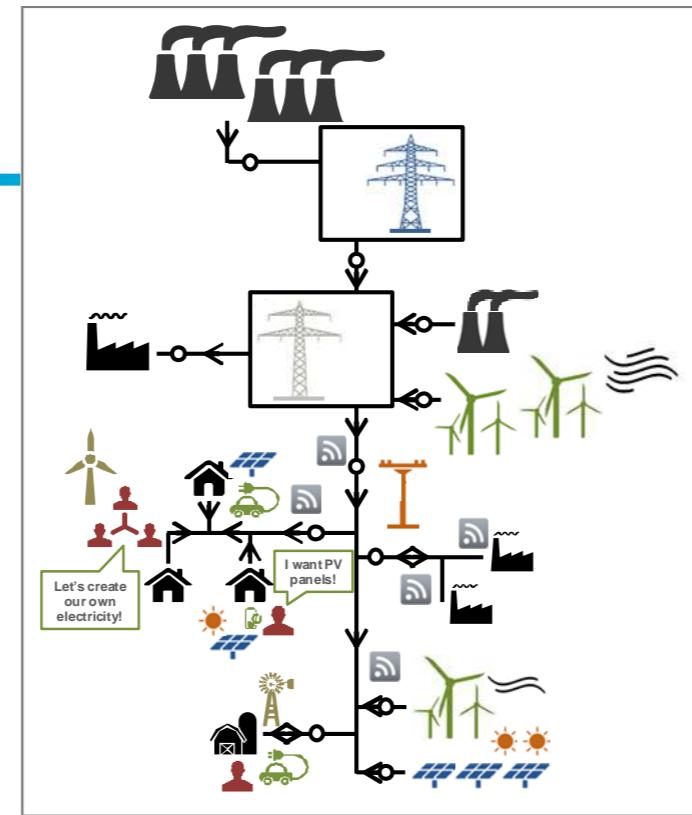


Ethical Acceptability and Social Acceptance of Smart Energy Systems

Christine Milchram (Faculty of Technology, Policy and Management)

Smart Energy Systems

- Smart Electricity Grid
- Smart Gas Grid
- Smart Thermal Grid
- ... including combinations



Smart Electricity Grid Illustration

Challenges for Acceptability & Acceptance

- Agreement on benefits of smart energy for integration of volatile renewables
- Value concerns:
 - Autonomy
 - Data Security
 - Privacy
 - Fairness
 - Trust
 - Energy Efficiency
 - Transparency
- Theoretical ambiguity between ethical acceptability and social acceptance
 - Acceptability: normative, non-utilitarian, fulfilment of multitude of ethical values
 - Acceptance: empirical / descriptive, perceptions by stakeholder groups

Research Aim

Ethical perspective:

- Understanding which values should be fulfilled
- Understanding conflicting and contested values

Social perspective:

- Relationship between value fulfilment, value conflicts, and acceptance by stakeholder groups

Contribution

- Normative perspective by a value theory: Capability Approach (Sen 1992, Nussbaum 2000)
- Non-utilitarian approach
- Technical and institutional features
- Conceptualization & relationship acceptability and acceptance

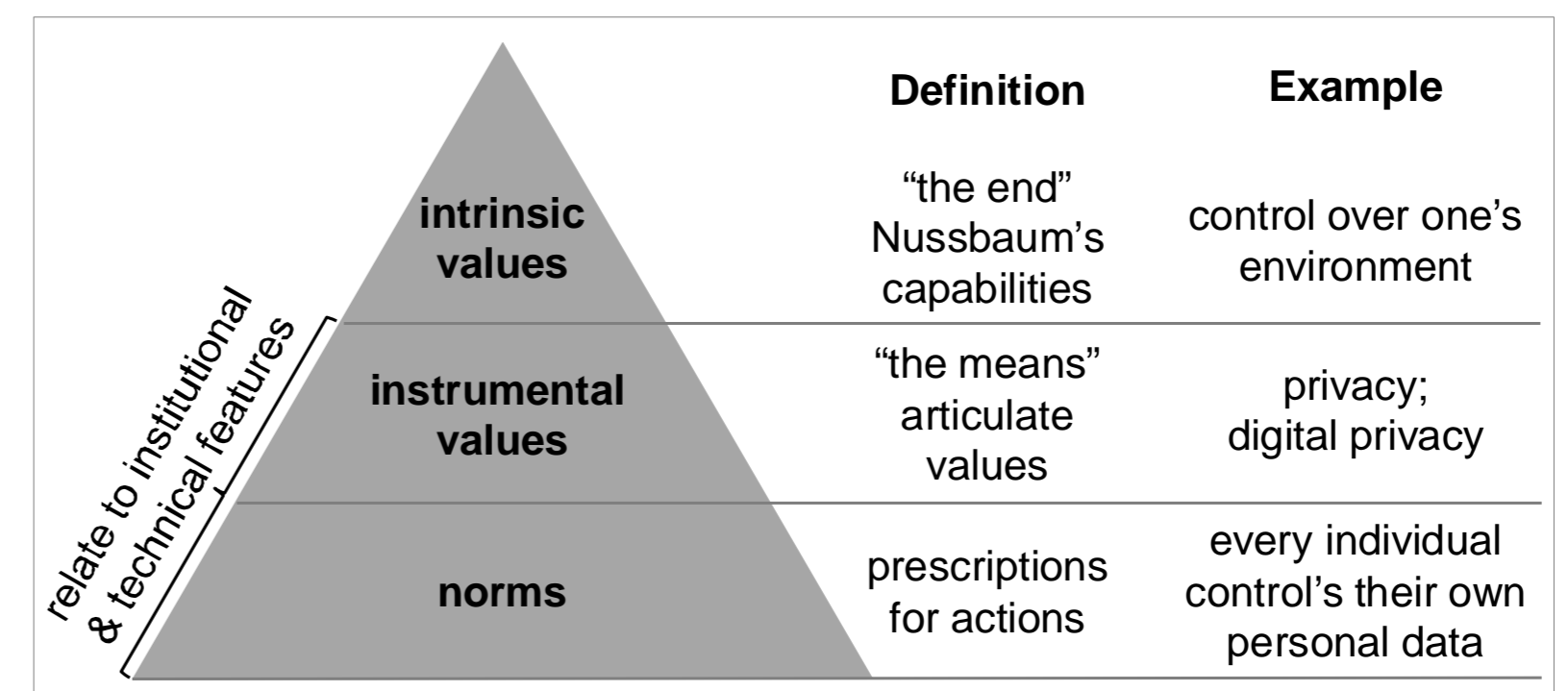
Core Literature

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- Nussbaum, M.C., 2000. *Women and Human Development: The Capabilities Approach*, New York: Cambridge University Press.
- Sen, A., 1992. *Inequality Re-examined*, Oxford: Clarendon Press.
- Sintov, N.D. & Schultz, P.W., 2015. Unlocking the potential of smart grid technologies with behavioral science. *Frontiers in Psychology*, 6(MAR), pp.1–8.
- Wüstenhagen, R., Wolsink, M. & Bürer, M.J., 2007. Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy*, 35(5), pp.2683–2691.

Main Research Steps

1. Identifying relevant values, link to capabilities

- Content analysis of public debate
- Matching values with capabilities
- Operationalization of values



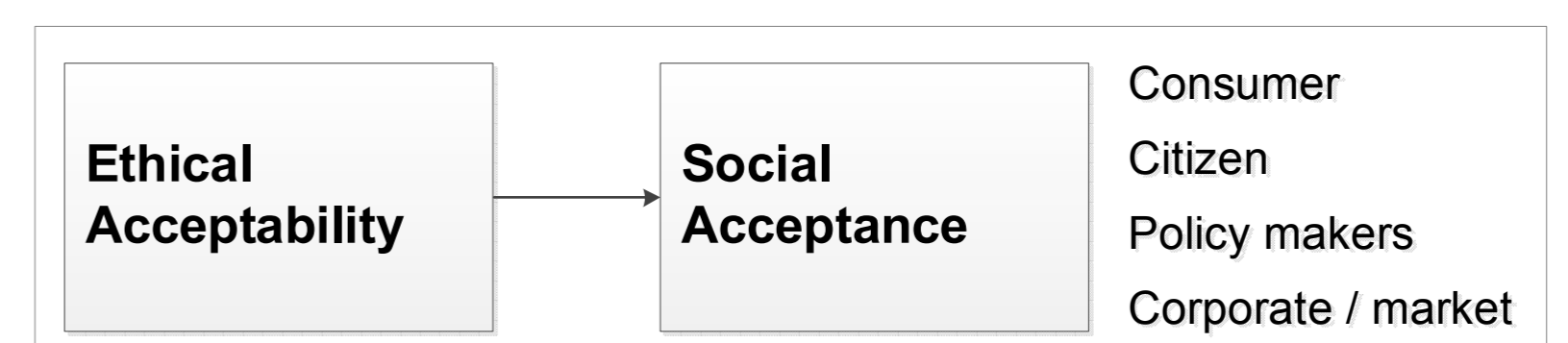
2. Acceptability assessment of case studies

- Identification of value fulfilment / value conflicts in different pilot projects
- Assessment of relative acceptability
- Development of propositions



3. Relationship acceptability and acceptance

- Influence of value fulfilment & value conflicts on social acceptance
- Multi-stakeholder group perspective



Methods

- Content Analysis
- Case Studies
- Survey

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