

Energy awareness services for households - European good practice



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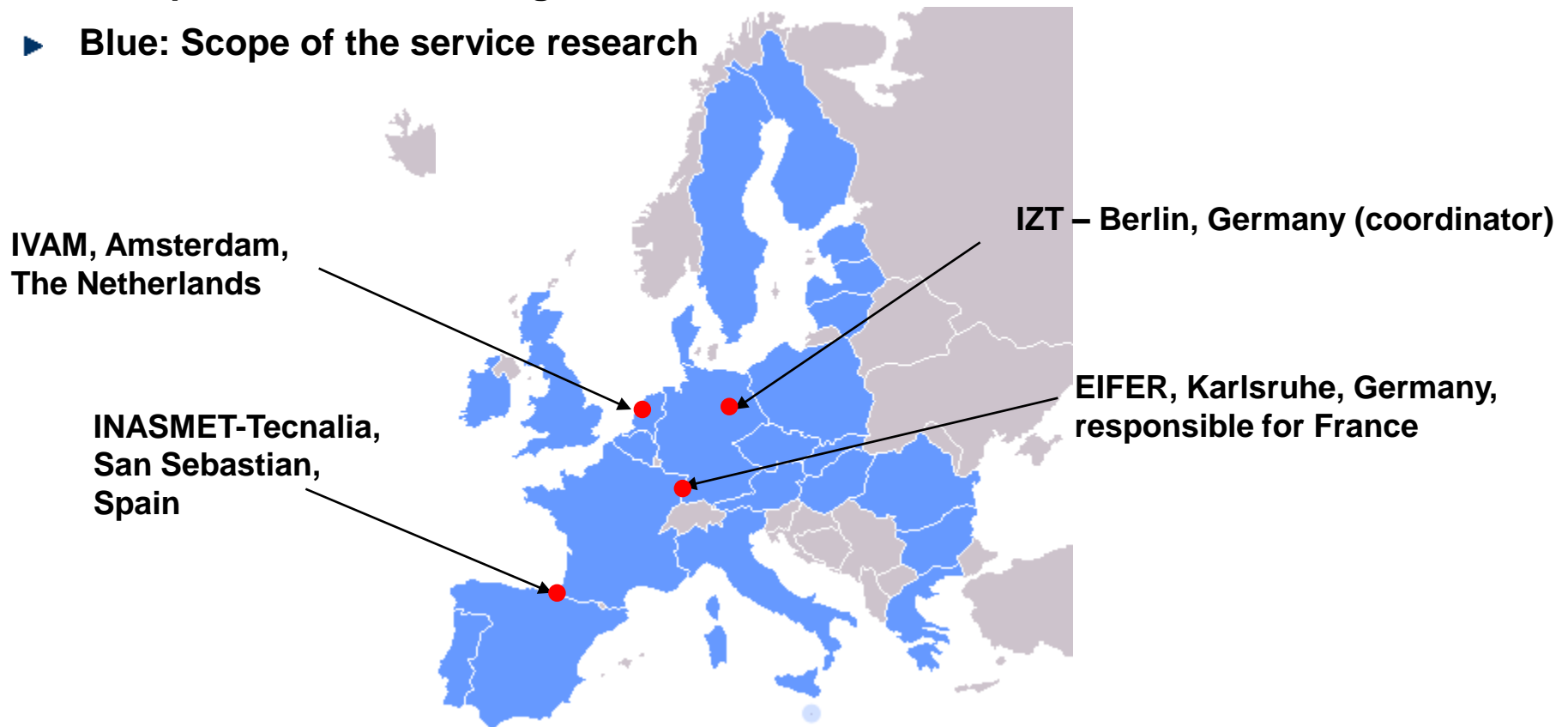


- 1. Introduction: Objectives and Background**
- 2. Psychology of Energy Consumption and Saving**
- 3. Methodology 1: Identifying Energy Awareness Services**
- 4. Methodology 2: Developing Energy Services**
- 5. A Lot of Examples**
- 6. Results and Conclusions**

Introduction

The BewareE project

- ▶ Duration: 30 months: December 2007- May 2010
- ▶ European project co-funded by the IEE-programme
- ▶ Four partners and four target countries
- ▶ Blue: Scope of the service research

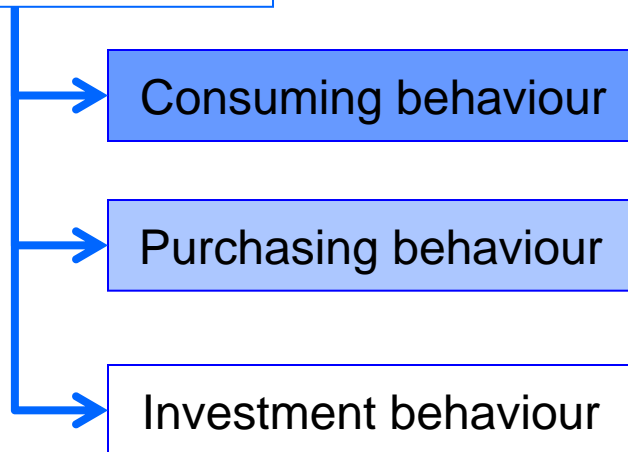


Introduction

Objectives of BewareE

- The BewareE project aimed at pushing the implementation of “energy awareness services” for changing energy consuming behaviour in European households.
- In collaboration with housing associations and other relevant stakeholders of the housing sector, the project consortium systematically gathered, evaluated and disseminated energy awareness services.

Changing behaviour



A household energy awareness service is any kind of action or tool to support residents in adopting sustainable energy consuming behaviours. These changes of behaviour relate to daily routines, purchasing and investment behaviours.

Introduction

Objectives of BewareE

- ▶ **Collection of energy awareness services = Service Inventory**
- ▶ **Identifying “Best Practice” (SWOT-Method)**
- ▶ **Examples: Developing energy services with stakeholders**
- ▶ **Proposals for strategies to promote energy services in four countries**
- ▶ **Dissemination: manual, brochures, presentations, articles**
- ▶ **Blue: Scope of the service research**





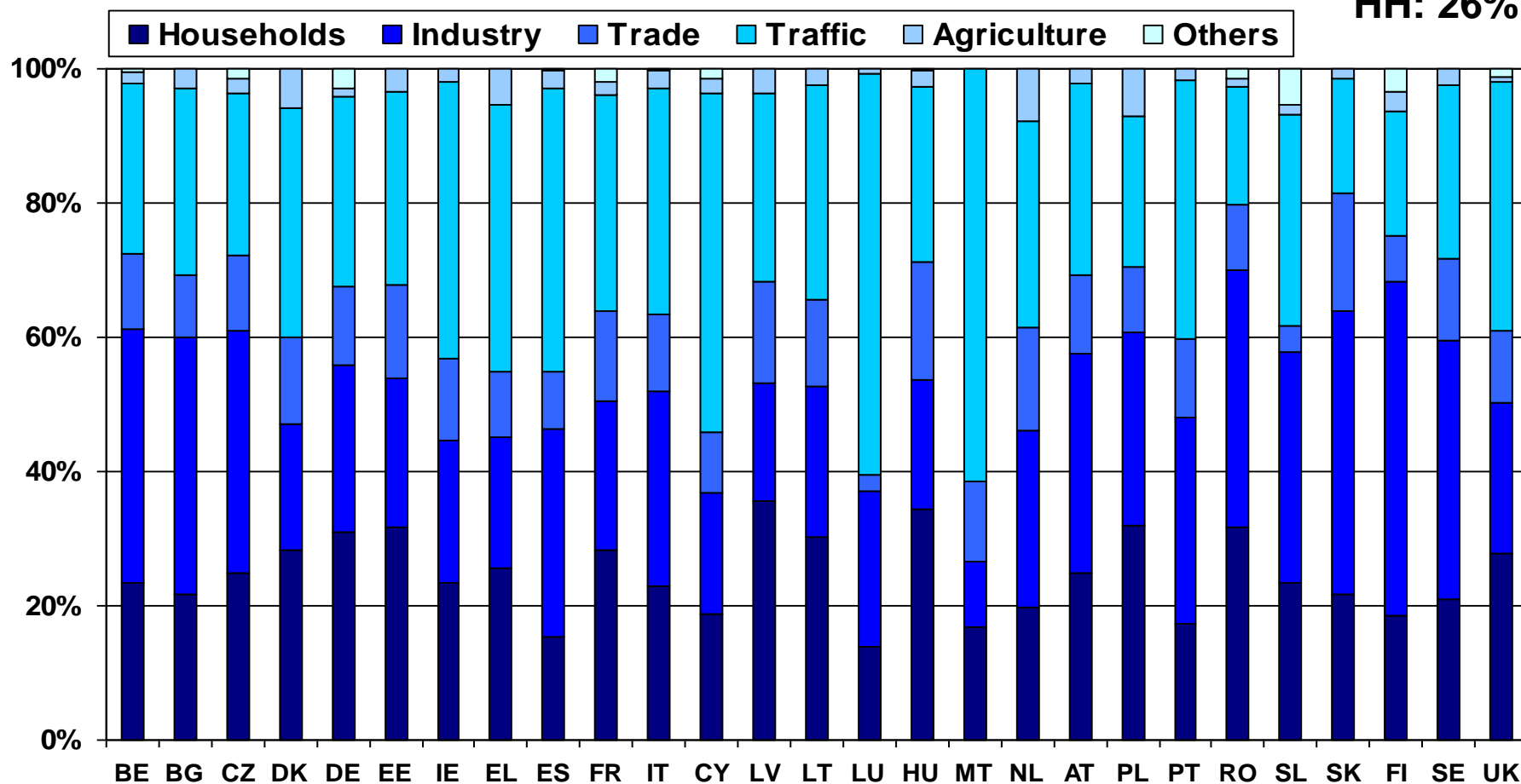
- ▶ Households account for around 26% of total energy consumption in Europe (not counting mobility)
 - ✓ A huge energy saving potential;
 - ✓ a considerable part of the energy might be saved merely by changing habits – without losing comfort!

Introduction

Energy consumption by sectors (2006)

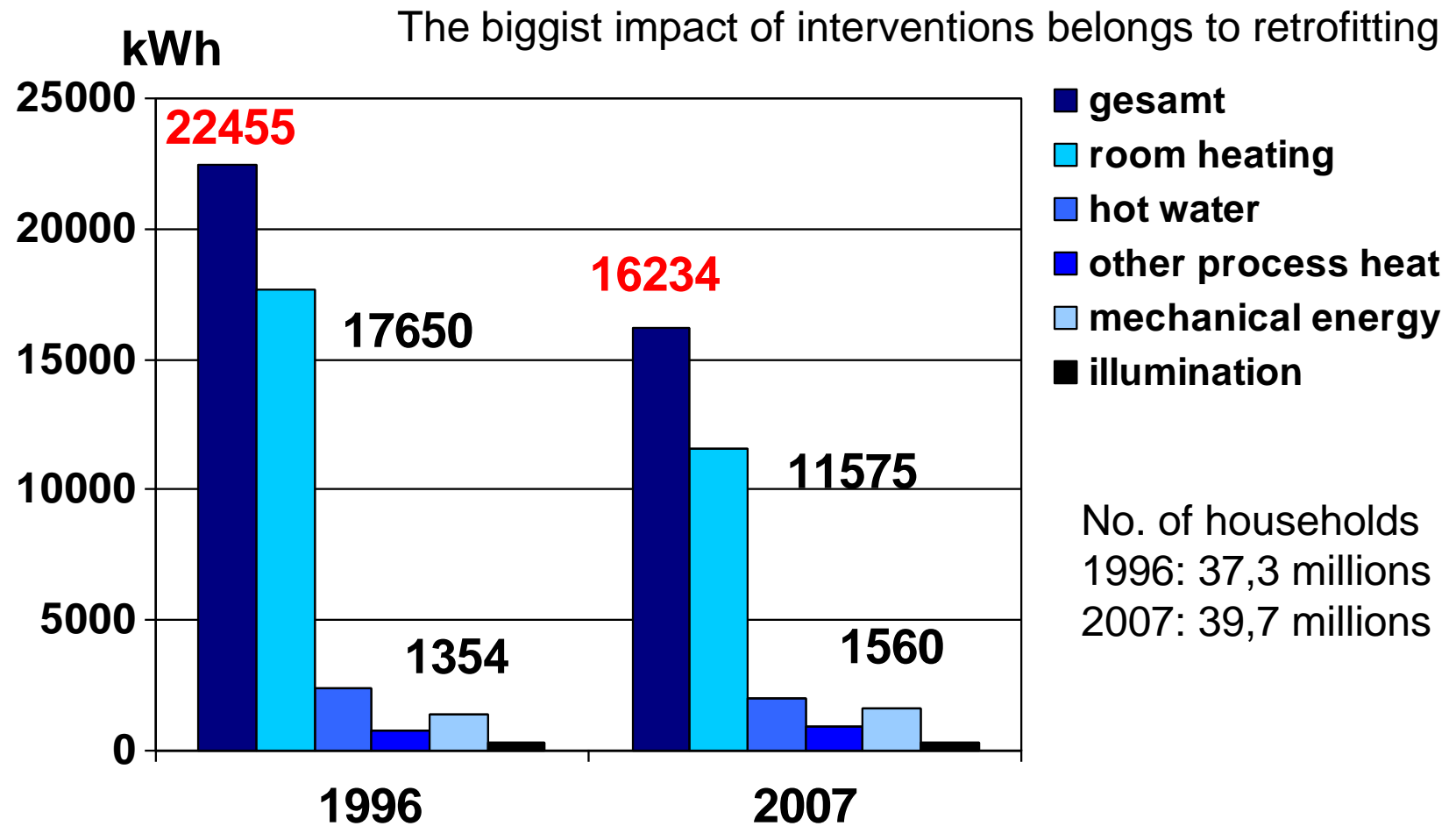
Source: Eurostat (n.d.): Environment and Energy. Online: energy – energy statistics

HH: 26%



Introduction

Germany: Reducing the energy consumption



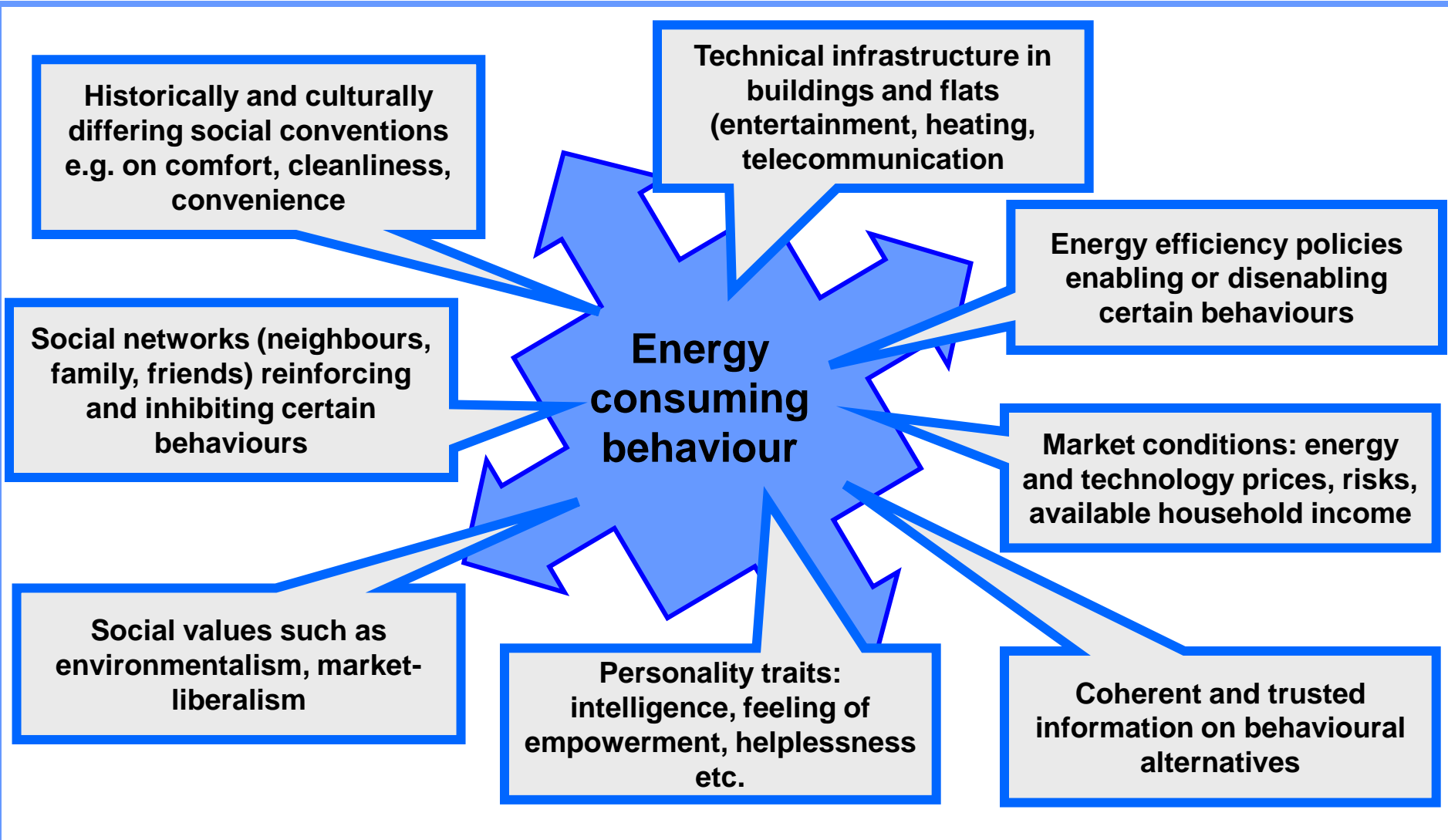
Source: Own calculations based on BMWi 2009: Tabelle 7a, end energy 2007



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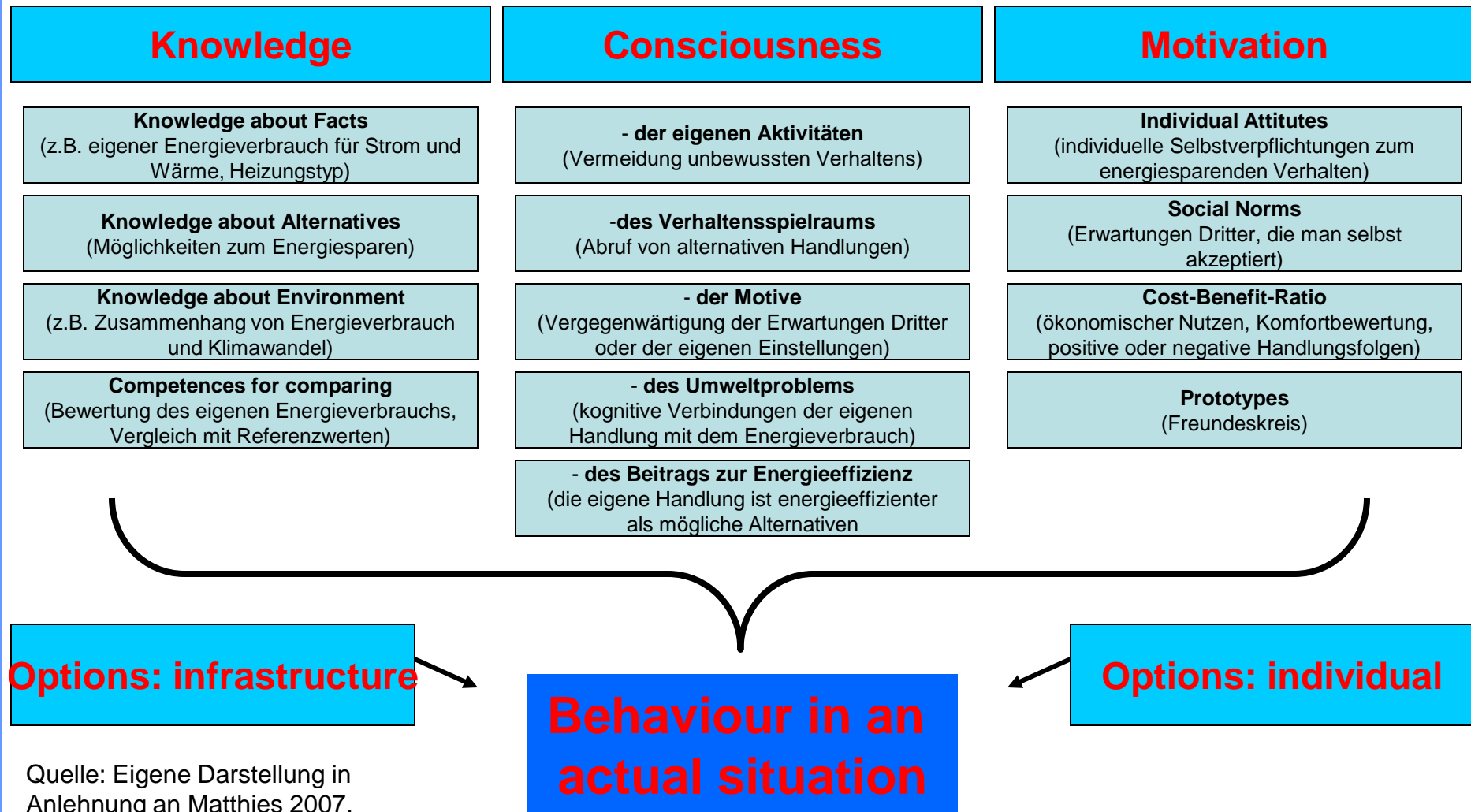
Psychology of energy consumption

A lot of factors influence our daily consumption



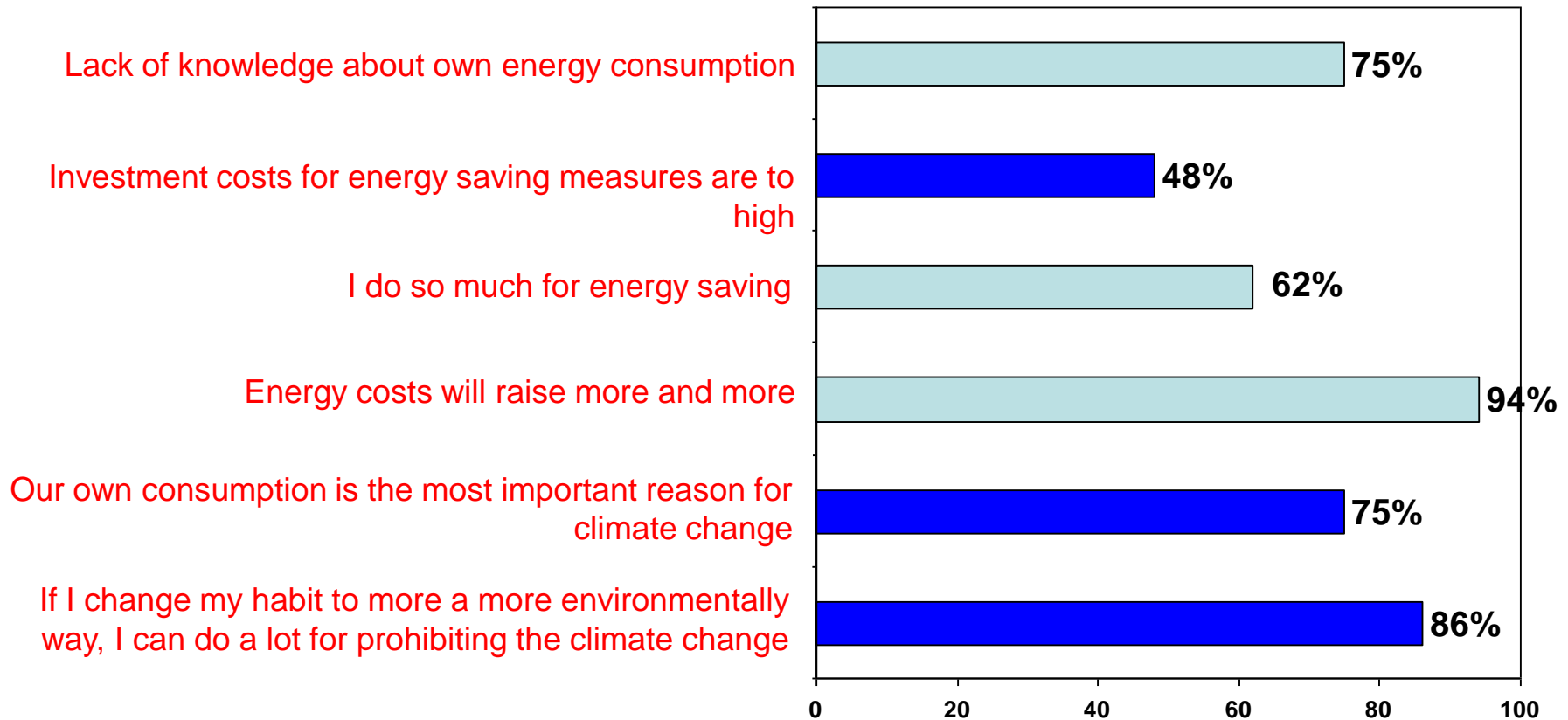
Psychology of energy consumption

knowledge + consciousness + motivation + options
to act (infrastructure + individual)



Psychology of energy consumption

Motivations and Obstacles in Germany and Europe



People know, that they are responsible!
People know, that they can act!

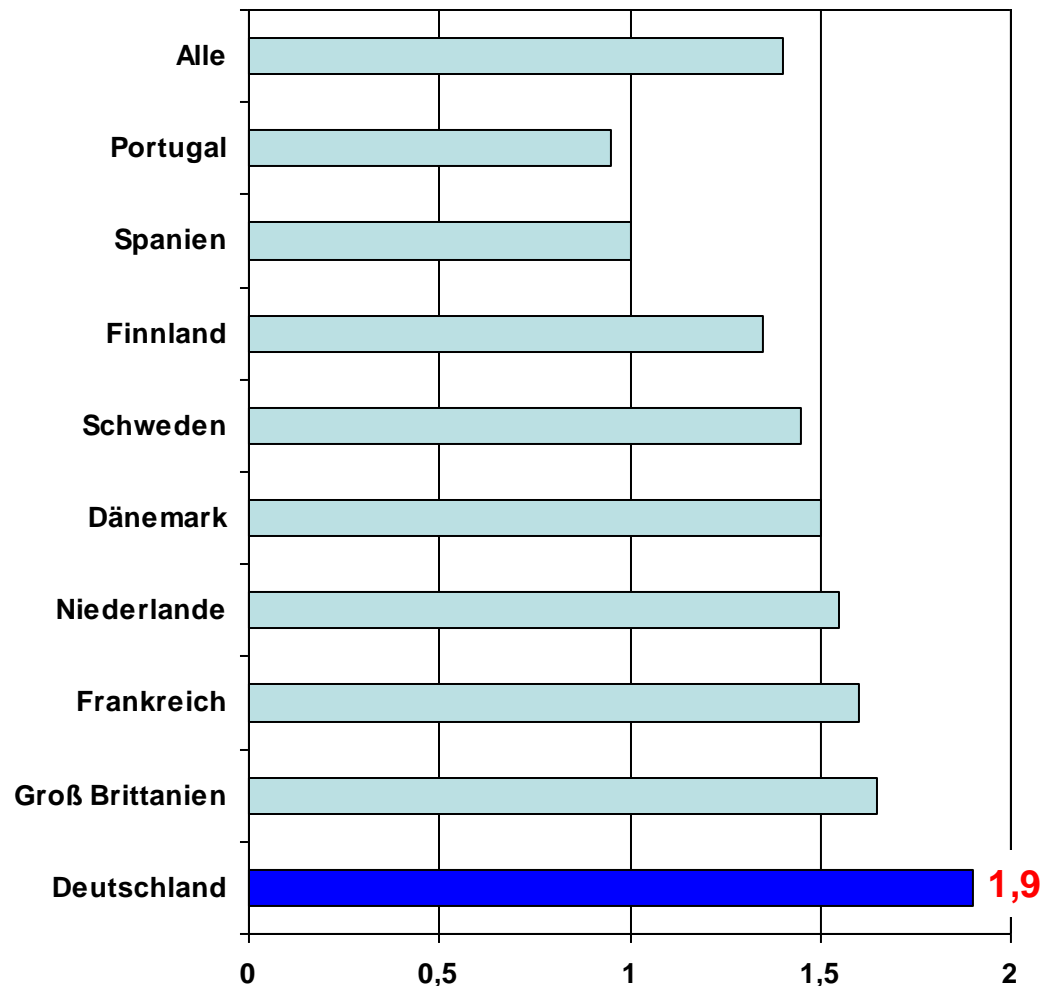
Quelle: BMU 2008 / Logica 2008.

Psychology of energy consumption

What do they in practice?

How often do you use the following 6 energy saving measures?

- Reducing room temperature or switching-off cooling appliances in summer
- Switching of electrical appliances or illumination
- Saving energy at your office
- Taking public transport or avoiding your car at short distances
- Exchanging your old car with an efficient one



- Abrahamse analysed scientific research on energy saving
- Six types of strategies have been identified:
- **Antecedence Strategies (strategic measures are pursued “before” the energy consumption)**
 - Information
 - Modelling (examples)
 - Commitment
 - Goal-Setting
- **Consequence Strategies (strategic measures are pursued “during” the energy consumption)**
 - Feed-Back
 - Incentives

Source: Abrahamse et al. 2005



- **Information:** Campaigns, written information, websites, workshops, exhibitions, consultations, home visits etc.
- **Pro:** low costs per household (exception: personal visits and consultations)
- **Con:** no confirmed effects according to several scientific studies
- **Effectivity:**
 - only if combined with other measures there is an effect e.g. for personal information combined with home visits, a few studies document a reduction of energy consumption
 - only one study document a reduction by 20% (several combined services)

Source: Abrahamse et al. 2005

- **Modelling:** Good examples e.g. the national minister for environment or “TV-Stars” call on to save energy, implementation like information strategy
- **Available data:** only scarcely investigated scientifically
- **Pro:** can be carried out via TV using nationally famous persons, can have a high degree of direct appeal
- **Con:** rather no energy reduction effects
- **Effectivity:**
 - only one study showed an instant 10% reduction of electricity, but after one year this effect vanished

Source: Abrahamse et al. 2005

- **Commitment:** Households commit themselves to save energy (e.g. saving 5% of energy)
- **Pro:** marginal expenditure, appeal can be communicated using flyers or brochures
- **Con:** effectivity could not yet be confirmed
- **Effectivity:**
 - effects only if households openly avow themselves to the commitment

Source: Abrahamse et al. 2005

- **Goal-Setting:** Households set themselves energy reduction goals (e.g. saving 15% of energy)
- **Pro:** if combined with feed-back services, profound energy savings possible
- **Con:** extensive employment of staff for consultation
- **Effectivity:**
 - ambitious goals and feed-back drastically increase the saving margins
 - savings if combined with feed-back: up to 15% (electricity)
 - if unambitious goal and no feedback: nearly no effects

Source: Abrahamse et al. 2005

- **Feed-back:** Household consultation about energy consumption and energy use, analysing the individual consumption, personalized advices, feed-back not just one time
- **Pro:** very effective and verified strategy, best if combined with regular energy controlling
- **Con:** personal approach, so extensive employment of staff
- **Effectivity:**
 - energy savings of 4 to 12% (electricity) confirmed
 - if combined with goal-setting: savings of up to 22% (electricity) confirmed

Source: Abrahamse et al. 2005

Psychology of energy consumption

Intervention strategy - Incentives

- **Incentives:** If energy consumption decreases, consumers receive incentives (favourable tariff's, bonus system, etc)
- **Pro:** most effective and verified strategy for saving energy, amplitude of incentive not that relevant
- **Con:** after incentive cessation, households again consume more energy; it is not clear, whether the strategy also works combined with modernisation
- **Effectivity:**
 - savings of up to 7% (electricity and gas) confirmed

Source: Abrahamse et al. 2005

Psychology of energy consumption

Results of different intervention strategies

Kok et al (meta study, 2009):

- **Reductions up to 19% is possible:**
 - Change of the behaviour and life-style
 - More attention for energy matters
 - low-cost measures
 - Small investments

Gardner/Stern (meta study, 2009):

- **5% reduced energy consumption:**
 - Reducing the temperatur for laundry and dish washing
 - Reducing room temperature
 - Reducing cooling temperature
- **12% reduced energy consumption:**
 - Low-cost investments (energy saving bulbs, window seal)
 - Low-cost investments for A+ or A++ appliances



Psychology of energy consumption

Results of different Strategies

- General information (flyers, brochures, exhibitions, events, campaigns) have no (verified) effects, but raise consciousness for energy saving
- Feed-back combined with personal consultation teaches households how to save energy
- Incentives lead to energy saving as long as incentives last
- Scientific projects show, that around 20% of the energy consumption of households (gas, electricity) could be saved by changing the behaviour
- A lot of low-cost measures reduce the energy consumption
- That means: if an (non scientific) energy service helps to reduce the energy consumption of household by 10%, it is a good service





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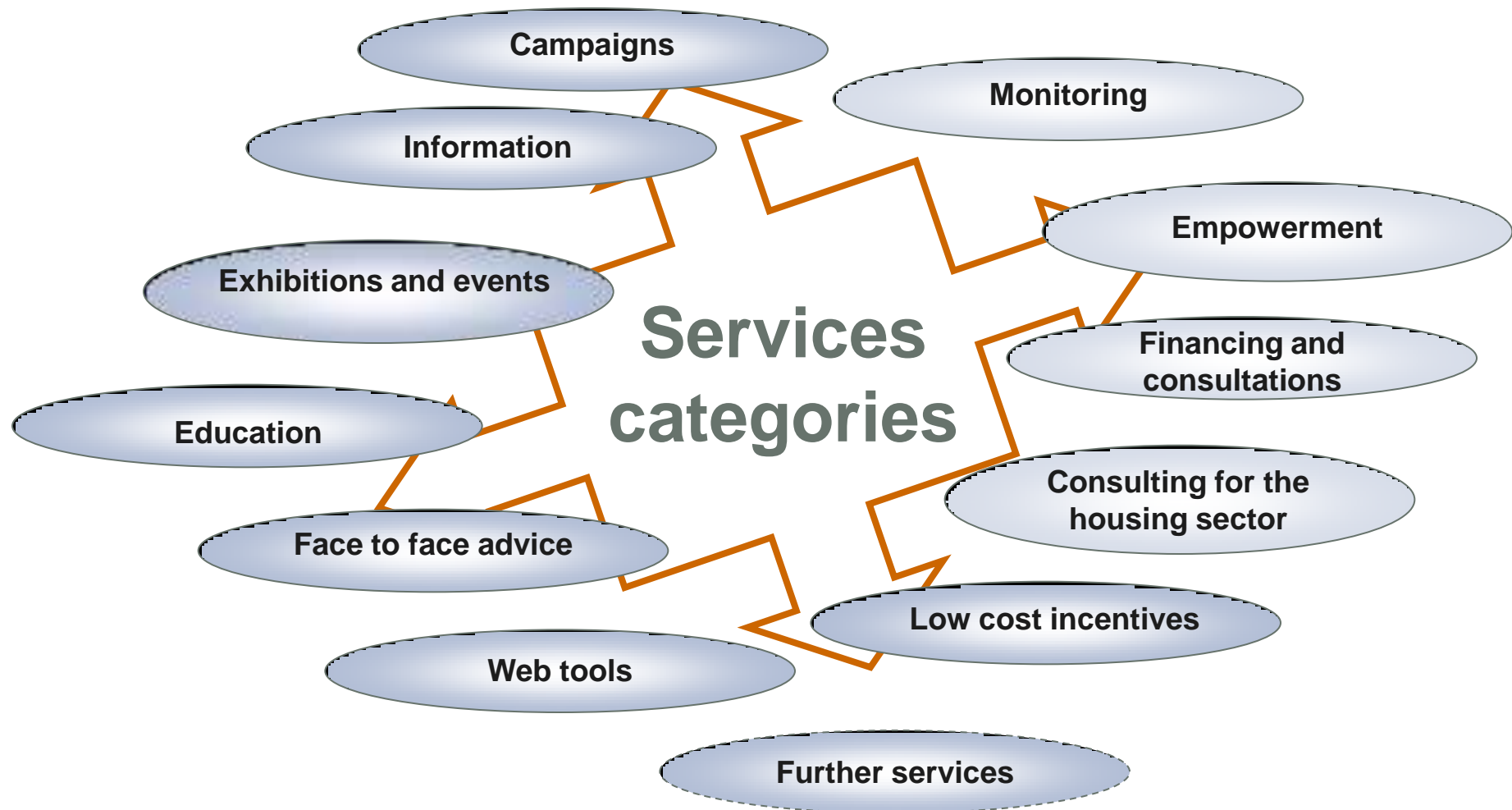


Phase 1: Selection of good practices

- ➔ **Compiling 136 energy awareness services** coming from almost all EU countries (by phone and internet)
- ➔ **Quantitative selection** of good practice examples according to
 - ➔ energy saving potential [0-1; 1-10; >10%]
 - ➔ Initial costs per household [>1000; 100 -1000; < 100€]
 - ➔ Target group acceptance [low; medium; high]
 - ➔ Potential market size [<10; 10-50; >50%]
 - ➔ Degree of development [idea; pilot; mature]
- ➔ **Qualitative selection** according to
 - ➔ Degree of innovativeness
 - ➔ Interest for certain regions in Europe

Methodology 1

Selection of good practice (Service Inventory)



Methodology 1

SWOT-criteria of the analysis

Criteria	SWOT-Criteria	Reasons
residents acceptance [high – medium - low]	strenght (high rating) – weakness (low rating)	a high acceptance is always a strength of a service
initial costs [€ per service unit or per household/year]	strenght (high rating) – weakness (low rating)	a high price is always a hindrance for accepting a service
potential market size [% of the whole country]	opportunity (high rating) – threats (low rating)	a high potential market size is always an opportunity for a service
energy reduction potential [% of total domestic energy use]	opportunity (high rating) – threats (low rating)	a high energy reduction potential is always an opportunity for a service
development stage	strenght (high rating) – weakness (low rating)	a developed service is always a strength of a service

Methodology 1

Rating methodology for the energy services

	Value 1 (=1)	Value 2 (=2)	Value 3 (=3)
Residents acceptance	Low	Medium	High
Potential market size [%]	<10	10-50	>50
Energy reduction potential [%]	0-1	1-10	>10
Initial costs [€ per service unit or per household/year]	>1,000	100-1,000	0-100
Development stage	Idea	Pilot	Mature

Methodology 1

Services in Europe (Best Practice)



- **DE: Consulting for the housing sector – Residents' advisory board**
- **DE: Consulting for the housing sector – Operating costs benchmarking**
- **DE: Energy monitoring – Displaying energy consumption**
- **DE: Financing and consultation – Energy contracting**
- **DE: Web tools – Online-check of heating costs and reduction potential**
- **AT: Exhibitions and events – Community events on energy saving**
- **AT: Face to face advice – Chimney sweepers as climate ambassadors**
- **BE: Campaign – Energy saving in laundry cleaning: The "turn to 30 - action"**
- **BE: Training forums – Five energy lectures for households**
- **BE: Web tools – Action book for households and monthly contact**

Methodology 1

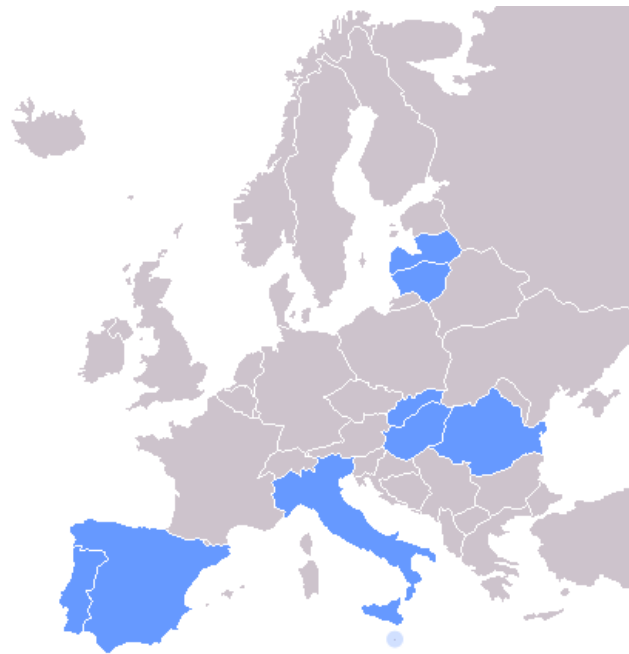
Services in Europe (Best Practice)



- FI: Empowerment – Tenants train tenants
- SE: Energy information – Energy letter with personalized energy reducing advice
- SE: Face to face advice – Local energy advisors
- UK: Empowerment - Local tenant energy network
- F: Exhibitions and events – Theatre play about energy-saving behaviour
- F: Energy monitoring – Interactive energy terminal “Poweo Box”
- F: Energy monitoring - ICT-based control of energy expenses
- F: Empowerment – Resident participation in refurbishment
- F: Empowerment – Energy ambassadors for low income households
- F: Low cost incentives – Climate Box by the energy agency Mulhouse

Methodology 1

Services in Europe (Best Practice)



- LT: Energy information – Kauno Energija's comparative energy bills
- LV: Training forums – Seminars for constructing energy-efficient buildings
- SL: Consulting for the housing sector – JEKO-In company's online benchmarking
- IT: Consulting for the housing sector – "One million energy-efficient homes"
- IT: Face to face advice – Boiler inspectors
- HU: Empowerment – Do-It-Yourself Solar collector – Kaláka
- RO: Campaign – How to invest and cooperate to reach energy efficiency
- PT: Empowerment– Evaluation of household energy use: EcoFamilias project
- ES: Web tools - Virtual calculator and Top Ten appliances
- ES: Web tools – Unión Fenosa's virtual forest



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Phase 2: Implementation

- ➡ Discussing the transfer and implementation of selected services with national housing associations and companies as well as other relevant actors
- ➡ 20 in-house workshop with housing companies, local communities, residents organisations, energy agencies and other actors
- ➡ Developing implementation plans for energy services
- ➡ Developing national strategies and strategy lines

- bottom up - participation of residents
 - higher acceptance
 - better to fulfil the needs
 - a lot of more work (and costs!)
 - it takes a lot of time
 - but: what do you do if they don't know what they want?
- top down – creating services with the provider
 - easy process – easy to develop
 - you need not much time
 - possible to execute within a scientific project
 - better to calculate (developing process!)
 - risk of lacking acceptance by the target group
- **best way – circle process: develop concepts – ask your target group – optimize together with your target group – pre test – optimize again – offer the service**
- **BewareE: just to less time for bottom up**

Methodology 1 – Top Down (BewareE)

Service Engineering for developing services

- Methodology: Service Engineering
- Service Engineering: Step-by-step approach which guides the team systematically in the development process

	Situation analysis	Service Creation	Service Design	Service Management
Configuration	Goals, environment, service portfolio, experiences	Achieving new ideas	Developing of a concept (implementation plan)	Providing the service
Rating	Frameworks for the specific situation	Rating the ideas	Rating the concepts	Evaluating the service

Basic questions: **What** (goal) do you want? **Who** (target group) do you want to reach? **How** (service) do you provide the services? **What** (resources) do you need?

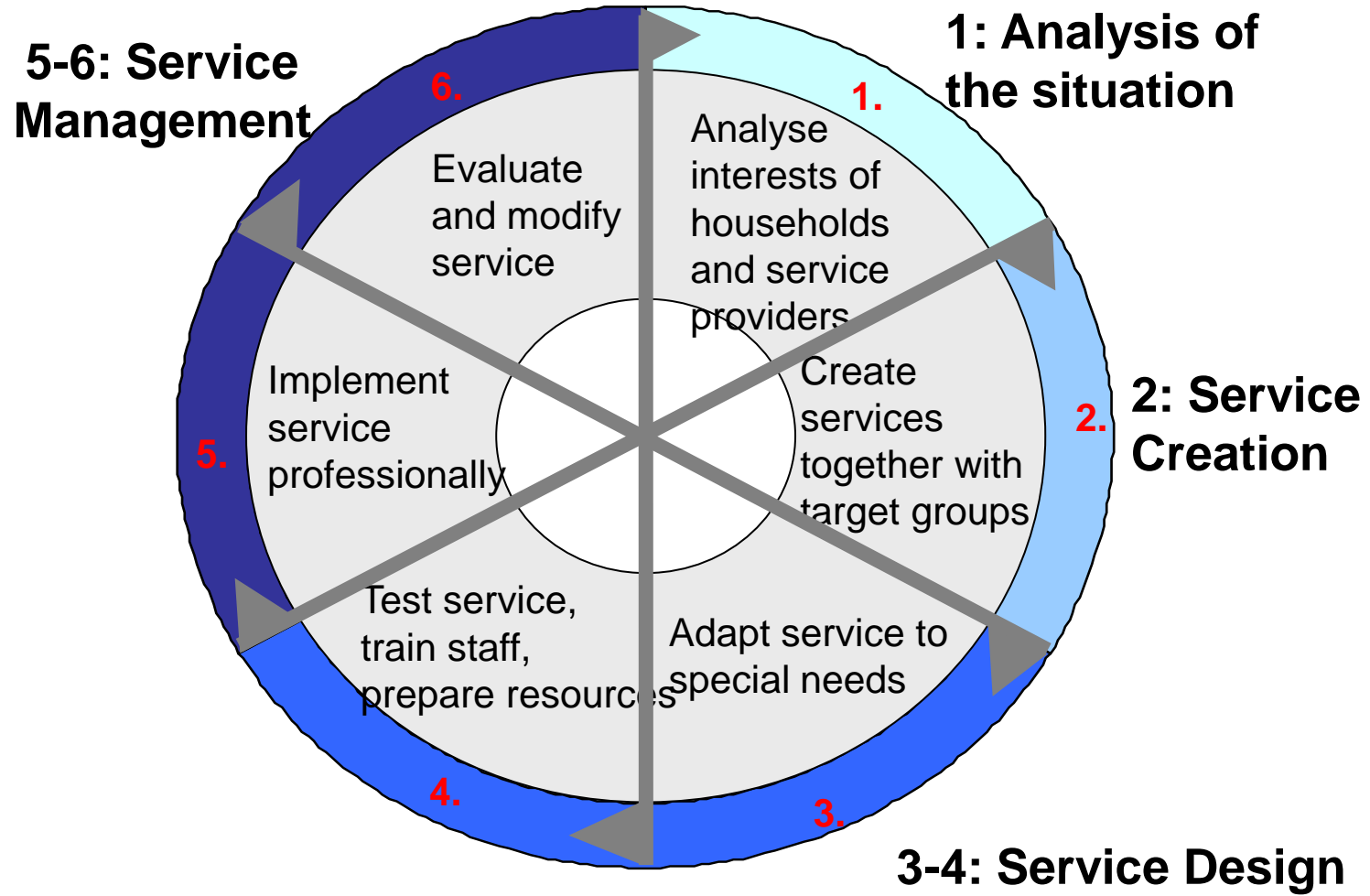
Methodology 1

Implementation plans for energy services

Wohn- und Baugesellschaft Calau mbH – housing company	<ul style="list-style-type: none"> • Energy box • Show flat with accompanying consultation
Unabhängiges Institut für Umweltfragen e.V. - advising public bodies	<ul style="list-style-type: none"> • Energy event • Express energy consultation • Cooperation for energy efficiency in housing companies
DGS Deutsche Gesellschaft für Sonnenenergie e.V. - private energy agency for renewables	<ul style="list-style-type: none"> • Process moderation for tenants solar collectors
Rolf Feuerhahn KG - property management	<ul style="list-style-type: none"> • Energy talks
THS TreuHandStelle – housing company	<ul style="list-style-type: none"> • Janitors as energy advisers
Experts	<ul style="list-style-type: none"> • Association discourse on energy services
Federal State of Schleswig-Holsten / Department for Building and Housing	<ul style="list-style-type: none"> • Advising housing companies • Competition „Energy services“

Methodology 1 – Bottom up

Service Engineering for developing services





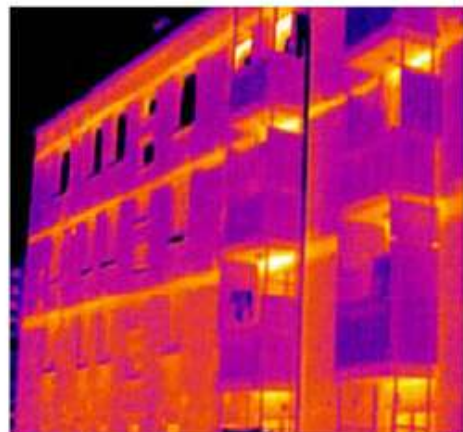
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Campaign and Information Crack the Kyoto Code / Be

- Project of regional „Kyoto Clubs“ like NGO Ecolife u.a.
 - Target: reduction of the CO₂-Emission up to 10%
 - Methodology: goal setting and feedback
 - Target group: 443 households
 - Tools: materials for energy analysis and energy saving tips, campaign materials
1. Analysis of the energy consumption
 2. Workshops to motivate and to discuss energy matters
- **Results: households saved 100 t CO₂ (225 kg/households)**
 - (equivalent to 280 kWh electricity or 1.200 kWh gas)



Consulting for the housing sector JEKO-In company's online benchmarking (SL)



Measured energy consumption

season 98/99: 230 kWh/m²

year 2005: 150 kWh/m²

year 2006: 139 kWh/m²

Normalized energy consumption (reference DD 20/12 KO Jesenice)

season 98/99: 250 kWh/m²

year 2005: 163 kWh/m²

year 2006: 159 kWh/m²

Calculated energy demand for heating

214 kWh/m²

Jeko In – a public district
heating company

- **Objective:** push building owners and managers to carry out energy efficiency renovation projects
- Information on the energy consumption status, recommended measures and estimation of investment for 40 high consuming buildings. Annual evolution and energy performance certificates
- Graphically presented using Google map tool
- + transparency;
- - pay back time (up to 3 years)



[Cesta Toneta Tomšiča 8](#)

[Cesta Maršala Tita 1a](#)

[Cesta Maršala Tita 4a](#)

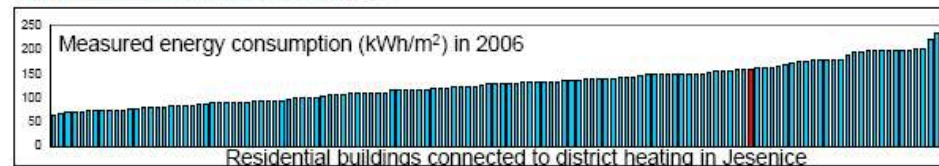
[Cesta Cirila Tavčarja 5](#)

[Cesta revolucije 11](#)

Measured energy consumption above 200 kWh/m²

Measured energy consumption between 100 and 200 kWh/m²

Measured energy consumption below 100 kWh/m² (measures implemented)



- Energy Contracting: financial service
- Definition: *An Energy Service Company (ESCO) implements a customized energy service package (consisting of planning, building, operation&maintenance, optimization, fuel purchase, (co-)financing, user behavior ...). The ESCo provides guarantees for all inclusive cost and results and takes over commercial and technical implementation and operation risks over the whole project term of typically 10 to 15 years (after [Bleyl+Schinnerl 2008]),*
- Most important: tenants pay agreed utility cost, which are higher than the “real” price, but lower than they have paid before
- The difference between “real and agreed” prices financed the investment
- Example Wohnungsgenossenschaft Bremer Höhe (co-operative):
 - contracting for CHP (inclusive retrofitting with exchange of windows, wall insulation and several other measures)
 - Tenants paid for ten years less than they have paid for heating, electricity and hot water
 - Average heating costs: 70 € per m² and year, average in Berlin: 1.5 € per m² and year





- ▶ **Objective: Making residents skilled actors** in the detection of energy wasting, in the conception and in the implementation of energy saving measures
- ▶ **Idea:** Giving people a feeling of agency is likely to create a sustainable impact on behaviors
- ▶ **Hard to get reliable data that can be generalised,** but very successful examples (5-10% savings)
- ▶ **Examples**
 - ... involving residents in monitoring and decision making,
 - ... training them to help themselves or their neighbours

Empowerment Residents' advisory board (D)



The social housing company **WGB Marzahn** established a residents' advisory board that:

- ▶ checks the evolution of costs and energy consumption
- ▶ suggests and co-decides measures for further energy saving measures
- ▶ shares its findings with other tenants.



Very low cost but positive effects on the company's corporate image.

Closer relation between company and residents

Residents are actors instead of just receiving information.

Risk:

Protection of data privacy

Empowerment

Training tenants as energy advisors, Motiva Oy (FI)

- **Training of energy experts by Motiva Oy** (energy agency)
- Motiva trains residents on energy saving behaviours and enables them to give advice to other residents.
- The trained energy experts give advice to the residents of the buildings they live in.
- They control the general consumption of energy and water in their buildings.
- Effect: water savings of 20%, electricity savings of 10%, and heat savings of 5%.



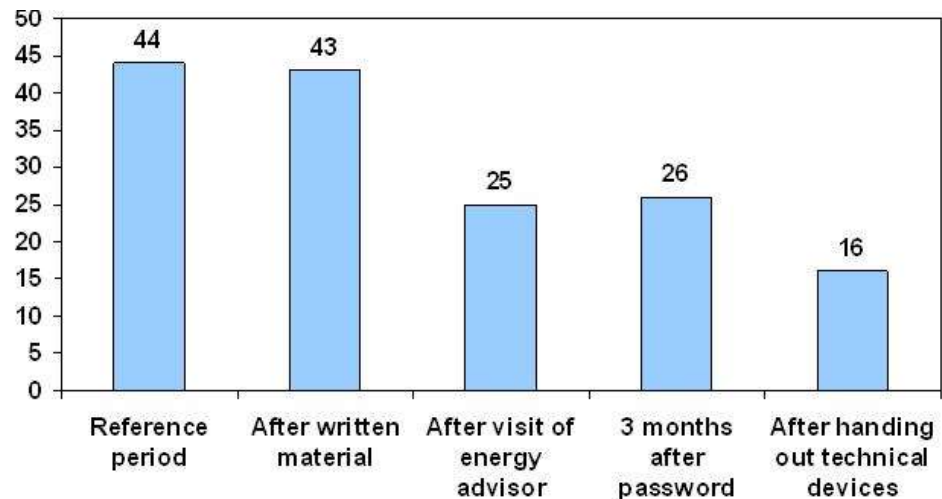
- ▶ NGO Prioriterre-Conseil Général de Haute-Savoie
- ▶ In the context of growing “**fuel poverty**”, NGO Prioriterre proposed its Energy Ambassadors service to the district authority “Conseil Général de Haute-Savoie”.
- ▶ **Energy ambassadors** help low income families to save money and energy by the following actions:
 - ✓ Training on energy and housing is offered to social workers.
 - ✓ Telephone service for social workers and volunteers, who are in contact with people at risk of poverty rate.
 - ✓ A written manual (the “ant guide”) was developed and distributed among targeting social workers and volunteers.
 - ✓ Home visits are offered to families.



Empowerment and energy monitoring

Reducing stand-by losses / DK

- Project of the energy agency „Energi“ and the national research institut
- Goal: Reducing stand-by losses for appliances
- Methodology: Analysis of energy consumption and consulting
- Target group: households
- Means: information and technical appliances (e.g. remote-control)
- All: automatic monitoring of electricity consumption
- Group 1: just flyer and brochures
- Group 2: personal advices and technical appliances
- **Result: reduction of 65% of stand-by use in group 2**



Source: Gudbjerg et al., Standby consumption in private homes socio-economic studies, mapping and measuring reduction? What works: campaigns or hardware solutions?

- Project of ECO-EDP -Energias de Portugal- and Associação Nacional de Conservação da Natureza
- Goal: motivation of households for saving energy
- Methodology: analysis of energy consumption and personal feedback
- Target group: 206 households
- Means: information (flyer, brochures), measurement devices and feedback
 1. Recording the energy consumption
 2. Detailed analyses
 3. Individual advices for changing behavior (and exchange of appliances)
 4. Continuous feedback
- **Result: 72.000 kWh/year saved
(10% of the energy consumption)
305 kWh respectively 167 kg CO₂ per household**



Energy monitoring Displaying Energy consumption (D)



- ▶ Social housing company „Volkswohnung GmbH – Karlsruhe“; project save@workforhomes
- ▶ Refurbishment of buildings, making them fulfil low-energy standards.
- ▶ Equipping buildings with electronically thermostats, sensors, and consume indicators (displays).
- ▶ Displaying of daily energy consumption using smileys (depending on comparison with other apartments).
- ▶ Two groups in the same building: one with displays, one without displays
- ▶ Users with displays used 7% less energy than users without displays.



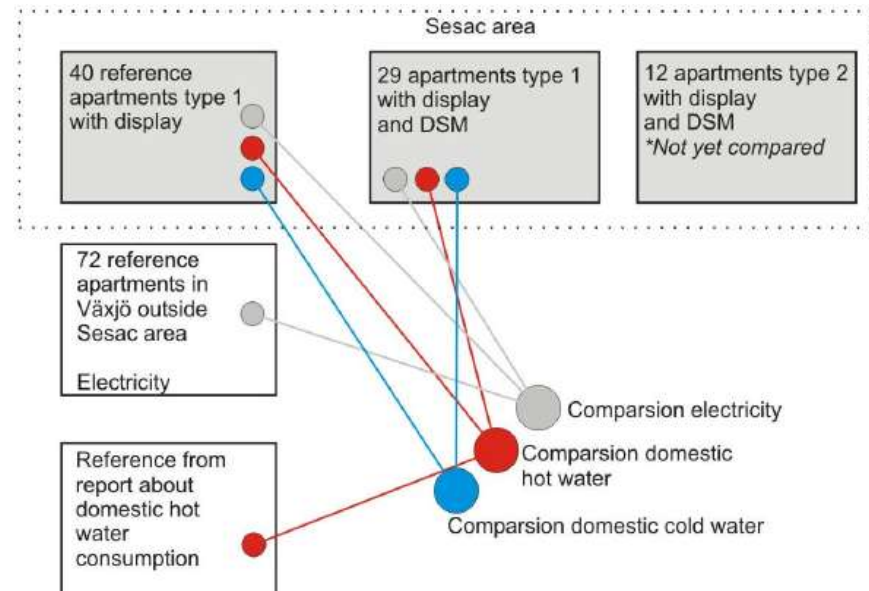
Energy monitoring Internet Platform for Controlling Consumption (F)

- ▶ Internet platform for controlling energy consumption“ (social housing company Moulins Habitat, software company Vizelia)
- ▶ In the framework of EU project **Save@workforhomes**.
- ▶ Apartments were equipped with sensors to transmit consumption data to Moulins Habitat
 - **Moulins Habitat** assesses the performance of its buildings, effects of rehabilitation works and detect possible leaks.
 - **Tenants** have access to their consumption data in real time. Warning message if consumption is excessive. It is possible to compare it with former consumption to check behavioural changes and control the energy budget.

<http://tf1.lci.fr/infos/jt/0,,4089637,00-comment-se-chauffer-plus-intelligemment-.html>



- Building project of the municipality Växjö, a regional utility and a housing company
 - Goal: demand side management for electricity and hot water
 - Methodology: computer based analyses of energy consumption and individual information about the consumption
 - Target group: households in newly build houses (85 resp. 95 kWh/m²a)
 - Means: measurement system for all flats and displays
1. Group 1: just only displaying the consumption of energy and water
 2. Group 2: additional information (high – average – low) at the display
- **Result of group 2:**
saving of electricity 34% and
saving of hot water 43%



Events and exhibitions

Street theatre play (F)



Who

- Prioriterre, NGO and
- Tartine, théâtre group

Aim

- Addressed to the kids and their parents, this service shows energy saving measures in an entertaining and “light” way



- 32 presentations between 2001 and 2004; 2300 people attending;
- Received considerable media coverage



- Real impact on behaviours unclear



Face to face advice

Promoting energy efficient appliances: Stromsparmeister (AT)

- Campaign “Stromsparmeister” („Masters of Energy Saving“) of the Austrian Life Ministry together with electronic store WKO – Der Elektrohandel
- Salespersons of WKO are trained as experts for selling low-energy and energy-efficient electrical equipment
- Salespersons advise customers on the energy-efficiency of electronic equipment (e.g. labels A⁺, A⁺⁺)
- The salespersons convince customers that it is less cost-intensive to take leave of old equipment
- Stores with trained salespersons receive the label „Stromsparmeister“



Face to face advice - Incentives

Advising energy poor and energy saving box / NL

- Project “Energie op Maat” (individual use of energy) in the municipality Dordrecht
- Goal: motivation and training/qualification of households
- Methodology: personal advice (consultation)
- Target group: 336 households with less income
- Mean: box with energy saving bulbs, window seals, foils (?)
- 1. Home visit
- 2. Analysing the consumption
- 3. Personal advices for energy saving
- **Result: Savings of 12% Gas resp. electricity**



Face to face advice

Chimney sweepers as energy ambassadors (A)

Who

- ▶ Ministry for Agriculture and Environment
- ▶ National Austrian Energy Agency
- ▶ Industrial partners



Measures

- ▶ Chimney sweepers advice residents on
 - ✓ heating systems and efficient use
 - ✓ replacing old heating installations by efficient ones;
 - ✓ thermal insulation and replacement of windows
- ▶ Other similar examples: boiler inspectors in Italy

Findings

- ++ Chimney sweepers appear neutral without commercial interest
- ++ Chimney sweepers visit most of the homes

Face-to-face advices Consulting elderly people at home / GB

- Project: Advising tenants in sheltered housing (EU project by SWEA)
 - Goal: Reducing the consumption of electricity
 - Methodology: personal advice (consultation)
 - Target group: Elderly people in sheltered houses
 - Means: home visit and personal advice, measurement equipment, flyer, tombola (prices: eco cettles)
1. Home visit
 2. Analysing the consumption (especially electric equipment and heating)
 3. Analysing the contracts and tariffs
 4. Personal advices (inclusive ventilation, room temperature, special offers)

Result: Savings of 12% Gas resp. electricity



Source: Severn Wye Energy Agency

Incentives and empowerment Energy Box of the city of Arnhem(NL)

- Energy Box of the city Arnhem, building companies and the local energy supplier
- Events presenting the Energy Box and lectures on energy saving
- Content of the Energy Box: shower head, isolation foil for heaters, energy saving bulbs, and sealing material
- Expert personal conducts the installation of the equipment



Incentives

50-50 model for utility costs for schools / DE

- Problem: user of municipal buildings like schools decide by themselves how much energy and water they need, the municipality has to pay for it
- Project: 50-50 model for utility costs (Berlin and UfU)
- Goal: reducing the energy and water consumption
- Methodology: contract between schools and the municipality, setting a standard (average) for consumption, 50% of the saved costs afterward remains at the school for own (saving!) projects, the other 50% should be used for retrofitting (in theory)
- Target group: schools
- Means: information
- **Result: Savings of around 30% confirmed (energy, water, costs for waste)**



- Project of the utility Umeå Energi
- Goal: motivation of customers for energy saving (!)
- Methodology: comparable information of the individual consumption
- Target group: households (customers of Umea)
- Means: Energy letters (additional information to anual/quarterly invoices)
 1. Analysis of the consumption
 2. Elimination of weather influences
 3. Standardization (size of household and flat, type of building)
 4. Individual advices for reducing the energy consumption
- **Result: average reduction 2,400 kWh resp. 12% per household**



UMEÅ ENERGI

Privat Företag Om Umeå Energi Kundsidor

Kundsidor start

Kundförmåner

- Elmarknadsanalys
- **Energispartips**
- Lokal väderhistorik

Avtalsvillkor

Du är här: Kundsidor > Kundförmåner > Energispartips

Energispartips

Uppvärmning och husets konstruktion

Värmeläckage

Frost på husfasaden på vintern visar tydligt var värmen försvinner ut genom väggen.

På taket kan du titta på snötäcket, och på istappar längs takfoten. Mycket is och/eller lite snö kan tyda på värmeläckage.

Snö på tak har förstås även med vindarna att göra.

Istappar på norra sidan när det inte varit töväder är ett tecken på värmeläckage.

Istappar på hus. Foto: Marcel Berkelder.

Ventilation

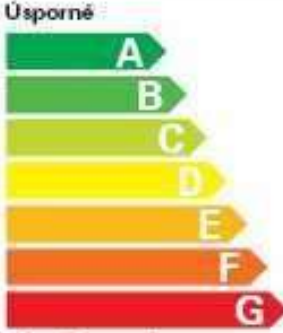

Information – Web tools

Union Fenosa Virtual Forest (ES)

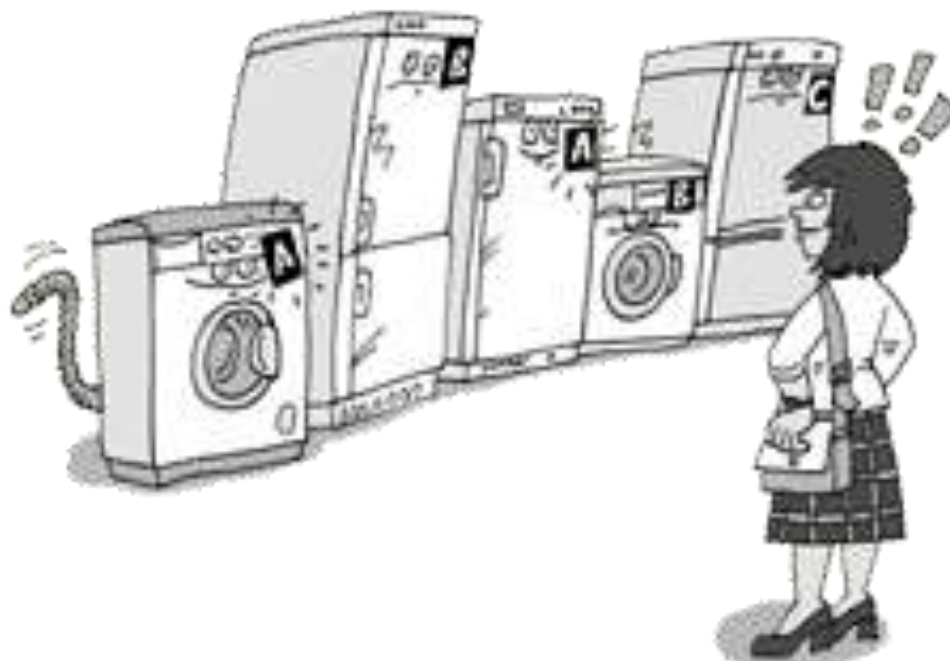
- the project “Virtual Forest” aims at guiding households towards a more **efficient use of energy**
- inviting them to fill out an on-line questionnaire on their consumption habits
- they receive advice on possible actions for reducing energy consumption
- the promoter of the “Virtual Forest”, the Spanish electricity company Unión Fenosa, donates **1€ to a reforestation project in Brazil** for each participant who responds to the on-line enquiry and also plants **half a tree in Second Life**
- Estimated CO₂ reduction 1,590 t, 16,500 planted trees

<http://www.bosquevirtual.com/>



Energie		Myčka nádobí
Výrobce	LOGO	ABC
Model		123
Úsporné		
Méně úsporné		
Spotřeba energie kWh/cyklu <small>na základě výsledků zkušebního normovaného cyklu s použitím nádobí studené vody</small> <small>Skutečná spotřeba energie závisí na způsobu používání spotřebiče</small>		X.YZ
Účinnost mytí <small>A: lepší G: horší</small>	ABC	DEFG
Účinnost sušení <small>A: lepší G: horší</small>	ABC	DEFG
Počet sad nádobí		YZ
Spotřeba vody l/cyklus		YX
Hluk (dB(A) re 1 pW)		XY
Číslo údaje jsou v návodu k použití		
Norma EN 50522 Číslo údaje XY: ZCE pro spotřebiče emise nádobí energeticky šetrný		

Úsporné spotřebiče
v České republice



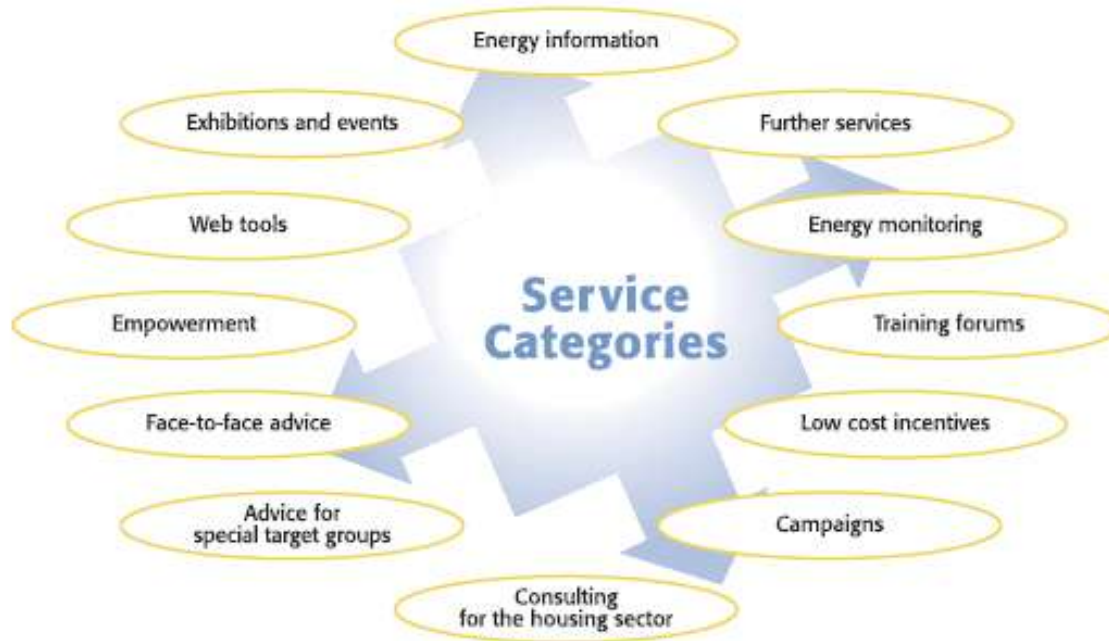
Campaign for energy efficient appliances

Source: Usporne spotřebice (2008)



1. Introduction: Objectives and Background
2. Psychology of Energy Consumption and Saving
3. Methodology 1: Identifying Energy Awareness Services
4. Methodology 2: Developing Energy Services
5. A Lot of Examples
6. **Results and Conclusions**

- Database with **139 energy awareness** services from all over Europe provided by housing companies, NGOs, utilities, consumer associations and similar organisations are addressed to tenants and house owners.



- 27 country reports** explaining the national framework conditions of the identified energy awareness services.
- Based on a SWOT analysis, **36 “best-practice” examples** were selected to highlight the most promising awareness services.

- Services' **transferability to the specific national framework** conditions in France, Germany, Spain and the Netherlands was assessed
- A **six step approach** for creating and implementing behavioural change services was developed. (based on Service Engineering method).
- **Methodology was tested** in several in-house workshops with service providers in each of the four countries
- Development of **national strategies** to recommend important country-specific actions for speeding up the implementation of energy awareness services

Step 1: Analyzing the situation

Analyse the situation of your target group and your own one

Step 2: Service Creation

Create services (together with target groups)

Steps 3-4: Service Design

- a) Adapt service to your special case
- b) Test service, train staff, prepare resources

Step 5-6: Service Management

- a) Implement the service professionally, patiently and passionately
- b) Evaluate and modify service

Learnt lessons




- All strategies for promoting energy services should be informed by **scientific evidence on its effectiveness**:
 - Simple **information services** are most prevalent, but don't appear to be effective.
 - Only some **feedback or empowerment** measures has proved the highest energy savings and the most persistent behavioural changes.



- **Collaboration** between different actors is a key factor for successful service provision

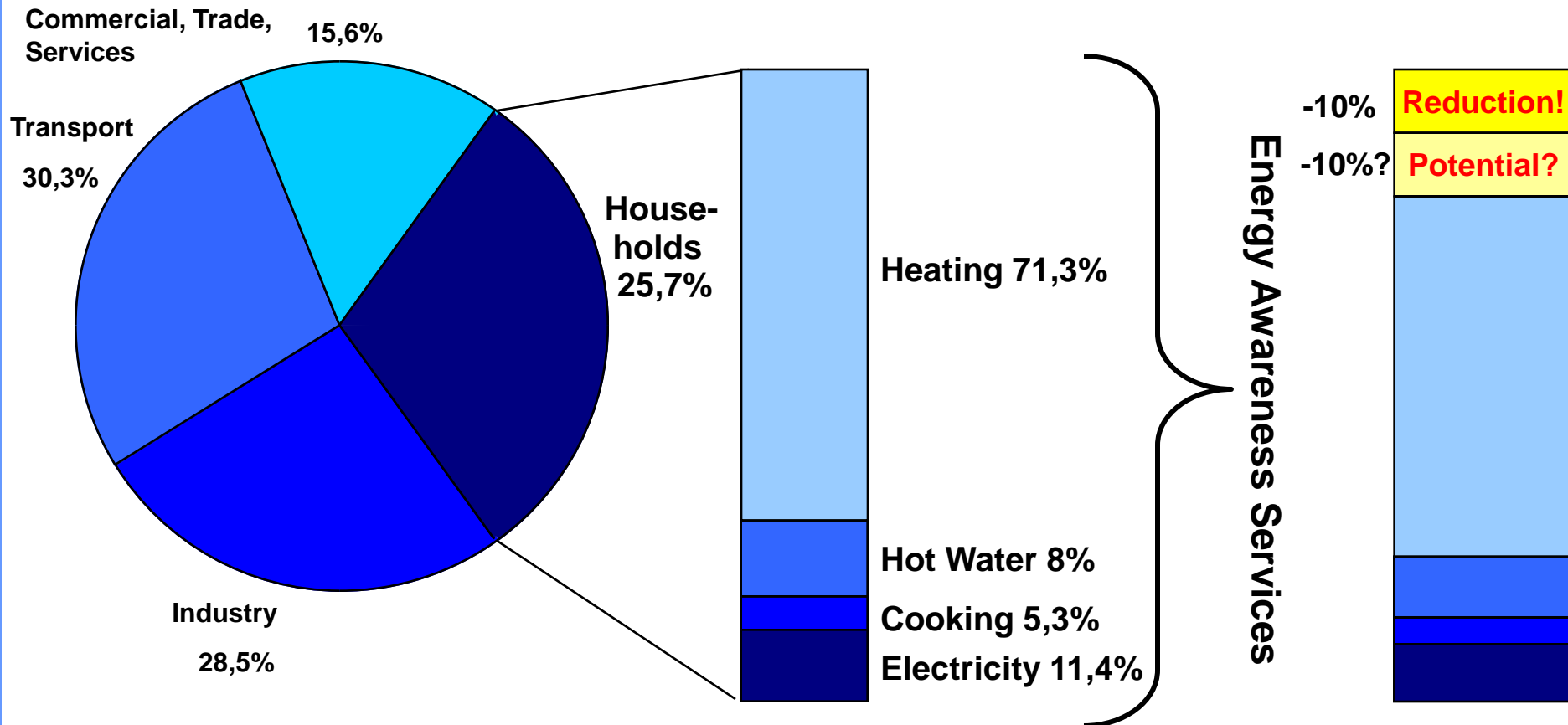
Promoting and supporting energy awareness services is **a matter of urgency** for all countries of the EU. However service providers face a number of significant **barriers**

- 
- The BewareE team will make **use of the results for further research activities**. For instance, some of the partners are applying for the 2010 IEE call for proposals which benefit from the BewareE findings.
 - Furthermore, **dissemination of outcomes** will continue after the end of the action, e.g. upon request by conference organisers.
 - The partners are **planning to support service providers** for the design and implementation of services.
 - **Broad media coverage** of the project findings
 - More information could be downloaded at the BewareE website <http://projekte.izt.de/bewaree/>.

- ➔ Energy awareness services help to reduce energy consumption in buildings through behavioural changes (up to 10%)
- ➔ Technology is needed in some cases to reduce energy consumption but changes of human behaviours are essential.
- ➔ Empowerment of residents seem to be the most efficient measures
- ➔ Combine measures! = feedback + monitoring + training + comparable information
- ➔ Adapt measures to target groups
- ➔ Keep energy efficiency on the agenda, not only punctual measures
- ➔ Develop creative measures that make energy efficiency attractive
- ➔ Collaboration between organizations: housing companies, Administration, NGOs, energy companies, energy and environmental agencies, etc.

Conclusions Saving Potentials

Energy Services: -10% in Reality, -20% in scientific projects



Source: Own picture based on BMWi 2009: Table 7a. **More information:** www.izt.de/bewareE

Thanks for your attention!



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→ More information:

www.izt.de/bewaree