A Smart Energy Future

Sustainable Energy Consumption in the Information Age

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Outline

- Introducing smart energy systems
- Problem definition
- Papers and field work
- Discussion

Smart energy future

https://www.youtube.com/watch?v=izE8Nxfj1zs

What do we see?

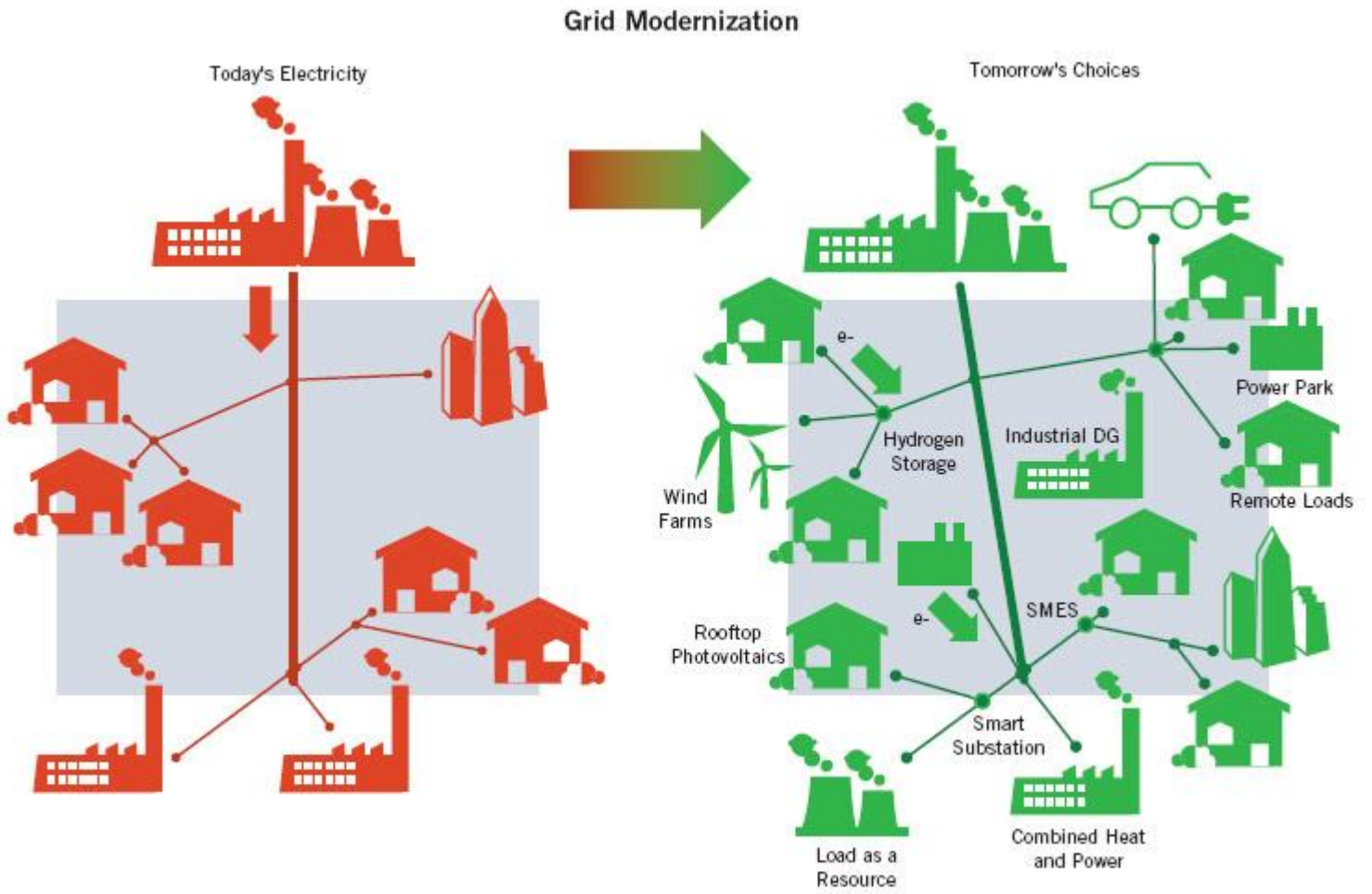
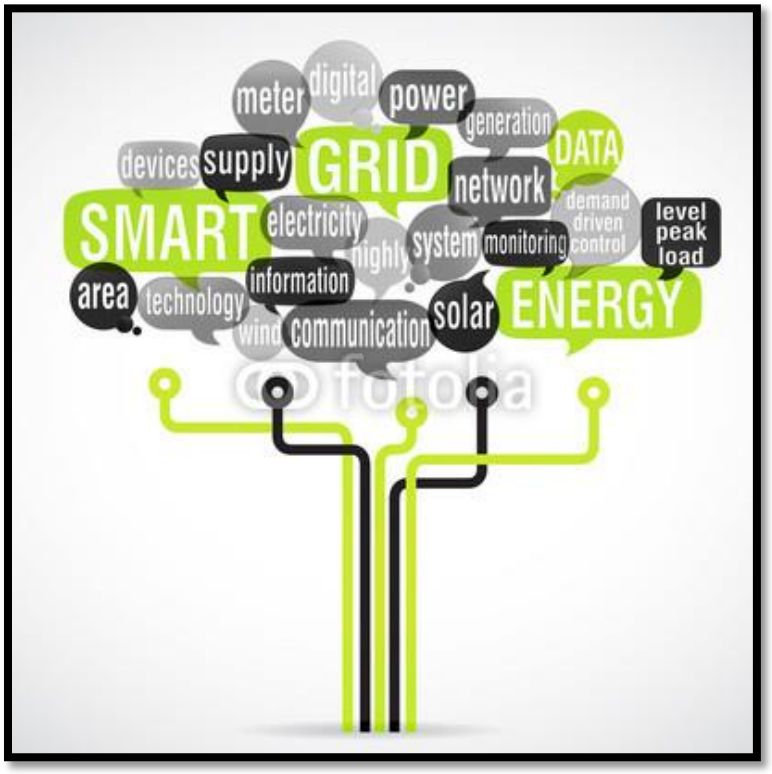


Fig. 1. The IEEE's version of the Smart Grid involves distributed generation, information networks, and system coordination, a drastic change from the existing utility configurations.

Why?

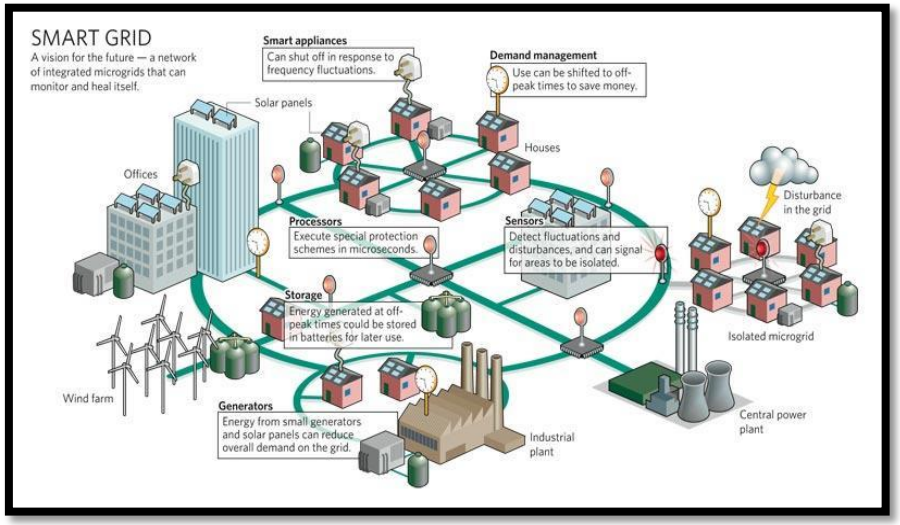
- Scarcity of fossil fuels
- Climate change
- Energy security
- Ageing infrastructure

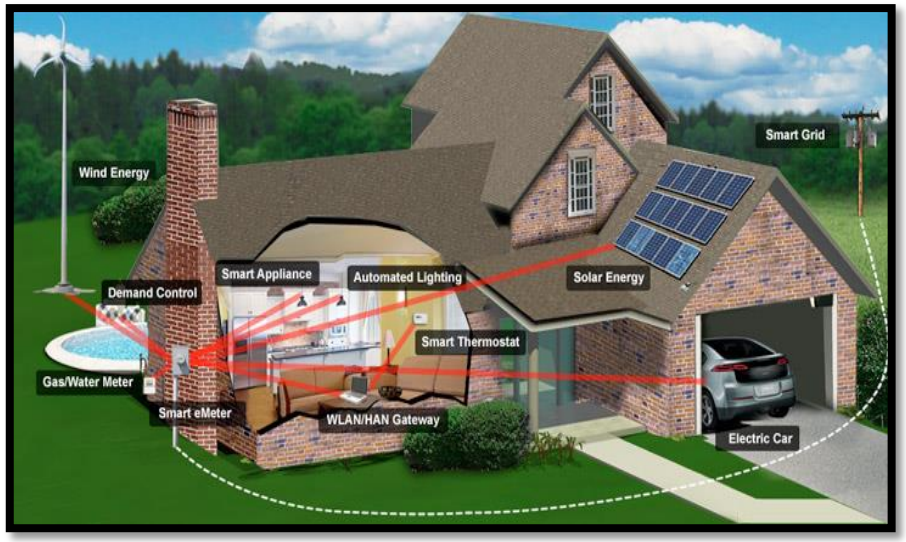
What is a smart grid?

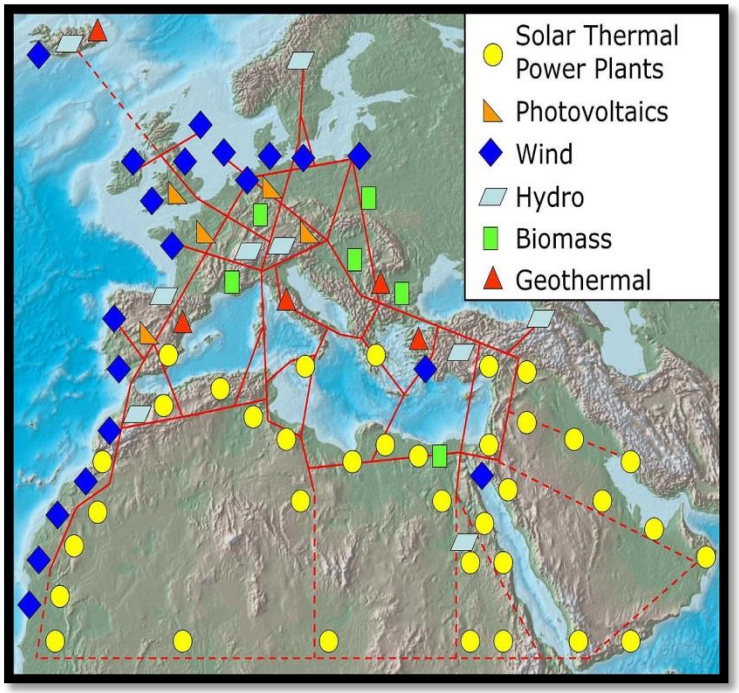


"A socio-technical network characterised by the **active management of both information and energy flows**, in order to **control practices of distributed generation, storage, consumption and flexible demand**"
(Wolsink, 2012)

3 visions of smart grids







Smart meter & feedback

So...what's the problem?

- In field of energy: strong focus on technology development and economic rationality...

- When 'social aspects' are considered:
  → Solve things without bothering consumers/users
  → All depends on acceptance and behaviour change

Limited understanding of **social context** in which change takes place (or not).

Main goal

To develop a contextual understanding of…

- Domestic energy consumption
- Role of information

Papers

1. Conceptual framework
2. Power, privacy and participation
3. Transformative role of information
4. Decentralisation of energy/information

1: Conceptual framework

(Published: Energy Policy)

Informational Governance

"Information is fundamentally restructuring processes, institutions and practices of (environmental) governance"

(Mol, 2008)

- Information:
  - Driving force behind social transformation
  - New resource for articulation of ecological rationality
  - Re-distribution of power, new social relations

→ 'Information flows' as a central analytical unit

→ Q: How and when does information provide effective guidance, facilitate cooperation, and/or lead to conflict?

Social Practice Approach

"The basic domain of study of the social sciences (...) is neither the experience of the individual, nor the existence of any form of social totality, but social practices ordered across space and time"

(Giddens, 1984)

As "Coordinated entities, i.e. temporally unfolded and spatially dispersed nexus of doings and sayings"

(Schatzki, 1996)

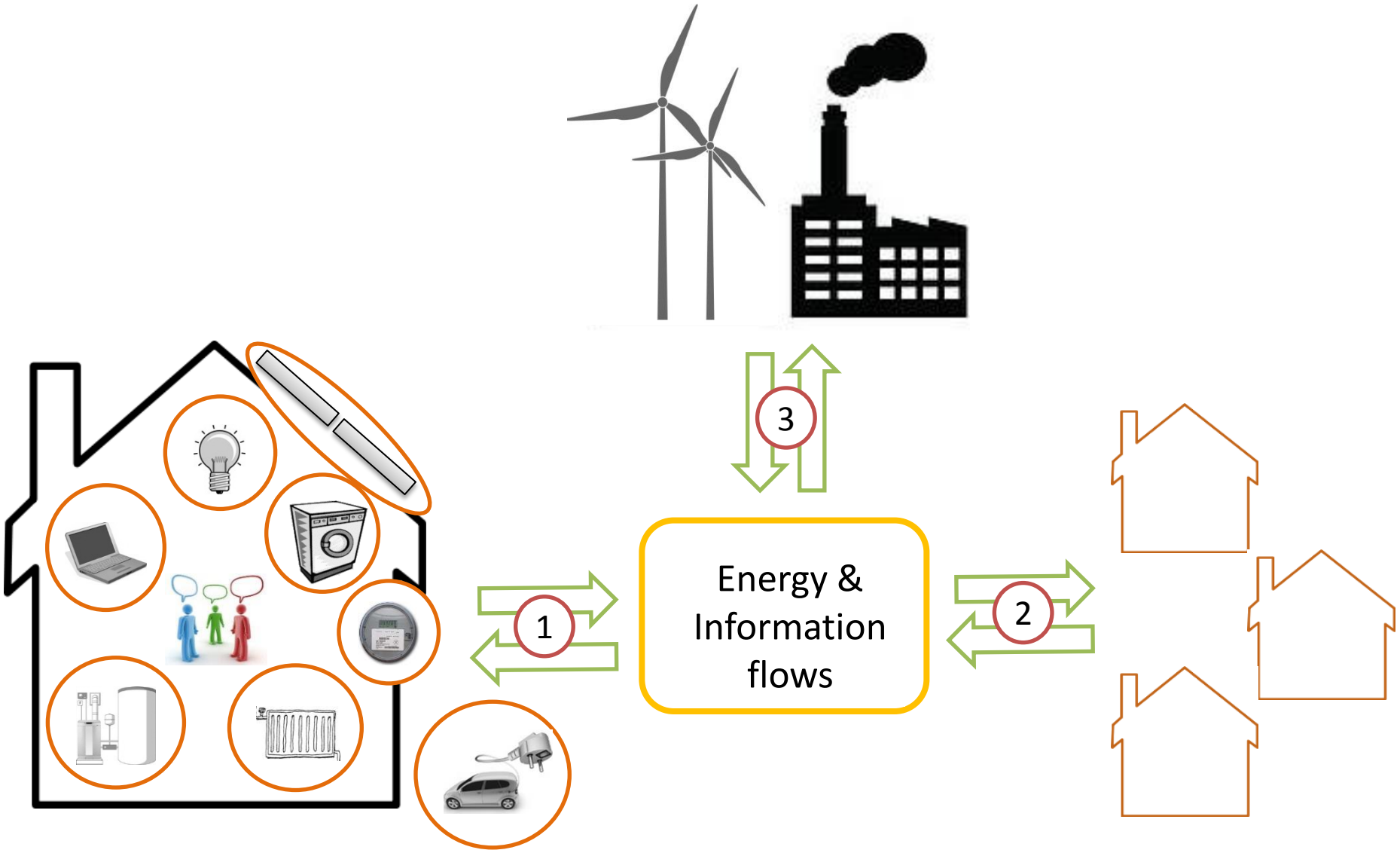
- Social practices as the 'site of the social':
  - Decentring of the mind (and structures)
  - Focus on sharedness (individuals as carriers)
  - Agentic capacities for materials/things

→ 'Social practices' as basic unit of analysis

→ Q: How do social practices emerge, persist, change and die?

Energy Practices

- Energy-involving practices
  - E.g: doing the laundry, cooking food, heating the house
- Energy management practices
  - E.g.: monitoring energy use, generating renewable energy, shifting time-of-use

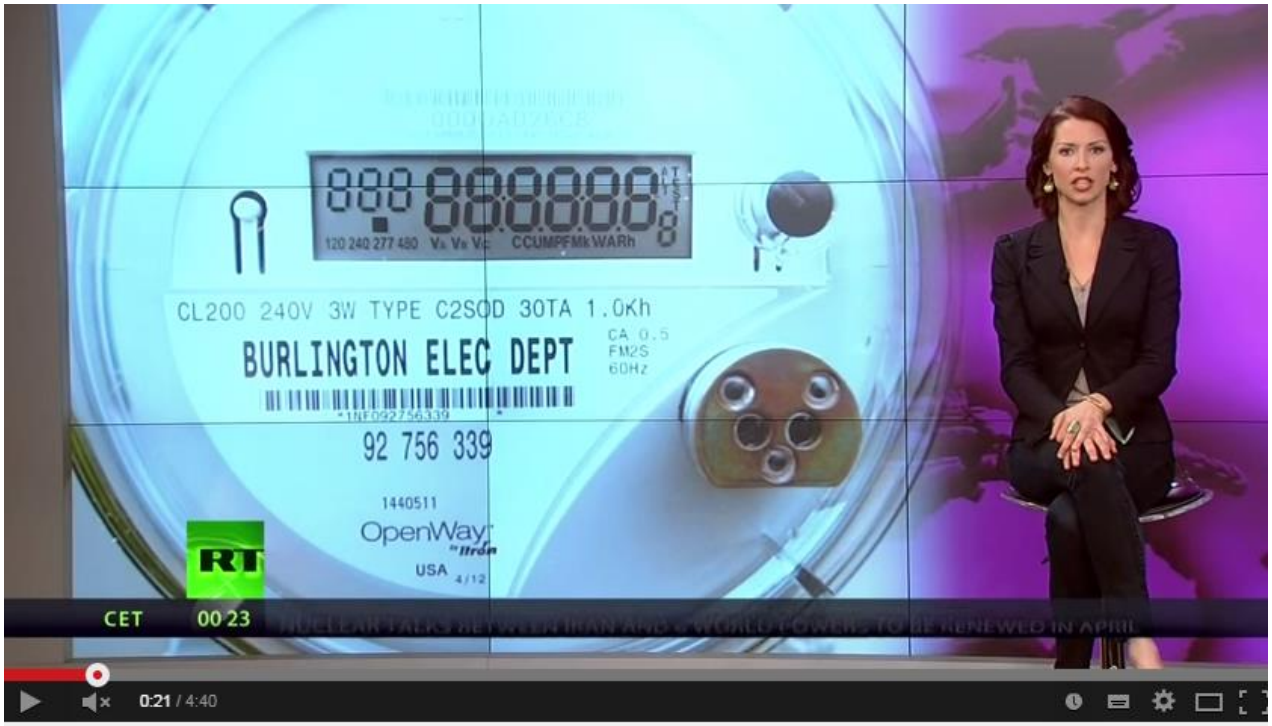


Naus, J., Spaargaren, G., van Vliet, B.J.M., van der Horst, H.M., 2014.
Smart grids, information flows and emerging domestic energy practices. Energy Policy 68.

2: Power, privacy, participation

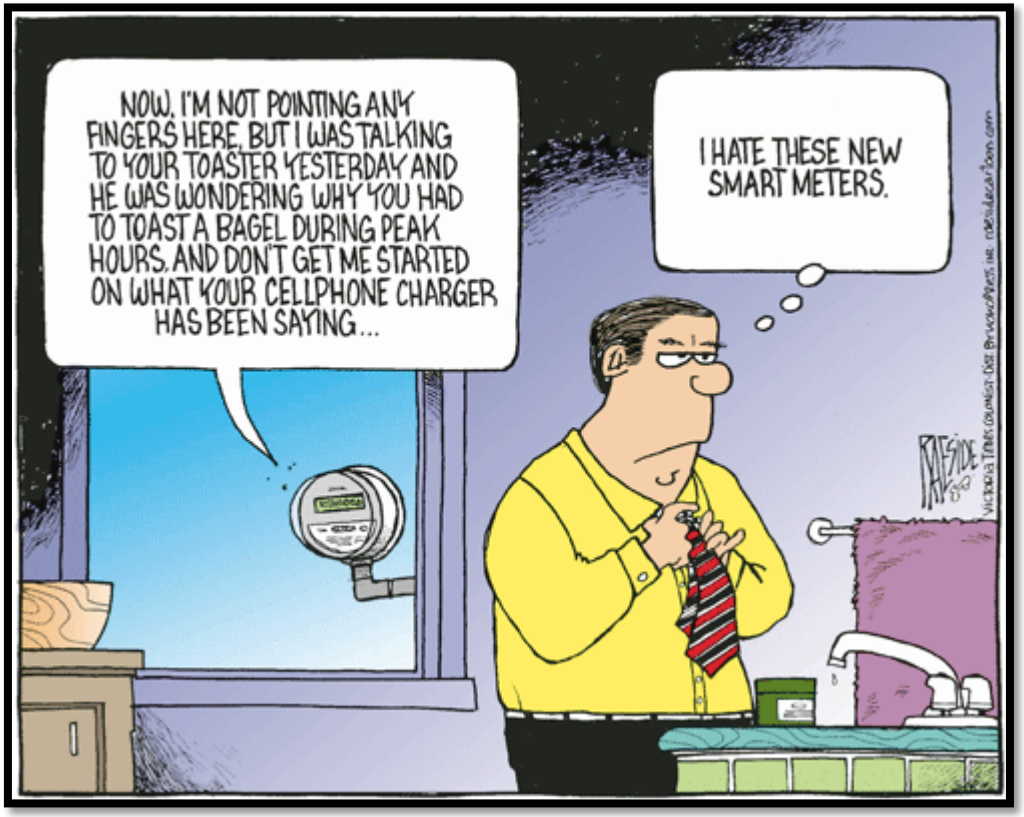
(Under review: Energy Research & Social Science)

Big Brother Watch



https://www.youtube.com/watch?v=8qrl1KSMr5M

Privacy/autonomy



What is privacy?

Home as private place (Solove, 2002):

"*a castle where the individual enjoy(s) freedom from government intrusion*", and where people can "get *peace of mind, cultivate intimate relationships, and engage in personal activities of self-development*"

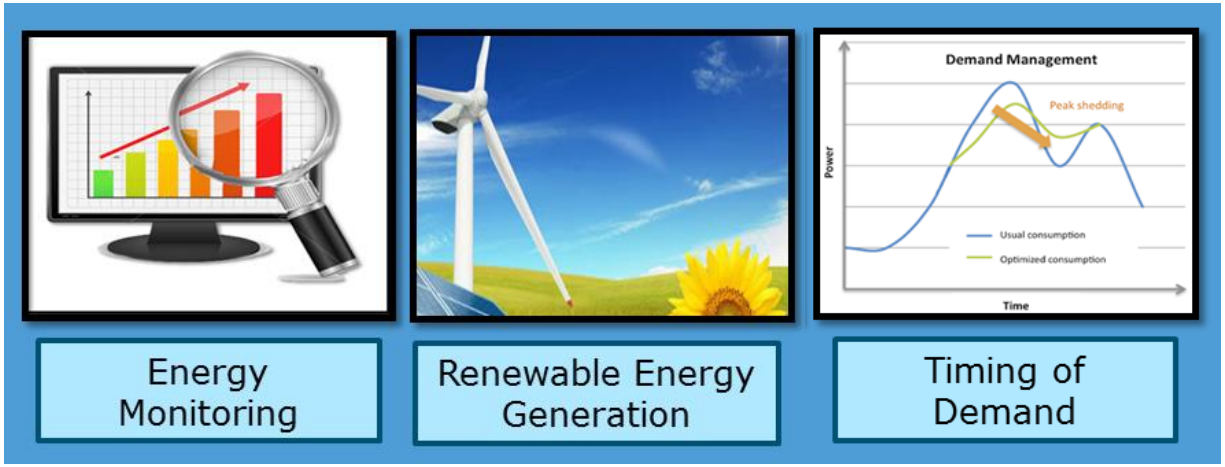
No common denominator for privacy!

Resistance against real-time displays (Hargreaves, 2012):

"does not usually represent a wholesale rejection, but rather a resistance to carbon governmentality in relation to some aspects of daily practice"

RQ's

If we take emerging **energy management practices** as a starting point…



1. In what social arrangements do householders feel in a good position to participate? And in what arrangements do they run into privacy and autonomy objections that can thwart such participation?
2. To what extent do householders differentiate between these emerging energy management practices?

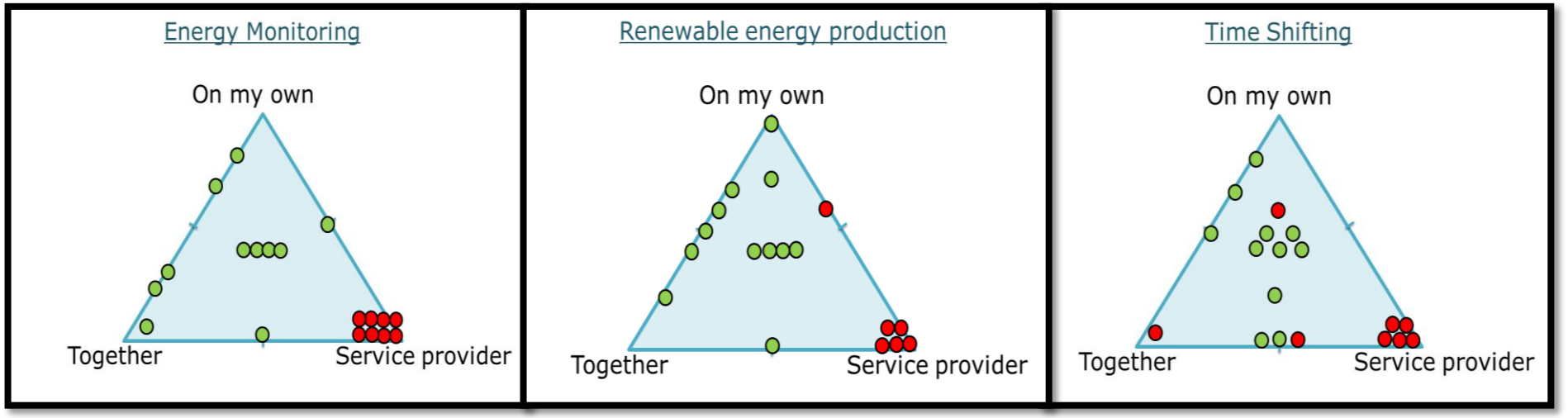
Online Survey + Focus group

		Social Arrangement		
		Domestic	**Horizontal**	**Vertical**
Energy management Practices	**Energy monitoring**	Self-monitoring	Information sharing*	Feedback & advice*
	Renewable energy generation	Home based production	Collective production*	Participation in large-scale production
	Time shifting	Domestic control	Shared (local) control	Demand control*

(some) Results

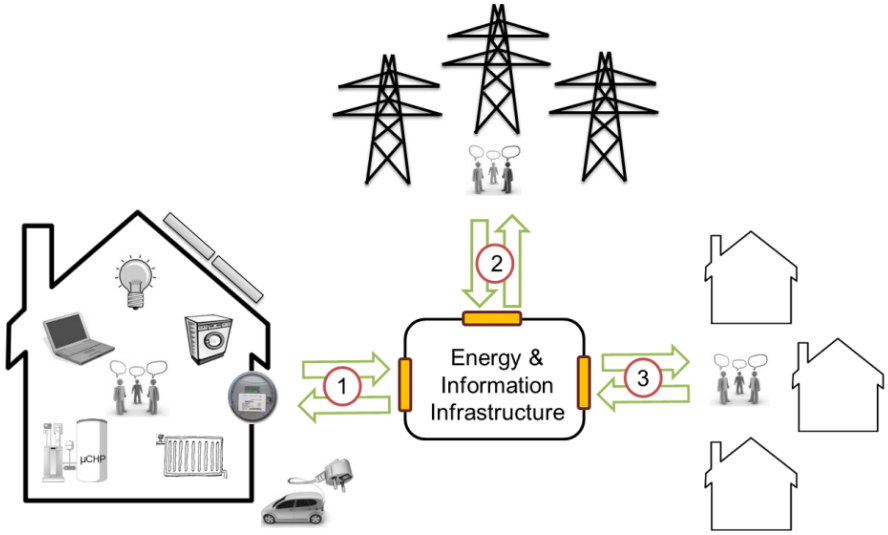
- Survey:
  - Eager to cooperate both vertically and horizontally
  - Some practice-specific autonomy/privacy constraints:
    - Feedback and advice (v) collective energy production (h)

- Focus group



(some) Conclusions

- Understandings of privacy are both **general** and **practice-specific**
- Decentralisation opens up possibilities for renegotiating **horizontal** and **vertical** relationships



3: Role of Information

in (transforming) energy practices

(Work in progress)

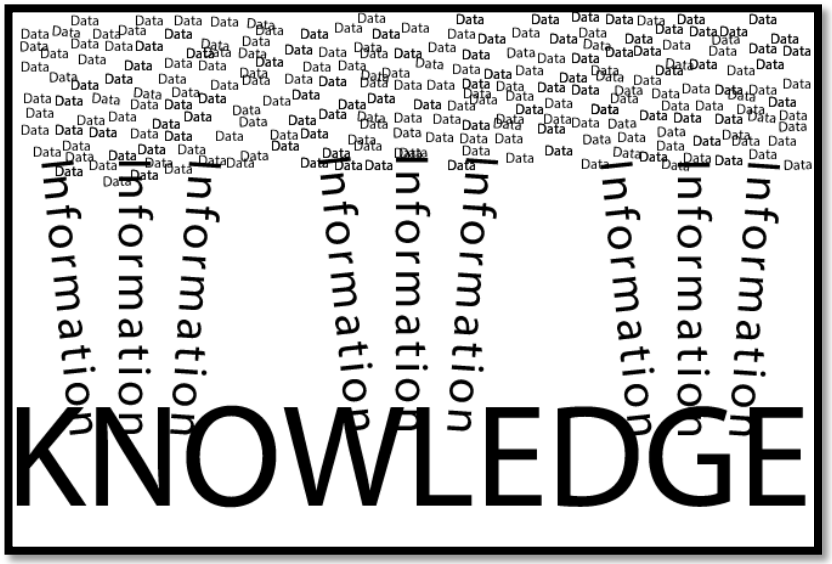
Information provisioning

- Key strategy to address climate change

- Public awareness campaigns → Social marketing + personal information technologies
  - Knowledge/information-gap
  - Make information ‘attractive’ and ‘actionable’

Information deficit model

- Households as lacking knowledge
- Focus of factual information
- Information is ‘out there’
- Selecting, filtering, interpreting



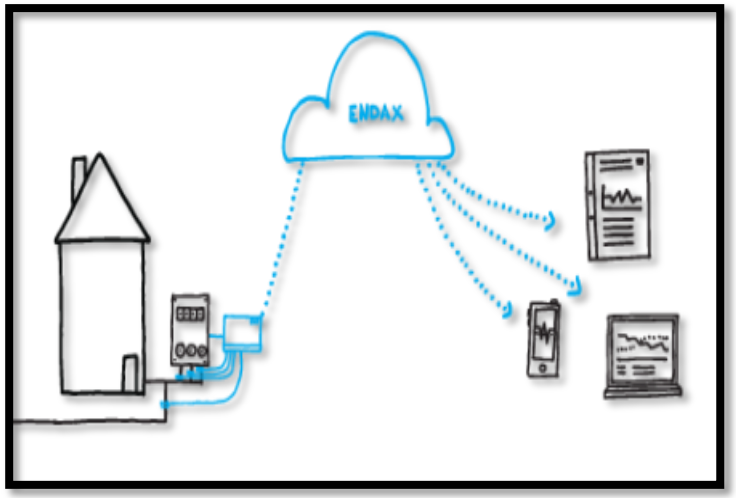
Social practices & information?

- Dismissal of information deficit model → focus on elements of daily practice (incl. know-how)

- Reconsidering information…
  - When and how does ('new') information come about? And when and how is information fitted into practices that consume energy?
  - What does this imply for practice theory?

→ What does this imply for our understanding of information flows (as in IG)?

Smart grid pilot (Lochem, NL)



Methods

Participative observation

Interviews

1. Involvement with energy/cooperative/pilot
2. Energy-involving practices
3. Energy management practices

Examples: ‘normal’ info

Information as mundane part of practice...

“If it’s (regular) clothing, it goes on programme for fine laundy, and if fits fragile clothing it goes on a wool programme. Other than that, towels and underwear and bed sheets, that kind of stuff, they go on a programme for coloured laundry.”

Information confirming proper conduct...

“That’s very nice indeed….haha. Even our little girl said so...”

“Yes, I told her to sit on the floor, and then she laid down on her back…hmmm… and it (the thermostat) is just on 3 or 3.5 now.”

Examples: Info & change

Information emerging from flow of events...

"It got really cold, yes. We only had cold water, so we called a mechanic. He said: 'you have switched the button'….haha (...) I didn't even know there was a switch!"

Information that is looked for...

"I do check how much I am using and how much I am producing. (…) I do that regularly, every couple of days. But we do not do enough, really, to check when every appliance is working. We have started doing that only recently. So, when I turned off the boiler, and when we bought some new light bulbs."

Examples: info rejected

Information that never becomes...

"*That's nice for a couple of seconds. But it's like anything on the internet; you can loose yourself completely. Wel, I don't have time for that. And, actually, I have no desire to do so either. Cause you get lost so easily*."

Information ruled out...

"So if things work, I am fine….no need to bother. (…) I am not the kind of person who wants to know how things work. I mean, the connection between electricity and this light... it doesn't tell me anything. I am happy if the thing works."

"I wouldn't know what to do with Lochem Energie. To me it's still not clear what they want exactly. Yes, another way of generating energy (…). But is that going to save the world? I don't think so."

So, it’s complicated…?

Towards practice-based understanding of information...

- Many different forms of information
- Information as practical accomplishment
- Differentiation ‘information in practice’ and ‘informational’ practices?

Discussion

1. **Does this make sense? How to improve/develop further?**

2. **What could be the implications for Informational Governance?**
   - Questioning of what information is
   - Debate about distinctions between data, information, knowledge

"Data are the raw material …
Information is the intermediate (processed) good…
Knowledge is the final product."
(Esty, 2004)

Information as common denominator
(Mol, 2008, p5)

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