Demand Side Management & the *prosumer* – what, who and the GESI implications

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"The focus of engineers needs to expand beyond just solving problems! We should understand the motivations of our customers to fully comprehend the future types and patterns of energy consumption and production." (IEEE PES)

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DSM social implications: energy studies perspectives

- A better understanding of the human aspect of energy use, including behavioural and societal drivers and barriers and external and internal contexts, will greatly improve the uptake of energy efficiency and DSM policies and programs.

- *Behavioural interventions using technology, market and business models and changes to supply and delivery of energy are the all-important means to that end.*

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Some definitions

- **Demand Side Management** relates to interventions (top-down and bottom-up policies, programmes and actions) developed and performed by Behaviour Changers (e.g. government agencies, utilities, DSM implementers) that seek to influence the ways in which end users consume energy at home, at their workplace or whilst travelling.

- The changes sought by Behaviour Changers may include the quantity of energy consumed for a given service, patterns of energy consumption or the supply management and type of energy consumed.

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- **Energy behaviour** refers to all human actions that affect the way that fuels (electricity, gas, petroleum, coal, etc) are used to achieve desired services, including the acquisition or disposal of energy-related technologies and materials, the ways in which these are used, and the mental processes that relate to these actions.

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- **Behaviour Change** in the context of this Task refers to any changes in said human actions which were directly or indirectly influenced by a variety of interventions (e.g. legislation, regulation, incentives, subsidies, information campaigns, peer pressure etc.) aimed at fulfilling specific behaviour change outcomes. These outcomes can include any changes in energy efficiency, total energy consumption, energy technology uptake or demand management but should be identified and specified by the Behaviour Changer designing the intervention for the purpose of outcome evaluation.

- **Behaviour Changer** is a person or agency tasked with the goal of designing, implementing, evaluating and/or disseminating interventions geared at changing energy end users behaviours. In this Task, we differentiate between five Behaviour Changer sectors:

- 'the Decisionmaker' (Government on all levels),

- 'the Provider' (Energy-providing industry on all levels including technology manufacturers),

- 'the Expert' (researchers and consultants from a multitude of disciplines especially economics, psychology, sociology and engineering),

- 'the Conscience' (the Third sector including NGOs, community organisations, transition towns etc.) and

- 'the Middle Actor' (the intermediaries selling energy-using goods and services who are directly in contact with the end users).
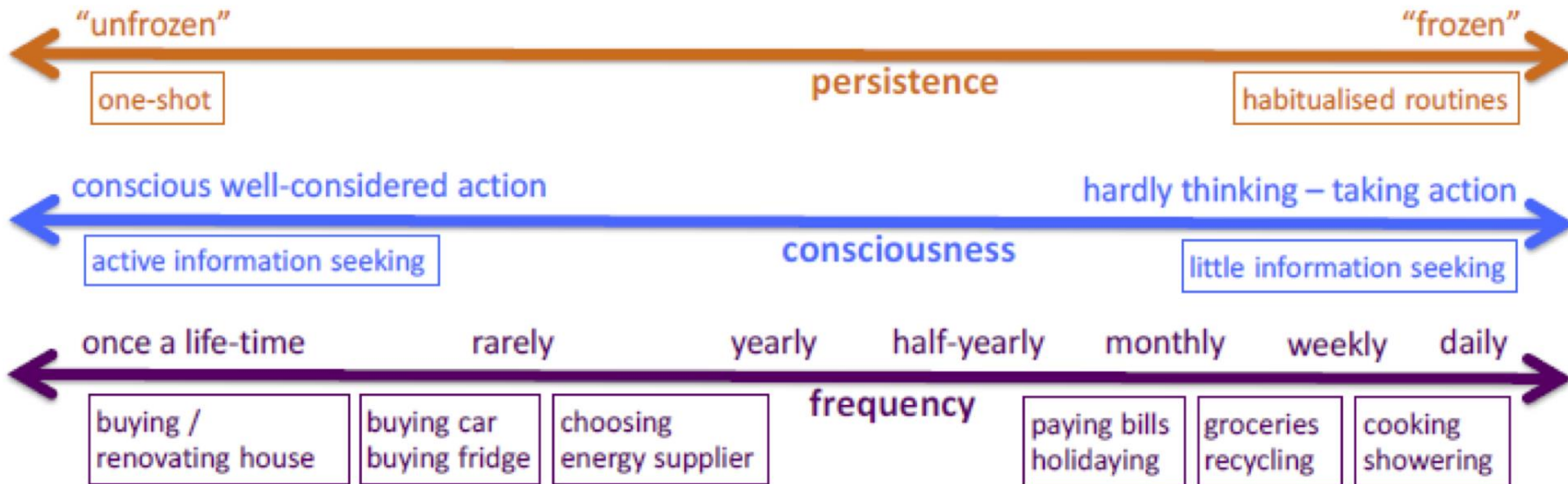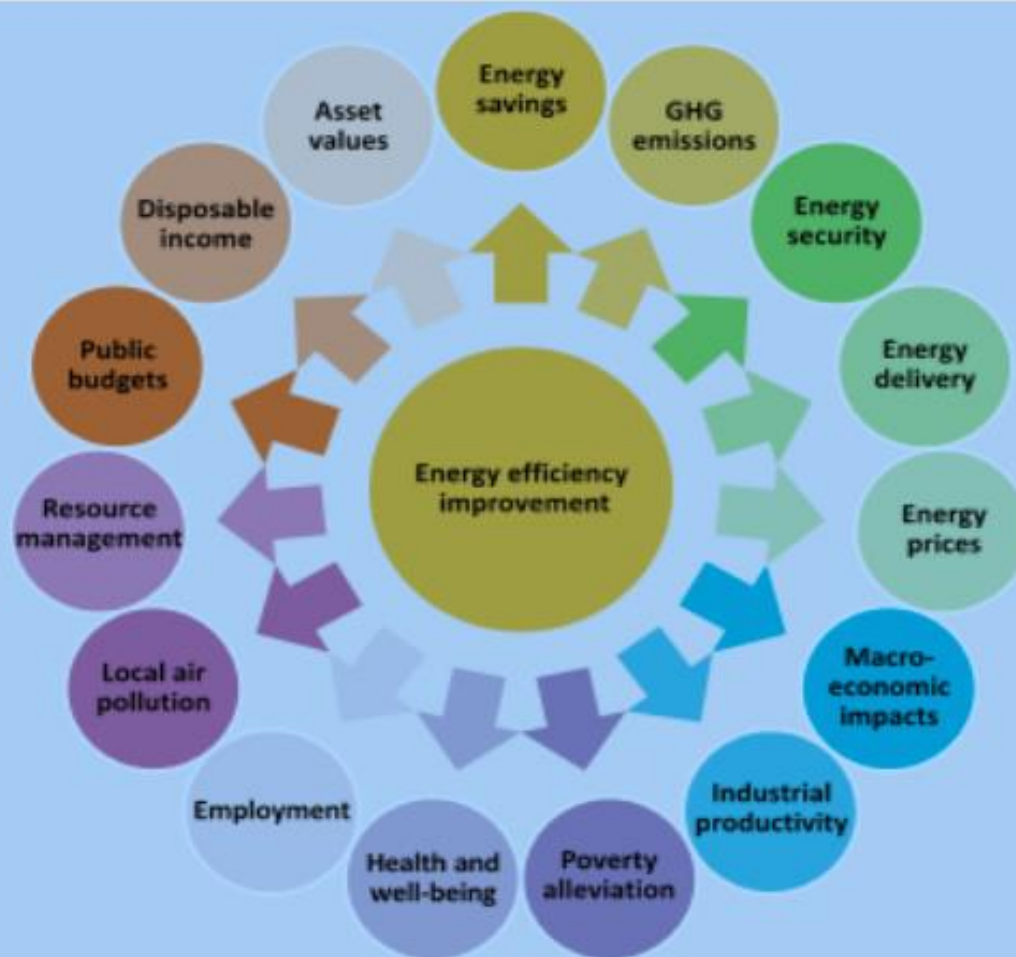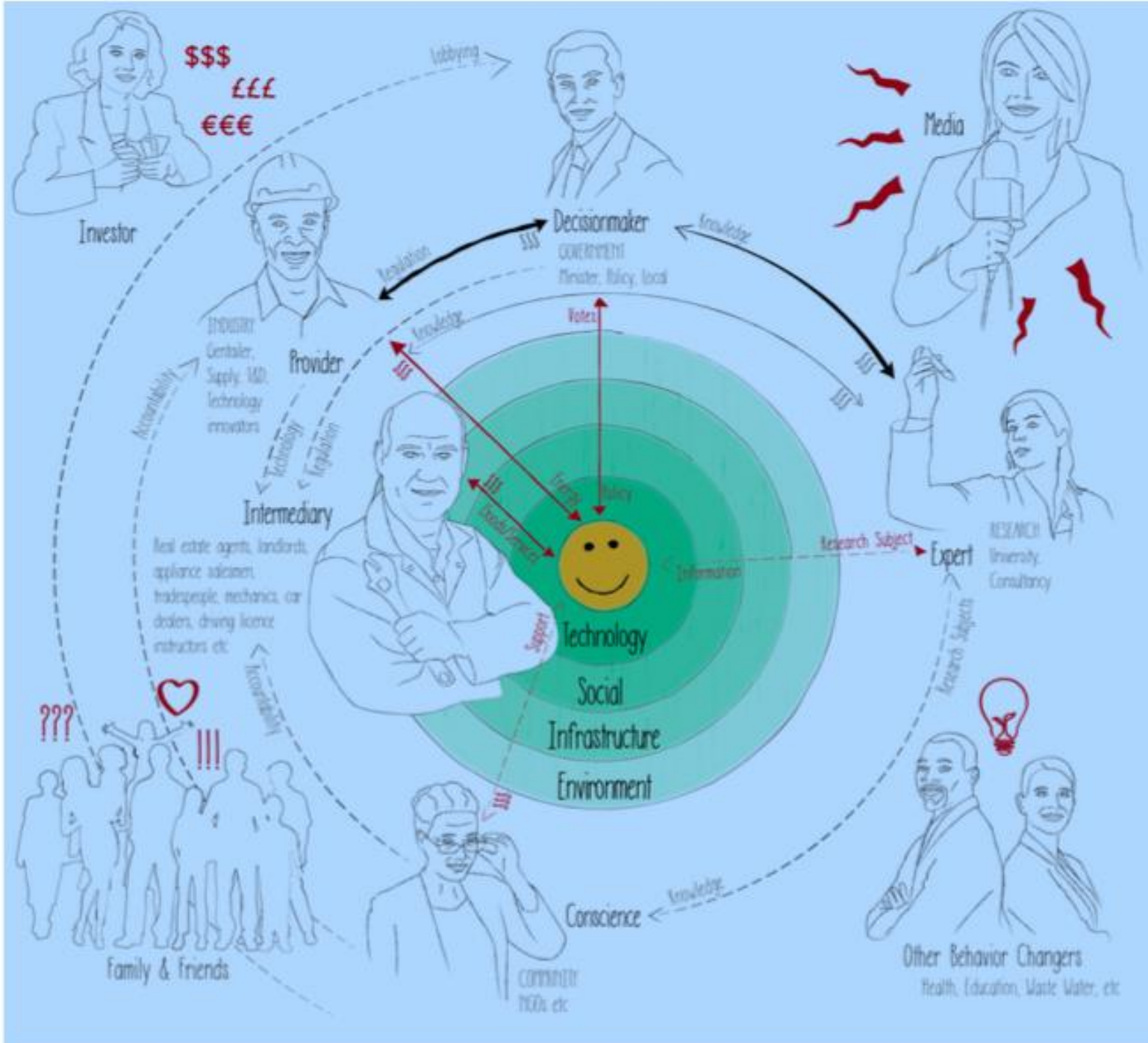
Figure 1: Behaviour spectrum, retrieved from Breukers & Mourik 2013

Benefits

- Increased energy security
- Peak load management
- Reduced need for new electricity generation and fossil fuels
- Monetary savings
- Achieving climate change, emission and pollution reduction targets
- Improved health and comfort
- Social cohesion and bottom-up community engagement
- Role-modelling of individual and corporate responsibility etc

Strategies to Promote Sustainable Energy Behaviour

- Provide information about the need for and urgency of a sustainable energy transition and the significance of individual/community actions for sustainability.

- Comparative feedback, where one's behavior is compared with others, is also effective.

- Commitment strategies, where people make a private or public statement to engage in particular sustainable energy, and implementation intentions.

- Behavior modeling, or having peers demonstrate sustainable behavior.

Sociotechnical approach

Who Communicates?
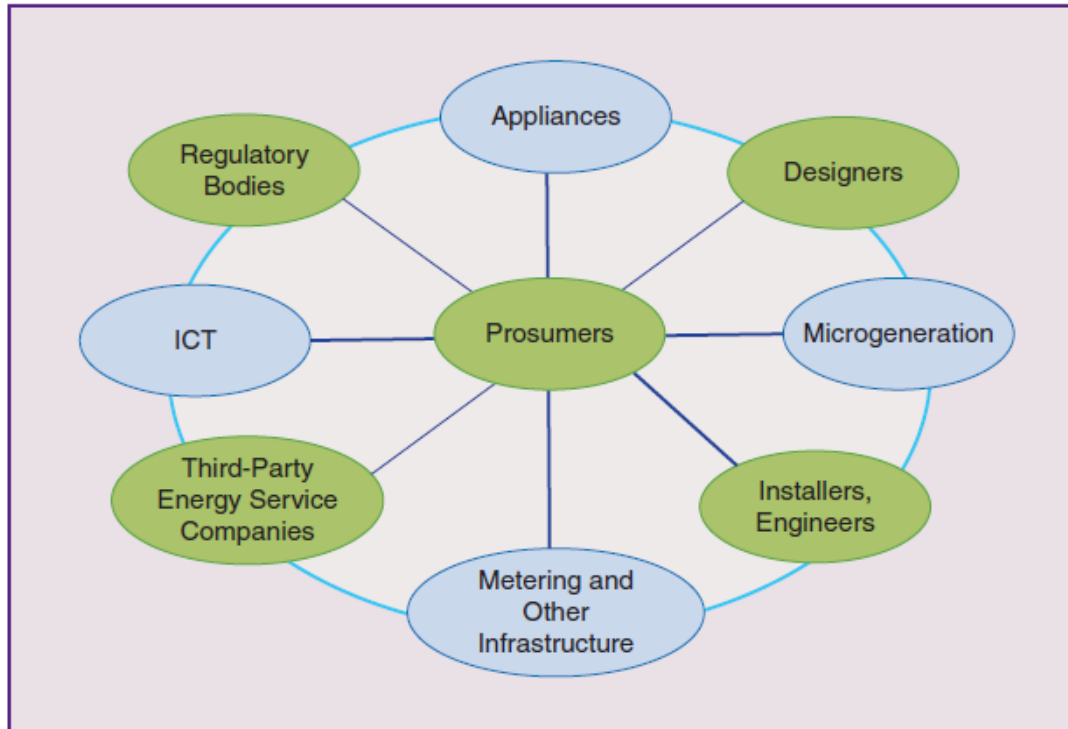What is Communication About?
Where is it needed?

".. with, not to"
Person to person
Technology to person
Technology to technology

figure 2. Communications between some actors in an electricity system.

Trust is a very critical factor in planning and siting processes. Efforts should be made to build trust … People need to recognize that their values and interests are taken seriously.

- A diverse project team is needed for developing and implementing energy projects, particularly people with relevant professional backgrounds who can engage with the public and assess its concerns

- Interdisciplinary collaborations among engineers, project developers, environmentalists, and a wide range of social scientists are needed.

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- "Empowering" .. citizens therefore isn't just about livelihoods and economic well-being, much less about "consuming." It is about demonstrating that modern, democratic states—acting alone or in the context of intergovernmental or supranational organizations—can devise solutions to pressing societal problems that find the backing of broad popular majorities and that they are reaching out to those in need of special support.

- So much is known but how to make citizen's – engagement better?

- Specifically the socially disadvantaged and marginalised, including women due to unequal gender barriers?

- Case studies?

- Research; DSM scoping study

References

http://www.ieadsm.org/task/task-24-phase-1/

International Energy Agency Implementing Agreement on Demand-Side Management Technologies and Programmes 2017 Annual Report

IEEE Power&Energy Vol 16, Number 1, January/February 2018

- Changing the context:
  - Changing/responding to the constraints people face and their concerns on promoting/adopting sustainable energy behavior.
    - adopting external incentives such as pricing policy, including subsidies, rebates, and taxes.
    - Nonfinancial factors, such as ease of participating in a sustainable energy program.
- Changing knowledge and information
- Tailored approaches
  - One size does not fill all. Take into account individual and sociocultural differences and target key factors motivating or inhibiting the behavior of relevant people.

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