Impact of regulation on firm behavior in the transition to decarbonization

Exposé Dissertationsvorhaben

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Problem Statement

- Achieve net zero emissions by 2050 (in GER: 2045) requires a system-wide transformation, including the economy.
- Comprehensive regulatory framework in EU designed to steer this corporate decarbonization (e.g. EU ETS I & II, CSRD, SFDR, EU Taxonomy, REDIII, EmpCo)
- Firms must adapt to uncertain regulatory, technological, and economic environments.
- From own professional experience: even similar firms from the same sector interpret and respond to sustainability regulation in different ways – why?

How does the regulatory framework related to decarbonization influence firm transition behavior in the context of energy?

Consideration for classification in theoretical framework

Multi-level approach von Geels

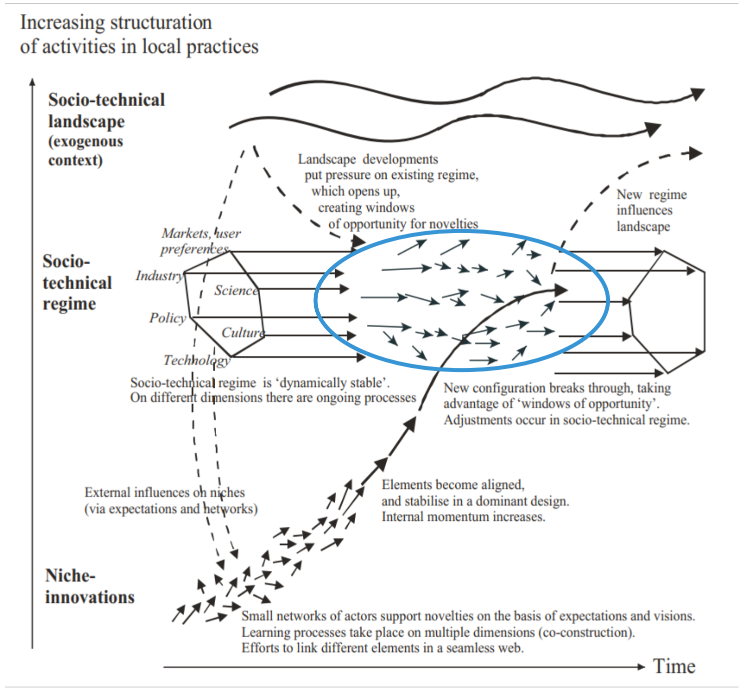
Difference in sustainability transformation:
Goal orientation instead of emergence

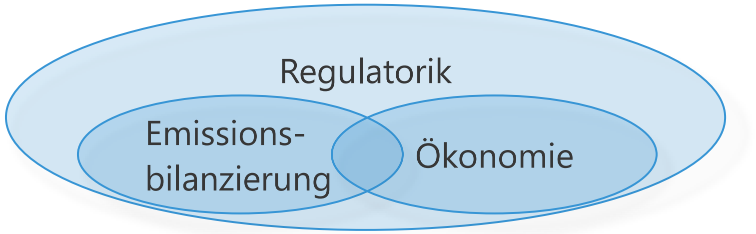
<u>Sustainability as a collective good:</u>
limited incentives for actors, especially when sustainability innovation is adversely reflected in price or quality (free-rider problem & prisoner's dilemma)

<u>Sustainability as an ambiguous concept:</u>
Differences of opinion and social negotiation for "appropriate" solutions, power struggles to protect one's own interests

- Change in the economic framework conditions (regulation) necessary for sustainability transformation
- Emerging interactions between technology, politics, economy, society and culture

Multi-level perspective on sustainability transitions (Geels, 2011)





Potential influencing factors in context of bounded-rational firm behaviour

Regulatory framework

- *EU ETS*
- *GHG limits / quotas*
- *CSRD*
- *CBAM*
- *SFDR*
- *EU Taxonomy*
- *Green Claims Directive*
- *EmpCo Directive*
- *Green lead markets*
- *Clean Industrial Deal*
- *…*

Other influencing factors

- *Compliance with own decarbonization goals (e.g. in CSRD, SBTi, …)*
  -> implementation of internal measures (e.g. internal CO_2 price, purchasing policies, compensation)
- *Brand value & building (fear of greenwashing accusations)*
- *Risk management*
- *Willingness to pay & customer requirements (passing on along the supply chain)*
- *Stakeholder expectations*
- *(Regulatory) Uncertainty*
- *Individual employsee motivation*
- *Employer branding*

Firm transition behaviour

Research goals and questions

- Identify influencing factors and their relevance for influencing firm transition behaviour.
- Firm perspective:
  - Assess relevance of influencing factors
  - Quantify impact and cost of most important drivers on firm-level
  - Assess divergence between firms & theory
- System perspective: Cost and impact of regulations via integration into cost abatement curves on sector level

1. What are influencing factors for firm decarbonization behaviour?
2. How do firms assess the relevance of these influencing factors in their decision-making?
3. How and why does this assessment differ between firms?
4. How can regulatory instruments be integrated into marginal abatement cost curves to assess their cost-effectiveness and impact at sector level?

Current work on management instruments (internal shadow prices for CO_2) to assess influencing factors and potential quantification.