Why does the transition in the heating sector occur so slowly?

A TIS in Context-based comparative analysis between the German electricity and heating sector.

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Comparative analysis of the renewable electricity and renewable heat competence blocs in the respective sector based on the TIS in Context framework

The TIS in Context framework (Bergek et al. 2015) addresses interactions between a TIS and wider “context structures”. It discusses four especially important context structures: political, sectoral, geographical and other TIS. The analysis on this poster follows a two step approach: The renewable heat TIS will be compared to the renewable electricity TIS in regard to the focal TIS characteristics and it’s context structures.

### Technology

- Grand grid that connects generation and demand
- Dominant generation designs lead to economies of scale
- Build-up of parallel energy infrastructure is possible
- Mix of incumbent and new actors
- Low density of civic organizations
- Installers require a completely new knowledge base

### Actors

- New actors
- Civic organizations spread info & amplify money flows
- Low knowledge base required for add-on Solar-PV
- High degree of interaction between actors
- Build-up of strong civic advocacy groups and professional associations
- Lower degree of interaction at all levels
- No strong coalitions for the renewable heat case

### Networks

- Convenient to install add-on tec. or sign RES contracts
- No direct competition with other similar investments
- Add-on tec. can be used as a tool for self presentation
- High inconvenience to substitute heating infrastructure
- Direct competition w/ other investments (e.g. sanitary)
- Heat tech is often negatively attributed (dirt & smell)

### Institutions

- 3 grand landscape pressures (c-change, nuclear, acid rain)
- High priority on societal agenda → higher political goals
- High, secure & coherent investment funding (2017 ~ 24 B €)
- 1 grand landscape pressure: Climate change
- Low on societal agenda → low political goals
- Low, instable & diverse investment funding (2017 ~ 3 B €)
- Utilities & ind. can initially operate on old business models
- Civil society actors and new industry challenge incumbents
- Local incumbents do not exist
- Business mod. are directly challenged → direct resistance
- Low level of challenging incumbents
- Resistance of local incumbents

### Political context

- High number of citizen groups engage in market formation activities (attention, information, education, legitimacy)
- High distance between generation and demand
- Limited citizen groups engage in market formation activities
- Short distance between generation and demand

### Relevant sector

- Low degree of coupling with other TIS or competence blocs
- Strong technical coupling with building efficiency & renewable electricity competence blocs
- Competition with RES-Elec com. bloc for political attention

### Findings

A variety of differences that structurally and contextually impede the acceleration of the German heat transition. Most technical characteristics apply also to other national settings, thus it’s the context structures that need to be adapted. Since geo. context and relevant sector are unlikely to be controlled, more attention should be paid to implementing higher, more stable and coherent funding schemes for renewable heat appliances and heat grids.