Psychology's Ultimate Challenge: The Climate Change Dilemma

Siegmar Otto, Oliver Arnold, & Florian Kaiser

Otto-von-Guericke-University Magdeburg

15th International Conference on Social Dilemmas
ETH Zurich (Switzerland), July 10-13, 2013
Climate change mitigation and psychology

Climate change is substantially different from other env issues
Extrinsic behavioral management of single behaviors -> Rebound
Measurement of intrinsic motivation / cooperation

The climate change dilemma - many open questions
How can we translate climate change mitigation into a game?
How do we contribute in the real game?

Commonly acknowledged contributions to climate change mitigation
How do we contribute in the real game?

Commonly acknowledged contributions to climate change mitigation

[Images of light bulbs, with the text "high"]
How do we contribute in the real game?

Commonly acknowledged contributions to climate change mitigation
How do we contribute in the real game?

Problem: Rebound - no real contribution

![Costs and consumption of light](image)

Herring & Roy (2007)
How do we contribute in the real game?

Problem: Rebound - no real contribution

REALITY on the individual level

increasing per-capita energy consumption because of efficient technology

<table>
<thead>
<tr>
<th></th>
<th>1996-2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>consumption per capita kWh/a</td>
<td>+23%</td>
</tr>
<tr>
<td>consumption per dish washer kWh/a</td>
<td>-19%</td>
</tr>
<tr>
<td>stock of dish washers</td>
<td>+63%</td>
</tr>
</tbody>
</table>

Umweltbundesamt (2011)

national energy supply seems to level off

rebound: efficiency gains are overcompensated by additional consumption
How do we contribute in the real game?

Commonly acknowledged contributions to climate change mitigation:

- High impact (car, bus, bike, money bags)
How do we contribute in the real game?

Commonly acknowledged contributions to climate change mitigation
How do we contribute in the real game?

Problem: Rebound - no real contribution

(www.worldbank.org)

no positive overall effect of single behavior changes

-> Rebound 100%

Klingholz & Töpfer (2012); Madlener, & Alcott (2011), ....
Why do we act and use technology (and produce CO2)?
Why do we act and use technology (and produce CO2)?

• more effective goal attainment
• functional, facilitates everyday life
• attain our goals with less effort and faster
• more goals can be attained

efficiency increase is prime strategy of evolution
valid on societal and individual level
the same in flora and fauna (biopsychology)
Why do we act and use technology (and produce CO2)?

psychological explanation of unrestrained consumption

- the purpose of cars, fridges, and houses is not to save energy
- cars, fridges, and houses are means to satisfy personal ends
- technology serves personal goals
- climate change mitigation is no prime goal of most individuals

common practice: extrinsic* behavioral management
main focus on enticements

- financial
- social

*intrinsic motivation: personal goal to reduce ecolog burden / mitigate climate change
extrinsic motivation: any other motive
How do we try to change this behavior?

financial enticements

e.g., providing free access to products or services, fees, rebates, refund, subsidies ...

social enticements

benefits grounded in people's social motives e.g.:

• status motives

• social norms (descriptive and injunctive)

• publicly made promises

many motives extrinsic to climate change mitigation

Rebound
How does behavior relate to motives and cooperation?
How do we measure motivation and cooperation?

simply ask people what they do for the environment
How do we measure motivation and cooperation?

Rasch-based measure

- active environmentalism
- refraining from own car
- refraining from shopping bags
- switching off engine
- refraining from car use
- refraining from fabric softeners
- heating reduction (> 4 Std.)
- commuting by bike
- refraining from clothes dryers
- no convenience food
- refraining from prewashing
- taking showers not baths
- recycling paper

(Germany 2010, N = 2,317)

How can we increase climate change mitigation?

Intrinsic motives vs. Extrinsic motives

common practice -> change behavior difficulty (with extrinsic motives)

bound on situational costs
- sociodemographics
- social beliefs/norms
- signaling (Prius)
- other situational factors e.g., old installations that don't work with new fluorescent light bulbs
  - ....

no change in intrinsic motivation -> rebound

no reduction in per capita energy consumption
How can we increase climate change mitigation?

Intrinsic motive vs. Extrinsic motives

- **Intrinsic motive**: affects personal overall consumption
- **Extrinsic motives**: no costly regulation necessary

Internally motivated persons: cooperation in the climate change dilemma
How does intrinsic ecological motivation relate to pro-sociality?

**Correlation**

**Intrinsic motivation** with:

- **SVO slider**: 0.38
- Community aspiration: 0.42
- Overt donation: 0.46

(p < .001, N = 175)

Kaiser, Otto & Schuler

Prosocial propensity is related to ecological motivation

Kaiser & Byrka (2011)

Kaiser, Byrka & Hartig (2010)

**Cooperation in commons dilemma**

**Intrinsic motivation**

- **Climate irrelevant (points)**
  - High: 38
  - Low: 29

- **Climate relevant (energy)**
  - High: 36
  - Low: 28

Kaiser, Byrka & Hartig (2010)
dilemma games can simulate single behaviors very well

BUT: overall effect on mitigation is questionable (rebound)

intrinsic motivation needed

what we need for climate change dilemma games?

personal overall consumption / CO2 footprint as criterion

realistic operationalization?

cooperation with 10 Billion people?

feedback unavailable (complex climate system)
Thank you!


Siegmar Otto
Otto-von-Guericke-University
Magdeburg

siegmar.otto@ovgu.de