

# **PRACTICE CHANGES IN DEMAND RESPONSE PROGRAMMES: DOES PRICE MATTER?**

**OR**

## ***THE ROLE OF PRICE IN CHANGING PRACTICES THROUGH DEMAND RESPONSE: FINDINGS FROM THREE SMART GRID DEMOS***

**TOKE HAUNSTRUP CHRISTENSEN ET AL.  
(THC@SBI.AAU.DK)**



**STATENS BYGGEFORSKNINGSINSTITUT**  
AALBORG UNIVERSITET KØBENHAVN



# Outline

- The critique of *homo economicus* and the resource man
- Practice theory
- The role of prices in demand response programmes?
  - Experiences from trials
- Contributions to a better (practice theoretical) understanding of the role of price?

*Work in progress*

*Co-authors: Freja Friis (AAU, Denmark), Alicia Gutting & Michael Ornetzeder (ITA, Austria), Tomas Moe Skjølsvold, William Throndsen & Marianne Ryghauge (NTNU, Norway)*



# The critique of “homo economicus” and the “resource man”

- Long-time critique of economic models of human rationality and decision-making
  - Stressing the *cultural embeddedness* of energy consumption (Lutzenhiser 1988 and others)
  - Stressing the *practice embeddedness* of energy consumption (Shove & Walker 2014 and others)
- The resource man critique of Y. Strengers

The individual (energy) consumer as a ‘resource man’ who is “an efficient and well-informed micro-resource manager who exercises control and choice over his consumption and energy options” (Strengers 2013: 34-35)
- Yet, *smart energy* demonstration approaches are still mainly based on price-incentives and assuming highly engaged participation by “resource men”



# Practice theories

- Practices as collective entities of “doings and sayings”
  - Constituted by heterogonous and mutually dependent elements (e.g. competences, images and materials)
  - Energy consumption is an *element* in and *outcome* of people practices
  - Close connection between changes in practices and changes in energy consumption – e.g. timing of practices and consumption
  - Practice theory partly developed in opposition to dominant positions like the homo economicus (rational choice) approach
- Risk of developing blind spot on the role of prices?
- Insights from social studies of markets (orig. Callon, MacKenzie)
- Calculative agency as *performative* and *distributed*



# Demand response trials

- Micro-generation (PVs) with hourly net metering (Denmark)  
Comparable to real-time pricing (low prices when sunshine/daylight, high prices while no sunshine) – 8 versus 30 eurocent/kWh
- Power tariffs (Norway)  
Tariff dependent on the three incidents of highest power consumption within a month. Not “time-of-use pricing”, but based on consumption intensities.
- “Traffic lights” (Austria)  
Energy system status feedback to consumers via “traffic light” in home. Minor economic incentive (real-time pricing)
- Work in progress – main focus here on Danish trial



# Experiences from Danish trial

- Nine interviewed households – seven report experiences with time shifting consumption in order to utilize their own PV power production
- Primarily time-shift dishwashing and laundering
- The households do not follow their metered PV power production regularly (with one exception)
- Many decide to time shift on basis of expected weather conditions during the day (personal judgement or based on the weather report)
- Some households made it into a daily routine to do dishwashing/laundry during daylight hours.



# Experiences from Danish trial – engagement (meaning)

Interviewees often refer to money saving as reason for time shifting

*Well, the more power we can use, when it is our own [PV] installation that produces the power, the better it is, because we get 60 øre (~8 euro cent) per kilowatt we are putting on the grid, but we pay almost 2 kroner (~30 euro cent) for what we pull back home... So it is an extremely bad business for us, when we are not at home and are just letting it all run into the grid and then have to pull it back again later... (Jens Svendsen)*

*But not only money saving...*

*(...) it is this mixture... It is about economy, but also this satisfaction with saying... What we are doing know, it's something we have produced our own power for... And what's weighting most, I don't really know... (Jim Beck)*

- Yet, none of the households know any figures on how much they save (“so much for the resource man”)



# Experiences from Danish trial – Devices

- PV panels – a material reminder of when electricity is produced  
*I would say that the thing that we got the solar cells put up [on the roof], that definitely made our eyes open to – okay, it is not nine in the evening that we are starting our dishwasher. (Simon Hansen)*
- National hourly net metering scheme
- Home battery (to some extent *lessened* the interest in time shifting)
- Timers on dishwasher and washing machine



# Experiences from Danish trial – competences

- New skills – for instance:
  - handling timers
  - interpret the signs of weather in the morning
- Introductory meetings within the project
  - learning “rules of thumb”
  - formatting the pilot participants and their practices



# Concluding remarks

- Price does make a difference to the pilot participants
- Important element in making it “meaningful” to change practices and adopt new habits (engagement)
- But *not* a calculative agency in the sense of homo economicus/resource man
  - No clear understanding of how much the time shifting ”is worth” – only that it is a “good idea”
- The importance of devices and competences in constituting (framing or “formatting”) new habits.
  - In particular “rules of thumb” and practical advices conveyed face-to-face at project meetings (anchoring within interpersonal relations)
- Price and “money saving” as part of shared, cultural meaning structures that pervade most everyday practices?



THANK YOU FOR YOUR ATTENTION

THC@SBI.AAU.DK

