



Investigating Energy Consumption Behavior in the Context of Germany's Energiewende

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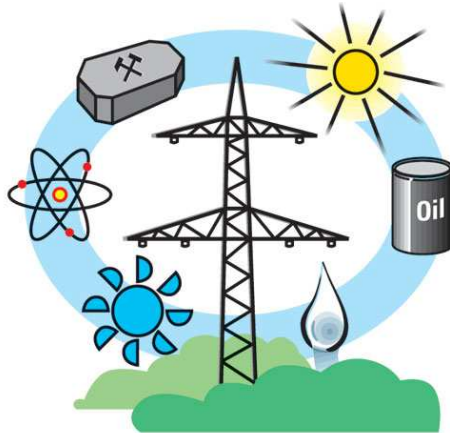
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Content

- Extending from energy scenarios to the consumer perspective
- Analytic framework
- Our research projects within the Helmholtz-Alliance ENERGY TRANS

Different perspectives



Energy supply: focus on energy production, including:

- Forms of energy, production and distribution of different energy forms; costs and environmental impact of production

Energy demand: focus on energy-related services, including:

- Choosing an energy supply provider, living in a warm/comfortable house, using light, internet, cooking, washing



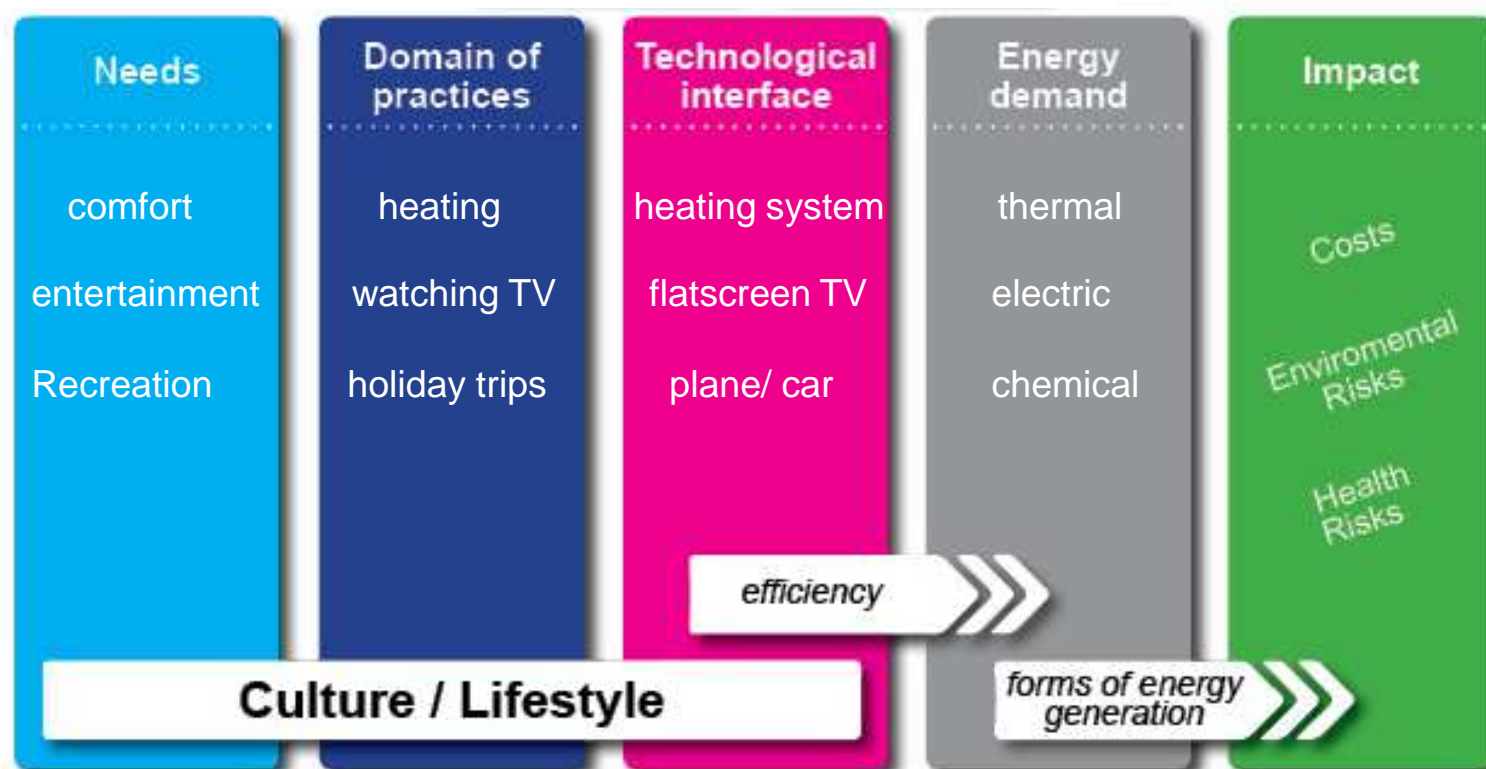
→ Need for concepts about the interfaces between the two for gaining an integrated understanding of the systemic nature



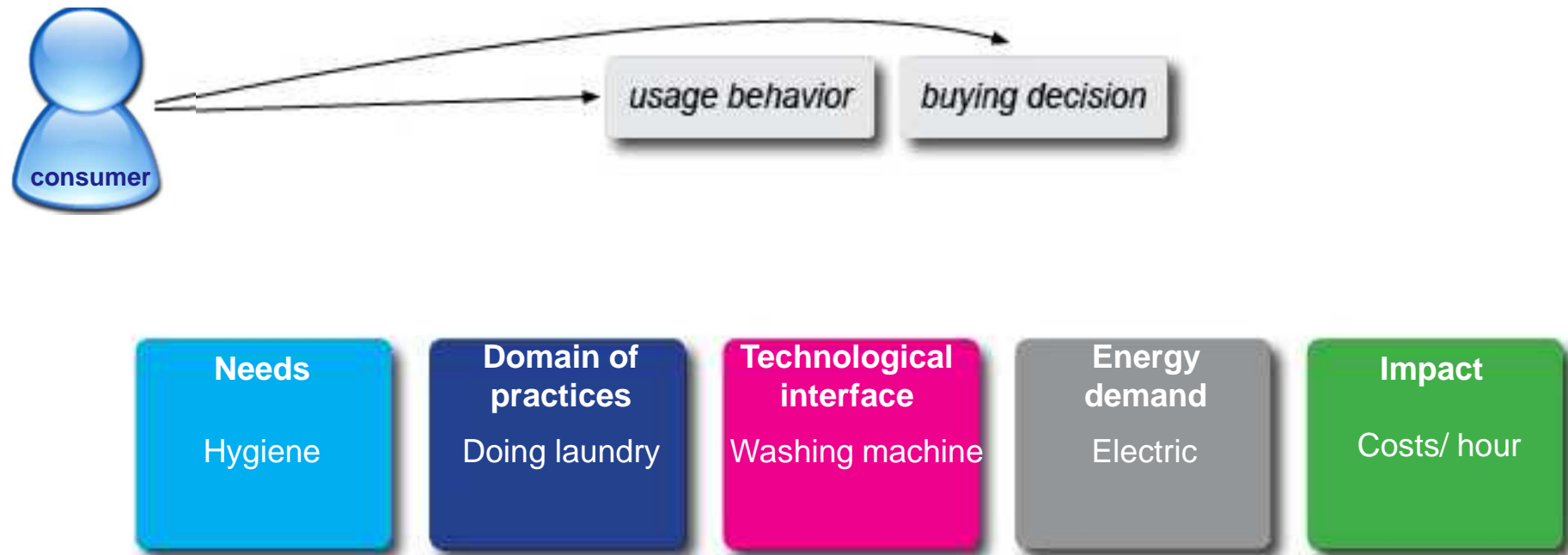
Analytic framework



100
200
300
400
500
600
700
800
900
1000



Smart Metering



→ Potential of a smart meter device: motivate consumers to reflect existing consumption patterns and to change behavior for saving energy



Smart Meter Webportal

Dr. Birgit Mack, Karolin Tampe-Mai, ENERGY TRANS

- Smart meters in households lead to a 2-20% reduction of electricity consumption
- Effectiveness of feedback
 - Prompt/ realtime
 - Related to a specific action and device (e.g. using the tumble dryer)
 - Repeated feedback helps stabilizing new behavior
 - Comparative/ competitive feedback fosters energy saving motivation
- Design of a webportal promising to meet these criteria
- Focus groups: energy saving in conflict with hygienic preferences, e.g. doing laundry at a lower temperature
- Data security, protection of privacy, vulnerability?



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Research Field D:

User Behavior and Demand Management

Structure

- D1 Determinants of household decisions and behavior
- D2 Determinants of industrial decisions and behavior
- D3 Effectiveness and efficiency of interventions

Cooperation partners

University of Stuttgart, ZIRIUS

University of Magdeburg

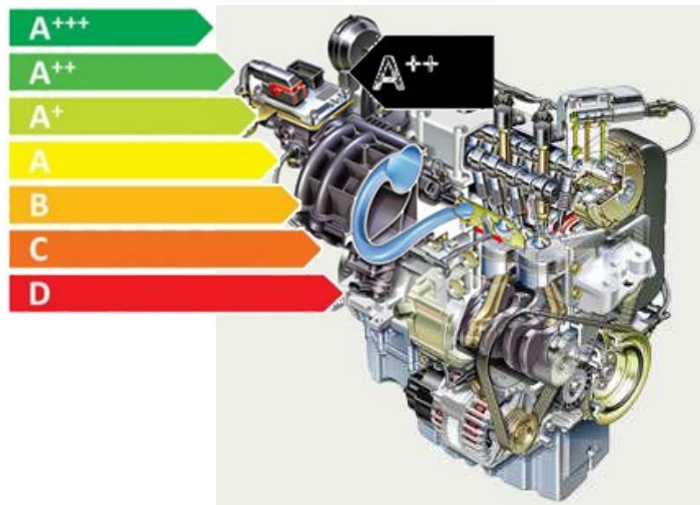
Centre for European Economic Research (ZEW), Mannheim

Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe

Forschungszentrum Jülich (FZJ)

Rebound effects in the context of car-based mobility (my Ph.D-Project, ENERGY TRANS)

Direct rebound-effect = technological efficiency gains lead to higher consumption through gains in money or value.

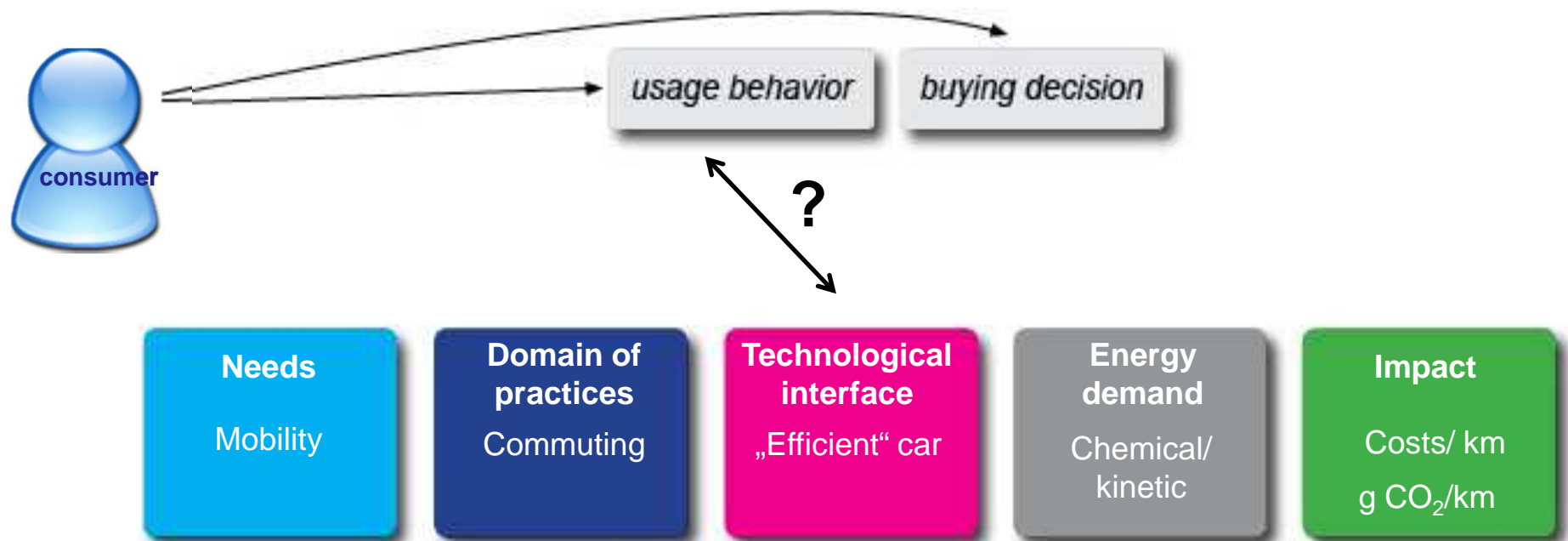


?



- (1) bigger car
- (2) driving more
- (3) driving faster

Rebound effects in the context of car-based mobility



ICCT(2013): huge discrepancy between official and real-world fuel consumption and CO₂ emissions (EU, USA), in average 25 %



Controversy about methods and concepts of how to measure rebound effects (e.g. Frondel et al. 2012: 57-62% vs. Gillingham et al. 2013: 5-30%)

→ Substantial risk of rebound effects



Thank you for your attention

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