Chameleon Research Group
Adapting Energy & Transport to Climate Change

Corporate Adaptation to Climate Change: A Learning Challenge

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Motivation: Climate Change as a Corporate Challenge

- Rising temperatures and increases in the frequency and intensity of extreme weather events put companies' infrastructure, production processes, logistics and supply chains at risk
- societal responses to present and future climate change are leading to transformations in political and market conditions
- these are long-term changes with a high degree of uncertainty

Background: Organisational Learning and Learning Needs

- Dealing with changes and uncertainties in the corporate environment calls for organisational learning processes
- Learning has a cognitive (acquire and process new knowledge) and a behaviouristic dimension (develop strategic responses and alter corporate behaviour)
- Companies cannot rely on past experience since climate change poses new challenges
- Relevant knowledge stocks on climate change are generated outside companies; companies need to acquire and interpret external knowledge

Conceptual Framing

Based on a combination of organizational learning and adaptation literature we distinguish different dimensions of corporate adaptation (see Figure 1) and identify different factors influencing corporate adaptation (see Figure 2).

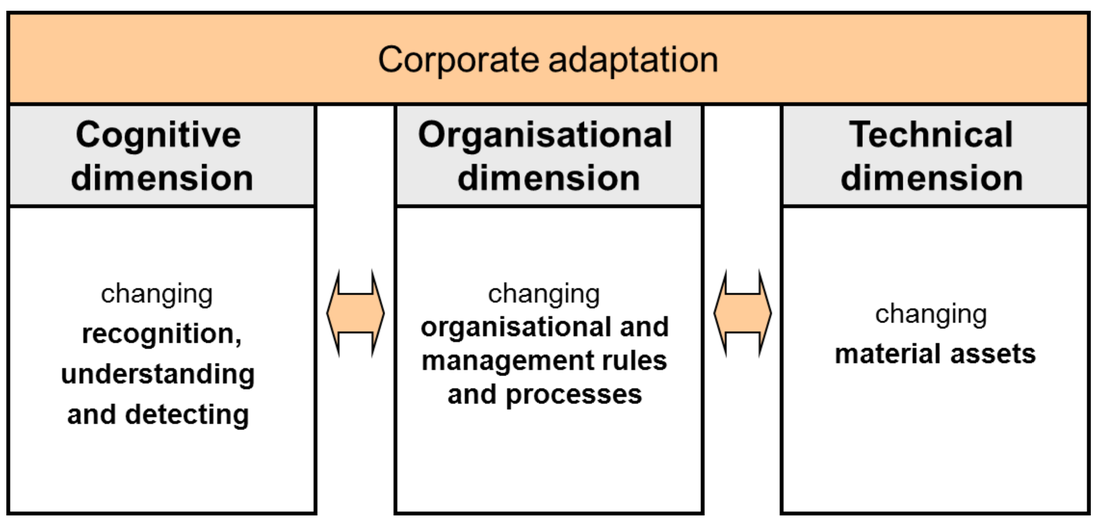

Figure 1: Corporate adaptation as a multi-dimensional phenomenon

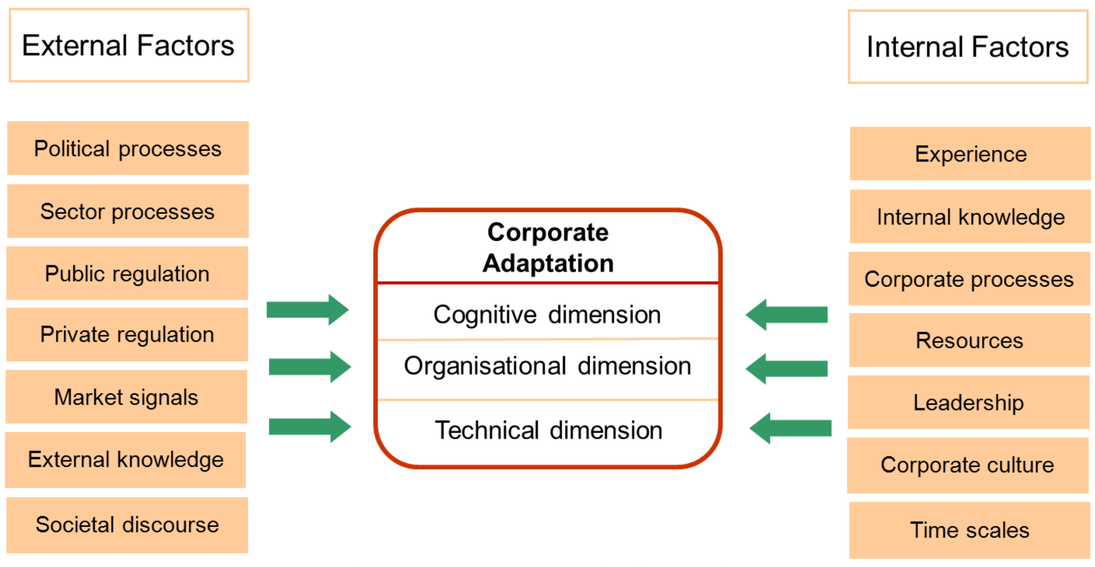

Figure 2: Factors influencing corporate adaptation

Methodological Approach

- Comparative case study research in 2 German companies (Case 1: Railway company; Case 2: Energy company)
- Qualitative, semi-structured individual and group interviews with representatives from different departments and workshops within the companies
- Coding of interviews to identify adaptation activities and influencing factors

Findings: Examples of Adaptation Measures in the Companies

Cognitive Changes / Enlargement of Knowledge Base

- **Case 1:** analysis of weather-related disruptions, internal standards and flood risks (for a critical track section)
- **Case 2:** analysis of flood risks; analysis of weather-related data

Organisational Changes

- **Case 1**: changes in vegetation control along the tracks; monitoring of weather conditions
- **Case 2:** changes in operations (e.g. testing of overhead line monitoring); changes in planning procedures

Changes in Technical Assets

- **Case 1**: changes in rail welding and drainage systems; wind protection fences; heating of overhead lines and switches
- **Case 2:** burying of the grid; renewal and retrofitting of pylons and cables

Findings: Influencing Factors

Supporting Factors

Internal
- Past experience with extreme weather events
- Security of supply as an important value in corporate culture

External
- Knowledge exchange in international technical, standardization and sector associations
- High societal expectations regarding security of supply
- Critical media coverage on weather-related disruptions
- **Case 1**: public authorities demanding an analysis of internal standards and the integration of climate risks in environmental impact assessment

Hampering Factors

Internal
- Efficiency as an important value in corporate culture
- Reliance on infrastructure's robustness: safety margins in technical standards are assumed to be sufficient
- No clear internal responsibility for adaptation
- Lack of knowledge regarding climate change; existing knowledge is scattered within the company

External
- Regulation does not offer sufficient financial incentives to invest in increasing security of supply

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