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DEPARTMENT OF THEMATIC STUDIES

LINKÖPINGS UNIVERSITET

Energy reduction through behavioural changes

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LiU EXPANDING REALITY

About

- Interdisciplinary research about energy and behaviour
- Prof. Kajsa Ellegård and Prof. Jenny Palm
- People and energy systems
  - End-users and organizational perspectives
    - Innovations for energy efficiency
    - Operation and management
    - Household motivation and behavioural change
    - Communication between professional groupd and tenants
  - The Swedish Research Council Formas
  - Public Housing Company Stångåstaden

Studies of energy systems

✓ Technology influence our everyday life to a large extent
✓ We influence what technology we get in society
✓ Research about this mutual relationship is important to understand the course of development in society and to influence the course in a good direction
✓ Interdisciplinary research about technology and social change: enery, environment, buildings, transport, medical technology and information and communication technology etc…

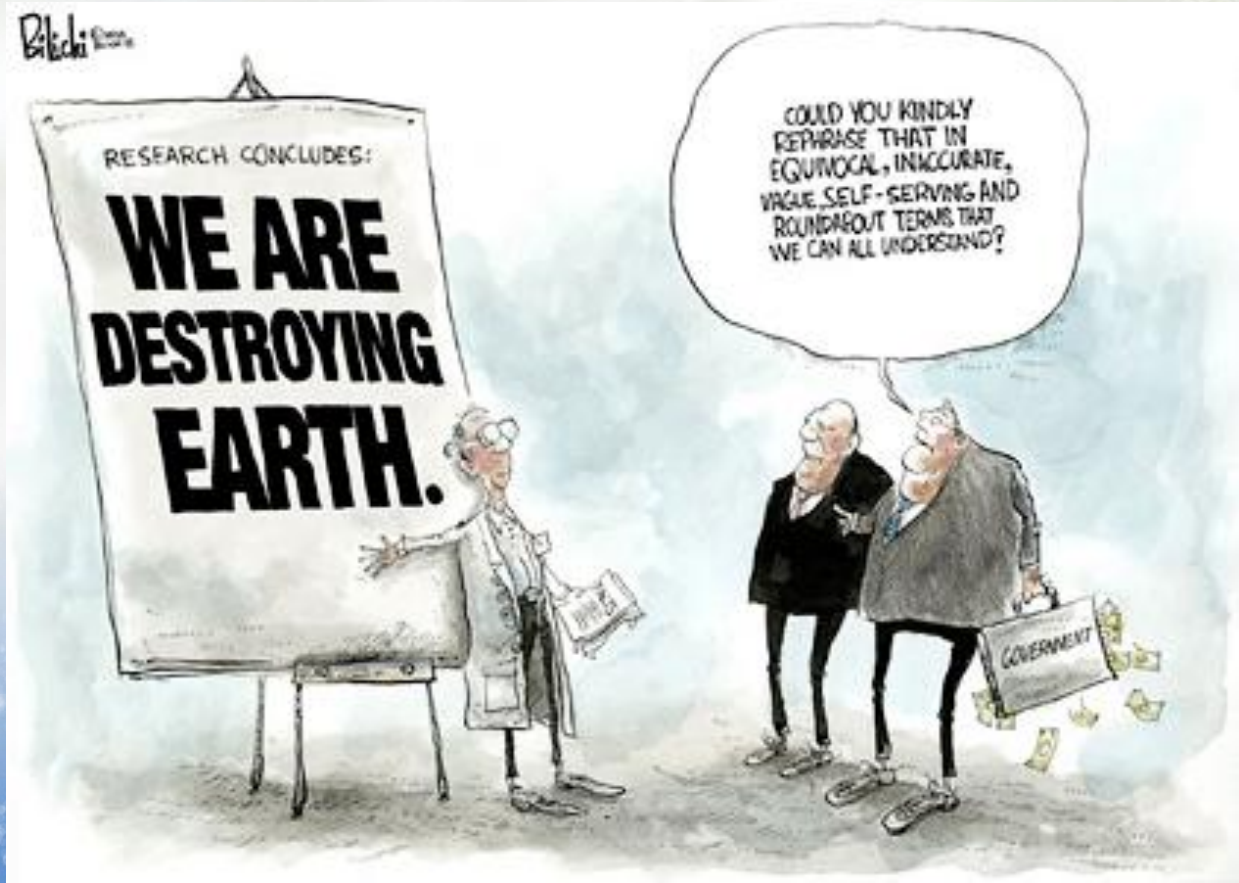
On what level?

Clark buys a new VCR for Doris with 3,278 features. Doris manages to find the one feature it doesn't have.

- ✓ Households
- ✓ Organizations
- ✓ Municipalities (politics, civil servants, companies)
- ✓ Regions
- ✓ Industries
- ✓ National government
- ✓ International and supranational relations and politics

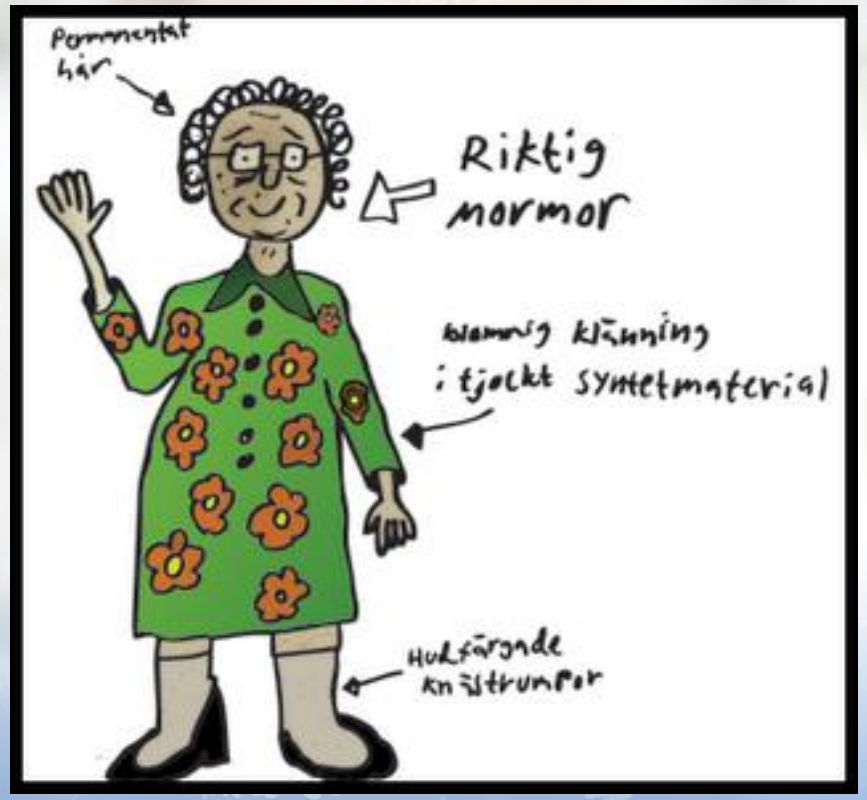
What are the issues?

- ✓ Unsustainable use of non-renwable resources
- ✓ Sustainable development (political agenda)
- ✓ Climate changes
- ✓ Save money
- ✓ Aesthetics
- ✓ Status
- ✓ ….



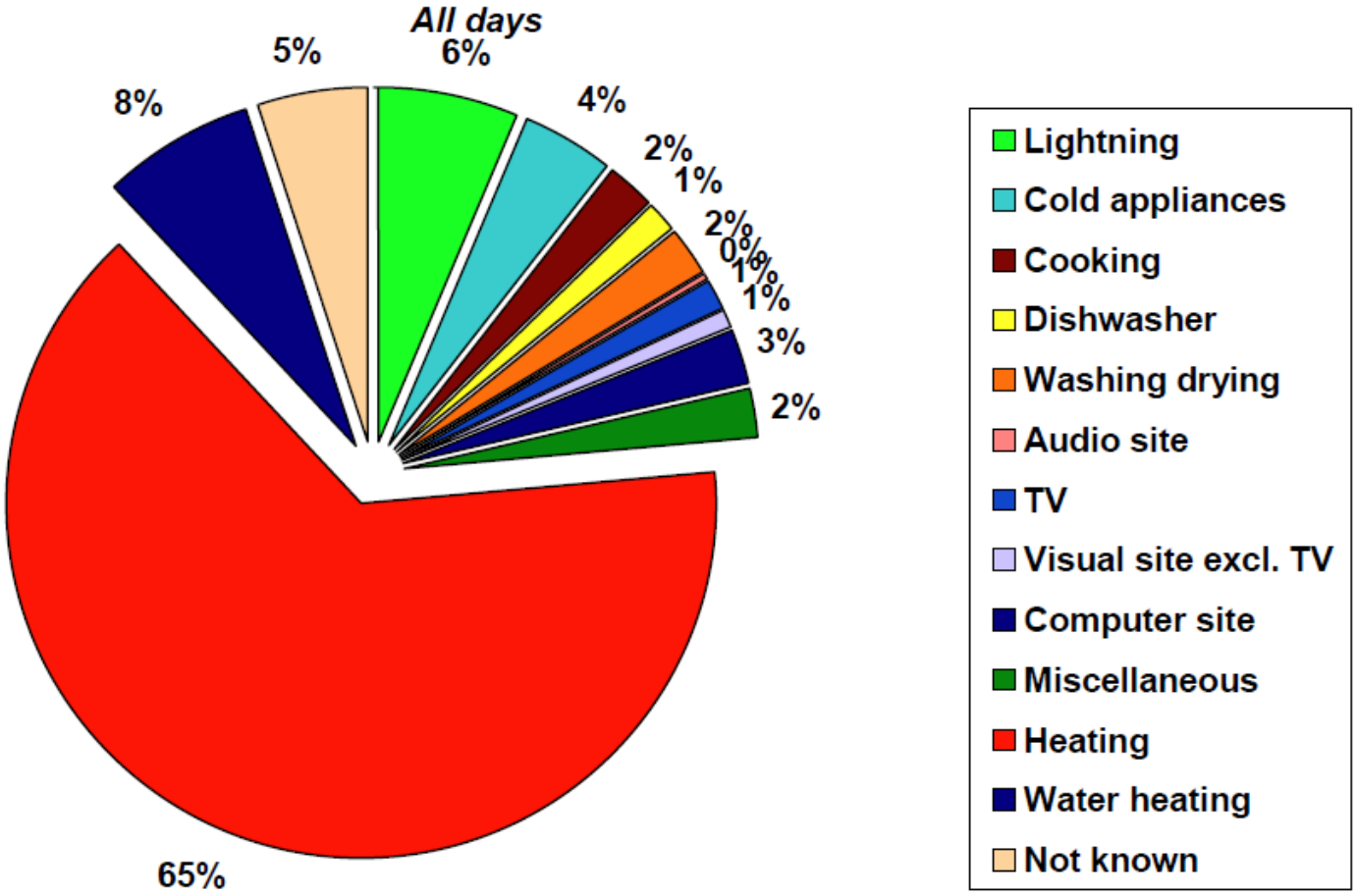
What are the issues?

- ✓We don’t know so much about the everyday lives of household
- ✓”My grandmother…”



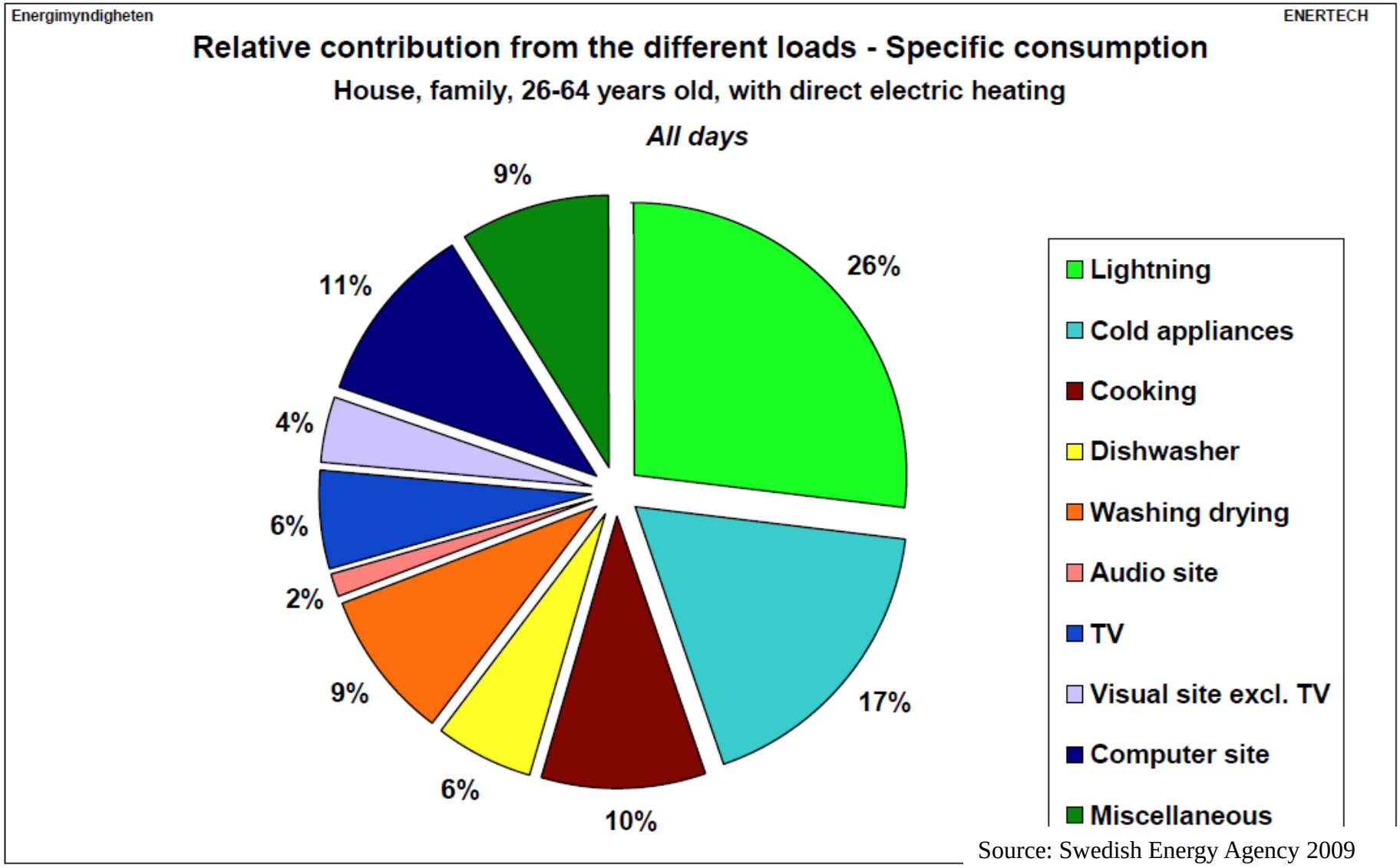
Use of electricity in households

Energimyndigheten ENERTECH



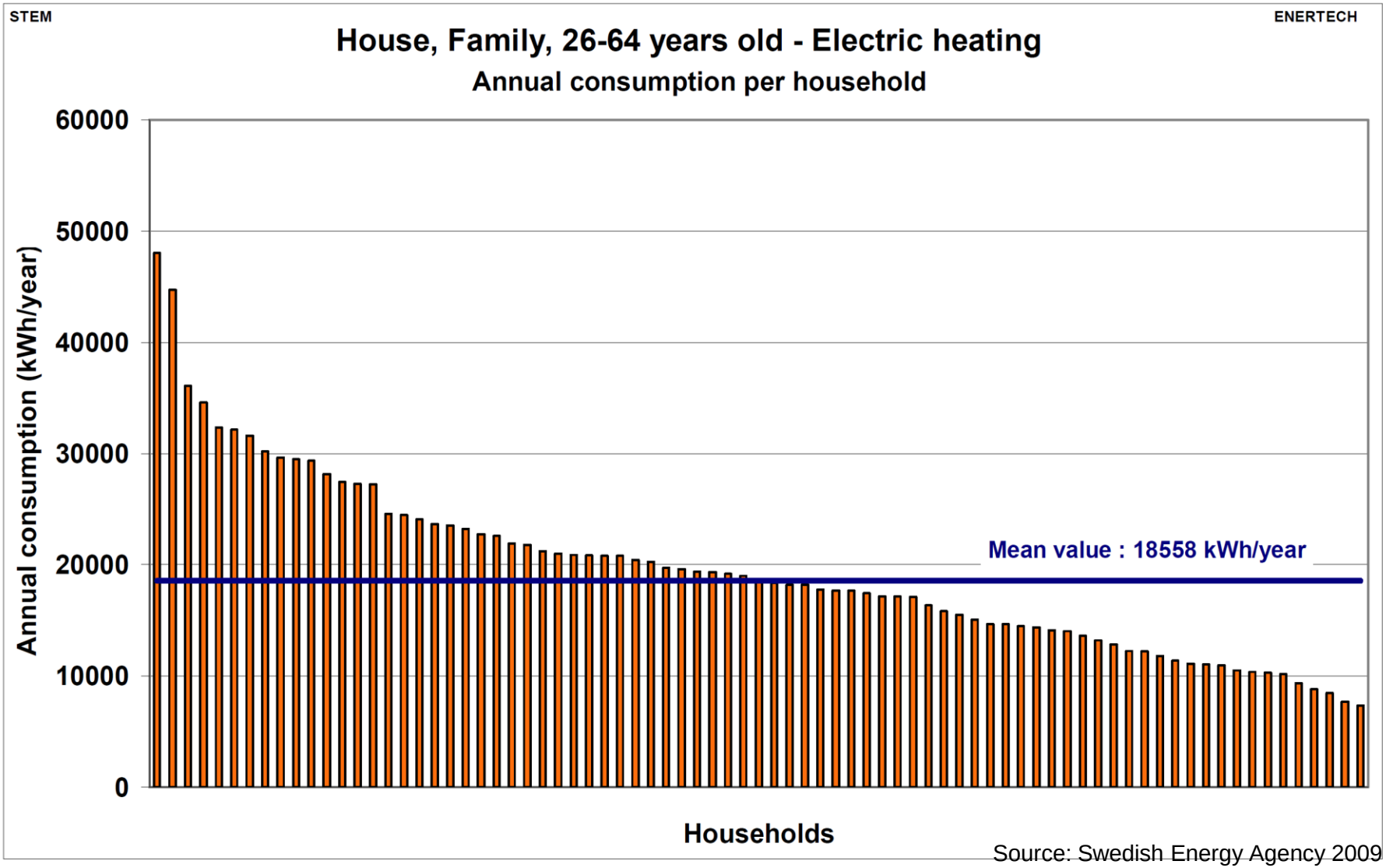
Source: Swedish Energy Agency 2009

Use of electricity in households



Source: Swedish Energy Agency 2009

The average user?



Source: Swedish Energy Agency 2009

But

✓The average person does not exist!

✓ Qualitative research about energy behaviour of people offers a more complex picture of energy use

✓ 1/3 of the energy use of houshold can be explained by background variables, the rest is due to **numbers of appliances** in the household and the **use patterns**

What causes variation in energy use?

Study of 1627 housholds in California (Lutzenhiser & Bender 2008)

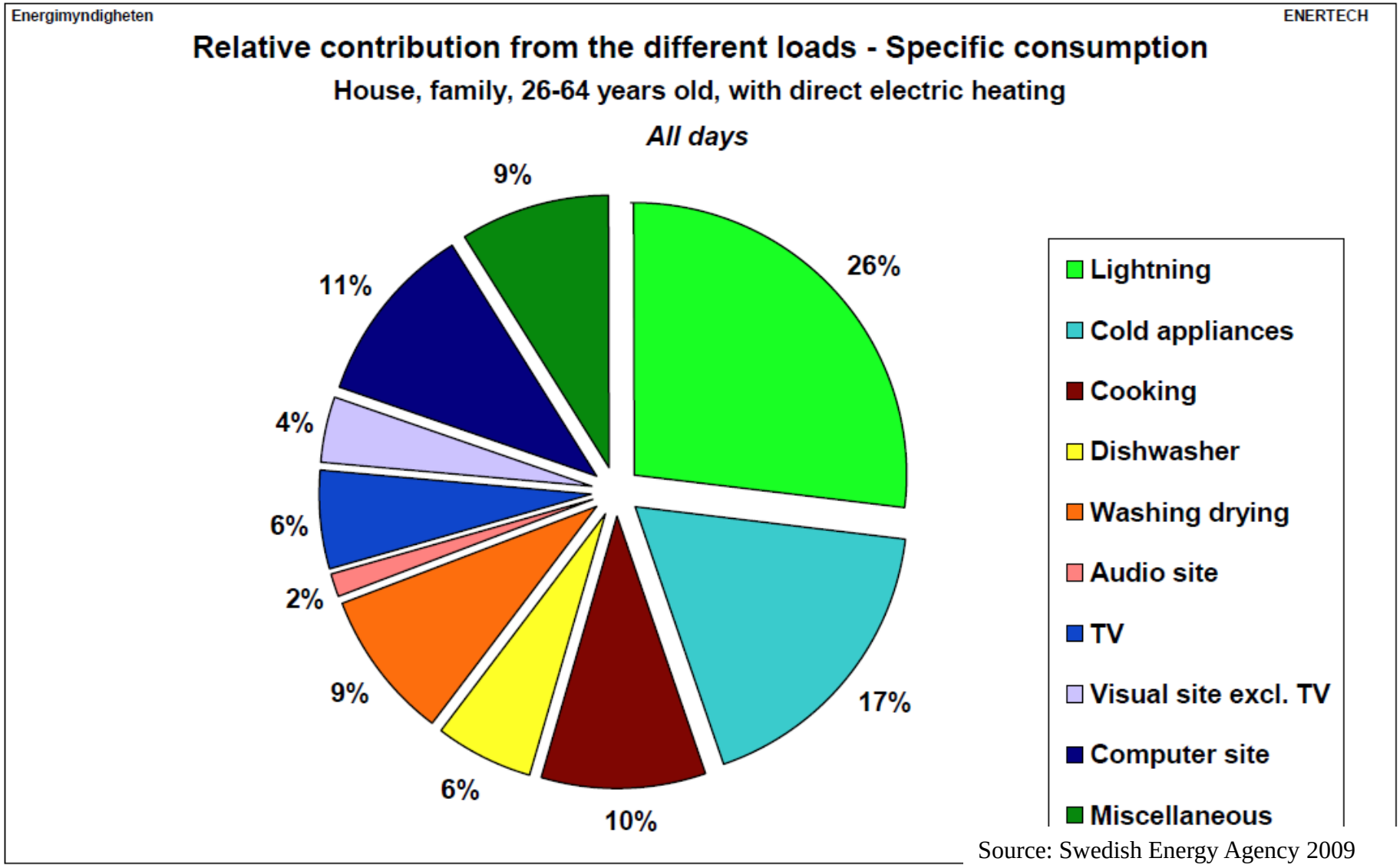
✓ 9% of the variation in electricy use could be linked to buildings and systems

✓17% depended on other “physical factors”

✓36% depended on social factors like income, employment, ethnicity and profession

✓39% depended on a combined effect of people, environment and building and were impossible to separate

Use of electricity in households



Source: Swedish Energy Agency 2009

Lighting in Sweden

Number of lamps and light spots in nine housholds (lamps/light spots) (young: 20-35 years, middle age: 36-64 years and senior: 65 years and older)

	Young	Middle	Senior
Single	15/12	18/9	14/10
Couple	34/21	22/11	60/25
Family	54/26	13/11 - 86/35	

Source: Bladh 2008

Lighting cultures
- comparison between Norway and Japan

(Wilhite, 1996)

- **Norge**
  - Many different lamps: ceiling lamps, floor lamps, table lamps, reading lamps, cosy lamps…
  - No preference for ceiling lights
  - Lighting for cosiness
- **Japan**
  - Less number of light spots
  - Ceiling lights are preferred
  - Fluorescents are preferred
  - Lighting for visability

Lighting cultures in Norways and Japan

Different routines and traditions

- Norway: Historically
  - Candles
  - Fireplace
  - Paraffin
  - Table lights
- Japan: Historically :
  - Ceiling lights: stearic, paraffin
- As a consequence: a culture with many different light sources

Why do we buy?

Deciscions about purchanse and use of energy consuming goods/appliances are a consequence of:

- ✓ Habitual (”unconscious”)
- ✓ Rational (”conscious”)
- ✓ Symbolic/status

How do we use?

Individualisation and the uneconomics of scale in the kitchen…

…when the use of appliances is adjusted to fit the schedule and preferences of different houshold members

Examples:

- Making the same type of food but with different appliances (coffea)
- Cooking and eating different type of food for the same meal (diets, allergies…)
-Eating the same meal but at different locations (home, summerhouse…)

(Source: Karlsson 2010)

How do we use?

Individualisation and the uneconomics of scale in the living room…

- purchase of more of the same appliances to solve conflicts concerning access and selection (low prices)
- when appliances are left on stand-by
- when children and youths learn to apply 1 and 2

How can energy behaviour be changed ?

Preventive measures

-Some research results show a positive effect (reduced energy use) in the long run,
-Other studies show no effect
-Massmedia influence attitudes and norms, but changes behaviour?

How can energy behaviour be changed ?

Feedback

-Some research results show a positive effect (reduced energy use) in the long run,

-Other studies show no effect

- Eco Team Program – both short term and long term effects (heating: 20,5 % short term, 16,9 % after 2 years, also electricity, water and household waste)
- Rewards showed varied results
- Combinations of feedback and rewards

Possibilities

✓Design of package

1. Identify a specific issue and practice
2. Identify target groups
3. Work with knowledge, attitudes, feedback, remove barriers
4. From concious action to routine and unconscious

Mindspace

✓8 influential factors:

- Messenger
- Incentives
- Norms
- Default
- Salience
- Priming
- Affects
- Commitments
- Ego

(Source: Pettersson, Camino 2012)

Design of message

Spara energi - I köket

- Ställ in rätt temperatur i både kyl och frys. I kylen rekommenderas +5 grader och i frysen -18 grader. För varje grad extra kyla drar kylen/frysen 5 % mer energi.
- Frosta av frysen minst en gång per år.
- Dammsug och torka av baksidan på kylen och frysen.
- Tina fryst mat i kylen så får du ”gratis” kyla i några timmar.
- Se till att kylen och frysen har täta dörrar eller luckor. Byt trasiga gummilister.

Design of message

Anti-dandruff:

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Thank you!

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