

# PROSUMERS

And energy awareness

STUNS  energi



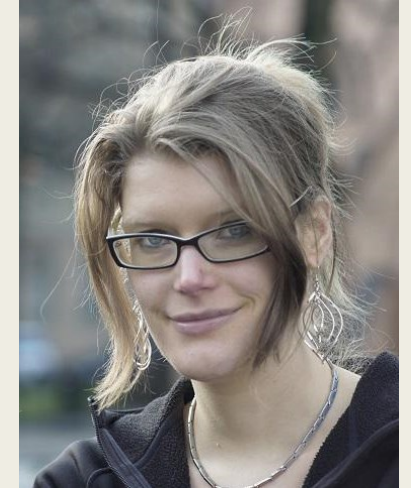
# Prosumers and energy awareness

Collaboration between STUNS Energi and two research groups from Uppsala university - Cajsa Bartusch's group at Industrial engineering & management and Peter Juslin's group at department of psychology

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# Prosumers and energy awareness

Develop an evaluation tool to measure energy awareness and what drives energy and environmental behaviours

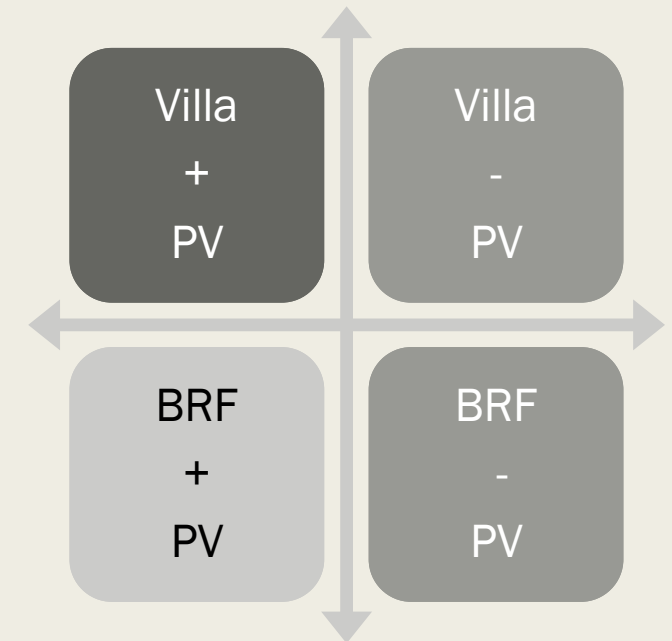
Carry out a first study on how the role as an active or passive prosumer affects an individual's energy awareness

# How to measure energy awareness?

The survey was sent out to 2000+ households

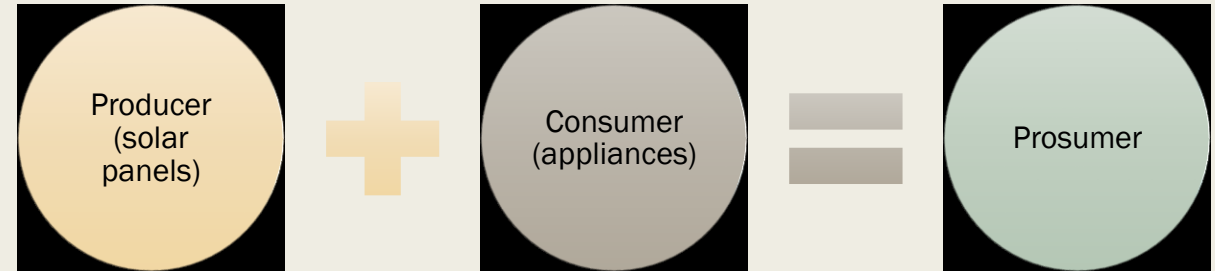
>25% response rate in all groups

- Single home owners (villa) with solar panels
- Single home owners (villa) without solar panels
- Condominium owners (brfs) with solar panels
- Condominium owners (brfs) without solar panels



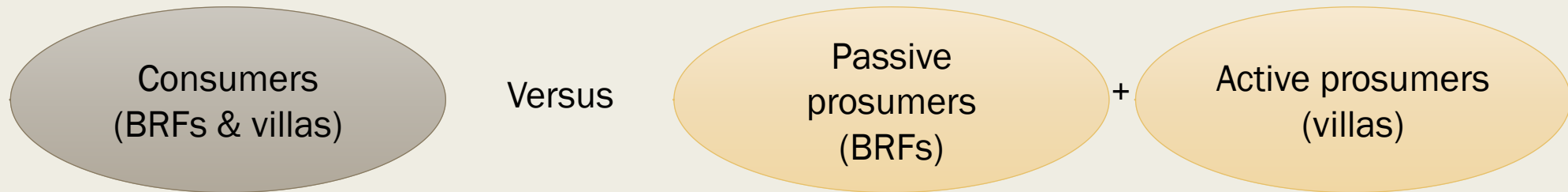
# Types of (solar electricity) prosumers

- (Electricity) consumers
  - *Any type of housing*
  - *Do not own solar panels*



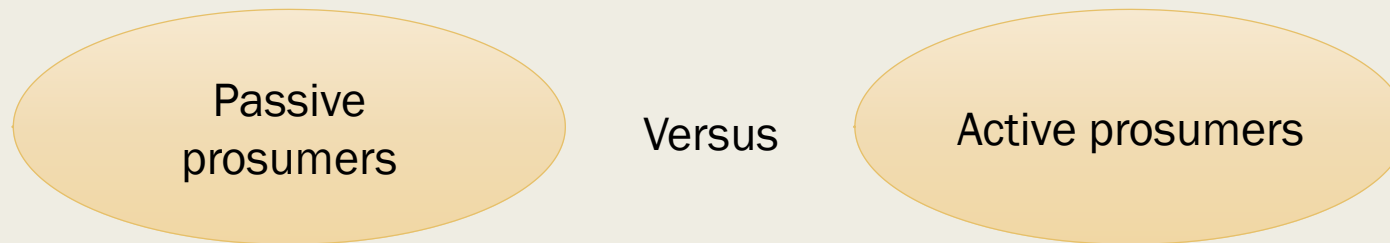
- Prosumers
  - *Passive prosumers*
    - Often condominium owners (BRFs)
    - Own solar panels but...
    - Were not part of decision to purchase
  - *Active prosumers*
    - Often villa owners (single family homes)
    - Own solar panels and...
    - Were involved in installing/purchasing these

# Questions we can ask



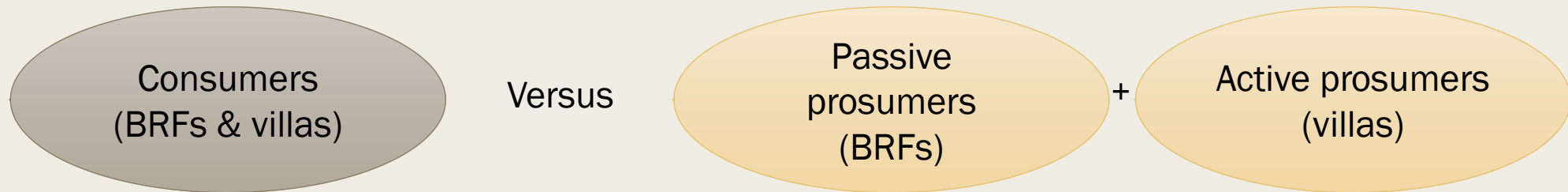
Are prosumers more energy-aware than consumers?

Are their motivations to perform pro-environmental behaviours different?



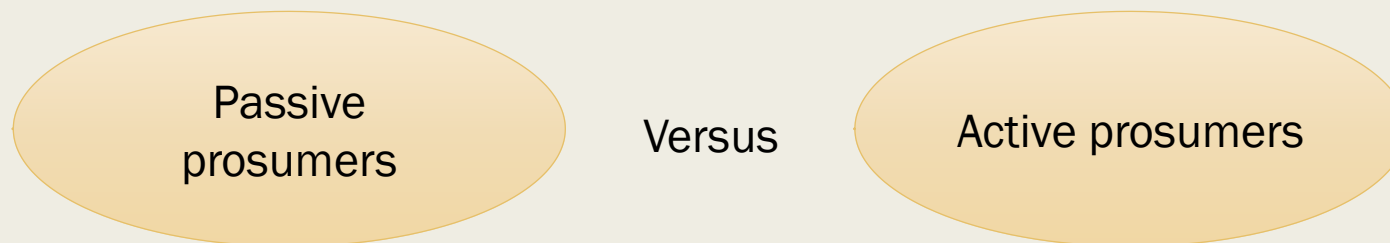
Are active prosumers different from passive prosumers in energy awareness?

# Questions we can ask



Are prosumers more energy-aware than non-prosumers?

Are their motivations to perform pro-environmental behaviours different?



Are active prosumers different from passive prosumers in energy awareness?

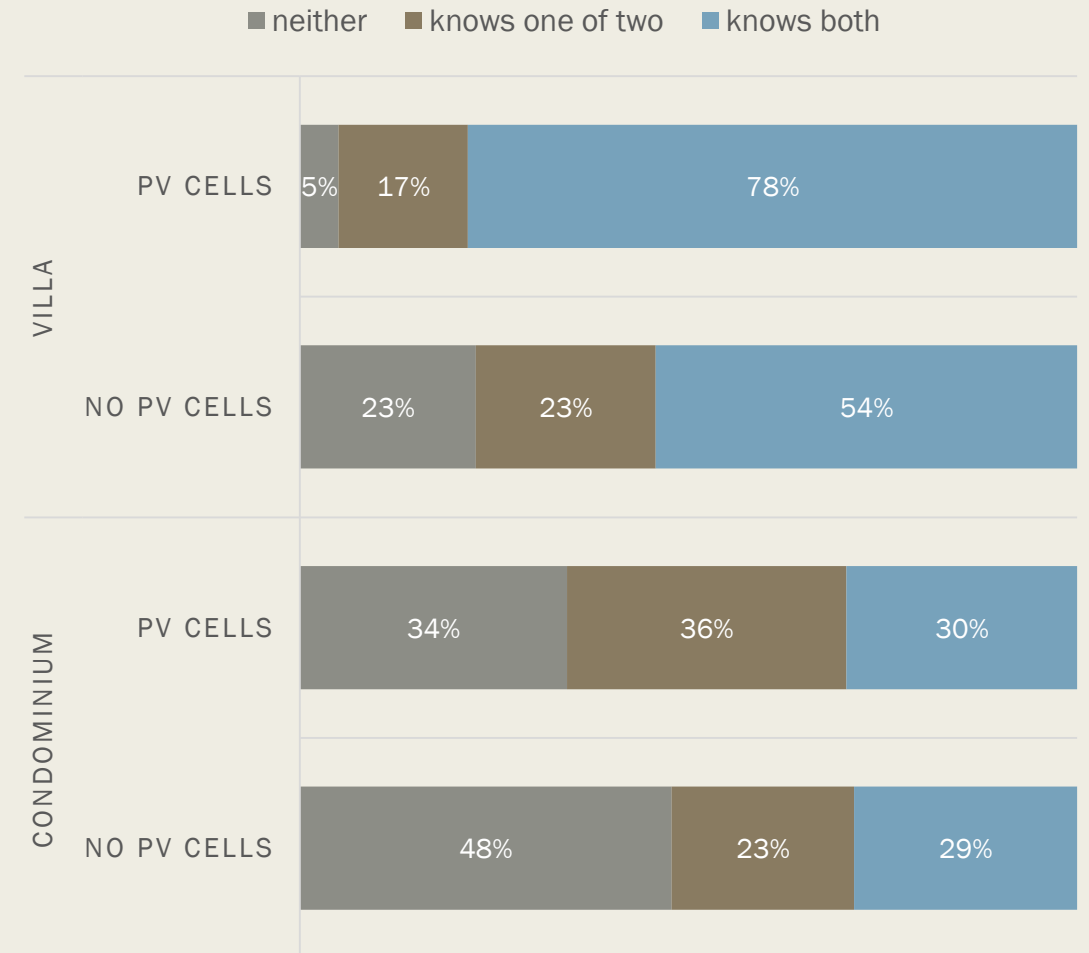
# Energy (consumption) awareness

## ■ Questions

- Vet du ungefär hur mycket el ditt hushåll använder under ett år, i termer av kilowattimmar (kWh)
- Vet du ungefär hur stor den totala kostnaden för hushållets elanvändning är per år?

## ■ Comparing between groups

- *Housing type:*
  - Villa owners say they have higher awareness
- *Owning solar installations:*
  - Condominium (BRFs): no (big) differences in energy awareness between solar/no solar
  - Villa owners: those with solar score higher





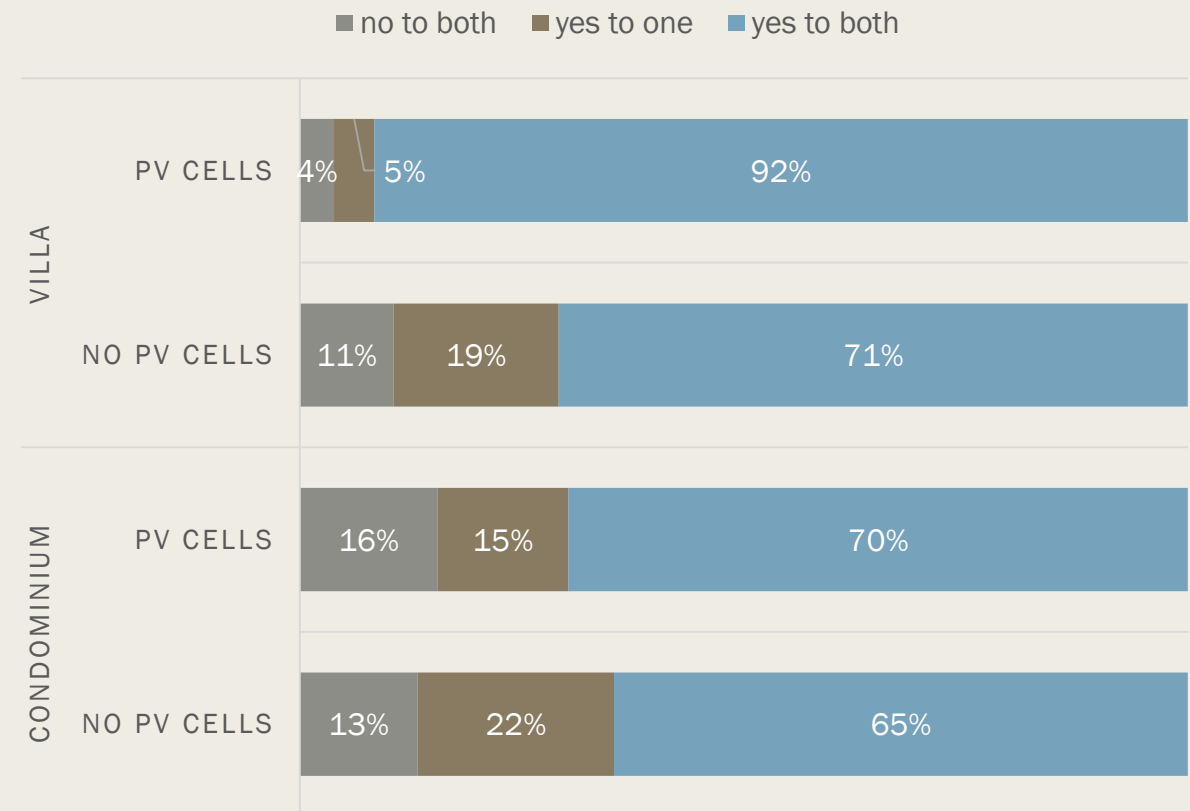
# Energy (saving) knowledge

## ■ Questions

- *Har du god kännedom om vilka apparater i ditt hem som drar mycket el?*
- *Har du god kännedom om vad du kan göra för att hushålla med el i ditt hem?*

## ■ Comparing between groups

- *Housing type:*
  - Villa owners say they have higher knowledge
- *Owning solar installations*
  - Condominium (BRFs): no differences in energy awareness
  - Villa owners: those with solar score higher



# Intentions for **other** pro-environmental behaviour

Differences between those owning and not owning solar, in **other behaviours**?

- *'General' pro-environmental behaviour: recycling, purchasing organic/vegetarian, travel by train instead of plane, buy energy-efficient appliances*
- Comparing between groups
  - *Condominiums:*
    - No difference between those with and without solar
  - *Villa owners:*
    - Those with solar show higher intention than those without
    - Rather: villa owners without score lower than all other groups
- Short answer: yes

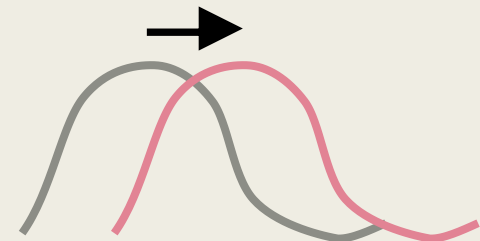




# Intentions for **other** in-door energy behaviour

Differences between those owning and not owning solar, in **other behaviours**?

- *Indoor electricity saving behaviour: turning off appliances in standby, switching off lights, use electricity off-peak*
- Comparing between groups
  - *We find no significant differences in intentions for these behaviours in any of the groups*
- Short answer: no



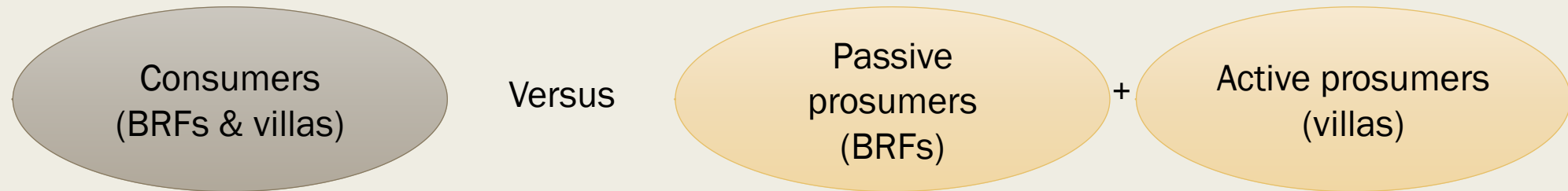
# Conclusions

Are prosumers more energy-aware than non-prosumers (consumers)?

Are *active* prosumers different from *passive* prosumers in energy awareness?

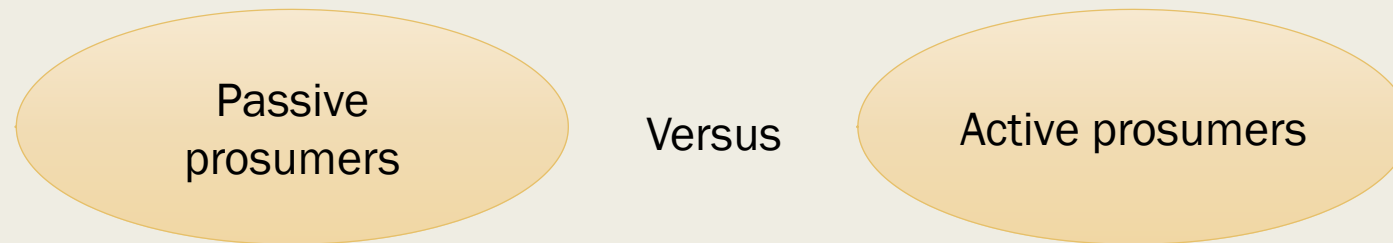
- *Prosumers seem to be more energy-aware and knowledgeable, and perform other pro-environmental behaviours...*
- *These differences are most convincing in the group of **active prosumers***

# Questions we can ask



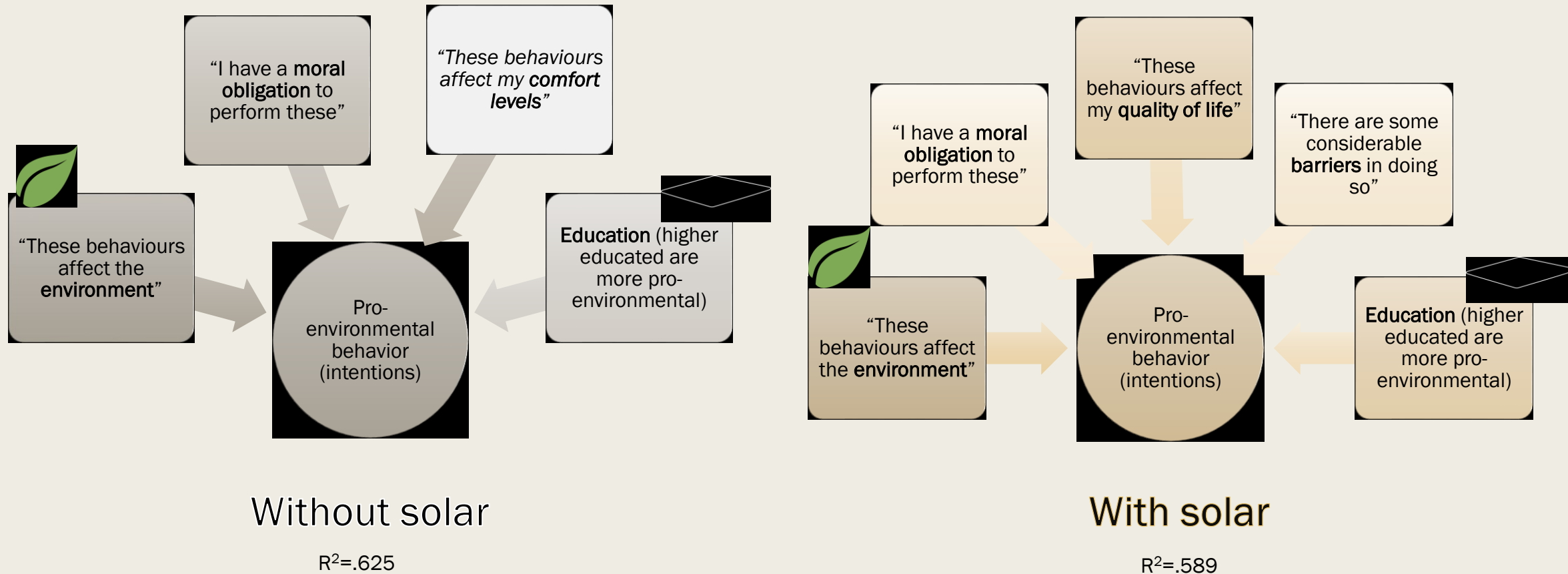
Are prosumers more energy-aware than non-prosumers?

**Are their motivations to perform pro-environmental behaviours different?**



Are active prosumers different from passive prosumers in energy awareness?

# What makes us perform pro-environmental acts?

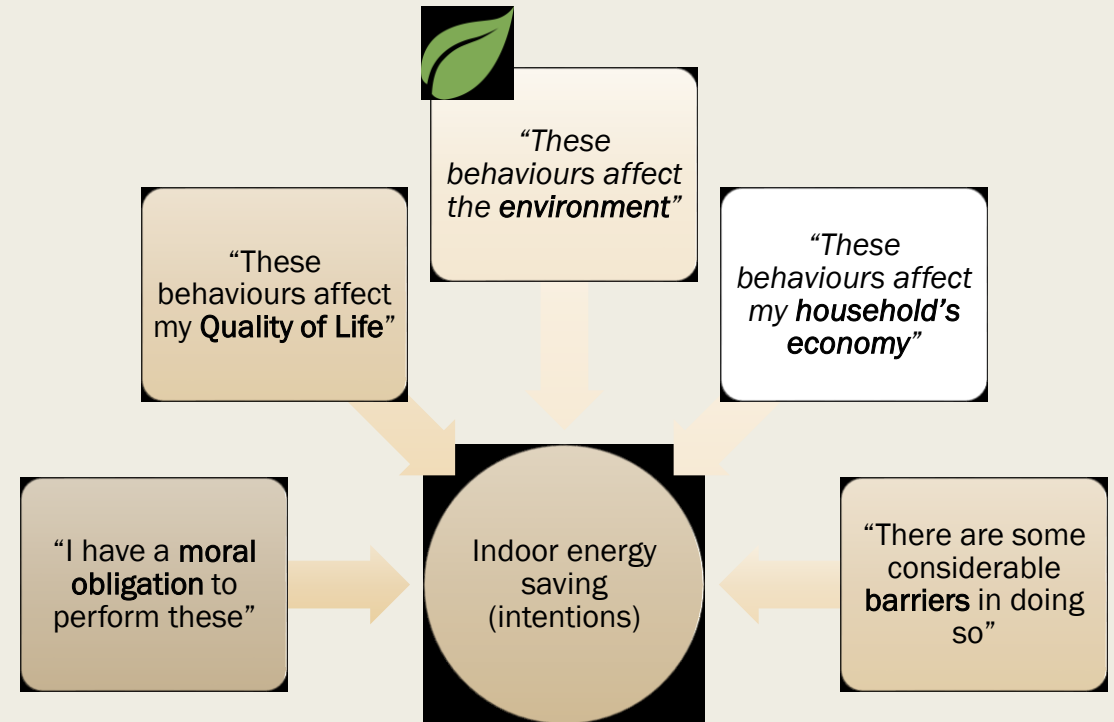


# What makes us perform indoor energy saving acts?



Without solar

$R^2=.440$



With solar

$R^2=.563$

# Conclusions

Are motivations to perform pro-environmental behaviours different for prosumers?

- *Those with solar panel installations seem more concerned with effects of their behaviour on the environment*
- *And have more elaborate 'beliefs' (about effects of behaviour) that motivate behaviour*



# What can we do with this information?

- Shows the importance of including people in the process - active prosumers are more inclined to make changes
- With a greater understanding of the motivations and attitudes on energy issues we gain a better understanding of what actions we should prioritize when working to reach behavioral changes

# Afterthoughts

- Difficult to conclude if this is consequence of purchasing solar panels, or a cause
  - *Did those with solar panels become more pro-environmental...*
  - *Or do more pro-environmental people become solar panel owners?*
  - *Study over time would make it possible to measure these effects more accurate*
  
- How passive is a passive prosumer?
  - *Doesn't know at all (one in ten)*
  - *Feels actively involved (one in three)*
  
- The responders in this study are either condominium or villa owners, hence the socio economic spread might not be fully representable for society in total.
  - *Same study but with people living in rentals?*



# Thank you!

Thank you for listening, and on a final note, our thanks to all those respondents that took time to fill in the survey.

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