DESIGNING A NEW GOVERNANCE FOR CONSUMERS TO FACILITATE THEIR PARTICIPATION IN THE ENERGY SYSTEM

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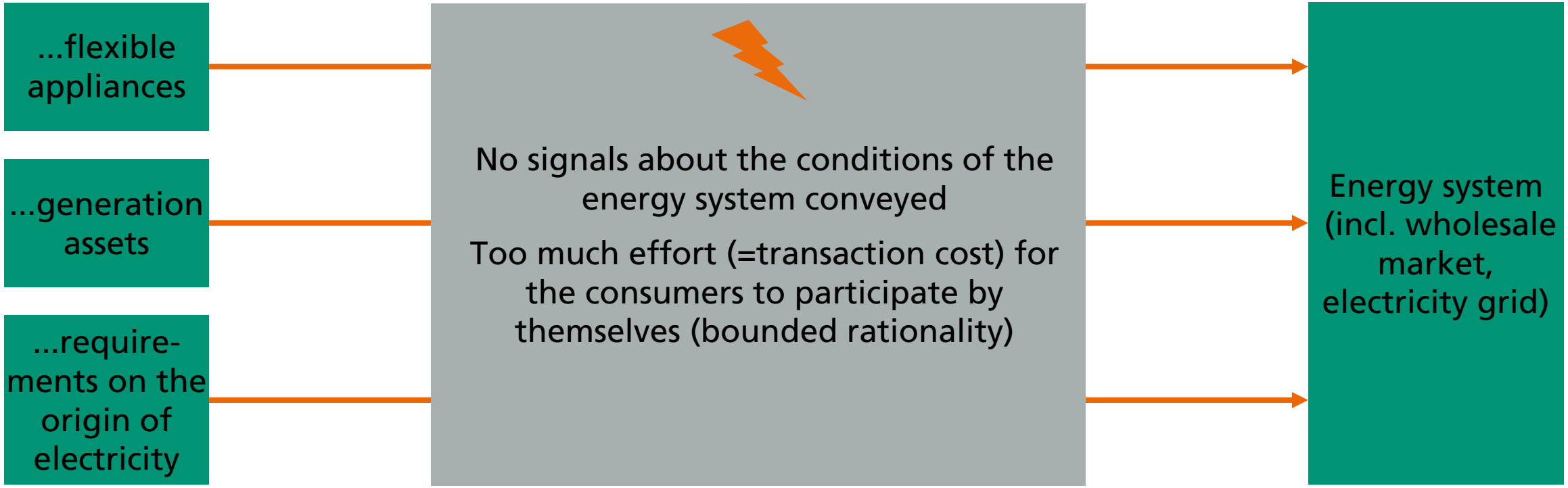
How to design a governance that facilitate the participation of households in the energy system?

Examples: Active consumers with...



Contribution of the paper: Develop a design process for the consumer governance based on literature

FULDA method for design of legal organizations
by Knops et al. (2005)

Approach: Design based on functions that need to be performed to fulfill the requirements

Transfer: Identification of functions for the electricity supply of households & corresponding design choices

Design process
(e.g. Dym et al. (2014), Herder & Stikkelman (2004))

1. Specify design requirements
2. Select design choices
3. Test the design choices

Transaction cost approach for energy service contracts
by Sorrell (2007)

Approach: Transaction cost as rationale to shape governance – only accepted if benefits offset the transaction cost

Transfer: Identification of cost and benefit indicators for the consumer governance

Goal of the design process: Identification of preferable governance designs

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Design requirements & design choices based on the functions of the electricity supply

Step 1: Specify design requirements (problem space)

Consumers' objectives: Reduce cost & increase benefits (incl. carbon neutrality, origin preferences) *

Constraints: Individual & system context*

Functions:

1) Matching of electricity & flexibility
2) Forecasting & balancing responsibility
3) Congestion management
4) Billing
5) Operation of controllable assets
6) Data collection
7) Reporting to consumer

* see paper for more information

Step 2: Select design choices (solution space) – examples*

1) Matching of electricity & flexibility:
   - ☒ Aggregation & trade on wholesale market [OR]
   - ☐ Intermediary matching level
4) Billing
   - ☐ Real time pricing (or ToU) [OR]
   - ☐ Flat tariff [OR]
   - ☒ Business model with ex-ante/-post allocation of costs and benefits
5) Operation of controllable assets
   - ☐ One time interaction and direct enforcement [OR]
   - ☒ Frequent interaction and direct enforcement [OR]
   - ☐ Frequent interaction and indirect enforcement

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Testing the governance design based on transaction cost economics

Basic options for the electricity supply of consumers (incl. impact on benefits & effort)

	Passive consumer	Active consumer
Without support	Little benefits & effort *(status quo)*	Additional benefits & high effort
With support	-	Add. benefits & limited effort *(new governance)*

Question for the governance testing:
Do the additional benefits of the new governance offset its additional effort compared to status quo?

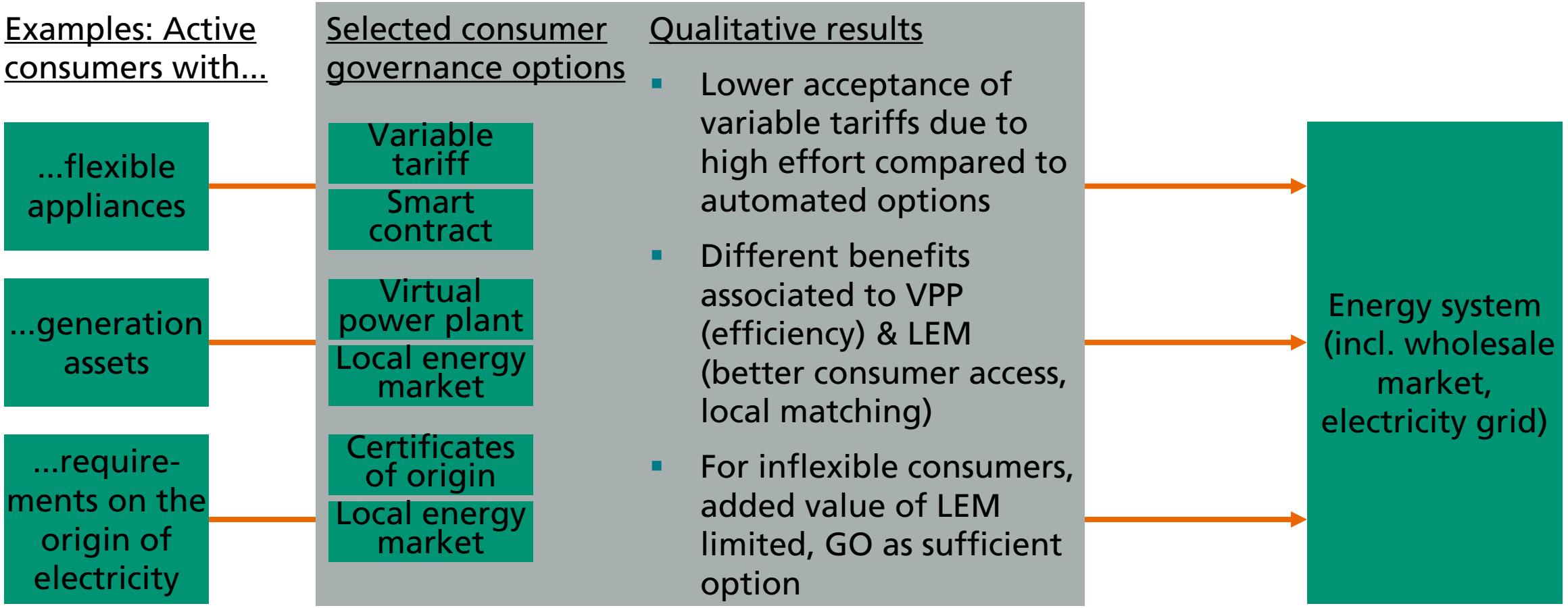
Transaction cost & benefit indicators for the testing of the new governance

	Benefits		Costs
Consumer	Energy cost savings & added value	>	Payment + transaction cost
Intermediary	Payment	>	Transaction cost
Energy system	Efficiency gains & CO_2 reduction	>	Transaction cost

Identification of determinants for the cost & benefit indicators, e.g. for transaction cost:

- Asset specificity
- Task complexity
- Frequency
- Uncertainty

Application of the governance design process on three kinds of active consumers & their key governance options



Conclusion

- Contribution: Design process for governance to facilitate the participation of households in the energy system seizing existing literature
- Two ways of application: Top-down based on existing arrangements or bottom-up by designing new ones
- Challenge mentioned by Ramesohl (2003): Applying transaction cost economics as it depends the specific social constellations, institutional settings, and market structures (difficult to generalise)
- Next steps: Substantiate qualitative results with empirics (survey & pilot) & analyse the interplay between the governance and the energy market design
- Questions to the audience:
  - Are key functions and design choices missing?
  - Experiences and hints for applying transaction cost economics in energy research?

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