

Individual and contextual factors that influence the effectiveness of efficiency instruments for private households



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Not one approach or consistent model, but findings from literature reviews on:

- Political instruments to reduce electricity of private households (Transpose / bmbf)
- Policies to promote sustainable consumption patterns (eupopp / FP7)
- Energy related (investment) behaviour + decisions (SECO@home / bmbf)
- Demand-side management Programmes / “Guide to Change” Report (Changing Behaviour / FP7)

Levels of Influence

Behaviour (directly):

- Investment / purchase (single shot behaviour)
- Use phase (curtailment behaviour)
- Waste treatment / afterlife phase

Context and framework (indirectly):

- Everyday routines + lifestyle patterns
- Technology (appliances / infrastructure / standards / price)
- Framework conditions (subsidies, tax, grants)

Know-how on instruments addressing energy behaviour is derived from different disciplines and scientific schools

Most important approaches for individual energy behaviour and context factors:

- **Behavioural Economics (recent studies on revealed + stated preferences)**
 - **Psychological and socio-psychological app (environmental psychology)**
 - **Sociological and socio-technical app (structuralism)**
- **Problems:** different definitions, various explanations, overlapping concepts but lack of survey-based studies on impact, non transferable results for single technologies, different foci and target groups

Types of Energy Behaviour

Efficiency behaviours: One-shot behaviours - *investments*

- Loft insulation
 - Cavity wall insulation
 - Double-glazing
- > *Economics distinguish between low-cost/no-cost investments and capital investments*

Curtailment behaviours: Repetitive efforts - *operational*

- Turning lights off
- Closing curtains
- Turning appliances off

Source: Martiskainen / SPRU 2007

Types of Energy Behaviour

	Automated	Reasoned
Individual determined	Repetition/habit: <ul style="list-style-type: none">• conditioning	Deliberation <ul style="list-style-type: none">• Planned behaviour<ul style="list-style-type: none">○ Attitudes○ Behavioural control
Socially determined	Imitation: <ul style="list-style-type: none">• social learning normative conduct	Social comparison <ul style="list-style-type: none">• Planned behaviour<ul style="list-style-type: none">○ Social norm• Relative deprivation/social comparison

Source: Martiskainen / SPRU 2007

Context Levels

Context (physical):

- Technology – appliances + infrastructure
- Systems of provision
- Everyday routines

Context (social):

- Norms and habits (imitation, social learning)
- Social practices (comparison)
- Life style; life events

Political framework:

- Pricing
- Subsidies, tax reduction,...

Sources: Shove 2003, van Vliet 2002, Wilhite 2007, Schäfer/Bamberg 2008

Different (psychological) explanation models available; model of Eierdanz/Krömker (2008) specifies different components linked to the process of decision-making and practice:

Decision-making process

problem-related components:

- consciousness (cognitive framing)
- awareness of effects (e.g. environmentally)
- other individual norms
- emotions

Source: Krömker/Eierdanz, Transpose 2008

Components of Individual Action

Action related components:

- sense of control
- cost-benefit issues
- social norms
- self-efficacy

Components of implementation (practice):

- clarity and focus of objectives
- (environmental) awareness
- other individual norms
- emotions
- social support / promotion / social marketing / endorsement

Instruments

Communicative (e.g. campaigns, ads)

Regulatory (e.g. standards, labeling)

Economic (e.g. white certificates, premiums)

Procedural/societal self-regulation (e.g. GAP, group work)

Barriers

Transaction costs, limited budget

Lack of information and motivation

Lack of know-how and awareness

Inadequate provision of appliances and infrastructure

Sources: eupopp 2008 /Transpose (Tews) 2008

Facing Internal + External Barriers

Programmes developed through participation instead of top-down strategies (consumer motivation):

Actors adapt their practices in line with an instrument / strategy if they were involved in its formulation (eupopp 2008)

Targeted instruments instead of general messages (sense of control, self-efficacy):

Relevance of age of household heads (differentiates due to type of behaviour) – younger households prefer (more efficient) up-to-date technology (Karlsson-Kanyama et al 2005) + have better knowledge about energy-efficient measures (Linden 2005)

Habits and routines have to be addressed in a focused manner (enable norm activation):

Low level consciousness (turn lights on/off) hampers the success of communicative instruments

Social and individual norms (awareness, changing habits)

Role models are seen powerful in getting people to change their behaviour (Feenstra/Mourik, Changing Behaviour 2008)

The behavioural changes need to be accepted – the endorsement by the social environment (neighbors, friends, colleagues) is important and can promote efficiency instruments (shared commitment), likewise social competition can promote efficient behaviour (s. GAP)

Adequate Information (quality of knowledge)

Information does not lead *directly* to awareness and behaviour change – likewise it is the basis for every conscious decision.

Some instruments such as labels or feedback systems are profoundly evaluated and deliver (transferable) results on influencing factors and quality, e.g. frequency, duration or way of presentation (Fischer 2008)

Check the credibility of source (acceptance of instrument)

Different authors point – besides the availability and adequacy of information - to the *credibility* of the source (Stern 1984).

Furthermore Curtis et al. (1984) find that a greater variety of sources is positively correlated with energy efficient activities.

Consideration of socio-technological context (less effects)

Provision of Infrastructure affects the behavioural options: insufficient access to infrastructure and way of provision might hamper alternate behaviour (Shove 2003)

The concept of “lock in” suggests that technological innovations (microwave, or domestic air conditioning) may encourage behaviour change away from pro-environmental goals - or strengthen the barriers to undertaking pro-environmental behaviour change (EST 2007).

Facing Internal + External Barriers

Income of households (consumer options + preferences)

Higher income is positively related with energy-saving activities/expenditures (Mills / Schleich 2008)

Education level (way of presentation)

Empirical evidence is mixed – previous studies for UK and US confirm a correlation, recent results for Germany on the diffusion of light bulbs show no significant impact (Mills / Schleich 2008)

Household size (transaction costs)

Household size is expected to be positively related to the adoption of energy efficient appliances through a faster replacement (Young 2008)
The more persons, the more profitable it is to acquire information on the energy performance of appliances and to purchase energy-cost saving appliances (Mills / Schleich 2008)

More Evidence Needed

- Interventions should address different phases of behaviour and take into account different context components (Eierdanz/Krömker, Transpose 2008)
- Mix of interventions through combination of tools is needed (Changing Behaviour 2008)
- Interventions have to follow the '4 Es': enable; engage; exemplify; encourage (HM Govt 2005)
- Single-shot behaviour needs more empirical evidence – integrating socio-psychological + socio-technological aspects (SECO@home)

More Evidence Needed

- Social and technological context has to be considered – analytically and strategically (eupopp 2008)
- Technology might function as a change agent itself towards more energy consumption (Wilhite 2007)
- Single-issue approaches (evaluation and interventions) are too narrow (eupopp 2008)
- Recent approaches offer a combination of interventions but still lack of social and technological conditions (SECO@home 2008)
- Target groups is a central principle of social marketing to bring about “specific behavioural goals relevant to a public good” (EST 2007/Changing Behaviour 2008)

More Evidence Needed

- Different products and systems have to be considered separately and findings on the behaviour for one system can't be transferred without checking for differences (Kaenzig/Wüstenhagen 2006)
- Lack of survey-based studies on the impact of general factors on the actual diffusion of energy-efficient household appliances (SECO@home 2008)
- Reflect the promotion of the use and afterlife phase – mainly for ICT/TV and cooling appliances (Strandbakken 2005)
- Find adequate (existing) communication channel – e.g. word-to-mouth is the most trustful source (EST 2007, Changing Behaviour 2008)

SCP: Need for Integration



- societal discourse on the objectives
- harmonize instruments/programmes of demand + supply side
- align framework conditions + context factors