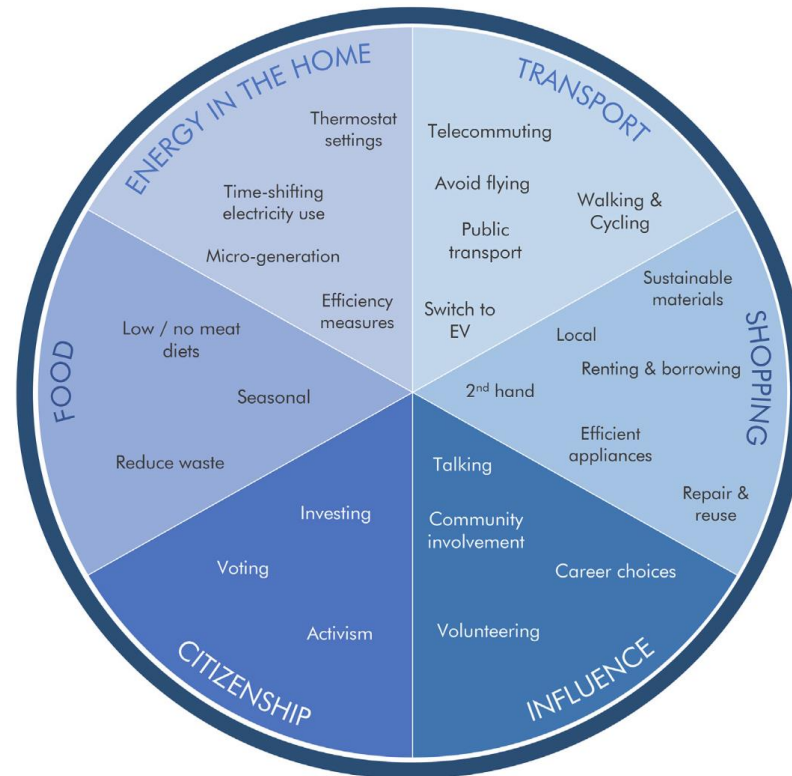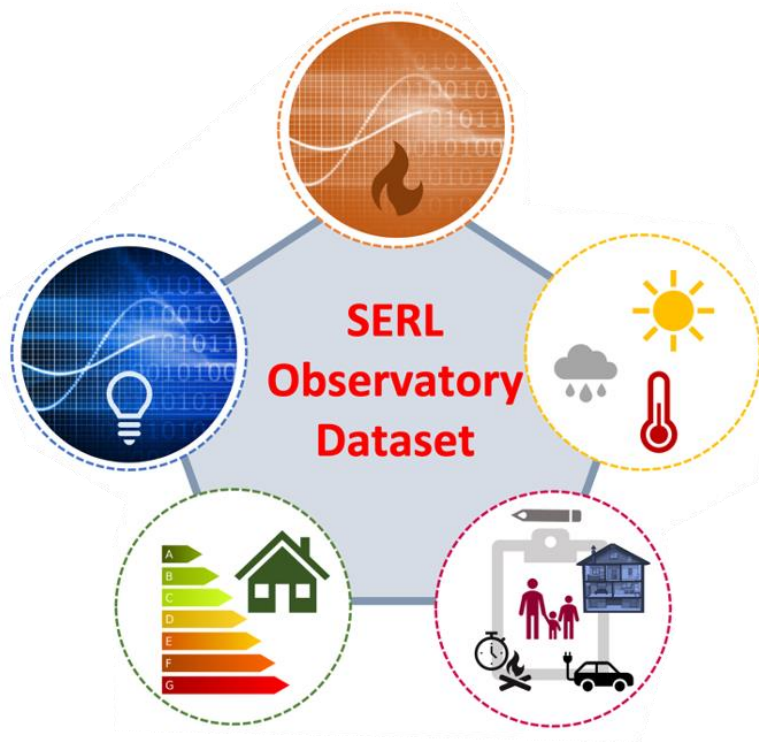
Step 1: Build predictive model of electricity/gas use trained on SERL data

Step 2: Use predictive model and shared variables between SERL and "Six domains" survey to predict electricity/gas usage

Step 3: Model relationship between survey data on "Six domains" and electricity/gas usage

- Electricity and gas usage data
- Dwelling and household characteristics
- *N=6,751* (electricity), *N=5,256* (gas)
- Nationally representative sample

- Dwelling and household characteristics
    - (>50 variables overlap w/ SERL)
- Survey data covering "Six domains of choice for climate action"[1]
- *N=1,001*
- Nationally representative sample

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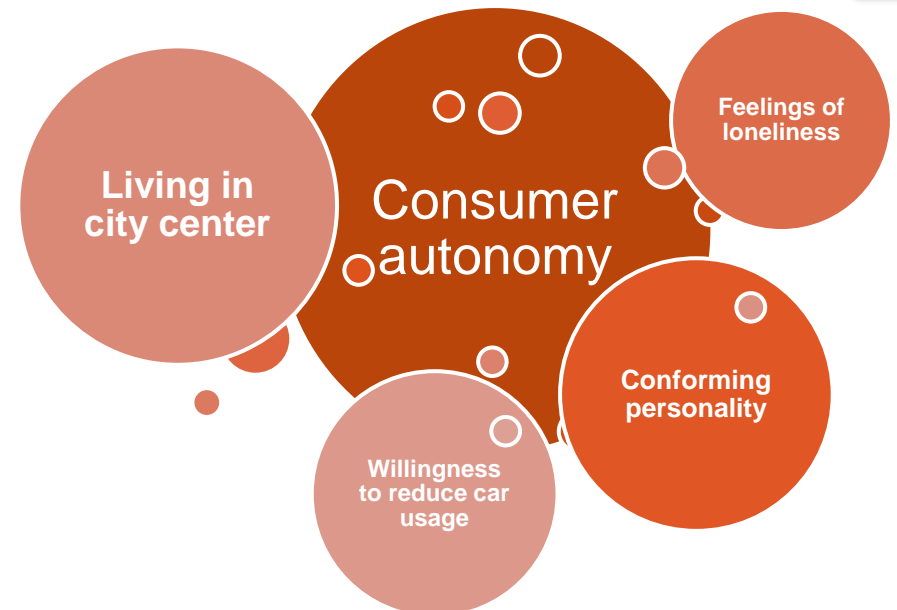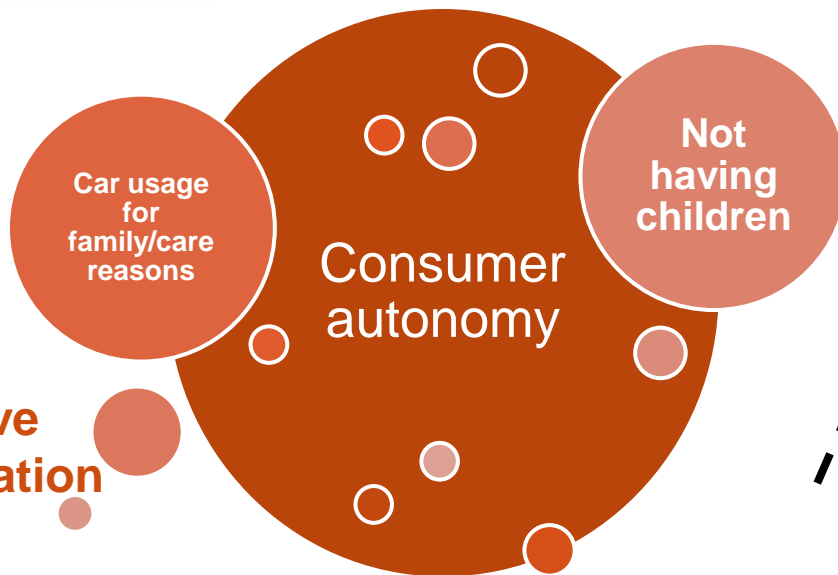# Analysis results

Positive association

Negative association
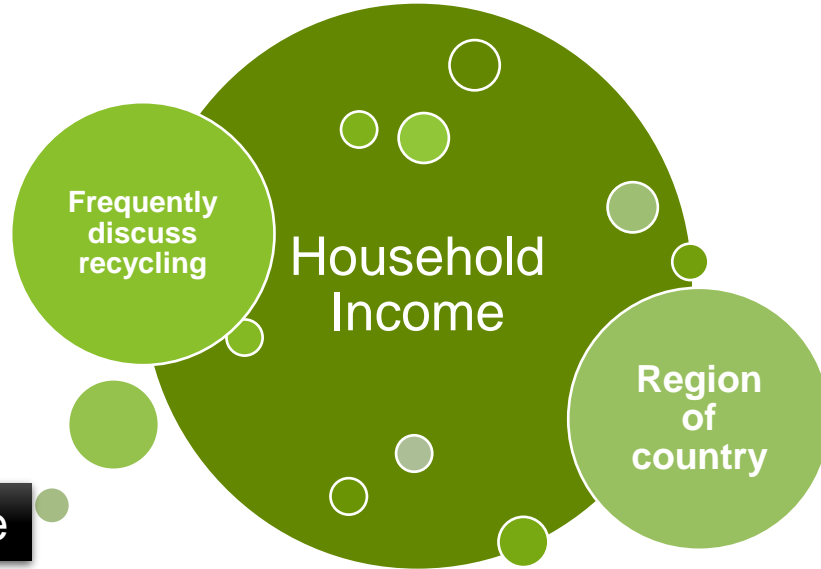
Electricity Usage

Gas Usage

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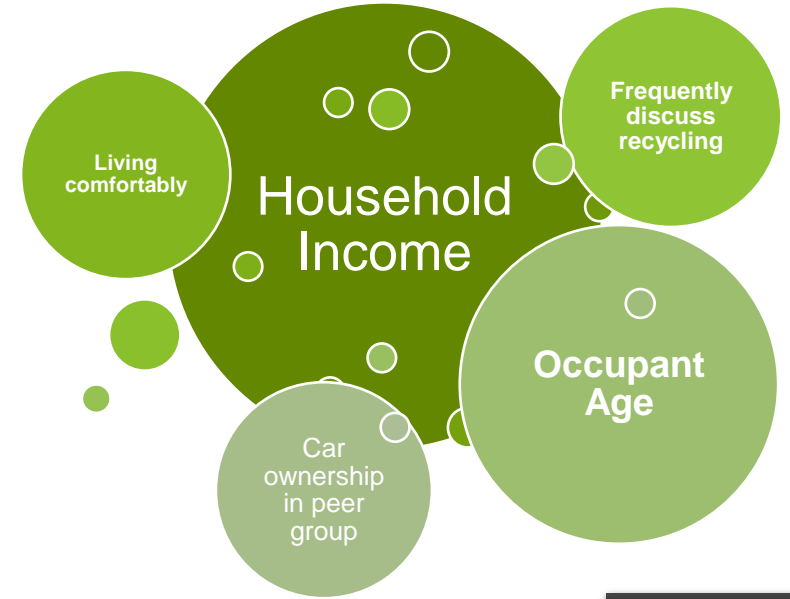
Future research

- Develop archetypes of "Carbon Capability" for UK population based on survey data

- Develop estimates of carbon footprint for other non-energy domains

- Analyze relationships between carbon footprint and "Carbon capability" to inform cross-cutting perspective on accelerating pro-environmental choices
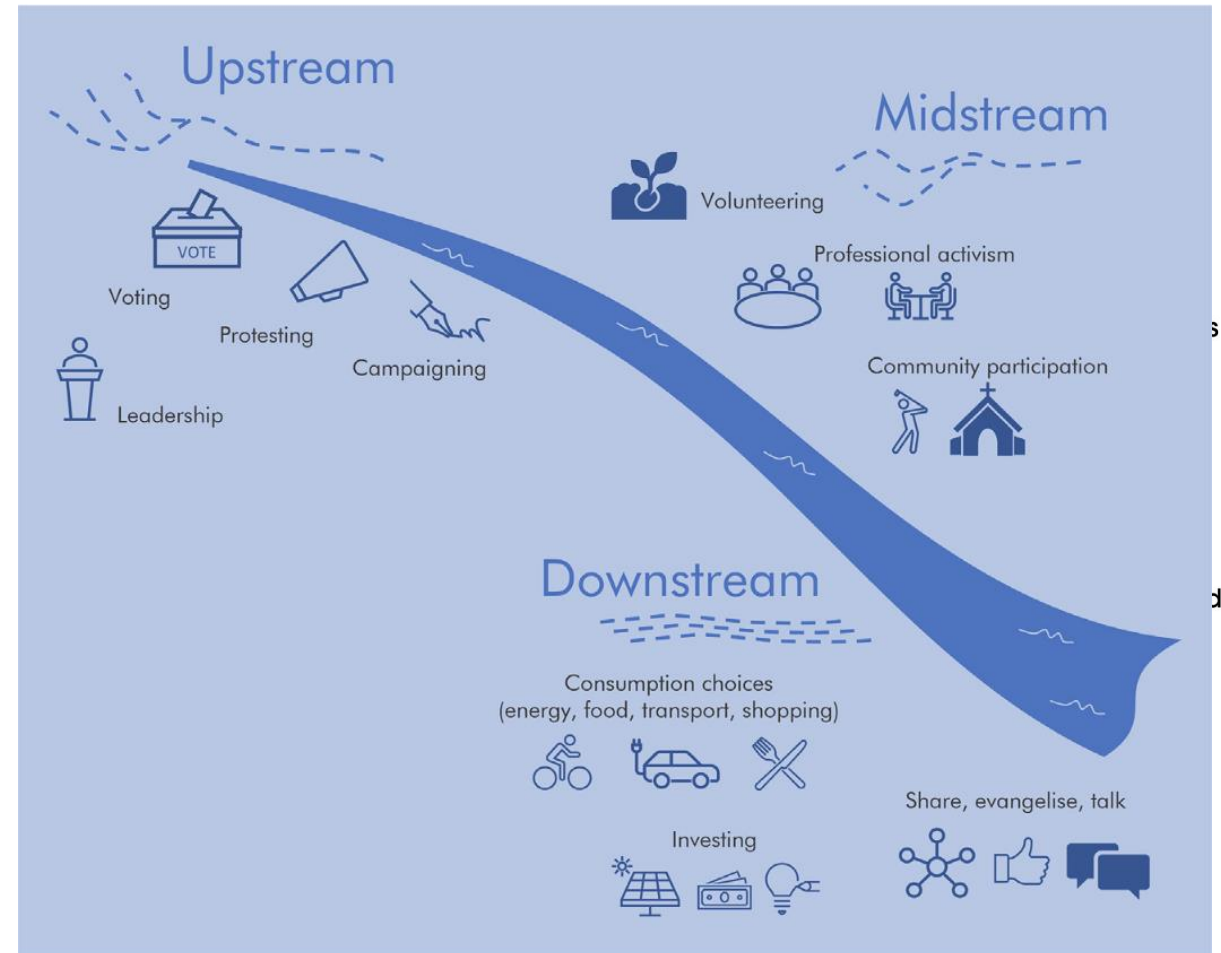
Hampton, S., Whitmarsh, L., 2023. Choices for climate action: A review of the multiple roles individuals play. *One Earth* 6, 1157–1172. https://doi.org/10.1016/j.oneear.2023.08.006

Thank you

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