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Theorising institutional processes and strategies

Case studies of sustainability policies on the macro and micro levels

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Acknowledgements

By October 2009, when I applied to WHU – Otto Beisheim School of Management with the aim of becoming an external doctoral student, I had been flirting with the idea of resuming my studies for over two years. However, as Freud said, “It is one thing to flirt with an idea, and another thing to be married to it.” These last three years have been exciting and compelling, but also very tedious. I could never have fully imagined what the research process would entail.

The present work encompasses my study on the temporal dynamics of institutionalization and the strategic responses to the collision of economic and institutional determinants. I used a case study method to gain new theoretical insights in addition to drawing on practical contributions in the fields of sustainability and supply chain management. I chose to start with an investigation on the macro level of climate change governance prior to examining the organisational level at Deutsche Post DHL.

What I have produced was only possible thanks to the dedicated support of various individuals to whom I would like to express my appreciation.

Special thanks go to my first supervisor, Professor Stefan Spinler. He provided continuous consultation and direction for this research project. The trust he showed me by allowing me freedom in my research, combined with his pragmatic approach and no shortage of challenges, helped me to find new research potential and to excel in my research method. Moreover, his experience and understanding in matters of focus and prioritisation were helpful in keeping up with the original milestone plan.

I would like to express my sincere thanks to Professor Jürgen Weber, my second supervisor. He motivated me to embark upon the study of institutional theory in the context of sustainability. He told this rookie doctoral student that the drive for sustainability is socially determined. If I aimed to find out why companies increasingly apply aspects of environmental sustainability to their businesses, I needed to understand the primacy of social constructivism. His words became the touchstone of my study.

My deepest gratitude is to my husband Peter. At every stage of the research process, I could count on his support. We contemplated difficulties and hunted for solutions together. I look at the dissertation as a sort of probationary period for our young marriage. My thanks go out to Peter, for his understanding, motivation, and empathy.
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<tr>
<td>AR</td>
<td>Annual report</td>
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<tr>
<td>BAU</td>
<td>Business-as-usual</td>
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<tr>
<td>BCA</td>
<td>Business case</td>
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<td>BU</td>
<td>Business unit</td>
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<tr>
<td>CEN</td>
<td>European Committee for Standardization</td>
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<tr>
<td>CEO</td>
<td>Chief executive officer</td>
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<td>CFA</td>
<td>Carbon footprint assessment</td>
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<td>COP</td>
<td>Conference of Parties</td>
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<tr>
<td>CR</td>
<td>Corporate responsibility</td>
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<tr>
<td>CSO</td>
<td>Chief sustainability officer</td>
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<td>CSR</td>
<td>Corporate sustainability report</td>
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<td>DGF</td>
<td>DHL Global Forwarding</td>
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<td>DPDHL</td>
<td>Deutsche Post DHL</td>
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<td>DSC</td>
<td>DHL Supply Chain</td>
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<td>DV</td>
<td>Dependent variable</td>
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<tr>
<td>EAC</td>
<td>EBIT after asset charge</td>
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<td>EBIT</td>
<td>Earnings before interests and tax</td>
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<td>EMAS</td>
<td>European Eco-Management and Audit Scheme</td>
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<td>EOS</td>
<td>Employee opinion survey</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<tr>
<td>ETS</td>
<td>Emission trading scheme</td>
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<tr>
<td>EVP</td>
<td>Executive vice president</td>
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<td>FFV</td>
<td>Flexible-fuel vehicles</td>
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<td>GCC</td>
<td>Global Climate Coalition</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<td>GHG</td>
<td>Greenhouse gas</td>
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<tr>
<td>IEA</td>
<td>International Energy Agency</td>
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<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>ISO</td>
<td>International Organisation for Standardization</td>
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<td>IV</td>
<td>Independent variable</td>
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<tr>
<td>KPI</td>
<td>Key performance indicator</td>
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<tr>
<td>NCV</td>
<td>Non-conventional vehicle</td>
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<td>NDRC</td>
<td>National Action Programme for Environmental Publicity and Education</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
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<tr>
<td>PAS</td>
<td>Publicly Available Specification</td>
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<td>ppm</td>
<td>Parts per million</td>
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<td>PR</td>
<td>Public relations</td>
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<td>PUD</td>
<td>Pickup and delivery</td>
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<td>PV</td>
<td>Photovoltaic</td>
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<tr>
<td>R&amp;D</td>
<td>Research and development</td>
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<td>REN21</td>
<td>Renewable Energy Policy Network for the 21st century</td>
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<td>ROI</td>
<td>Return on investment</td>
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<td>SCM</td>
<td>Supply chain management</td>
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<td>SEPA</td>
<td>State Environmental Protection Administration</td>
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<tr>
<td>TCE</td>
<td>Transaction cost economics</td>
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<td>TCO</td>
<td>Total cost of ownership</td>
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<td>UN</td>
<td>United Nations</td>
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<td>WEF</td>
<td>World Economic Forum</td>
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1 Introduction to the paper series

1.1 Motivation

In a recent publication, Okereke, Wittneben, and Bowen (2011: 4) argue that there is an increasing body of literature on the impact of climate change on governments and businesses. This literature addresses an array of actions taken. However, they are critical of the fact that most of the studies fail to “capture the dynamic interactions between governments and businesses and the organisational processes by which states and corporations develop strategies to achieve the massive cuts to greenhouse gas emissions called for by scientists.”

It seems indisputable that literature on climate change and sustainable development has mostly focused on a series of issues focusing on how governments and organisations address climate change mitigation. For instance, the literature examines governmental discussions and corporate investment in green technology (Li et al. 2010; Webber and Wallace 2009), alternative energy (LePoire 2011), non-conventional vehicles (C2ES 2012; Salvo and Huse 2011), efficient facilities (Westerkamp 2008), sustainability indexes (Germanwatch 2011; Robinson, Kleffner, and Bertels 2011), carbon capture and storage (Hoffman 2005; UN CSD 2007), carbon pricing (Esty and Charnovitz 2012; Kleindorfer and Li 2011), carbon offsetting (Dhanda and Murphy 2011) environmental funds (Climent and Soriano 2011; PwC 2012), corporate principles (Bilgin 2009; Campbell 2007; Levy, Szejnwald and de Jong 2010), and carbon reporting (CDP 2011; EPA 2012; Ioannou and Serafeim 2011). The outcome of these studies is a diverse list of political and organisational measures to mitigate climate change and to facilitate sustainable development across governments and industries. For instance, in the field of supply chain management (SCM), World Economic Forum members have developed a scorecard for decarbonisation opportunities along the supply chain, taking into account the life cycle impact of the supply chain product (Doherty and Hoyle 2009). Linton, Klassen, and Jayaraman (2007: 1078) contend that the concept of sustainability must expand the core of SCM by incorporating “product design, manufacturing by-products, by-products produced during product use, product life extension, product end-of-life, and recovery processes at end-of-life.”

At the same time, recent research streams and case studies have provided valuable insights into how climate change and the call for sustainability pose implications to governments and businesses (Berns et al. 2009; Busch and Hoffmann 2011; Campbell 2007; Delmas, Hoffmann and Kuss 2011; Hart and Ahuja 1995; Lash and Wellington 2007; McWilliams and Siegel 2000; Porter and van der Linde 1995; Russo and Fouts 1997; Shrivastava 1995; Thun and Mueller 2010). The studies explore ways to achieve emission reduction and economic growth simultaneously in order to gain competitive advantage. They elaborate if and how it can pay to be green. For instance, there are
investigations into how companies finance revenue growth while meeting the rising demand for sustainable goods and services.

Over the last decade, relatively little of the literature has given attention to governments and companies *instituting a course of sustainable development* in response to the challenges that global climate change induces (Goodall 2008; Linnenluecke and Griffiths 2010; Marquis and Toffel 2011; Okereke, Wittneben, and Bowen 2011; Walls, Phan, and Berrone 2011). Scholars have provided only sketchy information about theoretical and empirical evidence of dynamic activities in the institutionalization of climate politics and in elucidating the drivers behind why organisations choose particular responses to climate change.

Under the lenses of institutional theory, much has been written about the *institutionalization process* from various theoretical angles. Meyer and Rowan (1977: 340) emphasize the roles of symbols and myths in the *institutionalization process*. According to the authors, “institutional rules function as myths” that guide behaviour and hence rules give rise to formal organisational structures. In the “Iron Cage,” DiMaggio and Powell (1983: 149) describe institutional isomorphism inducing institutionalization. Strang and Meyer (1993: 499) examined institutional conditions of diffusion and concluded that “theorists are the carriers of the practice.” Barley and Tolbert (1997: 89) introduced a recursive model of organisational change enacted through “scripts” which are “observable, recurrent activities and patterns of interaction characteristic of a particular setting.” Clemens and Cook (1999: 448) underline that some institutional rules or models are more “mutable” than others. Most empirical work on *sequential* institutionalization is based on Tolbert and Zucker (1996) and Greenwood, Suddaby, and Hinnings (2002).

Little information is, however, given as to why and how the *institutionalization process* and the resulting institutions may vary in *pace and stability*. In addition, recent studies are weak in valuable insights into why and how companies pursue specific strategies in response to institutional expectations and economic potential. The integration of power theory and strategic management with institutional analysis promises interesting roads into these open items. Thereby, empirical work by Delmas and Toffel (2008), Haigh and Griffiths (2011), Hoffman (1999), Kolk and Pinske (2007), Levy and Kolk (2002) and Furrer, Hamprecht, and Hoffmann (2011) served as inspiration for this dissertation in addressing why and how organisations choose to adapt their structures, rules, and strategies to the consequences of climate change.

Given the theoretical potential and the sketchiness of information on A) the interdependences of governments and businesses in the challenge of sustainable development, and B) the dynamics of institutionalization and the impact of institutional determinants on strategic responses, the dissertation asks three core questions:
1. What are the institutional challenges in climate policy which the Chinese, US, and German governments must address?

2. How do these challenges, in association with institutional power mechanisms, move an institutionalization process within states and organisations towards sustainability?

3. Why and how do companies seek to navigate, influence, or transform institutional processes that address sustainable development?

In the dissertation, three research papers substantiate the generic questions and limit the scope of research.

1.2 Research objectives

The aim of this dissertation is to present in-depth insights into instituting sustainability with focus on the interfaces to governmental regulations, professionalism, and social change. I refer to Okereke, Wittneben, and Bowen (2011: 4), who state that “global climate change has become one of the most pressing issues for industry, government, and civil society in the 21st century.” To reduce some of the complexity in sustainable development, the dissertation project focuses especially on understanding how the institutionalization process of sustainable development has evolved within selected states and business operations. It thereby departs from a linear process of institutionalization (Tolbert and Zucker; Greenwood, Suddaby, and Hinings 2002) but shows the temporal dynamics in the institutionalization process of climate change mitigation and adaptation. The study aims to broaden our knowledge of the stability and speed of institutional power activities (Clegg 1989; Scott 1995, 2008) in an institutionalization process at a national macro level as well as at an organisational micro level. It takes up the criticism from DiMaggio and Powell (1991: 25) that, to date, “the link between micro and macro levels of analysis has not received much explicit attention from practitioners.” In addition, the dissertation aims to enhance understanding of strategic approaches that companies choose in response to institutional pressures and economic potential related to climate change. In the following, the research objectives of this dissertation are outlined in more detail.

1.2.1 Research objective one

Research objective one explores the institutionalization process and power management in global climate change. In previous publications, the theoretical lenses of power and institutions gave some valuable insights into the development of climate change issues. These publications studied the roles of conflict, politics, and control primarily under the rubric of institutional entrepreneurship and social movement (Child, Lu, and Tsai 2007; Escobar and Vredenburg 2010; Furrer, Hamprecht, and Hoffmann 2011; Greenwood and Suddaby 2006; Hoffman 1999; Levy and Kolk 2002; Okereke and Russel 2010; Ruostetsaari 2010). However, there is still a scarcity of systematic theoretical and empirical reflection on the dynamics of both institutionalization and power management as pursued by different institutions on the macro as well as on the micro level. Recent
studies have mostly dealt with the issue from either a single country or industry perspective. Furthermore, they remain weak in their analysis of pace and stability in the volatile development process of climate change governance. This affects not only climate change and sustainability, but also other empirical and theoretical work under the lens of institutionalization (Beck and Walgenbach 2002; Greenwood, Suddaby, and Hinings, 2002; Levy and Scully 2007; Lounsbury, Ventresca, and Hirsch 2003; Maguire, Hardy, and Lawrence 2004; Scott et al. 2006; Thornton 2002; Thornton and Ocasio 1999). Overall, drawing on institutional and power theory, research objective one will answer the following question:

*What are the approaches to institutionalizing climate protection and sustainable development that can be identified in China, the US, and Germany, and how are these approaches influenced by institutional power mechanisms?*

### 1.2.2 Research objective two

The first research objective focuses on instituting climate policy at a macro level. As a complement to this perspective, research objective two explores in depth the dynamics of institutionalization on an organisational level. The theoretical analysis of the first paper serves as a priori theoretical construct for paper two. In paper two, I aim to explore and to more extensively shape the nexus between power and institutional theory via a case study on the institutionalization process of green supply chain management (SCM) at the company Deutsche Post DHL (DPDHL). The work takes up Hirsch and Lounsbury’s call (1997: 416) that “it would be nice to see detailed micro-level accounts of institution building … coupled with event history analyses.” Although much has been written about green supply chain management (SCM), little is known about the temporal dynamics of instituting green SCM in relation to an historical analysis of disruptive events and institutional power activities. In their content analysis for sustainability and SCM, Linton, Klassen, and Jayaraman (2007) provided validation for the fact that most studies apply operations research methods. The literature has mostly ignored the topic of social institutionalization associated with green SCM (Halldorsson, Kotzab, and Skjøtt-Larsen 2009). Therefore, the second research objective of this dissertation will answer the following question:

*What are the compelling events and actions which motivated DPDHL to change to green SCM, and how have institutional power activities influenced the dynamics of this process?*

### 1.2.3 Research objective three

The third research objective emerged through an observation in the inductive case study of the institutionalization process of green SCM at DPDHL: The company approaches environmental aspects of a supply chain with varying efforts. The third objective targets the bottom line of this phenomenon. Institutionalists analyse how companies are influenced by social meanings conveyed through public opinion, legislation, or important
Introduction to the paper series

constituents. This explains why certain structures, rules, and practices become institutionalized and why companies adapt to them (DiMaggio and Powell 1983; Meyer and Rowan 1977, 1983; Oliver 1991; Scott 1995, 2008; Suddaby 2010). Although institutional studies provide valuable insights into how institutional pressures influence strategic responses, this issue has thus far not been sufficiently explored. Strategists, in contrast, focus on the productive value creation that ensures the long-term success of companies. They emphasize a proper alignment of endogenous capabilities with exogenous environmental variables (Aragon-Correa and Sharma 2003; Donaldson 2000; Zajac, Kraatz, and Bresser 2000) as well as efficient transactions and profitability through the coordination of rare and valuable resources (Barney 1991, 2001; Eisenhardt and Martin 2000; Helfat and Peteraf 2003; Pfeffer and Salancik 1978; Russo and Fouts 1997; Teece, Pisano, and Shuen 1997; Williamson 1991, 2000). Overall, strategists explain why companies choose certain strategies and structures based on the aim of making profits and differentiating from competitors (Gilbert and Strebel 1997; Porter 1980). Research objective three aims to redress the divergent foci of the two theoretical streams. Thereby, Oliver and Holzinger’s (2008) four political strategies serve as a priori theoretical constructs. The inductive case study of green SCM development at DPDHL is extended in order to answer the following research question:

What are the deciding institutional and economic determinants in the development of green SCM at DPDHL and how does the respective weighting of these determinants impact the company’s strategic approach in terms of level of activity and conformity in going green?

1.3 Structure of the dissertation

This dissertation consists of three research papers that address the research objectives that have just been outlined. The papers constitute the core element of this dissertation project. They will subsequently be presented in chapters 2, 3, and 4.

Each paper has been submitted for publication in an international scientific journal in the area of organisational study and supply chain management. Stefan Spinler is co-authoring the submitted papers. Paper 1 has been accepted for review in Sustainability Accounting, Management and Policy Journal (SAMPJ) in October 2012. The paper is planned for re-submission in December 2012. The taken amendments are already incorporated into this cumulative dissertation. Paper 2 has been submitted in Organization & Environment (OE) in August 2012. The editor of OE responded with a high interest in the paper. However, he has requested to re-submit it in January 2013 due to a recent transition in co-editors and editorial direction in the journal. Paper 3 has been submitted for publication in the Special Issue of Business and Society (BAS) on “Corporate Sustainability – Off to Pastures New or Back to the Roots” in August 2012.
Each paper has been adapted in order to avoid repetition and enhance readability of the dissertation. Hence, the research methodology will be elaborated in section 1.4 that follows instead of being outlined separately in each subsequent chapter. Moreover, since the second research paper complements research objective one, its a priori theoretical construct has been streamlined. Finally, the common topic of sustainability in supply chain management of research papers two and three has been summarized in chapter 3 (paper two). The overall structure of this dissertation project and its level of analysis are outlined in Figure 1.

Figure 1 Overall structure of the dissertation project

Chapter 2 presents research paper one: Institutionalization and power management in Chinese, US, and German climate policies. The chapter first provides a thorough explanation of sustainable development on a macro level. Second, within a comparison study of institutional theory and power management, Scott’s three institutional pillars (1995, 2008) are associated with Clegg’s circuits of power (1989). Three institutional powers are derived: regulative-episodic, normative-dispositional, and cognitive-facilitative. Third, the work explores the characteristics and relationships of these institutional powers and their dynamic impact on the development process of climate policy. In this way, the paper seeks to capture the institutional challenges posed to governments by climate change issues. Three country cases are selected: China, the United States, and Germany (research objective one). Finally, implications are derived that contribute to an understanding of how institutional power activities influence the pace of an institutionalization process and the stability of the resulting institution. Accordingly, the paper presents conclusions about the impact on the institutionalization process based on the role of state leadership, disruptive events, principles of sustainability such as uncertainty aversion on the individual level, and multiple international mechanisms.
Chapter 3 provides an outline of paper two: Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL). First, the paper provides an understanding of sustainable development in supply chain management (SCM) on an organisational level. It then investigates the institutionalization process of green SCM at the company DPDHL. Three phases of institutionalization are analysed: 1) the genesis of green SCM: 1997–2006; 2) strategic and structural endorsement: 2007–2009; and 3) towards professional pragmatism: 2010–2011. The paper explicitly explores how institutional power activities (regulative-episodic, normative-dispositional, and cognitive-facilitative) influence the dynamics of this process (research objective two). Finally, the chapter provides implications about which institutional power activities are essentially required to shift from the early phase of institutionalization to the next higher phase and, finally, to the sedimentation of institutionalization. Moreover, a generic integrative framework of institutionalization is derived that illustrates the nexus between institutional and power theory and provides implications for conducive institution of green SCM.

Chapter 4 presents paper three: Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL. The paper explores the strategies that the company DPDHL pursues in the eco-friendly development of its particular operational function. It focuses on the interactions between institutional pressures and economic potential perceived in different degrees by Group employees. These degrees are assessed by means of five eco-friendly operational practices at DPDHL: 1) process, route, and capacity improvement; 2) aircraft renewal; 3) road fleet renewal and driver training; 4) subcontractor management; and 5) efficient facilities and their ISO 14001 certifications. The paper enhances our understanding of how the intensity of institutional and economic determinants impacts the strategic approaches which companies tend to pursue in levels of activity and conformity in going green (research objective three). It provides implications as to which strategy a company is likely to follow when green activities are not lucrative, but social beliefs deem them to be indispensable to modern organisations. Finally, a generic framework of strategic direction is derived that explains the nexus between institutional and strategic theory and provides implications for a proactive strategy of eco-friendly operations.

Chapter 5 Concluding remarks summarizes the major findings from the three research objectives and discusses general theoretical implications and managerial contributions of this dissertation. It also outlines its limitations and discusses ideas for further research going beyond the future research aspects presented at the end of each paper.

1.4 Research methodology and method
This dissertation follows a qualitative research methodology, because such methodology “is great for addressing how questions – rather than how many” (Pratt 2009: 856). Qualitative research questions explore how social experience is created and meaning is
given. In this process, the perceived changes observed in the formation of sustainability offer insights into a complex social setting in which institutional power activities and strategic approaches are not immediately obvious and “that quantitative data cannot easily reveal” (Eisenhardt and Graebner 2007: 26). The dissertation project seeks to reveal how broad theoretical constructs operate in particular cases. Its investigations warrant continuous moving back and forth between theory and empirical data: “Qualitative research starts from and returns to words, talk, and texts as meaningful representations of concepts” (Gephart 2004: 455). This approach is distinctive to quantitative research, which is grounded in mathematical and statistical expertise in uncovering relationships among variables (Eisenhardt and Graebner 2007; Gephart 2004; Miles and Huberman 1994; Pratt 2009; Sigglekow 2007; Yin 1989).

The dissertation applies the case study research method. An extensive overview of various qualitative research methods is given in Miles and Huberman (1994: 7). In the methods, a distinction is made between their research purposes – understanding the meaning of text and action, for instance, description of commonalities and uniqueness via phenomenology1 – and interpretation and assertion via hermeneutics2 and case study. The case study approach is “a research strategy which focuses on understanding the dynamics present within single settings” (Eisenhardt 1989: 534). A case study is constructive if researchers aim to provide description, test, or generate theory (Eisenhardt 1989: 535). The dissertation seeks to test and to extend existing institutional theory by applying new lenses for understanding of a social phenomenon. As part of the phenomenon, an analysis is undertaken as to how climate policy and sustainable development are understood and deployed in practice and of the reasons behind such actions and beliefs. It also draws on Dubois and Araujo (2007: 172). In their study of purchasing and supply chain management, these authors postulate that “methods should shift from research on organisations to research in organisations” (also Bretzke 2011; Carter, Sanders, and Dong 2008). Their understanding of “on” organisations focuses on large-industry-scale surveys with single-time-period samples, while “in” organisations is associated with dense descriptions, observations, and event sequences. The dissertation’s analysis involves historical processes. Moreover, event sequences are classified and an analysis of the interviewees’ comments complements these event sequences with subtle descriptions and meanings (Barley and Tolbert 1997; Gephart 2004; Siggelkow 2007; Suddaby 2006). The presentation of the case study findings is in narrative form intertwined with theory.

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1 Phenomenology is a philosophy based on intuitive experiences and incidents perceived by conscious beings instead of rational statements of reasons. Its study method entails a strict objective depiction of a given circumstance.

2 Hermeneutics is a philosophy of comprehension. Hermes, the Greek messenger of the Gods, inspired its name. Its study method entails the depiction, explanation and interpretation of scripts, symbols and texts, particularly holy texts.
Chapter 2 employs qualitative case research with a deductive approach in order to test and explore complementary theories within three country cases (Eisenhardt and Graebner 2007: 25). The analysis structure of deductive case studies is based on Barratt, Choi, and Li (2010: 339). I discuss existing research work on institutional and power theory. A nexus is identified between institutional pillars and circuits of power which are complementary in their characteristics and the impact on the pace and stability of an institutionalization process. A detailed description of the added value of pairing institutional pillars and circuits of power is provided in section 2.9. The in-depth comparison of the two theories results in the development of propositions. The propositions encompass the compounded impact of institutional power activities on the pace and stability of the institutionalization process. The climate policies of China, the US, and Germany serve as case studies for validation of the propositions.

Chapters 3 and 4 pursue qualitative case research with an inductive approach in order to extend theory through the analysis of empirical data (Eisenhardt and Graebner 2007: 25). Thereby, the deductive case study of chapter 2 serves as the theoretical construct for getting started, especially as regards chapter 3. Hirsch and Lounsbury (1997: 412) postulate that “the details of micro-level action are needed to explain how macro-level institutions change.” Thus, generic propositions and a new theoretical framework are derived through the case study. The structural analysis of chapters 3 and 4 is based on Eisenhardt’s qualitative approach to an inductive case study (1989: 533). The chapters apply a single case study within the organisational level of the company DPDHL. It was gauged to be the most appropriate approach because it permits in-depth assessment of different research objectives within one organisational context. Although a cross-case study would have facilitated the comparison of different empirical settings within the organisational field level (e.g. including competitors, suppliers or customers), this advantage would have been only possible at the expense of depth or would have required an excessive use of resources.

The case company Deutsche Post DHL (DPDHL) was selected for various reasons. DPDHL is the primus inter pares in the logistics industry. It covers the whole range of supply chain services worldwide: mail, express, freight forwarding, and contract logistics services. The broad range is reflected in the Group’s naming of business units (BU): Deutsche Post Mail, DHL Express, DHL Global Forwarding (DGF), and DHL Supply Chain (DSC). Its competitors, however, are often constrained in their supply chain services, for instance offering only express and parcel services and no freight and contract logistics or vice versa. DPDHL calls itself “the world’s leading mail and logistics service group” (Deutsche Post AG 2012a: IV). In 2011, the Group generated revenue of €52.8 billion with a workforce of over four hundred thousand employees. Hence, the company is a significant presence in the logistics industry. Secondly, in various public interviews and publications, DPDHL proclaims that it places “great value on service, quality, and sustainability” (Deutsche Post AG 2011a: 21). It acknowledges that its total
emissions (scope 1 to 3) account for 28.2 mega-tons, 0.06% of our entire anthropogenic world emissions (Deutsche Post AG 2012b: 75; IEA 2010a: 11). In 2011, the Group produced around five mega-tons of CO₂ emissions (scope 1 and 2). Of these five mega-tons, 61% of emissions are generated by air express alone, 23% by road transport and 16% can be attributed to real estate (Deutsche Post AG 2012a: 85). CEO Dr. Frank Appel has fully resolved to take responsibility for the emissions through the Group’s climate protection programme: “Global warming is a fact. As a global leader in mail and logistics services we can’t wait for others to do something about it; we must take the initiative ourselves. We have a particular responsibility for the environment” (Deutsche Post AG 2010b: 5f). The Group has voluntarily set an official goal to improve its own emissions and those of its subcontractors by 30% by 2020. All business units must contribute to this goal, which is measured by a CO₂ emission index starting with 100 points in 2007. This makes the company an interesting case study for the development of sustainability. In addition, within its relevant business area of suppliers, competitors, customers, consultants, investors and scholars, DPDHL is considered a best practice institution in terms of green supply chain initiatives such as carbon neutral shipment services or emission transparency and optimisation of supply chain services. The Group’s efforts towards sustainability can be traced back to 1997, when DHL employees acting on their own initiative launched such environmental measures as ISO 14001 certification of their facilities or, in Amsterdam, the establishment of a floating distribution centre (Deutsche Post AG 2011b).

![Organisation chart of the case study company DPDHL](Deutsche Post AG 2012a)

**Figure 2**  Organisation chart of the case study company DPDHL (Deutsche Post AG 2012a)

### 1.5 Data collection

The data collection for **chapter 2** was based on the definition of disruptive events, institutional power activities, and pace and stability affecting the institutionalization process for climate change mitigation and adaptation (Jepperson 1991; Scott et al. 2006). The case study is founded on secondary data sources. I applied a multi-source search strategy in order to ensure the representativeness and validity of the countries covered. The material was retrieved from the EBSCO Business Source Complete, EconLit, OECD iLibrary, ScienceDirect, and JSTOR databases. In addition, I reviewed the homepages of the countries’ official authorities (e.g. China’s State Environmental Protection
Introduction to the paper series

Administration, the US Environmental Protection Agency, and Germany’s Federal Environment Agency), fact sheets and press releases of NGOs and panels active in climate protection (e.g. the United Nations Framework Convention on Climate Change, the United Nations Environment Programme, the Intergovernmental Panel on Climate Change, the International Energy Agency, the World Bank, and REN21), and recently published news from leading periodicals (e.g. “The Economist” and the “Financial Times”). In the databases, relevant articles were searched based on title and abstract with the key words: China, United States, Germany, climate change, environmental protection, sustainable development. I selected 74 relevant research articles. While around 40% were country-specific, the remainder covered global climate change and sustainable development and backed up their studies with country examples. There was at least one article each in which China, the US, or Germany were covered.

The data collection of chapters 3 and 4 pursued the path carved out by Hoffman (1999: 352) and Greenwood et al. (2002: 58) in defining the organisational field. Most of the case study’s data was collected within DPDHL. The data sources are of primary and secondary nature. The value of collecting multiple data in a single case study constitutes a powerful substantiation of the findings, which induces validity and reliability of theory-building. In addition, the study referred to the data collected for chapter 2 on climate change and sustainability. This was done in order to elaborate the external cultural, political, and social events that had crucial impact on the institutionalization of green SCM within the target company.

Primary data – multiple respondents and observations: Within DPDHL, I conducted 61 interviews between November 2009 and September 2011 (ref. Appendix). Of these, 39 were conducted between November 2009 and January 2011. They are integrated into chapter 3. While the scope of chapter 3 was primarily the business unit (BU), DHL Express and its relationship to corporate headquarters, the scope of chapter 4 was extended through interviews in all BUs. The interviewees include executives, C-level managers, senior experts (specialists), and staff from the divisional and corporate levels. The respondents were based in Europe, the Americas, and Asia. All participated in the operations, sales, strategy, finance, and/or communications processes of the company and were knowledgeable about DPDHL’s approach to green SCM practice. The majority of interviewees had been with DPDHL for over five years. Interviews were semi-structured and first focused on people’s own work experience in association with green SCM and then on the observed strategies and structures of DPDHL’s supply chain management. All interviews were between one-half hour and three hours in length. Crucial respondents were re-interviewed during the data analysis stage to ensure

3 Validity refers to the extent to which a “study’s findings or presumed causal relationships may be generalized” (Stuart et al. 2002: 430).
4 Reliability refers to the extent to which a “study’s operations can be repeated with the same results” (Stuart et al. 2002: 430).
reliability and to validate patterns. Moreover, between 2008 and early 2009, I participated in a DPDHL cross-divisional working group. The working group’s objective was to develop a concept for employee awareness and engagement, building on DPDHL’s GoGreen strategy. Finally, I conducted several informal interviews in order to acquire in-depth information that interviewees would not necessarily have mentioned in a formal interview.

Secondary data – archival data: I reviewed DPDHL’s corporate sustainability reports (CSR) in reverse chronology from 2011 to 2003 (first publication) as well as the strategic and non-performance sections of the Group’s annual reports (AR) dating back to 1997. I traced the first indications of sustainability in the company’s supply chain. In order to obtain more information about strategy and activities at DPDHL, it also proved useful to study the internal network magazine. The stated aim of the bi-monthly publication is to connect management across DPDHL. In addition, I reviewed the carbon reporting initiative as illustrated in the special internal “GreenExpressions” newsletter disseminated throughout the DHL Express division in 2010. Finally, I went through press releases published by DPDHL as well as by core competitors UPS, FedEx, TNT, DB Schenker, Kühne and Nagel, Panalpina, CEVA, and Maersk. In them, I searched the key words “green,” “sustainable,” and “efficient,” found in the www.cep-research.com and www.transportintelligence.com databases.

1.6 Data analysis

Data analysis for chapter 2 took place in three phases. First, a general overview of global climate policy was performed. Second, each country case was analysed individually in order to ascertain the sequence of events from which the institutional power activities evolved in each country. I derived the phases of the institutionalization process and then coded the institutional power activities based on the criteria of distinctive characteristics, sequences, amounts, and specific theoretical interest that sustains institutional development. The coding involved the findings about the temporal dynamics of the institutionalization process within each country. In a third step, I conducted a cross-case comparison of the coding results. Thus, common patterns could be derived that validated the a priori set of propositions and provided implications about the institutionalization process beyond the role of pace and stability, the role of the agents and the instituting of drill-down from the country system to its subsystems.

The data analysis of chapters 3 and 4 took place in two sequential work streams. In this way, the data analysis of chapter 3 complements chapter 4. The data analysis of chapter 3 started with the retrieval of DPDHL’s market profile in order to maintain a broad perspective of the company. It followed the creation of an historic overview of the company that allowed a better understanding of its evolution in culture, structure, and processes. Once the chronological account was in place, in a sub-step I focused on the documented events and initiatives relating to DPDHL’s engagement in sustainability, with a sharp focus on ecology. Finally, the interview guideline was drafted, with Strauss and
Corbin’s (1994: 274) “generative” questions as a starting point. The data analysis of chapter 4 adapted this questionnaire with its specific perceptions of the company’s green supply chain strategy: such drivers as constituents, regulations, and business relationships; the challenges and instruments of green supply chain execution; and the perceived impact on the social and economic performance of the business. More details about the data analysis of the case study, such as the coding process, are specifically provided in the two chapters.

Figure 3 depicts the research protocol of the data analysis.

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**Figure 3** Research protocol

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2 Institutionalization and power management in Chinese, US, and German climate policies

2.1 Abstract
The paper develops a framework which links the institutionalization process with the influence of power dynamics. The aim is to establish an understanding of how institutional and power-based activities mutually influence the institutionalization process. The paper’s objective is to show how institutional power mechanisms can affect the pace of the institutionalization process as well as they can challenge the stability of an institution. It does so by combining Scott’s institutional dimensions and Clegg’s circuits of power. I explore the framework of climate politics in China, the US, and Germany and derive four implications: First, the institutionalization process embodies a wide range of temporal dynamics, from slow pace and high stability of cognitive-facilitative institutional power to rapid effects and instability of regulative-episodic institutional power. Moreover, the path of institutionalization is likely to become non-linear in an unstable environment. Second, the state and its political and economic leadership assume a crucial role in shaping the institutionalization process. Third, the principles of sustainability intensify the effects of the institutional power mechanisms because of an aversion to uncertainty on the individual level. Finally, the institutionalization path of a country’s climate policy depends significantly on the mediating role of power within the corresponding international strategic framework. A country’s institutional power activities can impact global knowledge-transfers which can in turn influence international climate policy.

2.2 Introduction
Over 800 scientists from around the world affiliated with the Intergovernmental Panel on Climate Change (IPCC) advocate the view that since the start of the Industrial Revolution, the concentration of atmospheric CO$_2$ has risen from about 280 parts per million (ppm) to nearly 390 ppm. They say that this has been accompanied by increases in other greenhouse gases (GHGs)$^6$. Moreover, reliable temperature records going back to around 1850 show that over the last 160 years the global average surface temperature has risen about 0.7°C (1.5°F). However, sceptics of anthropogenic climate change argue that temperatures have varied naturally for millennia. These enduring sceptics are building a power dynamic which weighs in against the credibility of climate science (UNFCCC 2010; The Economist 2010).

The global and complex discussion on climate change (and with it, sustainability) involves diverse and conflicting institutional agents and structures. The call to cut GHG emissions

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$^5$ Based on Berndroth, J., & Spinler, S. "Understanding the temporal dynamics of institutional power mechanisms: Case of the climate politics of China, the US, and Germany", unpublished manuscript.

$^6$ Other GHGs are, for instance, methane (CH$_4$), nitrous oxide (N$_2$O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphurhexafluoride (SF$_6$) (IPCC 2007: 36).
proposed by many governments and NGOs, such as the IPCC, requires changes in socio-political structures, technological and economic systems, and subsystems (Haigh and Griffiths 2009; Hamid, Stern, and Taylor 2007; Hoffman 1999; IPCC 2007). Hence, other than being an environmental problem, climate change also has strong political implications. It poses unique and profound challenges to every type of institution.

2.3 Rationale and relevance

The paper draws on Lawrence (2008: 171), who stresses that “incorporating power is critical to understanding how institutions operate in society.” Moreover, the work takes the observations of Clegg (2010: 4f) and Dillard, Rigsby, and Goodman (2004: 522) into account that institutionalists often overemphasize the constraining nature of institutional beliefs, symbols and values, but neglect the element of power. Recent research streams and case studies have provided valuable insights into power and institutions, primarily under the rubric of institutional entrepreneurship (Greenwood, Suddaby, and Hinings 2002; Levy and Scully 2007; Maguire, Hardy, and Lawrence 2004) and social movement (Beck and Walgenbach 2002; Lounsbury, Ventresca and Hirsch 2008; Scott et al. 2006; Thornton 2002; Thornton and Ocasio 1999). The studies investigate the roles of conflict, politics, control, and resistance. The empirical studies on climate change in relation to power and institutions also focus primarily on this research area; for instance, the work of Ruostetsaari (2010) on changing elite powers in the Finnish energy policy; Escobar and Vredenburg’s (2010) study on multinational oil companies adopting sustainability; Child, Lu, and Tsai’s (2007) research on Chinese development of an environmental protection system and Hoffman’s (1999) research on institutionalization in the US chemical industry. What is explored only in a shallow way in existing research, however, is a systematic theoretical and empirical reflection on the dynamics of both institutionalization and power management as pursued by different institutions. Therefore, this paper aims to establish an understanding of how institutional and power activities mutually influence the institutionalization process. The objective is to show how institutional power mechanisms can affect the pace of an institutionalization process as well as challenge the stability of an institution. I develop a framework which links the institutionalization process with the influence of power dynamics. For this purpose, I combine Scott’s three institutional pillars (1995, 2008) and Clegg’s processes of power (1989) into three relationships of institutional power: regulative-episodic, normative-dispositional, and cognitive-facilitative. The paper explores the characteristics of these identified relationships and their impacts on the development process of institutions. The evolving patterns of climate policy within three key countries – China, the US, and Germany – serve as empirical studies for comparing and elaborating the developed model. All existing case studies on climate change in the field of power and institutions reduce their focus to one country, industry sector, or institution as notably impacted and active in climate change protection. The paper addresses this issue by applying the developed theoretical framework in different country settings.
2.4 Sustainable development and climate change

As early as 1590, in Germany, the Saxon Electorate Forestry Protocol pledged to provide an economic forestry plan, whereby wood was to be harvested in order to ensure a balance between deforestation and reforestation. In this way, its exploitation would be enduring and continuous. With this, the balance between deforestation and reforestation as the primary principles of sustainability had been set (Bosselmann 1992: 101). In 1972, with The Limits to Growth, Meadows and the Club of Rome derived today’s most referred-to origin of sustainability concept. “We are searching for a model output that represents a world system that is: 1. sustainable without sudden and uncontrollable collapse; and 2. capable of satisfying the basic material requirements of all of its people” (1972: 158). Their statement triggered hundreds of different definitions of sustainability and sustainable development (used synonymously). The most common definition is the one deriving from the Brundtland Commission in 1987; “… seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future” (WCED 1987: 2/II). At this time, the idea of sustainability was gaining momentum and global attention, as reflected by the UN Earth Summit in Rio de Janeiro in 1992. At the Summit, with Agenda 21 the institutional parties came to agreement on a set of actions for the global, national, and regional decision-making levels, for directing the respective economies towards sustainable development. Sustainable development is “a system-based approach” (Benn 2009: 357) that, from the macro-economic point of view, entails the integration of environmental protection, social advancement, and economic prosperity. The three pillars of sustainability are not mutually exclusive, but can be mutually reinforcing.

*Ecological* sustainability is achieved when there is balance between the exploitation of energy and natural resources and their (re)investment through the social and economic system. In addition, waste should not exceed the assimilative capacity of the natural sinks (air, land, water). In order to support the capacity of the ecological system, the institutional dimensions of the social and economic system must pursue the “three R’s”: recycling, re-usage, and re-exploitation of waste (Jennings and Zandbergen 1995: 1019).

*Social* sustainability focuses on justice, creating, and maintaining quality of life. It involves items like human rights, ethical consumerism, access to key services including health, education, transport, housing, and recreation as well as cultural integration and support for women, youth, and indigenous people (UN DESA 1992).

*Economic* sustainability focuses on efficiency in steering and use of needs, resources, and goods. It is the ability of an economy to sustain a defined level of economic production indefinitely.
2.5 Objectives of sustainability from a macro point of view

The concept of sustainability entails three complex objectives at a macro level of political, economic, and social systems:

*Intergenerational equity* emphasizes that “present generations should ensure that the health, diversity and productivity of the current environment is maintained or enhanced for the benefit of future generations” (Benn 2009: 357).

*Symmetric distribution of benefit and damage* emphasizes the need to develop social and economic policies, which allow a balanced allocation of environmental impacts as well as access to resources (Benn 2009).

The principle of *precaution and foresight* emphasizes that we must avoid risks imperilling the existence of future generations. “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation” (UN DESA 1992: Principle 15; also Benn 2009; Hepburn and Stern 2008). Amsler (2009: 124), elaborating the normative objectives of sustainability, questions individuals’ needs, and satisfactions. She asserts that many needs and sources of satisfaction need to be unlearned in order to generate “alternative conceptions of self” and to diminish misery thus created.

2.6 Role of institutions and sources of institutional change

Institutional theorists are mostly interested in three types of phenomena: 1) the *role* of institutions in society, 2) the *sources* of institutional change, and 3) the *process* by which objectives and practices become institutionalized. Institutions are considered socially constructed systems through recurrent activities and patterns of interactions. They are based on regulative, normative, and cultural-cognitive pillars that determine what is considered legitimate behaviour (Scott 2008: 222). These pillars can enact power through their agents and structures. Recursively the same pillars of power can design, develop, maintain, and destroy institutions (Clegg 1989: 189). In institutional theory, a change in climate policy is achieved through the process of behavioural and structural adaptation and selection that spurs legislative compliance and ecological proactiveness. The institutional change process is initiated by a *disruptive event* or many accumulating disruptive events. Scholars describe disruptive events by various terms such as shocks (Maguire, Hardy, and Lawrence 2004; Jepperson 1991), forces (Fligstein 1996; Lounsbury and Crumley 2007); jolts (Greenwood, Suddaby, and Hinings 2002; Meyer 1982), and rupture (Beckert 2010). Disruptive events may have exogenous or endogenous sources. Differentiation is made as to whether institutional change is triggered outside or within the unit of analysis. Institutional theorists consider the tracking of endogenous sources of institutional change as the most challenging and important element of institutional change (Clegg 2010: 8). This is because typically highly institutionalized systems become maladaptive due to economic and psychological
interdependence. A critical number of actors must be aware of alternatives and motivated to collectively break through institutional inertia, such as in Tocqueville’s example of the French Revolution (Jepperson 1991: 145). Greenwood and Suddaby (2006: 29), Levy and Scully (2007: 947), and Seo and Creed (2002: 223) refer to this controversial phenomenon as a “paradox of embedded agency.”

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<thead>
<tr>
<th>Exogenous sources</th>
<th>Endogenous sources</th>
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<tr>
<td>- Natural changes, catastrophes, and diseases</td>
<td>- Ideal and material differences in interests</td>
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<td>- Wars and revolutions</td>
<td>- Efficiency and resource gaps</td>
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<td>- Market turbulence</td>
<td>- Institutional inertia and blindness</td>
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<td>- New technologies</td>
<td>- Multiple interpretations of abstract rules and roles</td>
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<td>- Political and legal intervention</td>
<td>- Competing logic and multiple institutions</td>
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<td></td>
<td>- Hybrids of old and new institutional elements: “No institution is created de novo” (Riker 1995: 121).</td>
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Table 1  Exogenous and endogenous sources of institutional change

2.7 Process of institutionalization

Most empirical work on the process of institutionalization is based on Tolbert and Zucker (1996: 169ff) and Greenwood et al. (2002: 60f) who expanded upon Tolbert and Zucker’s work. The latter’s institutionalization process constitutes a circuit which starts off with a disruptive event followed by an early phase of habituation (pre-institutionalization) in which new rules, structures, and practices are developed. This is conducted under a still uncoordinated and immature process using homogenous adaptors. The second phase of institutionalization involves the theorization and rapid diffusion of new rules, structures, and practices. In objectification (semi-institutionalization), patterns are disassociated with particular actors/historical circumstances and wider acceptance is accelerated. Strang and Meyer (1993: 499) postulate that “theorists are the carriers of the practice,” e.g. strategic planning and R&D agents. Finally, the third phase of institutional process is sedimentation (full institutionalization) which is the complete establishment of the new institutional element through eligible institutions. It can be measured by a high conformity and adaptation rate of the new institutional element (bandwagon effect). The phase reaches its highest status once the institutional element is acknowledged as being taken-for-granted and is reproduced over generations. Greenwood et al. call it re-institutionalization. Cognitive legitimacy may be the outcome, but as Jepperson (1991: 149) also points out: “illegitimate elements can clearly become institutionalized.” Here, the author refers to such phenomena as organized crime or political corruption. If the institutional element is not re-institutionalized, it becomes a fad and may trigger a new
institutionalization process. Although the institutional process ideally undergoes a stringent circuit, this consideration must be present for a stable environment only. In the case of an unstable environment, no one linear process fits the dynamics associated with all phases of institutionalization. Hence, the dissertation proposes picturing the institutionalization process as a heterogeneous, complex, nearly unpredictable set of process phases that can be as repetitive and self-enforcing as the building up of a tornado.

Figure 4 Institutionalization in a stable versus unstable environment. Stable environment adapted from Greenwood et al. (2002: 60)

2.8 Role and process of power

In organisation theory, power in a broad sense can be viewed as the ability to get things done. Socially coercive power is constructed through the effectiveness of the strategies applied by an agent or institution to create an intended effect. One agent or institution is more powerful than others are if its strategies produce more intended effects for itself than for others (Bachrach and Baratz 1962: 948; Barbalet 1985: 538; Clegg 1989: 32; Cobb 1984: 494; Dahl 1957: 202; Dahrendorf 1968: 227; Foucault 1984: 92; Giddens 1984: 14ff). Often the values and interests of the dominant, elite groups are represented as those of society as a whole (Clegg 1989; Gramsci 1971; Levy and Scully 2007; Zald and Lounsbury 2010). Much focus of the power theories has been directed towards explaining how organisational obedience is produced and how society and its institutions as well as the individual are influenced in their functioning and even forced to do certain things. Hence, the process of power can influence the pace and stability of the institutionalization process. Clegg’s framework seeks to depict how the power of the agent’s translation accomplishes or restricts institutional change: Clegg proposes viewing power as a process that moves through circuits of episodic, dispositional, and facilitative
power in organized decision-making. The circuits are independent power procedures that interrelate through obligatory passage points.

2.9 Added value of pairing institutional pillars and circuits of power

The aim of this section is to discuss the added value of matching Scott’s (1995, 2008) institutional pillars to Clegg’s (1989) circuits of power. In his study on “Professionals as Institutional Agents,” Scott employs the concept of the agent who attempts “to create general cultural-cognitive frameworks; others to devise normative prescriptions to guide behaviour; and still others to exercise coercive authority” (2008: 219). He discusses how institutional agents hold different roles within their communities and thus erect institutional pillars through diverse manifestations, e.g. testing general principles, interpreting, and applying them or communicating ideas to other communities. Clegg addresses how power is employed through an intertwined process and how obligatory passage points can empower or disempower the process. Scott devotes less attention in his study to how the institutional pillars influence each other and thus form specific linked mechanisms to accelerate and to stabilize the institutionalization process. Scott’s institutional pillars complement Clegg’s understanding of how an institution is stabilized. For instance, when institutional elements are based in culture and cognition, people tend to engrain them in a deeper sense. Automatic follow-through often takes place without the need for monitoring activities such as incentives or sanctions. Institutions with cognitive elements at their base are more stable than on those based on regulative elements. Consequently, Clegg’s circuits of power can be redressed by the stabilization effects of Scott’s institutional pillars and vice-versa. Scott’s institutional pillars can be redressed by turning to Clegg’s linked mechanisms of power. Both intellectual frameworks are compatible in illustrating diverse tools of control, modes of legitimatizing authority, and activities in shaping rules and social behaviour. Moreover, they show that elements of institutions and power are reflected in activities, structures, relations, and resources. By associating the two frameworks, implications can be drawn as to how and why organisational fields are shaped and structured. The implications culminate in my propositions about the pace of institutionalization and the stability of institutions.

2.10 Pace and stability

The pace of institutionalization and the levels of stability of institutions are the dependent variables (DV) of my integrative model. Pace is defined by the length of time of the institutionalization process. The amount of time it takes to accept, diffuse, and internalize the new institutional element. Stability is defined by the length of time over which an institution is supported and reinforced through its legitimating agents and structures. The operational measurement of pace and stability has always been a difficult challenge (Jepperson 1991; Scott et al. 2006). A way to measure the two factors is through the strength and growth process of social construction or power. Indicators might include the presence of champions conveying ideological energy, focus, and financial means; the altering of organisational strategies; tactics linked to resource allocation; the increasing
presence of interactions and interdependences as well as the availability and relevance of standardized training and certification. A high degree of social construction can be a double-edged sword. For instance, increasing lobbying power on the part of more entrenched interests can be an early indicator of instability. In contrast, increasing lobbying power of more aligned interests can be an indicator of stabilizing institutionalization.

### 2.11 Relationships of institutional pillars and the circuits of power

The approach of the paper’s framework originates in Lawrence, Winn, and Jennings’ (2001) temporal dynamics model of institutionalization. It differs in its approach to matching institutional theory and power management. While Lawrence et al. built intersections of the modes of power (systemic/episodic) with the target relationship (subject/object), the work draws one-dimensional links between the institutional pillars and circuits of power. The relationships represent the independent variables (IV) of my model.

#### 2.11.1 Regulative pillar paired with episodic power

The *regulative* pillar coincides with the *episodic* power. Scott’s regulative pillar stressing “rule-setting, monitoring and sanctioning activities” (2008: 222) is potentiated and complemented through Clegg’s episodic “circuit of power through rules and domination,” where “agencies possess varying control of resources” (1989: 215). Clegg’s episodic circuit of agency is based on Dahl’s (1957) episodic face of power and Foucault’s (1984) sovereign power. The latter is tied to the formal apparatus of the state in its complex organisation and executive power, which exert influence on actions of the population. The common key influence tactics of the *regulative-episodic* pair are legislation and surveillance with their accompanying sanctions and rewards that require an organisation’s response. Tactics are to promote compliance and coercive isomorphism. Agencies, e.g. the state or the military and police have the power to enforce laws and regulations that on the one hand can deploy, control, even destroy organisational property, and on the other hand can foster additional income. The *regulative-episodic* activities are stronger, the more authority the executing agency holds. The lack of active involvement of the society during the habitualization and objectivation phase may cause various organisations and the state’s population to contest the new institutional element. Clegg points out that “power at this level will invariably be accompanied by resistance” (1989: 215). Thus, intended directions might turn into *unintended transformation* (Paterson 2009). An example: subsidies for the solar industry are intended to promote its growth as against that of traditional fossil energies, but there is also a disadvantage to this promotion. Namely, other renewable energies must be simultaneously subsidized in order to balance growth, if growth is desired. The stability of the institutionalized item requires recurring episodes of *power enforcement*; therefore, the stability is graded as low. For instance, if a regulation fostering a new institutional practice is abrogated and the agents entrusted with carrying out the practice are not cognitively convinced by the
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regulation, the institutional element likewise disappears as the behaviour of agents regresses to the status quo. This leads to the first proposition:

\[ P1: \text{The regulative-episodic relationship typically generates a fast-medium pace of institutionalization with low stability.} \]

2.11.2 Normative pillar paired with dispositional power

The normative pillar coincides with dispositional power. Scott’s normative pillar, introducing “a prescriptive, evaluative, and obligatory dimension into social life” (2008: 215) is potentiated and complemented through Clegg’s dispositional circuit of power. This involves a process of "mobilizing relations of meaning and membership," whereas the power of agencies or regimes primarily stems from professionalism and central authority (Clegg 1989: 219; also DiMaggio and Powell 1983: 152; Jepperson 1991: 150). Moral values and social status are represented on a higher level, which affects the executive power of the episodic circuit. The common key influence tactics of the normative-dispositional pair are the elaboration and development of morals, norms, standards, rules, and routines through the consultation and advice of scholars and industry experts. Moreover, actors in power re-enact and reproduce rules and routines so that these can be preserved for particular interest groups. There is a tendency for scholars and professionals to convince the targeted organisation or individual based on rational persuasion, appeal to senior members of the organisation and coalition or cooperation. Discipline and commitment are used to ensure that norms and standards are met. Actors also withhold information from the political agenda that could cause conflicts of interests. Consequently, decisions or actions may be prevented. This tactic has common ground with Bachrach and Baratz’ (1962: 952) “nondecision-making” power and with Foucault’s (1984) disciplinary and bio-power. Another tactic is for appropriate behaviour to be backed by scientific evidence and best practices (Scott 2008: 215). An example in terms of climate protection is expert committees from the fields of science, industry and policy developing new norms, standards, and practices for a 100% renewable energy life-cycle. Municipalities and organisations then voluntarily comply with and indeed tolerate third-party examination to obtain a green certification. It typically takes from a medium to a long time until the new norms, standards, and practices are successively internalized within the target group. The target for the new institutional item only truly internalizes its norms, standards, and practices if it can be motivated by large or quick-win benefits, be they financial, reputation, health, or any other. If the new institutional element is likely to provide only small benefits or offers them on a long-term perspective, whereas the target’s actions are based on short-term payoffs, the target typically will either reject the institutionalization of the new item or institutionalize the new item on its surface only (Oliver 1991: 152ff). I call this a placebo institutionalization, which is often conducted to maintain the external perception about the target. In the case that the organisation or individual sees a real benefit in the new institutional element, it transforms it into a routine. Consequently, power is decreasingly required to promote the institutionalization
process. This is the major difference between dispositional and episodic power: The latter must be continuously repeated because of external pressures in order to sustain institutionalization. Thus, institutionalization is more stable than it would be through the regulative-episodic approach. This leads to the next proposition:

\[ P2: \text{The normative-dispositional relationship typically generates a medium-slow pace of institutionalization, but with medium-high stability.} \]

\subsection*{2.11.3 Cultural-cognitive pillar paired with facilitative power}

The \textit{cultural-cognitive} pillar coincides with \textit{facilitative} power. Scott’s cognitive (or cultural) pillar emphasizing “the centrality of symbolic systems” (2008: 215) is potentiated and complemented through Clegg’s facilitative circuit of power, mobilizing system integration through “techniques of production and discipline.” Conversely, “agencies will require the diffusion of disciplinary techniques throughout the apparatus or organisation” (1989: 219). Clegg stresses that human beings must be trained to identify themselves with the monotonous work of complex automation. Moreover, “formal rituals, myth, and ceremony serve to reinforce and make meaningful the routines of everyday subordination” (1989: 223). Facilitative power gives a path to new power constellations “since new techniques may open up new conduits and passages which undermine the presently entrenched structures” (1989: 239). The common key influence tactics of the \textit{cognitive-facilitative} pair are emotional appeal, ingratiating, anger, and assertiveness. These touch upon personal passions, sympathies, and appetites to build a social consensus about the new institutional element. The emphasis on shared beliefs, common symbolic representations, and granted conceptions influences how problems are solved and new practices adapted. Examples are donations for reforestation and construction, non-profit disaster response teams and charity programmes, protests in favour of the environment, consumption of ecologically-friendly products, and recycling. Other important facilitative influence tactics include providing transparent information and statistics to increase public awareness of trends as well as innovations to persuade consumers through life-style improvements and process efficiency. Examples are statistics relating to energy outlook and GHG emissions. Oil prices per barrel (West Texas Intermediate) are anticipated to increase from US$86 as of November 2012 to a low-price scenario of US$135 and a high of US$210 in 2035 (EIA 2010a: 85f). The energy sector alone causes 25.9% of worldwide emissions (IPCCb 2007: 36). According to the International Energy Agency (IEA 2010a: 9), the “greatest scope for increasing the use of renewable in absolute terms lies in the power sector.” These published statistical numbers and statements put public pressure on the power sector as well as on governments. The pressure has been slowly growing over the years and thus has created the mobilization to invest in renewable energies, as well as to set up corresponding laws and regulations. Energy generation by renewables shall triple between 2008 and 2035. According to Lovelock (2009: 84): “The gestation period from a seminal idea to globally marketable product is far longer than is usually thought – it is on average about forty years.” Therefore, the pace of the institutionalization
process driven by *cognitive-facilitative* institutional power is usually very slow. A crucial requirement is that a lion’s share of the society is engaged in steering and adapting the new institutional element. This is a key difference between episodic and dispositional power. Once society has transformed the new institutionalized element into a routine, it takes a new practice or innovation to change that routine (in this case a new institutionalization process would occur). This leads to the following proposition.

**P3**: The cognitive-facilitative relationship typically generates a slow pace of institutionalization, but with high stability.

### 2.12 Summation of propositions

The integration of Scott’s three pillars of institutions and Clegg’s circuits of power culminates in three propositions as summarized in the Table 2 below.

<table>
<thead>
<tr>
<th>IV: Institutional powers</th>
<th>DV: Pace</th>
<th>DV: Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulative-episodic</td>
<td>Fast-medium</td>
<td>Low</td>
</tr>
<tr>
<td>Normative-dispositional</td>
<td>Medium-slow</td>
<td>Medium-high</td>
</tr>
<tr>
<td>Cognitive-facilitative</td>
<td>Slow</td>
<td>High</td>
</tr>
</tbody>
</table>

**Table 2** Relationships of institutional dimensions and circuits of power (independent variables) and their temporal impacts (dependent variables) on the institutionalization process

The first proposition reconfirms the findings of Lawrence et al. (2001: 634ff). The authors consider force as an episodic mode of power. If this mode (force) is elected in support of an instituting process view, it "will have a significant effect on the pace of the institutionalization process" (635). Moreover, the stability of the resulting institution will be low. Different from my first proposition is that the *regulative-episodic* relationship goes beyond the typology of force because it includes the tactic of surveillance. Lawrence et al. postulate that the influence of surveillance over the institutionalization path can only occur at a slow pace resulting in a strong institution.

The second and third proposition can only be compared to a limited extent with the findings of Lawrence et al. due to the different methodical approach. Lawrence et al. draw their conclusions about the pace and stability of the institutionalization process based on the four core typologies of power they have defined (influence, force, discipline, and domination). In addition, they analyse two combinations of the four typologies (influence and discipline; force, and domination). The second proposition above coincides most closely with their combined influence and the discipline curve of institutionalization. The third proposition coincides most closely with their combination of influence and domination. The key extension to the findings of Lawrence et al. is the direct link between the recognized institutional pillars and the circuits of power.
2.13 Interpretation and selection of cases

In order to evaluate the papers’ theoretical framework, the study examines the evidence that can be adduced to suggest that climate change mitigation and adaptation goes through an institutionalization process. I ask what sets of events and happenings exert *regulative-episodic, normative-dispositional,* and *cognitive-facilitative* institutional powers. In a first step, I identify the chronological phases of institutionalizing governance in climate policy for each selected country study. In a second step, I investigate the indicators that can provide an assessment about how the three institutional power mechanisms impact pace and stability.

Three examples of national climate policy have been selected: China, the United States, and Germany. The reason for selecting these nations is first, their different political systems and economies, e.g. China with very strong state-led economic development and an obsession with keeping its racial equity. Second is the variable support of the Kyoto Protocol\(^7\), e.g. the lack of US ratification (UNFCCC 1998) and China not being obligated to reduce greenhouse gas production in light of being considered a developing country (UNFCCCa 2009). Third, the consideration that in particular developed and strongly developing countries are advanced terms of the mechanisms and power relations for managing climate protection, e.g. the experiences of the EU Emission Trading System (ETS). Finally, the IEA (2010a 11) stated in its energy report that China, the US, and Europe account for over 50% of the cumulative emission abatement that is needed in the period of 2010–2035 to accomplish the 450 ppm scenario, a limit of temperature increase to 2°C (3.6°F).

2.14 Phases of institutionalization in Chinese climate policy

2.14.1 Genesis of vergence in climate policy

In the early 1970s, water pollution cases with severe impact on the health of the population caused the Chinese government to take initial action towards climate protection. Through the *disruptive event,* the government began to realize the urgency of the situation and the importance of finding a new institutional approach for environmental protection, a key requirement for climate change mitigation. Consequently, a State Council task force on environmental protection was set up at the *habitualization* phase of institutionalization. Between 1972 and 2005 a series of regressive *episodic-regulative* initiatives followed in order to set a framework for environmental protection. According to the official White Paper on Environmental Protection (NDRC 2006a), the Green China Project was formally launched on a national scale in 2001, and by 2005 over 800 national environmental protection standards were stipulated (*normative-dispositional activities*).

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\(^7\) The UN Kyoto Protocol is a global, legally binding agreement for nations to reduce greenhouse gas (GHG) emissions and forms a framework for a global Emission Trading Scheme, Joint Implementation and Clean Development Mechanism. Annex B countries (major industrialized countries) have committed themselves to a reduction of at least 5% of their GHG emissions below their 1990 levels by 2012 (UNFCCC 1989).
2.14.2 Strategic and structural alignment directed by top Chinese authorities

A *turning point* came in 2006 when China passed its 11th Five-Year Plan, the target being that “the total emission volume of major pollutants will be reduced by 10% ... energy consumption per unit of GDP down 20 percent in five years” (NDRC 2006b). Moreover, in 2009 in Copenhagen, China committed to reducing its emission intensity – carbon emissions/unit GDP – by 40 to 45% from 2005 levels by 2020 (NDRC 2010). For the first time, China has offered a GHG-related quantitative target (*regulative-episodic activity*) in the UNFCCC context (German Federal Environment Agency 2010). Recently, Premier Wen Jiabao announced that, with 2010 as basis, emissions are to be reduced by 17% in the 12th Five-Year Plan period (2011-2015) and the country will continue investing in renewables. For instance, the Chinese government aims to raise non-fossil fuel energy consumption to 11.4% of the Chinese energy mix by 2015 (NDRC 2011). These changing episodic-regulative measures also represent an *obligatory passage point* for China’s altering normative-dispositional relationship in climate policy. China’s leadership has incrementally and consciously changed its mindset on climate politics. There are several reasons that explain the shift. The first, as noted above, is China’s growing awareness of its vulnerability to global warming and the accompanying environmental problems (*physical force*). A second reason is China’s longer-term *economic motive* in nexus with its energy and food security (NDRC 2006a). Chinese government agreed by common consent that it needs to diversify its energy sources and that it must challenge its desertification problems (Lewis 2009: 1201; NDRC 2006a; Zhuang 2008). Hence, the government has taken the position (*dispositional power*) that growth and greenery can be compatible. A third reason is China’s growing sense of being one of the world’s leading powers and thus expected to work together with the other leading industrial nations to find solutions for such global issues as climate change, especially being as it is the world’s largest emitter of greenhouse gases. For a country whose economic prospects will remain closely tied to overseas exports for the near future, this is a serious risk (Lewis 2009: 1213). It represents a *passage point* for the facilitative circuits of power.

2.14.3 Emerging professionalism and cautious social integration

The fact that China’s core economic development infrastructure is directly vulnerable to the impacts of climate change poses a big risk to China’s leadership. This *passage point* made the Chinese government recognize that the institutional power that it had exercised for a long time had *neglected* the beliefs and expectations of the broader society and with it, that society’s professionals, entrepreneurs, and scholars. China’s government thus has been going through a smooth change in mindset towards a cautiously conducted dialectic of power, in which contentions about climate change are permitted but kept well controlled. It has triggered a *turning point* in its normative-dispositional exercise of institutional power. In its climate policy, China now includes not only central government agencies and industries, but also regional and local communities, a range of associations, and the broader society via events and the mass media (Child et al. 2007; NDRC 2006a; Wei and Rose 2009). The change in climate policy directly altered the facilitative circuit of
power through the development of new standards and technologies. Green technology development is gradually becoming engrained in the Chinese economy; witness such features as renewable energy, carbon capture and storage, combined heat and power, and hydrogen energy (Zhuang 2008). For instance, a Green Electric Valley has been established around the city of Baoding, with over 200 specialized companies producing solar and wind power. These include global market leaders Solartech and JA Solar as well as Goldwind and Hara XEMC (REN21 2011: 40; Mathony 2010). Moreover, in 2011 China took the lead in investments in renewable energies with US$51 billion, an increase of 20 times over 2000 (US$2.5 billion). China was followed by the US, with US$48 billion, and Germany with US$31 billion (REN21 2012: 60).

2.14.4 China's institutional powers in nexus with pace and stability

During the institutional phases of Chinese climate policy, pace and stability are ascertainable through several indicators. These are in nexus with the events and happenings initiated by the institutional powers.

Regulative-episodic

Passing a law on climate policy rapidly does not present difficulties for China’s government, which enjoys nearly autonomous control over its own legislative and executive powers. Since 1982, climate legislation has been carried out exclusively by the State Environmental Protection Administration (SEPA) as an independent administrative system with unique power over resources and coalition building. This affects the ongoing normative-dispositional activities. China’s top-down approach to climate change sets the framework for compliance and obedience and exerts a rapid coercive isomorphism. For instance, the White Paper (NDRC 2006a) on Environmental Protection in China claimed a number of successes in reducing environmental pollution, including the closure of 16,000 polluting enterprises and 10,000 pollution warnings to remedy the problems. In addition, alongside the recent strategic shift in thinking about climate change among the elite of Chinese executive and legislative powers, the emission targets and renewable energy standards of the Five-Year Plan serve as a starting point for accelerated pace in Chinese climate policy. To cite an example, China has the largest active hydropower industry worldwide. It nearly doubled its hydropower capacity from 2005 to 2011, from 117 GW to 212 GW. An additional 140 GW will be added by 2015 (REN21 2012: 42). Hydropower generation costs are among the lowest renewable energy costs (Xingang et al. 2011: 4303), which smoothes the way to a large-scale hydropower rollout (obligatory passage point). Since 2010, China’s total installed wind power capacity also ranked first in the world (44% in 2011). While the total installed capacity has largely expanded, the level of wind power that is actually fed into Chinese power grids remains low (REN21 2012: 15). This is because a specific penalty (episodic power) has not been defined for grid utilities which fail to absorb wind power, despite the National Development and Reform Commission’s approval of a law in 2006 guaranteeing a compulsory grid connection for wind power generation. In addition, the compensation for integrating wind farms into the
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Main grid infrastructure is too low (0.01–0.03 yuan/kWh) to cover the costs of engineering connection projects (Xingang et al. 2011; Zhang and Li 2012). In order to effectively integrate wind power into the electricity grid, technical codes such as voltage fluctuation range are required (normative-dispositional passage point), enabling a more precise forecasting of wind power. Germany, the US, and other countries have already implemented these codes. Another regulative-episodic passage point is that electricity prices for wind power must be bid on and approved for each and every project, making it difficult to calculate the profitability of wind power projects (Lewis 2010: 2881). Consequently, wind power projects are mostly exploited by state-owned and large-scale companies. Innovative, small companies are rather disempowered (cognitive-facilitative passage point). An assessment of the international strategic competitiveness of Chinese wind farms reveals capacity factors which are still more than 10% lower than in Germany or in the US (Lewis 2010: 2881; Zhang and Li 2012: 1114).

These examples show that although China’s regulative-episodic measures bring results efficiently and at a fast pace, in the continued absence of normative-dispositional elements such as expert knowledge and necessary standards, the passage point will remain that of cognitive-facilitative mechanisms. High-quality products and processes need time to be explored and to be rolled out.

**Normative-dispositional**

The Chinese government overwhelms new members with its ideas and standards on climate policy, thus trying to ensure its stability via normative-dispositional activities. In total, over 3,000 administration departments dealing with environmental protection control the ideas and standards of Chinese climate policy at different levels all over China (NDRC 2006a). This multitude of different departments also leads to institutional power struggles. If too many departments govern renewable energy in parallel, the state’s macro-control is undermined and energy policies become inconsistent (Peidong et al. 2009: 444). The oil, gas, and utility sectors are state-owned. Opening the renewable energy sector to private domestic and foreign enterprises is a key condition in mediating the institutional power positions. It facilitates passing the obligatory passage point for the cultural-cognitive pillar so that the technical industrialization of renewable energy is further backed by stock and public funds. The industrial development of green technologies is still passive in nature (Peidong et al. 2009: 447).

For a long time, China’s normative-dispositional framework enabled the government to put up resistance to officially limiting its greenhouse gases by instituting a target. In contrast, in 2008 the number of officially registered environmental NGOs had increased to over 3,500 versus around 1,000 in 2005 (Child et al. 2007; Gong 2009). Moreover, international organisations like the UN, the IPCC, the Earth Summit Watch, and the World Bank have developed modes of cooperation with the Chinese government (NDRC 2006a). Thus, they can gradually promote normative-dispositional influence in the
institutionalization of climate protection by the Chinese government. For instance, in 1972, at the UN conference on Human Environment, the appeal of higher instances coupled with scientific evidence about climate change triggering Chinese water pollution cases served to gradually convince the Chinese government to consider adjustments in its environmental protection system (Child et al. 2007: 1027). Another example is the SEPA’s close cooperation with the World Bank on an analysis verifying that “the cost of air and water pollution in China is between 3.5 and 8 percent of GDP” (2007: ix). Moreover, starting in 2005, the Chinese government adopted “Measures for the Operation and Management of Clean Development Mechanism (CDM) Projects in China.” The normative rules have fostered CDM projects (cognitive-facilitative passage point) in China representing around US$8 billion (55%) in renewable investment from the global carbon market (Lewis 2010: 2877f).

These examples show that international organisations promote normative-dispositional activities of sustainable development inside China. The pace of this process is slower than the regulative-episodic initiatives taken by the Chinese government. Internally the state strongly controls normative-dispositional mechanisms. On the one hand, this control blocks private investment, building a passage point for improved green technology. On the other hand, the forced unanimity permits stabilization of the execution of Chinese laws on sustainable development.

**Cognitive-facilitative**
Three key expressions of cognitive-facilitative activities were identified. These push slowly but surely for a sustainable climate policy. First, over the years there has been an increase in public complaints regarding environmental issues together with a growth in compensation for pollution. This pushes for more climate protection measures (Child et al. 2007: 1027). Second, society has become more educated about climate protection, e.g. through the National Action Programme for Environmental Publicity and Education (NDRC 2006a). Third, the strong will and endurance of Chinese society displayed in a rise in prosperity and improved livelihoods (Min Sheng) is aligned successively with a sustainable pull for new low-carbon-energy technology. This technological integration steps up a self-spinning wheel of institutionalization on climate change mitigation and thus demonstrates the cognitive-facilitative effect of stability. Demands are also coming from outside of China and could become passage points for driving down costs through faster rates of technological learning and economies of scale.

**2.15 Summation of Chinese climate policy**
After many years of dynamic processes, China’s institutionalization of a sustainable climate policy is on the way to stabilization. Despite a key focus on sustainable growth in its 12th Five-Year Plan, China has not yet reached the sedimentation of climate change mitigation.

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8 Clean Development Mechanisms (CDM) permit developed countries to purchase emission certificates to meet their Kyoto emission commitments.
mitigation and adaptation. This is due to a *cyclical repetition* of theorization, diffusion, and implementation activities. The Chinese government has made the expansion of renewable energy a priority. Laws have dictated a dramatic increase in China’s renewable sources over the past six years to over 9% of final energy consumption in 2011. However, it will still take many decades before coal loses its leading role in the Chinese energy structure (at 70% in 2011). China accounts for nearly half of the world’s coal consumption and is the second largest oil consumer behind the US (EIA 2012a: 2; REN21 2011: 11; also Zhang and Li 2012). Time for institutional change is required on the *normative* and *cognitive* levels in terms of processes, standards, skills, infrastructure, and technology. Reservations also linger as seen in China’s predominantly regulative top-down approach to climate policy serving to *accelerate* pace but *block* long-term stability. Although it has already moderated its approach by altering all three institutional powers, NGOs and the public are still not very encouraged by Chinese beliefs and actions on climate change. Moreover, too many government-run departments are involved in the management of renewable energy. This *regulative-episodic failing* in institutional power causes some climate policies not to be transmitted to subordinate functional and regional levels. Although sustainable development in remote areas is promoted, its economic efficiency is still low. Thus, it represents an *obligatory passage point*. The investment and financing mechanisms for renewable energy must be further explored, as must be market-based emission regulation instruments. For instance, the capital market for energy needs to be opened more to private institutions, and tradable emission allowances should be introduced. The knock-on effect would be a potential increase in the investment portion of technical research and development (*obligatory passage point*).

### 2.16 Phases of institutionalization in US climate policy

US climate policy has undergone dynamics of strong engagement (1955–1997) through to scepticism and a laissez-faire attitude (1997–2007) and very smoothly back to occupying a formative role domestically and internationally (Carus 2012; Eberlein and Matten 2009; Moslener and Sturm 2008; Paterson 2009; Purdy 2010; Roberts 2012; The Economist 2009a).

#### 2.16.1 Genesis of vergence in climate policy

Critical institutional *events* for US climate policy occurred as early as 1969, when President Nixon initiated investigations into acid rain. This was a crucial prerequisite for the UN Conference on the Human Environment in Stockholm in 1972. It was also the US, represented by Al Gore, which negotiated hard to integrate the Kyoto mechanism into its protocol. The US signed the Kyoto Protocol, agreeing to a 7% emission cut, but never ratified it (Eberlein and Matten 2009; Paterson 2009). In 1997, the US senate passed the Byrd-Hagel Resolution stating that the US should not sign the Kyoto Protocol unless its Annex B incorporates high emitters from developing countries such as China and India. The Bush administration (2001–2009) opposed the Kyoto Protocol. To soften its international position on climate policy, in 2002, the US set itself the target of reducing its
GHG emissions intensity per unit of gross GDP by 18% by 2012. “This proved in fact to be simply the business-as-usual rate of reductions of intensity in the US economy; no policy actions were needed to achieve this” (Paterson 2009: 142). In fact, in 2007, the US’ absolute emissions had gone up by around 17% (7,289 versus 6,187 mega-tons CO₂) compared to 1990 levels (Paterson 2009: 152; also EPA 2012: 31). Hence, this policy can be considered as a placebo institutionalization of climate protection, which has had no true altering effect on the normative-dispositional or cognitive-facilitative institutional powers.

2.16.2 Struggles of strategic and structural alignment

In 2007, Bush shifted his position at the G8 summit⁹ by accepting a statement that the G8 members “consider and adopt” a 50% cut in carbon emissions by 2050 (Hunter 2008: 83). The Bush administration’s smooth shift is owed first to the end of the second Bush administration. The President thus had no constraints in terms of re-election. Second, the global agreement has no base date specified or implementation details spelled out. So it is hard to track directly. Consequently, it has more of a symbolic facilitative institutional power than a regulative power. The agreement pleased and calmed international political partners as well as the home population that had begun to change their opinions towards climate change (USCAP 2010a: 1). Two years later, the disastrous American Clean Energy and Security Act (ACES) also known as the Waxman-Markey Bill, followed, which aimed to reduce emissions by 17% below 2005 by 2020, or 4% below 1990 levels regulated via a cap and trade system. In 2009, the Bill got through the House with a majority of seven votes and since then has been held up in the Senate (Business and the Environment 2010). The Kerry-Lieberman Climate Bill, the Senate’s version of Waxman-Markey, has fallen victim to many institutional power factors, which are explained further below.

2.16.3 Emerging professionalism and social adaptation with divergences

The demise of cap and trade in Congress does not call a complete halt to the administration’s efforts to cut emissions. In 2010, the Environmental Protection Agency (EPA) issued new emissions standards for vehicles as well as outlining a timetable for rules on large facilities such as cement factories and refineries. Moreover, in 2011, the EPA agreed on new fuel economy standards aiming for an average of 35.5 miles per gallon (6.6 litres per 100 km) for cars and trucks built between 2012 and 2016. The regulation will save 1.8 billion barrels of oil (The White House 2011). The EPA collaborates intensively with other federal and state agencies as well as with public and private organisations to reduce GHG emissions. Examples of programmes are Energy Star, Industrial Technology Program, SmartWay Transport Partnership, Clean Energy-Environment State Partnership, Community Action for a Renewed Environment, and the EPA-industry government partnership (EPA 2006: 23ff). In the absence of US

⁹ The Group of Eight (G8) encompasses the governments of France, Germany, Italy, Japan, the United Kingdom, the United States, Canada, and Russia.
government leadership on climate change, many states and municipalities have moved forward on their own. Of particular note is the ambitious legislation in California; the Regional Greenhouse Gas Initiative; the Western Climate Initiative; and the US Mayors Climate Protection Agreement (Carus 2012; Devi and Wong 2010; Moslener and Sturm 2008; Paterson 2009; Purdy 2010). These initiatives exert strong pressure to institute federal legislation. The EPA also finally approved the Californian waiver on setting its own GHG emissions standards for motor vehicles. The Agency had rejected the waiver in 2007, thus shielding the auto industry from environmental regulation by setting lower standards at federal level (EPA 2007: 2, 2011). Fragmented approaches on state and regional levels also increase compliance complexity for the regulated companies. Hence, in spring 2010, in a letter to the Senate and the President, leading businesses and organisations demanded the enactment of comprehensive climate and energy legislation “to become the world’s leader in a burgeoning clean energy economy” (USCAP 2010b).

In 2011, the US increased its investment in renewable energy by 59%, to US$51 billion, compared with US$30 billion in 2010. As a result, the number of wind and solar installations has doubled since 2008. A great deal rests upon the fact that private investors have taken advantage of three green stimulus programmes, due to expire in 2012 (UNEP 2012). We can thus see that regulatory short-term incentives accelerate the pace of green investment. Industry analysts question, however, whether investments in sustainable development will stabilize and continue to grow after the expiration of green stimulus packages. In contrast, they anticipate that, for instance, the phase-out of the Production Tax Credit will result in 37,000 jobs lost and trisect wind investments in the period from 2012 to 2013 (Carus 2012: 4). Another consequence of the phase-out is that emissions are projected to increase by 2.8% in 2013 assuming that coal regains some of its share of the power industry (EIA 2012b).

**2.16.4 US institutional powers in nexus with pace and stability**

**Regulative-episodic**

The *regulative-episodic* institutional power held by the federal government has given American society only limited impetus to support the mitigation of climate change. However, incentives for the development of new energy technologies have been and are being pursued. For instance, in 2009, the American Recovery and Reinvestment Act granted a green stimulus package of around US$60 billion. It triggered an additional fast boost for the increase (6.5%) of renewable energy, which accounted for 11.8% of domestic primary energy production and for 39% of domestic electricity capacity in 2011 (REN21 2012: 14). Effective federal constraints on carbon and energy use and a market price for GHG emissions, however, are absent. A market-based approach, such as a cap and trade mechanism, could limit emission generation with minimal national economic expenditure through tradable emission allowances. The absence of a cap and trade mechanism is a crucial failing (*obligatory passage point*) in stimulating innovation and investment and in affecting behaviour; the second and third institutional powers.
Nevertheless, it must be considered that 30 out of 50 states had implemented mandatory Renewable Portfolio Standards (RPS) in 2012 (Roberts 2012). In that context, even if US federal law on climate policy is weakening, regulative-episodic measures are on the advance on a state level. They exert strong normative-dispositional institutional powers, as illustrated in the next section.

**Normative-dispositional**

US climate policy reveals in particular how normative-dispositional mechanisms may delay or reinforce the pace of regulative-episodic processes. The following examples also illustrate how normative-dispositional mechanisms influence the stability of institutional construction, including through empowering or disempowering the cognitive level (obligatory passage point).

The Byrd-Hagel Resolution was backed by a powerful industrial lobby organized through the Global Climate Coalition (GCC) that had campaigned against Kyoto. The lobby spread scientific misinformation in order to confuse societal belief about the existence of climate change and claimed astronomical emission reduction costs (Moslener and Sturm 2008: 258; Paterson 2009: 143).

State regulation gives strong momentum to the countrywide climate policy in the US. The US Congress is increasingly pushed to create harmonized federal legislation. For instance, in 2007, California’s petition on stronger emission standards for motor vehicles resulted in the US adopting California’s emission standards countrywide in 2010. Another indicator of this pressure is that 13 states have called for the entire country to make use of feed-in tariffs (Cartledge 2010). Moreover, 30 states have encouraged the remainder of the country to apply to set targets for renewable power generation (Carus 2012; Roberts 2012).

The EPA has been criticized for allowing itself to be pressured by the US government. An example is the long period of EPA silence before admitting that GHGs pose a danger to public health. At the same time, the US government was claimed to have pressured American scientists in the US Climate Change Science Program to suppress discussion of global warming (Piltz 2009; Zabarenko 2007).

In the Clean Energy and Security Act lobby, distraction was created by other political priorities. For instance, the health care bill took up much discussion time and has created resentments against reforms. In addition, the Republicans have supported the logic of traditional industry growth with fossil energy as a prerequisite, fearing that the bill could transfer wealth from the US by raising carbon prices and sending money abroad through emission offset projects (perceived efficiency and resource gap). In alignment with powerful trade associations such as the National Association of Manufacturers, the American Petroleum Institute, and the US Chamber of Commerce, the Republicans have
weighed in against the bill. According to the Center for Responsive Politics, the energy companies were the fourth biggest political sponsors out of 13 fields (The Economist 2009b). The lobbyists do not deny the existence of global warming these days, but argue that cap and trade is the wrong remedy. In addition, the strong Republican right wing has accused the Obama Administration’s federal climate policy of profligacy. The claim is made that subsidies for renewable energy could have been avoided, with the argument that electricity prices for conventional energies have been low. This is due to the price of natural gas being at an all-time low. The Democrats decided to drop the bill as being too sensitive an issue for the US mid-term elections in autumn 2010, exercising a dispositional “gatekeeping” function (Cobb 1984: 494) to block unwanted interference. With the Republicans winning the majority in the Senate at the mid-term elections, the decision was taken to abandon the bill, at least until the elections in November 2012. In an election year, every party wants to be seen as a budget hawk with the aim of reducing the US$16 trillion deficit (Carus 2012: 5). As a result, the different normative-dispositional mechanisms could create a temporary institutional inertia.

Cognitive-facilitative

The Clean Energy and Security Act has also fallen victim to cognitive-facilitative activities based on public attitudes. Americans’ ideals and material interests towards climate protection are split between those of the costal population and those of the hinterland (The Economist 2009b). Coastal Americans are more liberal, more concerned about hurricanes and rising sea levels and less dependent on coal. Many Americans are also still suffering from the consequences of the Great Recession which began in 2008. The year 2012 is the fourth consecutive year of US unemployment above 8%, with the national deficit at its highest ever (IMF 2012). This has motivated a large proportion of American citizens to pressure their political representatives to promote rapid economic growth and social welfare programmes in place of focusing on the long-term benefits of sustainable development. Moreover, the 2011 insolvency of Solyndra, a key panel manufacturer, raised suspicion about federal funding of renewable projects. Solyndra had received a government loan guarantee of US$535 million before declaring insolvency (REN21 2012: 50). Coastal Americans “are vastly under-represented because their states are more heavily populated than those inland and every state gets two Senate seats. And since a bill needs 60 votes out of 100 to pass through the Senate, senators representing a mere 11% of the population can block that passage” (The Economist 2009b). The example reflects that it will be necessary to establish greater public understanding about climate protection (cognitive-facilitative passage point) before any regulation can be enacted. A strategic long-term plan is required. Local and regional champion activities help here. For instance, the Mayors Climate Protection Agreement has equipped 1044 city governments, representing 82 million Americans, with the knowledge and tools to adopt the US Kyoto goals (United States Conference of Mayors 2010). That public awareness is demonstrating growing power is also reflected in the EPA’s admission on
2.17 Summation of US climate policy
The approach followed in the US to climate policy is predominantly bottom-up, with strong normative-dispositional and cognitive-facilitative leaning. Through their lobbying activities, American industrial professionals influence the pros and cons of climate protection, causing instability in its institutionalization. The economic situation, featuring a high US deficit and unemployment rate combined with strong differences of opinion between Republicans and Democrats, impedes market-based climate policy instruments. Stimulus packages accelerate green investments. However, if the US wants to ensure continuous growth, more long-term policy instruments such as cap and trade mechanisms must be developed. It will be an obligatory passage point for the US to obtain 80% of its power from renewables by 2050 (NREL 2012: 5). Today, the US is still the largest consumer of oil and the second largest of coal (EIA 2011). Scholars put a positive spin on climate protection through their scientific findings, but they have not yet achieved enough institutional power to establish an obligatory passage point on the normative-dispositional level. The public, in its liberal tradition, engages on a state and regional level, although not yet fully convinced of the need for climate protection measures. Both normative-dispositional and cognitive-facilitative institutional power lack unanimity and consistency and, by extension, stability in the institutionalization process on climate protection. The institutionalization steps of consensus building, diffusion, and pragmatic legitimacy in climate protection have been going in circles. If the US wants to fully institutionalize climate protection, it needs to progressively strengthen its domestic coherence among the three institutional relationships of power.

2.18 Phases of institutionalization in German climate policy
Germany is one of the leading nations in terms of climate policy. Its government has influenced the agenda of the global and European climate policy negotiations since the late 1980s (Clémençon 2008; Eberlein and Matten 2009; Schreurs and Tiberghien 2007; Weidner and Mez 2008). For instance, the Kyoto Protocol's successful conclusion owes, in part, to the preparation work of the Conference of the Parties 1 (COP) by Angela Merkel, then Minister for the Environment, in Berlin in 1995. Moreover, in 2002, Jürgen Trittin, then Minister for the Environment, proposed that the EU agree on a GHG reduction of 30% by 2020, baseline 1990. In 2007, this agreement was taken on the Spring European Council, under the condition that other major emitting countries commit to doing their fair share under a global climate agreement (EC 2010a). Also, in 2007 at the G8 summit in Heiligendamm (Germany), a pledge was made for a unilateral global agreement on GHG reductions, with the nations present aiming to at least halve global CO₂ emissions by 2050 (Weidner and Mez 2008).
2.18.1 Genesis of vergence in climate policy

Germany has a longstanding tradition of strong regulatory and tax policies and broad industry and public involvement. Climate policies go back to the early 1980s. Critical early events in its institutionalization process came in 1980, with the founding of the Green Party; in 1983 with the Ordinance on Large Combustion Plants; in 1984 with the ban on PCBs; in 1986 with the establishment of the Federal Environment Ministry (BMU); in 1987 with the set-up of a special parliamentary investigatory committee on Precautions for the Protection of the Atmosphere with its first analysis on GHG reduction scenarios; and in 2000 with the comprehensive National Climate Protection Programme listing specific carbon reduction targets based on Kyoto, with Germany committing to a 21% GHG reduction goal from its 1990 levels by 2012.

2.18.2 Alignment and endorsement at all institutional levels

In 1999, the socialist-green party coalition passed a special package that included the introduction of an eco-tax on energy, a 100,000-roof programme for photovoltaic roofs, and a market incentive programme for renewables. The episodic power of the package enabled the breakthrough of solar energy. Therefore, it illustrates how taking control of an obligatory passage point alters the other two circuits of power. The package enabled the growth of solar power as a new mode of energy and its recognition as such among the German population. The solar industry enhanced its standing in the energy economy (dispositional circuit). The knock-on effect at the facilitative circuit was that it changed the energy composition of the powerful energy companies, which had mainly used fossil or nuclear energy until that point. An additional legal episodic prerequisite of this development has been the feed-in electricity tariffs, allowing private households to feed their renewable energy into the public energy net operated by the four big energy companies. These are in turn obliged to pay a fixed tariff for renewable energy. In 2005, with 14 other European countries Germany launched the EU Emissions Trading System (EU ETS), currently in its second phase (2008-2012) with 30 participants (Egenhofer 2007; EC 2010). Germany’s meeting of its 21% GHG reduction target by 2010 is owed largely to the ETS and the historical circumstance of reunification, which in turn led to industrial change (BMU 2010).

2.18.3 Enforcing social responsibility and professionalism

In 2010, a new passage point of climate policy was triggered. The four big energy companies threatened to immediately shut down all their nuclear power plants if the federal government introduced an additional tax on nuclear energy waste in 2011. The energy companies were able to arrange a compromise with the conservative-liberal government coalition by having the life span of nuclear plants extended in contrast to the original closure plans of the previous socialist-green coalition in 2002. The additional profits generated were to be used for the nuclear waste tax as well as for an investment...

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10 Germany’s 21% GHG emission reduction commitment is part of the EU collective commitment on 8% reduction by 2012 over 1990.
Institutionalization and power management in Chinese, US, and German climate policies

Fund supporting the government’s renewable energy concept. The knock-on effect at the dispositional circuit was meant to be an alteration in the social standing of nuclear energy. Following along these lines, it would be considered as supporting rather than opposing the transition to renewable energy. In 2011, however, Japan's Fukushima nuclear disaster (disruptive event) caused a swift change of political course in nuclear energy. The government agreed to phase out nuclear power by 2022 and to obtain a 35% share of final energy from renewable sources by 2030, 45% by 2040, 60% by 2050 (episodic power). The new political course was spurred by strong public pressure (facilitative power) whereby people were apprehensive of accident risk in German nuclear facilities. The pressure became most visible in the great loss of votes suffered in local elections by the conservative-liberal coalition as well as in many protests throughout the country in support of the closure of nuclear power plants.

2.18.4 Germany’s institutional powers in nexus with pace and stability

Regulative-episodic

The case revealed that the regulation of the Electricity Feed Law, later Renewable Energy Act, has accelerated solar energy’s breakthrough. In addition, control and taxation of emissions via the cap system and subsidies for low-emission fuels and renewable technologies have ensured the pace of growth in Germany’s climate policy. Indicators show, for instance, that Germany enjoyed new financial investments of US$34.3 billion in small-scale projects such as rooftop solar photovoltaic (PV) in 2010. It installed more PV capacity in 2009 (7.4GW of a total 17.3) than was done anywhere else in the world (REN21 2011: 23). In 2011, Germany connected its one-millionth PV system to the grid, maintaining its status as global leader in installed and operated PV capacity. With 24.8 GW, Germany accounts for 36% of the world’s total capacity (REN21 2012: 48). According to the Federal Environment Ministry, the share of electricity produced from renewable energy has increased from 6.3% of the national total in 2000 to about 20% in 2011, with a target of 35% for 2020 (REN21 2012: 13). Germany’s renewable energy industry grew to around 372,000 employees, more than double (130%) the 161,000 in 2004 (BMU 2011: 15; REN 21 2012: 27). Regulative-episodic change, such as a decrease in feed-in tariffs, led to a prompt and dramatic decline in growth rate: in 2011, the rate fell to one-half of the previous year. Moreover, the claim of a sustainable net increase in employment through the promotion of green energies is contested (Frondel et al. 2010, Helm 2008). For instance, the major share of PV modules on German roofs originates from imports, in particular from China. In 2012, Q-Cells, one of the world’s top PV manufacturers, declared bankruptcy. They were unable to carve out a significant niche on the global PV market due to reduced regulative-episodic subsidy measures and the 76% decline in prices (to around US$1.1/kWh) for PV modules beginning in 2008 (REN21 2012: 61). The examples show how effects from regulative-episodic measures can be of transitory nature if revoked.
Institutionalization and power management in Chinese, US, and German climate policies

Germany’s tariff feed-in model has influenced over 90 countries, states, and provinces to also enact feed-in policies over a period of less than twenty years (REN21 2012: 66). There is a downside to the feed-in model. Its *regulative-episodic* mechanisms promote large-scale production and distribution of renewable energy technologies which are not yet cost-effective and still technologically *immature*. For instance, considering the net costs of €0.30/kWh for PV modules installed in 2010, and estimating that PV substitutes for fossil energy (coal and gas) with an emission factor of 0.58 kg of CO$_2$/kWh, abatement costs reach as high as €517/tonne CO$_2$ (Frondel et al. 2010: 405ff). The average technological efficiency of PV modules sold, however, is still less than 20% (IEA 2010b: 8). Moreover, subsidies for renewable energy technologies *disempower* the effectiveness of ETS. The rise of renewable energies through the granting of subsidies reduces electricity sector emissions. Consequently, unused emission certificates are generated resulting in dumping prices for certificates for other industries participating in ETS. Since the ETS launch in 2005, the certificate prices have never exceeded €30/tonne CO$_2$, but were at a low of less than €9/tonne CO$_2$ in November 2012 (European Energy Exchange 2012). The examples illustrate how *regulative-episodic* measures are able to constrain *normative-dispositional* development of standardization as well as technical innovation initiatives of *cognitive-facilitative* nature. The outcome is a significant *temporal delay* in instituting sustainability.

**Normative-dispositional**

Germany’s long-established integration of a precautionary principle (1971) into its environmental policy as well as its Green Party reflects a higher social order in climate policy institutionalization, distinguishing it from the US and China. Moreover, as early as 1983, five Green representatives sat in the national parliament. Over the years, the Green Party has gained sustainable power and thus influence in shaping climate policy. In 2009, the Green Party, officially called Alliance '90/The Greens reached their all-time highest results in the elections to the Bundestag (10.7%). In addition, the German government has referred to climate change as a “third industrial revolution” transforming the economy towards a low-carbon future (Brunnée and Levin 2008: 62).

Germany’s federal structure also provides social impetus and stability to climate policy. Its Länder (federal states) have the right to establish their own regional and local measures. Similar to the US, many German municipalities have been increasingly active in climate-related matters, e.g. targeting a 100% renewable energy supply (REA 2010).

Professionals and industries supported by federal and local governance pursue research and development into technology for energy efficiency and climate protection offering strategic business opportunities. Concurrently, they successively transfer climate friendly technology, zero emission products, and emission monitoring processes to *standards* through ongoing replications and enhancements. For instance, in Germany as well as in the US, China, and 152 other countries, the number of organisations certified with the
ISO 14001 series has been steadily growing, reaching over 200,000 in 2011 (ISO 2011). Another example is Germany’s National Electric Mobility Platform with important representatives from the worlds of politics, science, and industry (all German automakers are members). Here it was stipulated that the number of electric vehicles would be increased from around 1,500 in 2010 to at least one million in 2020. The regulative level supports the commitment, giving consumers a motor vehicle tax exemption of ten years if they purchase a car that generates fewer than 50 grams of CO\(_2\) emissions per kilometre by the end of 2015 (German Federal Government 2011). This example gives an idea of how the German elite gradually shapes the policy agenda and adapts to shifting public preferences, representing the obligatory passage point for the facilitative circuits of power.

**Cognitive-facilitative**

A study conducted by the German Federal Environment Ministry revealed that risk perceptions of climate change are high among the German population, although other countries such as the US or China can rightly fear much higher impacts (Weidner and Mez 2008: 374). Moreover, the German public has accepted the need to take action on climate change through a broad communication platform supported by the government, its opposition as well as NGOs, industry associations, and the public media (Frondel et al. 2010: 4053). For instance, green power labels such as Grüner Strom and Ok-Power have strengthened consumer confidence. In 2009, Germany was the world’s green power leader, with 3.2 million residential customers using green power compared to 0.8 million in 2006 (REN21 2011: 24). Although the number projected for the entire German population still represents only 4%, it is a clear signal that Germany’s population is slowly but surely moving towards consciously living in a ‘greener’ way by integrating climate protection into their daily decisions and actions. Nevertheless, the bridging of an economic and social divide must be executed even more effectively when implementing carbon-cutting policies. German carbon policy has significant economic consequences for the country’s people. The costs are driven by over-determination of renewable quotas and efficiency targets (Helm 2008: 231). For instance, the targeted rise of renewable energy though PV and wind means that the power network must face intermittent loads and requires conventional back-up supplies to prevent blackouts. The maintenance of such a system is very cost-intensive, whereby the additional costs are borne by consumers and taxpayers (Frondel et al. 2010). The situation represents a crucial cognitive-facilitative passage point for acceptance by the German population. In fall 2012, the German population, supported by the media, protested an increase in energy prices.

2.19 **Summation German climate policy**

Although all three institutional power relationships are present in Germany, the regulative-episodic with a top-down approach is predominant. There is general public understanding that Germany as an export and knowledge economy needs to invest in further progress towards climate mitigation and adaptation (obligatory passage point). Germany’s
institutionalization of sustainable development has reached a pragmatic legitimacy and with it the sedimentation phase. Long-term stability and cognitive legitimacy will depend on the government’s effectiveness in strengthening normative-dispositional and cognitive-facilitative institutional powers. There is great potential for improvement in the conscious development of climate protection in consideration of the balance of costs and benefits. This must serve to make climate protection efficient and of value for all institutional levels, right down to the individual citizen (Helm 2008: 231; Weidner and Mez 2008: 374). Helm (2008) as well as Frondel et al. (2010) argue that it is much more effective to fund long-term R&D projects that increase the technological efficiency of renewable energies than it is to subsidize immature, large-scale market penetration of renewable energy through feed-in tariffs. For instance, the electricity prices of German households rose by around 70% to an average of €0.20/kWh from 2000 to 2010 and an additional rise of 30% is projected by 2020 (Frondel et al. 2010: 4052). The increasing electricity prices limit spending capability. Consequently, consumers invest less into other emission abatement options which are potentially more beneficial. Another crucial passage point of power is presented by the challenge facing the government for continued horizontal and vertical integration of the economic, social, and environmental ministries. Added to this is the need for multi-level governance upward to the supranational EU level, downward to the Länder, and horizontally to public and private networks (Steurer 2009).

The following table summarizes the critical events for the institutionalization of climate policy from 1970 to 2011.
### Institutionalization and power management in Chinese, US, and German climate policies

<table>
<thead>
<tr>
<th>Global</th>
<th>China</th>
<th>US</th>
<th>Germany</th>
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<tr>
<td>1972 The Limits to Growth</td>
<td>1974 Leading task force on environmental protection founded by State Council</td>
<td>1970 President Nixon's environmental state-of-the-union address</td>
<td>1979 Climate research governmental committee founded</td>
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<td>1980 World Conservation Strategy</td>
<td>1979 Provisional Environmental Law</td>
<td>1972 Clean Air Test for automobiles</td>
<td>1983 Ordinance on Large Combustion Plants</td>
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<td>1984 Bhopal, IN, chemical release</td>
<td>1982 State Environmental Protection Administration (SEPA) founded</td>
<td>1976 PCBs banned</td>
<td>1984 PCBs banned</td>
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<td>1987 UN Montreal Protocol: To halt the production of ozone-depleting chemicals</td>
<td>1998 State Environmental Protection Administration (SEPA) is further upgraded to a ministry-level agency with increased power and authority</td>
<td>1976 Toxic Substances Control Act</td>
<td>1990 CO₂ reduction target for western Germany of 25% below 1987 figures by 2050; extended to Germany as a whole in 1995</td>
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<td>1996 ISO 14000 concluded</td>
<td>2004 Global Environmental Institute (GEI) founded as leading NGO</td>
<td>1987 Toxics Release Inventory Program</td>
<td>– Carbon reduction targets over 1990 levels of 21% by 2012</td>
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<td><strong>IPCC</strong></td>
<td><strong>Environmental Emergencies</strong></td>
<td><strong>2002 Resolution of Global Climate</strong></td>
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<td>2007 EU Spring Council agrees to increase then- 20% GHG reduction goal to 30% under the condition that other major emitting countries commit to do their fair share under a global climate agreement</td>
<td>2005 China and UNEP host China-Africa Environment Cooperation Conference</td>
<td>Coalition 2002 target to reduce GHG emissions intensity per unit of gross GDP by 18% by 2012</td>
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<td>2007 Agreement to a 50% global emission reduction goal by 2050 at the G8 meeting (base date was unspecified)</td>
<td>2006 Renewable Energy Law</td>
<td>2002 California (CA) bill to control GHG emissions for automobiles</td>
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<td>2009 Climate and energy package voted into law: EU to adopt a 20, 20, 20 by 2020 goal as opposed to a 1990 baseline (GHG reduction, energy efficiency, share of renewables)</td>
<td>2007 Medium- and Long-Term National Plan for Renewable Energy: 10% production increase of primary energy from renewable sources by 2010; 15% by 2020</td>
<td>2005 Clean Air Interstate Rule and Clean Air Mercury Rule</td>
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<td>2009 COP 15, Copenhagen, DK: Copenhagen Accord goal on limiting global temperature increase to 2°C set; global funds to support climate action in developing world and low rates of deforestation targeted</td>
<td>2008 All supermarkets, department stores and shops are prohibited from giving out free plastic bags</td>
<td>2005 Renewable Fuel Standard</td>
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<td>2010 Gulf of Mexico, oil spill, LA</td>
<td>2009 Reduction of emission intensity per unit of gross GDP by 40–45% by 2020 over 2005 levels</td>
<td>2005 CA first emission targets</td>
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<td>2010 COP 16, Cancun, MX: Agreements based on COP 15 Accord</td>
<td>2009 US$34.6bn invested in clean technology</td>
<td>2005 RRGI founded</td>
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<td>2010 Resolution of Global Climate Coalition 2002 target to reduce GHG emissions intensity per unit of gross GDP by 18% by 2012</td>
<td>2007 EPA gains authority to regulate GHG emissions</td>
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<td>2002 California (CA) bill to control GHG emissions for automobiles</td>
<td>2009 EPA finding of GHG endangerment through automobile emissions and mandatory GHG Reporting Program for large US sources and suppliers</td>
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<td>2005 Mayors’ Climate Protection Agreement resolved</td>
<td>2009 EPA approval for CA to implement own emission standards for motor vehicles</td>
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<td>2009 With the American Recovery and Reinvestment Act, a green stimulus package of US$60 billion is passed</td>
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<td>2009 Clean Energy and Security Act in limbo: to be passed by the Senate</td>
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<td>2011 National bio fuel blending mandate</td>
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<td>– Incentives for renewable energy</td>
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<td>2002 Energy Savings Ordinance: Regulation on buildings</td>
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<td>2002 Amendment of the Atomic Energy Act provides for limited life of nuclear power stations and no new construction</td>
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<td>2002 Proposal of EU reduction of GHGs by 30% over 1990 by 2020</td>
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<td>2004 Renewable Energy Act (EEG) succeeds Electricity Feed Law</td>
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<td>2005 Progress for National Climate Protection Programme</td>
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<td>2006 Bio fuel-admixing obligation for diesel and gasoline</td>
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<td>2007 Integrated Energy and Climate Programme with 30 measures for reducing GHGs by 40% by 2020, 80% by 2050 (baseline 1990) and improving energy efficiency by 3% annually</td>
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<td>2008 £500m budget for support of energy voluntary measures by homeowners</td>
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<td>2009 Alliance ‘90/The Greens have highest scores in Bundestag elections since founding (10.7%)</td>
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<td>2010 Legislation to extend operating life span of nuclear power plants</td>
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<td>2011 Decision to phase out of nuclear power by 2022 and to obtain 30% share of final energy from renewables by 2030, 45% by 2040 and 60% by 2050</td>
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2.20 Conclusion

The paper demonstrates how the dynamic processes of institutional power have consequences for the pace of the institutionalization process and the stability of the institutionalized element. The research work concludes with several implications for the research of organisation theory and for the practice of climate policy.

The first implication of the framework involves the role of pace. Facilitative-cognitive activities respond slowly to the institutionalization process in contrast to the rapid effects of regulative-episodic institutional power. On the one hand, we can consider China’s 11th and 12th Five-Year Plan progress in terms of emission reduction targets and the rapid effects experienced in the development and the spread of hydro, wind, and solar power. The regulative-episodic framework for the economic dimension of sustainable development has played a massive role in accelerating the pace. In 2011, China internationalized its lead in investments in renewable energies and caught up significantly from the GDP angle. With 0.7% of its total GDP invested in renewable energies, China bypassed the US (0.32%) and is only slightly behind Germany (0.87%) (REN21 2012). On the other hand, the process of changing the Chinese government’s common beliefs about climate change mitigation and adaptation is slow in developing: It began four decades ago and is still in progress. Moreover, the environmentally-friendly consumer behaviour of the Chinese population has not yet become engrained as it is in Germany and the US. For instance, while around 4% of Germans and 0.5% of Americans purchase renewable power, there is still no green power market in China (REN21 2012: 24).

The second implication of the framework involves the role of stability of a new institutional element. I argue that the three institutional power mechanisms provide a useful basis for exploring temporal patterns of institutional instability derived from the findings of their effects on stability. For example, the episodic-regulative mechanisms in place might destabilize an institution on one occasion, but unless initiated for further episodes, the destabilization might only occur for brief periods. In the case of California’s petition for tightening up emissions standards for motor vehicles, the waiver was first rejected by the EPA but ultimately approved. The EPA was not able to affect the underlying conditions of climate change thinking in California. Thus, the effect of this incident of regulative-episodic institutional power was only short-term in nature.

The third implication of the framework involves the role of the agents who affect the institutionalization processes and the drill down of institutionalization from the overall system to the subsystems. The empirical study demonstrates that if governments aim to be successful in engraining climate change mitigation and adaptation into their countries they must use all three identified institutional powers at all institutional levels, from the macro level (state) to the micro level (organisation and individuals). Moreover, the case examples show that state leadership takes a crucial role in positively and negatively
shaping the institutionalization process. Examples include the investigations into acid rain that occurred during the Nixon administration; Al Gore’s efforts to integrate the Kyoto mechanism into the Kyoto protocol; Merkel’s preparatory work for COP 1 to successfully conclude Kyoto; Trittin’s initiative for the EU to agree on a GHG reduction of 30% by 2020; and the power of Hu Jintao and Wen Jiabao to integrate emission reduction targets into China’s 11th and 12th Five-Year Plan.

The fourth implication of the framework involves the role of disruptive events and repetitive cycles within the institutionalization process of an unstable environment. Conglomerated or strong single disruptive events supported by institutional powers may in a revolutionary way change the path of the institutionalization process in an unstable environment. Thus, an originally linear path could be modified through skipping or repeating phases of the institutionalization process. For instance, in 1997, the US had already reached a high level of objectivation and partial sedimentation of climate policy. It was strongly engaged in the UN COP and in executing national laws on climate protection. Then a severe endogenous disruptive event took place: The US did not sign the Kyoto Protocol further to the enactment of the Byrd-Hagel Resolution due to a powerful industrial lobby and Republican right-wing denialists. The parties in opposition to Kyoto criticized the significant fiscal transfers to developing countries that would be required for low-carbon industrialization. Such payments were a particular taboo in that they transform communist China into a major competitor to the US (Helm 2008: 234). This event led to the objectivation and sedimentation of climate protection regressing to an infancy state of habitualization in successive years, in particular during the Bush administration. Moreover, on an international level China used the US’ decision on Kyoto to legitimate their defensive stance against any constraints on their economies in respect of emissions (Moslener and Sturm 2008: 258). Since 2007, the US again reached a good outlook for objectivation and sedimentation in its institutionalization of climate policy. This was contributed to in 2008 by the Great Recession, which flattened electricity demand. Recovery has still not been seen. Moreover, natural gas prices have been falling steadily. In 2012, they were trading at a ten-year low after the tightening of clean-air rules by the EPA in 2011 (Roberts 2012).

The fifth implication involves the relationship between the institutional power mechanism and the objectives of sustainability: the principles of precaution, intra-, and intergenerational equity. One of the primary insights of institutional theorists is that institutional mechanisms diminish uncertainty and individualists fear uncertainty (Ball and Craig 2010; DiMaggio and Powell 1983; Meyer and Rowan 1977; Tolbert and Zucker 1996). The pursuit of sustainability objectives also accelerates a diminishment of uncertainty on the individual level. Consequently, individuals with higher risk aversion are more willing to push for the implementation of sustainability objectives through the mechanisms of institutionalization than are individuals with lower risk aversion. Comparing the different approaches of the three countries to climate policy, I conclude
that awareness of climate change and need for related action has been diffused within the countries analysed, but to a different degree of effectiveness and stability. This is largely because the governments prioritise climate policy differently on their political agendas. They regard climate policy from different angles in terms of precautionary actions, systemic distribution of benefit and damage, and moderation. The governments also encounter different forms and degrees of support and resistance from their home industries and the society at large, again based on their views of sustainability. For instance, the precautionary perceptions on the impacts of climate change are stronger among Germans than they are among Americans or Chinese (Weidner and Mez 2008). However, Germany’s population is projected to decrease 10% by 2050, from 82.3 million in 2010 to 74.7 million in 2050. In contrast, the US population is expected to increase 30% by 2050, from 310 million in 2010 to 403 million in 2050. China’s large population of 1.34 billion in 2010 is projected to show only a slight decrease (3%) to 1.30 billion in 2050 (UN DESA 2011). The National Development and Reform Commission (NDRC 2011) aims to progressively raise the standard of living of the Chinese. Hence, the US and China pursue an approach to the climate that prioritises current economic growth. Climate protection initiatives are primarily selected that can promote this growth on a precautionary basis. This is done by taking such actions as adding renewable energy sources to supplement fossil. For instance, the US subsidizes bio-fuels derived from corn-based ethanol. The intended climate friendliness has an unintended impact on food prices and monocropping (Paterson 2009: 150). A change in the direction of reflexive ecological modernization is constrained by the production routine.

Finally, an important finding suggested by this paper is the assessment of a country’s institutionalization path within an international strategic framework of climate policy. The international Kyoto agreement defines emission targets based on geographic production. Germany has met the Kyoto target with -8%. The US missed its target of -7%, but emissions are up by around 11% compared to 1990 levels (EPA 2012: 1). China was excluded from Kyoto targets. We must challenge whether this normative definition of emission measurement is based on the true root cause of emission generation (Helm 2008). Is it not so that consumers of emissions represent the root cause and should thus be held to a higher level of accountability? Highly developed countries may import carbon-intensive goods and thus be able to show a low rate of emissions in their balances. Nevertheless, these countries may still have a high level of emission consumption. For instance, although China and India produce substantial emissions, many of the goods causing them are a function of the cognitive-facilitative demand mechanisms generated by consumers in developed countries. In addition, international regulative-episodic emission targets may need to be more adjustable because they are part of multiple international mechanisms such as global trade and human rights negotiations.
Therefore, on the one hand countries must be assessed based on their domestic institutional power activities and how they manage these activities to achieve strategic competitiveness in climate change protection and mitigation. On the other hand, countries must be assessed on their international leadership in climate policy. They must be investigated on the strength of institutional power activities in the development of global knowledge-transfer mechanisms: defining harmonized standards for environmental goods and services, making industries more efficient in energy use, and generating innovation in energy and transport systems. In this process, it should also be seen as to whether countries facilitate financial-transfer mechanisms that enable knowledge transfer, such as by providing green technologies to developing countries. In the last decade, the Conferences of Parties (COP) did not succeed in setting up groundbreaking mechanisms for global transfers in climate policy. Therefore, future research should conduct deep-dive analysis on institutional power variables and disruptive events that have caused deviations from a proactive international climate policy. In addition, do we need new international institutions in order to accelerate and stabilize institutional power activities in climate policy? These questions open the way to future explorations into the use of power and the process of institutionalization in climate policy.

The article also opens the door to future investigation into the dependent variables and propositions that have been developed. They should be advanced in terms of measurement variables and suitable testable hypotheses for multiple regression or forms of analysis dealing with structural equation modelling. In addition, an empirical longitudinal study could investigate the implications of the approach of the three institutional power relationships to the problem of re-institutionalization. One way would be to conduct a longitudinal analysis on the impact of institutional powers on the deviation from business-as-usual (BAU) scenarios for carbon emission growth. The BAU of the International Energy Agency projects that the current global emission growth will lead to a 49% rise between 2006 and 2035, with the US and China contributing to almost half (IEA 2011: 167). An analysis of the mediating role of institutional powers in the BAU scenarios could provide transparency as to how measures on substantial emission reductions are sustainably institutionalized.
3 Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)\textsuperscript{11}

3.1 Abstract

The paper analyzes the institutionalization process of green supply chain management (SCM) at Deutsche Post DHL (DPDHL), from its genesis to the present. For the most part, previous studies investigate green supply chain management under an operational research approach or reduce their focus to a single supply chain item. Moreover, existing research does not explore the temporal dynamics of instituting green SCM. The inductive case study aims to enhance understanding of how institutional power activities (\textit{regulative-episodic}, \textit{normative-dispositional}, and \textit{cognitive-facilitative}) influence the dynamics of this process.

The study explores what development the institutionalization process takes when institutional power activities have different characteristics and collide. In the case of DPDHL, \textit{regulative-episodic} and \textit{normative-dispositional} activities are essentially required to shift from the phase of habitualization to the next higher step of objectivation. To reach the phase of sedimentation all three institutional power activities must be carried out. The results also show that the speed and stability of the transition depend on the characteristics and strength of these activities. The findings are summarized into an integrative framework of institutionalization that sheds light on the nexus between institutional and power theory and provides implications for a conducive institution of green SCM.

3.2 Introduction

“We want to be part of the solution when it comes to lowering carbon emissions.”
Dr. Frank Appel, CEO Deutsche Post DHL (Deutsche Post AG 2010a: 11).

Traditionally, cost, speed, and reliability are the main criteria by which logistics operations are judged. Recently a fourth dimension appears to have been included in the decision-making process: sustainability. Sustainability is considered “a proxy for management quality” (Berns et al. 2009: 23). The transport and logistic sector contributes greatly to economic prosperity around the world. It creates roughly 9% of global GDP, with a steady increase seen (ACARE 2010; MHL 2010). Equally, logistics organisations must take responsibility for their impact on climate change stemming from their worldwide trade and transport activities by creating green supply chain management (SCM). According to the World Economic Forum (WEF 2009: 4) the logistics and transport sector (excluding passenger transport) accounts for around 2,800 mega-tons (6%) of greenhouse gas (GHG) emissions, while human activity generates a total of 50,000 mega-tons. In the process, road freight accounts for roughly 57% with over 1,500 mega-tons. Airfreight is

\textsuperscript{11} Based on Berndroth, J., & Spinler, S. “Institutionalization and power management with bearing on green supply chains: Case in a global logistics company”, unpublished manuscript.
still the most carbon-intensive transportation mode; the most carbon-efficient motorized transportation modes are rail and ocean (WEF 2009: 8). Since the logistics industry is growing, so will its GHG emissions and energy consumption unless changes are made (IEA 2010a).

Logistics company Deutsche Post DHL (DPDHL) aims to improve its energy efficiency and emission standards to become less vulnerable to social, legal, technological, financial and natural coercions, and movements (Deutsche Post AG 2010a). It pledges corporate citizenship as a term to “connote embeddedness in society and the obligations that accrue” from such embeddedness (Moss Kanter 2011: 21). However, DPDHL’s transformation process towards a green SCM appears to be in conflict with the principles of its express business. The premium express product requires maximal delivery speed and reliability that can only be accomplished by using all available energy sources (maximal principle). For instance, a shipment via road express weighing 5.5kg transported from Munich to Hamburg expends an average 2.7kg in CO\textsubscript{2} emissions. In contrast, a non-express delivery carried the same distance by rail has only 0.41kg (85% fewer) CO\textsubscript{2} emissions (Deutsche Post AG 2003: 28). The green approach demands minimal energy consumption in order to meet a set delivery time (minimal principle). Logistics trade-offs need to be recognized in order to find an optimum balance between sustainability and the requirements of speed and costs. The trade-offs pose complex and unique challenges to an organisation, involving as they do diverse and conflicting agents and structures.

3.3 Rationale and relevance

The paper analyzes the institutionalization process of green supply chain management (SCM) at Deutsche Post DHL (DPDHL) through an inductive case study. This study emerged as I became aware that the existing literature has mostly ignored the topic of social institutionalization associated with a green SCM. For the most part, studies investigate green supply chain management under an operational research approach. For instance, they analyse the optimization of processes and network designs with an optimum input and output relationship (Tenerowcz, Boppert, and Seebauer 2009; WEF 2009), the development of new green technologies and customer services (Berns et al. 2009; Michalak 2009; Routroy 2009), and the setting of emission reduction targets (Montreuil 2011; Thun and Mueller 2010). Other existing studies apply organisation theory but reduce their focus to a single item like the development of sustainability reports and policies (Bask and Kuula 2011; Levy, Szejnwald Brown, and de Jong 2010) or the creation of green awareness and motivation (Gattiker and Carter 2010; Routroy 2009). While the existing research provides insight into all the elements that have been behind the triggering and evolution of today’s understanding of green SCM, not described are the phases of its institutionalization process or the disruptive events that trigger their development. Moreover, the existing research does not explore the temporal dynamics of instituting green SCM. The research aimed to discover the compelling determinants
behind DPDHL changing over to green SCM, and how institutional power activities influenced the dynamics of this process. The study uses the institutionalization process from Tolbert and Zucker (1996) and the institutional power mechanisms from Scott (1995, 2008) and Clegg (1989) as a priori theoretical constructs that ground the aim of theory building research (Barratt, Choi, and Li 2010: 330). I contribute to theoretical understanding of the micro-dynamics of the institutionalization process in line with the assertion of Lounsbury (2008: 351) that although attention to the micro-process of the organisational field is still mostly limited, it contributes most significantly to the development of institutional theory. The paper sheds light on the nexus between institutional and power theory further to Lawrence (2008: 171) who underscores that “incorporating power is critical to understanding how institutions operate in society”. I also draw upon Clegg (1989: 41) and Dillard, Rigsby, and Goodman (2004: 522), who assert that institutionalists often overemphasize the constraining nature of institutional beliefs, symbols and values but neglect the element of power. Cooper, Ezzamel, and Willmott (2008: 693) point out that institutional theory incorporates power in an inconsistent way. The study highlights the recursiveness and repetition of institutional phases through the incorporation of the element of power and the alternative interests and actions of the actors. It contributes to clarifying how the institutionalization process can assume a temporal dynamic nature.

3.4 Sustainable supply chain management (SCM)

Elaborating the meaning of sustainability in supply chain management, green SCM is defined as all activities of the supply chain – from product and service design and sourcing to final delivery and return recycling processes – that consider environmental-friendliness. The underlying aim is to reduce carbon dioxide and energy intensity and add value for the customer while maintaining social and economic benefits with no limitations for future world trade (Buysse and Verbeke 2003: 455; Chakraborty 2009: 13; Halldorsson, Kotzab, and Skjøtt-Larsen 2009: 86; Preuss 2005: 125; Routroy 2009: 20; Srivastava 2007: 54f; UN CSD 2007: 90). The definition brings together the sustainability definition coined by the Brundtland Commission (WCED 1987: 2/II) with the SCM definition of Harland (1996: 64) and the Council of Supply Chain Management Professionals. Based on the Triple Bottom Line Concept of Sustainability, green SCM focuses on environmental protection, social advancement, and economic prosperity (Halldorsson et al. 2009: 83). From a company point of view, it entails efficient use and re-use of goods and resources, employees’ education, and improved work environment, as well as solid and constant profits and value creation.

The WEF (2009: 14) identified nine key areas for the implementation of green SCM: 1) clean vehicle technologies; 2) de-speeding the supply chain; 3) optimized networks; 4) packaging design initiatives; 5) training and communication; 6) modal switches; 7) reverse logistics; 8) enabling low carbon sourcing and 9) energy efficient buildings. The case study concluded that green SCM for DPDHL is seen as optimizing energy
consumption and emission reduction of its airline, road network, and facility operations. Measures to improve internal processes and customer services are conceptual and innovative solutions, employee motivation, and training as well as adequate subcontractor management. An interviewee from DHL Express Americas summarized the findings: “If I could put together the ideal supply chain, of course with no cost constraints, this is what I would do. A, from an aviation perspective, I’d have the best cargo payload support. B, from a facility perspective, I’d have a better understanding of the automation behind the design of the shipment process flow. C, from an employee perspective, I’d measure any performance carried out, because that’s the only way to engage the majority of employees. And finally, from a road perspective, I would go for a PUD that runs on renewable energies and mindful driving for less fuel burn.”

3.4.1 Objectives of sustainability from an organisational point of view
The concept of sustainability encompasses three qualitative, complex objectives: intra-generational equity, inter-generational equity, and the principle of precaution and foresight (Benn 2009). These three objectives translated to an organisational level are detailed in the following.

*Optimization and symmetry between benefit and effort* emphasizes that companies need to develop governance rules and structures that balance the allocation of ecological efforts and access to resources within and across organisations.

*Strategic competitiveness* emphasizes that the company should ensure that its competitiveness is maintained or enhanced for the benefit of its future shareholders. The goal of improving customer loyalty is extended to loyalty to the environment.

*Risk management and contingency* emphasizes that the company must be prepared for unexpected natural disasters and diseases; legislation changes; future demands of its customers and employees; and geopolitical events. “Decisions regarding sustainability have to be made against a backdrop of high uncertainty” (Berns et al. 2009: 24; also Hepburn and Stern 2008).

3.4.2 Macro and organisational field level initiatives of emission reduction in SCM
National GHG emission reduction targets at the country level impose increasing implications on the transport and logistic sector to do its part. In 2005, the EU introduced an emission trading scheme (ETS) that puts a price tag on carbon. The ETS took effect for aviation starting in January 2012 (EC 2008). The Union’s Single European Sky II package or the US’ Next Generation Air Transport System will restructure air traffic control globally. This will make its own contribution to reducing air traffic congestion and costly delays. Other initiatives taken on the macro level and impacting the transport sector include vehicle emission standards, such as those imposed by the US Environmental Protection Agency; the Euro I-VI classifications; vehicle access restrictions
such as the removal of EU road cabotage; vehicle taxation; road usage charges; congestion pricing; speed limits; night and Sunday driving bans; emission landing charges for airplanes; liberalization of rail systems; heavy goods vehicles charges; and aerodynamic improvements to existing vehicles\(^{12}\) (German Federal Environment Agency 2009). These macro initiatives help and incentivize organisations to improve their usage of intermodal transport; increase their loading capacity; optimize conventional vehicles’ weight and size, as well as to invest in innovative technologies and alternative fuel development, among other features. Hybrid and electric vehicles\(^{13}\) are already at the state of road testing in transport. Other promising developments include new designs and technologies for airplanes, such as operating the electric nose wheel with fuel cells (Duwe 2011; The Economist 2011a); maglev shipment transport via pneumatic pipes; and three-dimensional printers that produce single-material objects quickly and conveniently on site (The Economist 2011b). These examples demonstrate only a small array of worldwide transport and logistics initiatives that have been introduced in support of the movement towards green SCM. There is also a broad spectrum of related guidelines and frameworks, depicted in Table 4. Challenging, however, is that they overlap contextually and have different levels of comprehensiveness and details. See the International Organisation for Standardization (ISO) 14000 series versus the European Eco-Management and Audit Scheme (EMAS), the British Publicly Available Specification (PAS) 2050, and the European Committee for Standardization (CEN) prEN 16258:2011. Moreover, none are legally mandatory. Consequently, it is each organisation must decide for itself as to which, if any, it chooses to adopt.

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Description</th>
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<tbody>
<tr>
<td>Eco-Management and Audit Scheme (EMAS)</td>
<td>Is an environmental management scheme on the foundation of the EU-Regulation 1221/2009. The EU Commission provides its regulatory framework. <a href="http://www.emas.de">www.emas.de</a></td>
</tr>
<tr>
<td>Carbon Disclosure Project (CDP)</td>
<td>Publishes the emission data and future emission reducing strategies of more than 2000 of the world’s largest corporations through the Carbon Disclosure Global 500 Leadership Index (CDLI) and the Carbon Performance Leadership Index (CPLI). <a href="http://www.cdproject.net/en-US/Pages/HomePage.aspx">www.cdproject.net/en-US/Pages/HomePage.aspx</a></td>
</tr>
<tr>
<td>Dow Jones Sustainability Index (DSJI)</td>
<td>Provides an industry-specific ranking of sustainable corporations. <a href="http://www.sustainability-index.com/">www.sustainability-index.com/</a></td>
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</table>

\(^{12}\) EU Commission Directive 97/27 includes exempting rear-end devices that reduce aerodynamic drag from the definition of the length of heavy goods vehicles.

\(^{13}\) The future of fuel cell vehicles remains unclear because of their high cost and technical uncertainty.
Table 4  Overview frameworks and guidelines for green SCM

<table>
<thead>
<tr>
<th>Framework / Standard</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>European Committee for Standardization (CEN)</strong></td>
<td>In 2012, CEN is going to provide a standardized method for GHG emission calculation in transport services based on DIN draft from 2011. (<a href="http://www.nadl.din.de/cmd?artid=138210917&amp;bcrticlelevel=2&amp;level=tpl-art-detailansicht&amp;committeeid=117152656&amp;languageid=en">www.nadl.din.de/cmd?artid=138210917&amp;bcrticlelevel=2&amp;level=tpl-art-detailansicht&amp;committeeid=117152656&amp;languageid=en</a>)</td>
</tr>
<tr>
<td><strong>Global Reporting Initiative (GRI)</strong></td>
<td>Develops a reporting framework for sustainability reports and officially collaborates with the UN Environment Programme. (<a href="http://www.globalreporting.org/Home">www.globalreporting.org/Home</a>)</td>
</tr>
<tr>
<td><strong>Greenhouse Gas (GHG) Protocol</strong></td>
<td>An accounting tool that quantifies and manages GHG emissions. (<a href="http://www.ghgprotocol.org/">www.ghgprotocol.org/</a>)</td>
</tr>
<tr>
<td><strong>International Organisation for Standardization (ISO)</strong></td>
<td>Includes the introduction of an environment management system (EMS) with ecological performance assessment and regular audits as well as product norms, eco-labeling, and life-cycle-assessment. (<a href="http://www.iso.org/iso/iso_14000_essentials">www.iso.org/iso/iso_14000_essentials</a>)</td>
</tr>
<tr>
<td><strong>SmartWay Transport Partnership</strong></td>
<td>The US Environmental Protection Agency (EPA) acts as independent emission data provider for companies to judge the emissions-level of their subcontracted services. (<a href="http://www.epa.gov/smartwaylogistics/">www.epa.gov/smartwaylogistics/</a>)</td>
</tr>
<tr>
<td><strong>UN Global Compact</strong></td>
<td>Sets the foundation for organisations code of conducts. (<a href="http://www.unglobalcompact.org/">www.unglobalcompact.org/</a>)</td>
</tr>
<tr>
<td><strong>UN Principles for Responsible Investment (PRI)</strong></td>
<td>Asset owners and investment managers commit themselves to integrating responsibility criteria in investment decisions. (<a href="http://www.unpri.org/">www.unpri.org/</a>)</td>
</tr>
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3.5  A priori theoretical construct

The a priori theoretical construct of this paper refers to section 2.7 Process of institutionalization, and 2.11 Relationships of institutional pillars and the circuits of power.

Institutionalization describes the change process of institutionalized structures due to social meanings. It explains why organisations adapt certain structures, practices, and rules. In institutional theory, in order to institutionalize green SCM, an organisation must transform its recurrent behavioural and structural processes and patterns of interactions in such a way that they give impetus to legislative compliance and ecological proactiveness. The transformation is triggered by a disruptive event or cumulative disruptive events that are differentiated into exogenous and endogenous drivers (Barley and Tolbert 1997; DiMaggio and Powell 1983; Greenwood et. al. 2002, 2006; Hoffman...
Power dictates the effectiveness of strategies to obtain an intended effect. Agents and institutions are more powerful than others if their strategies produce more intended effects for themselves than for others. In a broad sense, power determines the ability to get things done (Bachrach and Baratz 1962: 948; Clegg 1989: 32; Cobb 1984: 494; Dahl 1957: 202; Foucault 1984: 92; Giddens 1984: 14ff; Gramsci 1971; Levy and Scully 2007). Legitimate organisations are those that are successful in aligning their activities of power and influence with the institutional context of “the rules, norms, and ideologies of the wider society” (Meyer and Rowan 1977: 84).

Institutional power activities affect the pace of the institutionalization process and the stability of a given institution. They are distinguished between regulative-episodic, normative-dispositional, and cognitive-facilitative mechanisms. The institutional powers operate at different levels, so called circuits. These emanate from a narrow organisational level causing direct force and direct impact on resources (regulative-episodic), moving to a broader level with changing social meaning (normative-dispositional) and systemic thinking (cognitive-facilitative). Obligatory passage points ensure that institutional power activities can interact. These points serve as channels for empowerment or disempowerment. The regulative-episodic mechanism may constitute an obligatory passage point for the normative-dispositional level. This mechanism’s influence on rules and resources can alter the membership constellation and consequently meaning as well. The normative-dispositional mechanism may create an obligatory passage point for the cognitive-facilitative level. New production techniques or mindsets and disciplines can be blocked or promoted through meaning and membership alignment. The cognitive-facilitative mechanism may involve transition to new regulative-episodic constellations because new demands and production techniques and processes also often constitute new governance and resource structures. Figure 5 shows the circuits of institutional power.
Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

3.6 Research method and data analysis

This section comprises the data analysis of the research and points the reader to the introductory chapter of the dissertation, which explains the chosen research methodology and data collection for the case study of Deutsche Post DHL.

Why is green SCM important to the company? From where does the importance of a green SCM come and since when has it been viewed as important? Who took the leading role in shaping a green SCM system? What problems are faced in building green SCM and are these related to other problems encountered? How was the problem resolved? What roles do cooperation and power play among the internal teams and with external parties in building green SCM? These generative questions led to a first iteration of theoretical sampling. Based on my first memoranda I carefully analysed and substantially coded the retrieved data, and I did so simultaneously. The open codes laid the foundation for building initial categories that drive the institutionalization process of green SCM within DPDHL. I could elaborate associations with the identified categories and the three dimensions of institutional power activities.

Performance integration and governance collides with the episodic-regulative relationship. It involves the Group’s strategy, structure, and target setting for green SCM driven by the Corporate Board of Management, its Corporate Development, and the GoGreen team as the core institutional power agencies.
Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

Organisational alignment relating to matters of vision, ethos, and expertise collides with the *normative-dispositional* relationship. It involves DPDHL’s internal and external alignment on the standards of green SCM. Its key agents are the board of management, the Corporate GoGreen, and PR team together with the Group’s Innovation Center and line function middle management.

Social and system embeddedness collides with the *cognitive-facilitative* relationship. It involves DPDHL’s adaptation and practice of green SCM, incorporating all its employees.

<table>
<thead>
<tr>
<th>Category</th>
<th>Data source</th>
<th>Sample illustrations</th>
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<tbody>
<tr>
<td>Performance integration and governance</td>
<td>Interviews</td>
<td>“Focus 2010 (<em>Express programme</em>) tells us to only implement GoGreen measures that are profitable or reflect an economic benefit…efficiency has always been aligned to the business priorities and is driven by our KPIs.”</td>
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<tr>
<td></td>
<td></td>
<td>“We have a report on energy consumption per country and a new position for EU ETS reporting.”</td>
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<td></td>
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<td>Our contribution could be much higher in terms of product enhancement with an equally ecological benefit, if we had enough resources.”</td>
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<td></td>
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<td>“All our business case templates have a green section to demonstrate positive long-term ROI.”</td>
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<td></td>
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<td>“A green project loses drive after a while as there are no targets to which real attention is paid.”</td>
</tr>
<tr>
<td></td>
<td>Statistics</td>
<td>Scope of GoGreen product offerings; emission reporting; number of non-conventional vehicles; volume of electricity need met by renewable energy sources; number of own jet aircraft meeting nitrous oxide (N₂O) emission standards</td>
</tr>
<tr>
<td></td>
<td>AR &amp; CSR</td>
<td>Target for emission reduction; climate change graded as top business risk; investment policies towards low-carbon processes; paper and car policies</td>
</tr>
<tr>
<td>Organisational alignment in relation to vision, ethos and expertise</td>
<td>Interviews</td>
<td>“Our board of management (<em>DHL Express division</em>) puts the focus more on compliance rather than seeing it as a differentiation strategy …we could use our GoGreen strategy to compensate our still high volume of docs (<em>Express document</em>). The area is growing smoothly, but mostly through Corporate.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“The overarching vision is still more on a political and marketing level …Although I’m supposed to manage GoGreen, my key tasks are other projects that are more...”</td>
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Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

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<tr>
<th>Category</th>
<th>Data source</th>
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<tr>
<td></td>
<td>56</td>
<td>important for my manager.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“There is strong central expertise that we must diffuse into our BUs, the regions and countries.”</td>
</tr>
<tr>
<td></td>
<td>Statistics</td>
<td>Carbon Disclosure Leadership and Global Reporting Initiative Index Ranking; number of external awards; number of ISO certified facilities</td>
</tr>
<tr>
<td></td>
<td>AR &amp; CSR</td>
<td>CR motto Living Responsibility; alliances and cooperation; controlling as lead in making energy consumption and emissions transparent</td>
</tr>
<tr>
<td>Social and system embeddedness</td>
<td></td>
<td>“Customers increasingly want to have the emissions of their shipments reported. In order to provide the shipment footprint on the waybill, our ACCEPT (Automated Customer Calculation of Environmental Performance Tool) must be linked with the CFA (carbon footprint assessment) tool. There are still technical limitations. The CFA tool gives us transparency on power and fuel consumption on a site level. This is great progress.”</td>
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<tr>
<td></td>
<td></td>
<td>“We have quite a few initiatives for improving efficiency. A common challenge is that we are quite dependent on the awareness and motivation of the people involved.”</td>
</tr>
<tr>
<td></td>
<td>Statistics</td>
<td>Number of GoGreen products sold; number of GoGreen Champions; number of drivers trained; number of participants in the online tutorial; number of initiatives submitted for the GoGreen CEO award</td>
</tr>
<tr>
<td>AR &amp; CSR</td>
<td></td>
<td>Initiatives improving efficiency; customers’ requirements for carbon management; status of carbon reporting rollout</td>
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Table 5  Summary of core categories and data sources with illustrations

In the second part of the analysis, the categories were integrated into a chronological overview of events and activities for green SCM development. In addition, I developed selective codes to explore temporal relationships of the categories. During the entire analysis phase, I iterated the raw data, memoranda, and theory. All data sources were examined for evidence of change in behavioural, strategic, and structural patterns. Finally, I put the pieces of data together. After this sorting process, I wrote up the final research results.
3.7 The institutionalization process of green SCM at DPDHL

The following sections outline the phases of green supply chain institutionalization within DPDHL, focusing on its business unit DHL Express\textsuperscript{14}. In the analysis, I elaborate the identified categories in terms of their temporal implications for the institutionalization process.

3.7.1 Genesis of green supply chain management (1997–2006)

In DPDHL, the concept of green SCM began to evolve in 1997 when external disruptive pressures in the form of the Kyoto Protocol and the Global Reporting Initiative forced the company to move towards a broader institutional environment (public perception) to legitimise its supply chain actions under ecological impact\textsuperscript{15}. Some committed DHL employees started local environmental initiatives such as the ISO 14001 certification of their facilities or, in Amsterdam, the establishment of a floating distribution centre with over 12,000 litres of fuel saving annually (Deutsche Post AG 2011b). At that time, mother company Deutsche Post AG was occupied with the modernization process and transforming itself from a formerly state-owned civil service apparatus to a profit-oriented stock company armed with the ambition of becoming a global leader in logistics.

Deutsche Post fully acquired DHL in 2002. However, it had been buying many other express companies in Europe since 1998. A selection: Ducros (France), Guipuzcoana (Spain), MIT (Italy), Securico (UK), Servisco (Poland), trans-o-flex Schnell-Lieferdienst (Austria), Van Gend & Loos and Selektvracht (Netherlands) and Quickstep (Czech Republic) (Deutsche Post AG 2001, 2010c). In 2000, the company launched an integration programme for its numerous newly acquired European express companies. The programme contained six steps, which made it possible to facilitate a green SCM on a site level. At that time, the six steps represented an outstanding approach. However, the integration programme’s primary institutional power activities facilitated the harmonization of operational processes, IT, and financial reporting. The six steps of a green SCM system were largely ineffective due to a lack of the needed influential instruments. In 2008, the Group’s GoGreen team, as the leading institutional agency for green SCM, adapted and enforced the six steps across the entire Group. The steps cover all three institutional power mechanisms. The first three steps mostly entail regulative-episodic activities such as compliance with local environmental policies and precautionary standards for an environmental emergency case. Step four focuses on a shift to a normative level of a green SCM system. It promotes ISO 14001 certification with intensive eco-driving training and process adaptation aiming for emission reductions, waste, and pollution avoidance as well as local carbon accounting and controlling. Finally, steps five

\textsuperscript{14} DHL Express was founded by Adrian Dalsey, Larry Hillblom, and Robert Lynn in San Francisco in 1969. The three letters ‘DHL’ stand for the initials of the founders’ surnames.

\textsuperscript{15} For instance, in October 2012, the German federation (Bund) holds a 25.5% share of DPDHL through its Reconstruction Credit Institute (KfW). As the major shareholder, it expects DPDHL’s management to support the implementation of nation-wide climate policies in line with the “comply or explain” principle (German Federal Government 2012a).
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and six amplify the normative legitimacy to a cognitive level. The steps ensure that the environmental management system in place provides anticipatory research for innovative green solutions as well as that business decisions be taken based on the Group’s vision of sustainability (Deutsche Post AG 2003: 38).

In 2001, from an episodic-regulative, top-down approach, the Corporate Public Policy and Environment department was founded. Before joining DPDHL, the new head of department, Dr. Monika Wulf-Mathies, had held political positions, such as her stints as Commissioner for the European Regional Development Policy, board member of the German union for public services and transport, and head of department for social policy at the German Chancellery. Consequently, Wulf-Mathies and her team made it possible on a normative-dispositional level for the company to actively shape the European and German political transport agenda and to build a bridge with several NGOs. For instance, in 2006, DPDHL signed the UN Global Compact with a Caring for Climate statement. Our interviews revealed that DPDHL’s membership in the UN Global Compact is considered as the initiating event to cement its bond with other NGOs for a green SCM system later on (next phase). Internally Wulf-Mathies provided a strong grounding in environmental policy that resulted in DPDHL’s first Corporate Environmental Policy and Strategy in 2003. It represented the regulative-episodic foundation for the GoGreen Programme, which was developed later. Shortly thereafter, further regulative-episodic instruments created momentum for the institutionalization of green SCM. An example is a first report on the Group’s environmental responsibility and a policy for the use of recycled paper products. The head of External Stakeholder Dialogue, involved in DPDHL’s environmental work since 2001, said that “…at that time the idea of green supply chain management was still in its infancy. Our small corporate team had set up a policy and a very high-level strategy, but it realized that it needed more to be done in order to engrain the idea into our Group. The then-new Euro IV emission standards and the launch of ETS were a clear alert. And of course, we were watching our competitors who were also looking into environmentally-friendly ways of reporting. So we set our first GHG emission target. This was to reduce the emissions of our road vehicles to 5% based on a 1990 baseline.” This regulative-episodic target was the passage point for a project in the company’s European region exploring fuel consumption and emission reduction options. The project was aligned with the six step programme. In this way and in a short time it increased the ISO certification of DHL Europe from below 10% in 2004 to 35% in 2005 and 44% in 2006. In addition, in 2005 around 5,000 delivery drivers had already been trained in fuel-saving driving techniques (Deutsche Post AG 2006). Moreover, European management approved initial investments for the deployment of a small number of compressed natural gas and biogas delivery vehicles as well as for diesel vehicles with a particular filter. The launch of Euro IV emission standards in 2005 as well as the prospective tightening up of the European emission reduction goals from 20% to 30% contributed to facilitate the investment as an external regulative power.
In 2002, the Swedish country organisation developed the company’s first environmental product called Grøna Ton (green tonnage) that gave customers the opportunity to buy tonnage transported anywhere in the DHL network using renewable fuels. In 2005, DHL Parcel Germany piloted a carbon-neutral shipping service called Grünes Paket (green parcel). Sweden and Germany are leading nations for climate policy (Eberlein and Matten 2009; Klintman 2009; Reed and Sains 2009; Weidner and Mez 2008). Hence, institutional power activities on the macro level contributed decisively to the emergence of DPDHL’s green service portfolio. Swedish and German customers started to adapt green approaches to their daily business operations. DHL responded accordingly to the changing demands of its customers. A small team from each country organisation, possessing entrepreneurial spirit and believing in a sustainable approach, were behind DHL’s first green offer. The two successful country initiatives served as proof of the concept so that in 2006, the board of management decided to launch GoGreen Services Europe-wide. The Corporate Communications department used this launch to promote DPDHL’s leading logistics role as the first company offering a carbon-offsetting product to customers.

In 2005, the Corporate Public Policy and Environment department made some initial progress on a normative level in establishing green SCM. For the first time, scope 1–3 emissions were gathered according to Greenhouse Gas Protocol rules. The consolidation of emissions necessitated a breakdown of the origin of emissions incorporated into every single process. It was also necessary to set up distribution keys for common emissions of activities (Deutsche Post AG 2006). At that time, reporting was a very tedious manual process since the company’s reporting system had not been set up for it. The head of External Stakeholder Dialogue in charge of the Group’s corporate sustainability report confirmed: “We had to follow up with each division asking them for emission information and explaining our need for it. It took us several months to gather and analyse the emissions.” Consequently, a technical solution was required as an obligatory passage point to facilitate the reporting process. In addition, the 2006 employee opinion survey conducted within DPDHL revealed that staff across all divisions required more transparent information and training on environmental responsibility. This represented a cognitive-facilitative passage point in endorsing the Group’s strategy for a green SCM programme.

In summary, the genesis of green SCM at DPDHL – from 1997 to 2006 – was predominantly determined by regulative-episodic institutional power activities. A small corporate team was established. This team set up an environmental strategy and introduced new rules of reporting along with energy-saving practices and training. In

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16 At a surcharge, GoGreen Services offers customers the opportunity of calculating their emissions that are caused by shipment transport and offsetting the emissions through climate-protection projects managed by DPDHL in cooperation with certified NGOs.
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parallel, a few country organisations initiated environmentally-friendly measures on their own, motivated by the overall climate policy approach practiced in their countries. The next challenge was to stabilize the green supply chain elements and to master the obligatory passage points to facilitate the institutionalization process of the supply chain. The institutional work on a normative and cognitive level needed to be intensified. For this, the early adaptors of a green approach had to initiate an exchange with and among the other divisions and departments. The development of GoGreen Services and a Group-wide emission reporting system served as starting points.

3.7.2 Strategic and structural endorsement (2007–2009)

The second phase of green SCM institutionalization at DPDHL started in 2007, when the Corporate GoGreen team developed a five-pillar concept on how to approach climate change on a Group-wide level. The concept was launched together with a new Group-wide GoGreen structure in early 2008. This process of development was triggered by increasingly broader societal discussions on climate change and by the need for compliance with the associated regulations. Influencing external disruptive events included the publication of the Stern Report and the fourth assessment report of the IPCC, the G8 agreement for a 50% global emission reduction by 2050, and the second phase of the EU ETS on aviation. Internally the maturing in the development process of green SCM was primarily initiated by the Group’s core strategic programme First Choice. First Choice focused on organic growth, sustainable solutions, and service simplifications for DPDHL’s customers. The head of First Choice at DHL Express said: “First Choice supports the functional programmes by continuous process improvement, for example in the reduction of energy consumption. Our message should be that we offer the best value for our customers and, on top of that, we save CO₂ emissions.” Moreover, the strategic and structural endorsement of green SCM was triggered by the event of a change in CEO. Dr. Klaus Zumwinkel stepped down abruptly, having led DPDHL from 1995 until February 2008. His successor, Frank Appel introduced a new leadership philosophy based on respect and results. This needed to be absorbed by the company’s staff.

Consequently, the strategic pillars of GoGreen were used as influential institutional power instruments to support the implementation of the leadership philosophy and the Group’s Strategy 2015. First, a Group-wide and binding target to reduce CO₂ emissions by 10% and 30% across all BUs and among subcontractors, respectively by 2012 and 2020, was approved (regulative-episodic). Second, management decided to invest in a Group-wide carbon accounting and controlling system in order to make accounting for emissions a transparent process (regulative-episodic). Third, the GoGreen team agreed that all employees must be mobilized in order to spread the concept of sustainable green SCM (cognitive-facilitative). Finally, the fourth and fifth pillars were set up to create market

17 In 2012, the ETS limited the aviation industry’s emissions to 97% (95% as of 2013) based on arithmetic mean average emissions from 2004 to 2006 (in total 219m allowances).
value with new logistics solutions (cognitive-facilitative) and to shape the political agenda towards green SCM (normative-dispositional). The independence between the GoGreen pillars and the Group’s overall strategy and leadership philosophy served self-reinforcing. DHL Express had already achieved its divisional GoGreen CO\(_2\) efficiency target for 2012 within the first two years, owing to its large US downsizing programme. The reduction of “number of own and dedicated jet aircraft from 229 to 136” was primarily responsible for the target accomplishment (Deutsche Post AG 2010b: 8). As a result, the regulative CO\(_2\) target profited from a prompt upswing in figures. Nonetheless, the institutionalization of green SCM was not effectively integrated into the daily routines and common beliefs of staff. Most operational processes went on as before.

In order to reduce the emissions of DPDHL’s subcontractors, in 2007 the GoGreen team introduced another regulative measure, the Supplier Code of Conduct. Since then, the Code has been applied to supplier contracts, obliging them to comply with “all applicable environmental laws, regulations and standards” (Deutsche Post AG 2008, 2009a: 2). About a year later after its introduction, the Group’s procurement team disseminated a globally standardized Green Questionnaire to be used as an additional selection criterion on a mandatory basis for bids. Moreover, since 2009 a cross-divisional subcontractor committee has been working on a normative-dispositional level to agree on scope 3 measurement practices and rules. An interviewee from the subcontractor committee attested that subcontractor emission measurement would mean struggle on all three levels of institutional power: “Our suppliers’ provision of emissions is very limited. We have a response rate of less than 10%. We should insert a clause mandating regular reporting duty in their contracts and set up an automatic system for request of information. We also need to better integrate our suppliers into our GoGreen projects.”

Starting to involve DPDHL’s suppliers more intensively has entailed a change in organisation. Further, the internal focus on emission reduction has been extended internationally, across organisational lines.

At the same time, internally, the new GoGreen structure as a regulative-episodic instrument rapidly showed the Group’s seriousness in environmental responsibility. Since 2009, the new head of Corporate Public Policy and Sustainability, Dr. Rainer Wend, reported directly to the Group CEO and managed all three core programmes of sustainability: GoGreen, GoHelp, and GoTeach. These correspond to environmental management, disaster management, and education. In addition, GoGreen governance was set up to ensure that the concept of green SCM would be diffused within the BUs. The global and regional GoGreen heads in the express division, however, pointed out that GoGreen is just an additional item in the work profile of the responsible individual on the local level. Hence, it is very dependent on that person’s motivation; he or she often lack the time to add these activities to their ongoing assignments. Moreover, the divisions had no direct reporting lines to the Corporate GoGreen team, but only to their divisional functions. The majority of staff had no target agreements concerning green SCM. CO\(_2\)
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performance was not part of the bonus system in the majority of DPDHL’s divisions. Thus, GoGreen was set rather as a low priority in the divisions. These obstacles in the way of GoGreen governance and target structure contributed to institutional power blockades for GoGreen investments and caused a slow pace of institutionalization. The Corporate GoGreen team asked the divisions to become more involved in green SCM, but the essentials of extrinsic motivation as well as a cognitive-facilitative framework for intrinsic volunteer initiatives were missing. Institutionalization nearly stagnated on the divisional level.

In 2007, IndEx (Indirect Functions Excellence), the cost-cutting programme, was introduced. IndEx served yet as another regulative measure that blocked the pace of green SCM institutionalization. The programme’s goal was to reduce indirect costs by €1billion by the end of 2009. With €460 million, DHL Express was responsible for the core share of savings (Deutsche Post AG 2009b: 31). The global financial crisis as an external disruptive event once more aggravated the situation for green investments in support of the concept of green SCM. In particular, DHL Express struggled through the economic crisis hit by a severe loss of shipment volumes. At the same time, it was confronted by its many years of uneconomical budgeting of process costs. Hence, in 2009, a new CEO for DHL Express was appointed. His mandate was to run a strict cost reduction and optimization programme. At the beginning of his mandate, almost no new investments were approved so that no further losses were incurred. Instead, the focus was placed on fighting for the survival of DHL Express. Target setting which was primarily focused on EBIT (earnings before interest and tax) was promoted. There was an additional cash is king philosophy that discouraged sustainable behaviour. In 2009, the board of management adjusted the long-term incentive plans for its executives. According to the guidelines for the Group’s stock appreciation rights, bonuses paid out in the form of stock had to be held by executives for a minimum of four years (previously three) (Deutsche Post AG 2009b: 115). Moreover, the Board introduced a new investment policy that favoured the transition towards low-carbon processes (Deutsche Post AG 2009c: 40). The policy allowed for expected returns to be lowered for capital invested in eco-friendly business initiatives. The Corporate Board of Management allocated 2% of the divisional capital expenditure budget to green investments. In addition, expert groups were set up and clear criteria laid out, with the aim of adequately securing green investment selections (normative-dispositional). The Board also considered calculating the EAC (EBIT after asset charge) internally in a different way so that managers would not be penalized when investing in green technologies. A cognitive-facilitative passage point that made effective implementation of a different EAC schema fail was constituted by inadequate system integration in the finance area combined with inadequate training and communication at the middle management level.

An interviewee from the global DHL Express team talked about further barriers and gave examples of regulative-episodic issues with regard to investments in support of a greener
supply chain that were slowing down the institutionalization process: “Green investments will not be on the short-term investment agenda of our management as long as they do not have the same ROI as traditional investments. For example, we had five business cases for the implementation of GoGreen solutions with a positive long-term ROI. They are all in the drawer. Management has not approved any for implementation. ...I think that we need a price tag on CO\textsubscript{2} emissions that is agreed Group-wide so that carbon costs are subtracted from earnings. We also need to adjust our BCA template so that every requested investment must justify its emissions output. ...Yes, we have a green section in our BCA template today, but the question on the investment’s energy and CO\textsubscript{2} savings calculation is more something that is nice to have than an obligation.”

The Canadian fleet manager gave the example of the rejection of an investment in hybrid vehicles by global management although his country and regional management had approved it. About a half year later it turned out that the reason for the business case (BCA) rejection was not as initially suspected global management’s thinking in short-term targets, but rather its strategic plan to sell DHL’s Canadian domestic business which actually occurred in April 2011. This disruptive event was only known and only planned by a very small and select institutional power group. Thus, the decision to reject the BCA on the hybrid cars’ purchase first seemed controversial to the rest of staff in consideration of top management’s previous call for green SCM. The management decision could not yet turn around the fleet manager’s strong cognitive belief in environmental responsibility. The fleet manager said he would continue submitting BCAs for hybrid cars even if he gets “a bloody nose from management.” In contrast, the fleet manager’s last feedback revealed that once he was made aware of the circumstances he became highly motivated. It was encouraging for him to see global management take consistent long-term decisions.

Green investments challenged not only DPDHL’s institutional power management internally, but its high costs and risks also prompted the company to start to establish collaborative efforts with external parties in order to develop future technologies for energy and emission reductions. In 2007, DPDHL opened its Innovation Center. The aim was to build a bridge between internal R&D projects and external collaboration. In 2008, the Innovation Center launched the DHL Express Smart Truck project. The smart truck is equipped with dynamic route planning and real-time traffic data to enable emission reductions of 10 to 15% (Deutsche Post AG 2010a: 91). The project was a successful collaboration between the German Aerospace Centre (DLR), the German Research Centre for Artificial Intelligence (DFKI), and three companies: Infoware, Motorola, and Quintiq. The trucks’ piloting in the German capital was also a political move. The federal government and the Federal Ministry of Economics and Technology provided additional support, marketing the vehicle as part of the Intelligent Logistics in Goods and Commercial Transport initiative. The GoGreen team further became active on a normative-dispositional level by lobbying its membership in industry alliances and non-
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governmental organisations (NGOs). Beckert (2010: 611) acknowledges: “...network positions can be used to influence institutional rules and dominant cognitions.” For instance, in 2008, DPDHL initiated the Alliance for European Logistics for purposes of shaping the European policy framework in decisions on supply chain management. DPDHL also became a member of a half dozen other well-recognized associations during the endorsement phase of green SCM (Deutsche Post AG 2009c). Moreover, between 2008 and 2009, the Group worked on a delphi study that analysed future global trends and involving over 900 industry experts and scholars (Deutsche Post AG 2009d: 13). The CEO of DPDHL presented the study in a prestigious CNN interview at the Globe Forum in Stockholm. DPDHL’s strong PR engagement in aligning industry experts, politicians, and academics contributed to its receiving a great deal of external and internal recognition for its environmental efforts. German institutions primarily granted awards. However, after several years of persistent attempts, in 2009, DPDHL was listed in the Dow Jones Sustainability Index. Added to that, it was ranked the best performer in the Logistics and Transportation sector of the Carbon Disclosure Global 500 Leadership Index.

In the Group’s Employee Opinion Survey (EOS), positive responses were made to the statement “my company is making an honest effort to be a more environmentally-friendly company” (Deutsche Post AG 2008: 10). In 2009, the EOS revealed that nearly 60% of staff was taking measures to save energy at work (Deutsche Post AG 2010b: 27). The Corporate GoGreen team facilitated employee awareness by introducing several initiatives, including a cross-divisional analysis of energy-saving opportunities, a contest to award the best fuel-saving ideas, and a yearly Corporate Responsibility Award, with project sponsoring for the 30 winners. An interviewee from the regional express office pointed out a barrier that still stood in the way of GoGreen training: “We have a GoGreen online tutorial which we push our employees to take. However, it’s only in English and lots of employees in my region only speak Spanish.” Giddens (1984: 24) advocates for training measures to be in one common language. This makes it possible for rules to be institutionalized, with some minor variations. In 2009, an analysis conducted by a cross-divisional working group made it clear that a large cross-section of DPDHL employees were not yet aware of any common definition or language for green SCM. Complaints were made that many initiatives were driven by the Corporate GoGreen team, but that most of them were not well implemented within the divisions. The marketing and communications department saw the value of GoGreen. Line functions, however, such as operations, sales and procurement focused on their traditional key performance indicators. For instance, Operations focused on fast, reliable, and cost efficient shipment processing, Sales on revenue increase, and Procurement on cost price reduction. Emission reductions would only play a role if they complemented energy saving and thus cost reduction, or if extra margin could be generated through them.

In summary, between 2007 and 2009, DPDHL succeeded for the most part in strategically and structurally endorsing green SCM. The Group’s GoGreen strategy has
become well known inside as well as outside the company. Nevertheless, societal recognition of its institutionalization process was limited. Externally, it focused mostly on Europe, Germany in particular. Internally, marketing, communications, and the GoGreen team were the key drivers. By the end of 2009, all divisions had launched GoGreen services for its customers (bandwagon effect). However, the services lacked conformity and staff opinion was divided. There were many obligatory passage points that stood in the way of instituting the measures needed to institutionalize green SCM. Emission controlling and GoGreen training systems were in need of improvement; the integration of suppliers and customers took place very slowly; just about half of staff was aware of the Group’s GoGreen ambitions; and blinded by short-term cash targets, the bulk of the management did not regard green SCM as a top business priority.

3.7.3 Towards professional pragmatism and social acceptance (2010–2011)

The third phase of green SCM institutionalization started in 2010, when the responsibility of the GoGreen team was expanded. It took charge of any kind of environmental issue, for instance sustainable sourcing and waste management (Deutsche Post AG 2010b: 6). In addition, GoGreen was set as a permanent agenda item of the quarterly business review meetings between the CEO of DPDHL and the divisional board of management team. Externally, increasing oil prices have gradually raised pressure on industries to invest in renewable energies and energy efficiency (UNCTAD 2011: 57). It was anticipated that oil prices per barrel (West Texas Intermediate) would increase from US$86 in November 2012 to a low of US$135 and a high of US$210 in 2035 (EIA 2010: 85f). Moreover, BP’s oil drilling disaster in April 2010 and Japan’s nuclear power leak, occurring less than one year later, have caused a strong growing social demand that companies assume more environmental responsibility. DPDHL is increasingly expected to walk the talk in its green SCM concept. An interviewee from the investor relations department said: “Just recently (since around February 2010) investors have been actively asking for our investments in greener logistics, since the downswing of the economic crisis appears to be over. They are asking more about our preparedness for the upcoming ETS and our fleet conditions for the US and EU vehicle emission enforcement standards. Pension investors, in particular, have begun to ask if we are listed in sustainable reporting indexes. They are concerned that in the future the company might have to face unexpected costs due to non-compliance. The issue of green compliance could become like that of the risk of sanctions if our company provides shipment services to countries and people on the black lists.” Various scholars, rating agencies, and investment banks have researched the fact that companies rated with high sustainability outperform the low (Ioannou and Serafeim 2011: 12; Kempf and Osthoff 2007: 908; Thun and Mueller 2010: 129). New external pressure on a normative-dispositional level was established when renowned rating agencies like Asset4 (Reuters) and RiskMetrics (MSCI) started to integrate environmental aspects like carbon footprint, energy efficiency, and technology trajectory into their traditional rating factors.
DPDHL’s management was thus further sensitised to the importance of achieving its 2012 emission reduction goal. Rollout completion for linking carbon accounting to the Group’s financial accounting system CREST18 supports divisional target tracking. This allowed for tackling an important obligatory passage point for the institutionalization of green SCM. In the field, my interviewees pointed out additional improvements to the regulative-episodic GoGreen structure. For instance: “The global environmental programme manager needs to report directly to the divisional CEO” and “Each board member should take up a sponsorship for the process ownership and implementation of our Group’s GoGreen pillars, just as before with our Seven Corporate Values.” From the cognitive-dispositional perspective, the interviewees requested to be better informed by the Corporate GoGreen department of new regulations. In contrast, the business units drive their own initiatives: For example, DHL Express’ Network Operations department has started to look further into emission reduction opportunities in alignment with its existing Network Operations Efficiency Programme, especially as regards costs per move on pick-up and delivery. Besides several trainings for drivers and dispatchers to practice more fuel-efficient driving and to optimize the loading factor, a system was worked on for better forecasting of capacity needs. The operations programme manager confirmed the findings of Kompfner and Reinhardt (2008: 15) that eco-training leads to about 20% of direct fuel reduction and maintains a good long-term effect on daily driving habits. He also confirmed Montreuil’s (2011: 2) criticism that containers often have a great deal of packaging optimization potential and sometimes remain partially empty because of unbalanced weight distribution.

In addition, the DHL Express environmental manager briefed the sales team about GoGreen Services and underlined the steady increase in revenue that came with their use. In 2012, Corporate Communications praised the fact that 1.9 billion GoGreen shipments were sold in 2011, of which the bulk originates from the German mail and parcel division, and only around 850,000 shipments from DHL Express. From 2009 to 2011, the yearly growth rate of GoGreen services had been 100%, but from 2011 to 2012, it slowed down to 5% (Deutsche Post AG 2011b: 96; 2012b: 62). Because the communication team has devoted much time to create a green image for the company, consumers as well as staff might assume that DPDHL’s GoGreen services are already a core offering throughout the company. Meyer and Rowan (1977: 358) describe the phenomenon of “things are as they are seem” as happening through “a decoupled structure” without changes to the underlying reality. In 2011, GoGreen services represented less than 0.1% (Deutsche Post AG 2012a: 39) of the annual overall volume of shipments handled by DHL Express (17.1 billion). Interviewees pointed out that they do not have the resources needed to drive GoGreen services’ sales and to develop new green product enhancements. For instance, a middle manager from the DHL Express

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18 Billing data is associated to internal emission-relevant data, for instance fuel, kerosene and energy consumption.
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regional office in charge of GoGreen and other operational tasks said: “I only have a certain overall budget available and I must be sure to spend it on the projects that my superior wants.” Moreover, admissions were made that customer requests for carbon footprint calculation sometimes are not met due to a lack of resources and the absence of the necessary business principles. Thus, **regulative-episodic** and **normative-dispositional** mechanisms slow down the institutionalization process.

Additionally, similar **passage points** and **decoupling features** must be mastered with regard to a green road fleet. In 2011, the total number of vehicles operated with alternative drivetrains or fuels was still insignificant, with around 3% (1,040) in DHL Express (Deutsche Post AG 2012a: 67, 2012c). In contrast, the communications team frequently published press releases on DPDHL’s strong engagement in testing and investing of non-conventional vehicles (NCVs), similar to the efforts made by its competitors. The most fundamental **obligatory passage points** for NCVs have been technical challenges and higher initial investments than traditional vehicles. DPDHL’s local organisations have tended to invest in sustainable improved diesel vehicle technology. Nevertheless, the Corporate team set up a central resource area for experiments on NCVs. Undertaken were testing of hybrid and electric vehicles and improvements in trucks and aircraft aerodynamics, such as by using teardrop shapes and winglets. Efficiency and effectiveness is often used as justification for institutionalization of a new element (Meyer and Rowan 1977: 361). Interviewees working in the area of large customer sales confirmed that DPDHL’s sustainable conceptual solutions, such as forward stocking and consolidation centres, have been well accepted by customers because they offer cost reduction and reduced work while offering ecological benefit. For instance, DHL’s consolidation centre for Heathrow Airport brings together 700 inbound retail deliveries into 300 outbound runs weekly. These successful customer solutions and many other factors like the environmental managers’ work were contributing factors to nearly 90% of employees knowing of the company’s GoGreen endeavours (Deutsche Post AG 2011b: 89) in 2010. This is a significant **cognitive-facilitative** force that stabilizes the institutionalization of green SCM. “People are hungry for the opportunity to work professionally in a way that is consistent with building a sustainable world instead of one that undermines it” (Berns et al. 2009: 34). Berns et al.’s assumptions were also reflected in the increase in the yearly voluntary registrations of DPDHL employees on the occasion of the World Environmental Day, at which staff come together to tackle the issue (Deutsche Post AG 2011b).

In summary, the green SCM concept has developed to such an extent that it is hard to imagine DPDHL without it. A crucial reason has been external pressure on compliance with regulations and on proactiveness in solutions that respond to increasing social awareness of environmental responsibility. The **regulative-episodic** and **normative-dispositional** mechanisms have **accelerated** the pace of the institutionalization process, for instance, investors’ criteria for sustainability; GoGreen as a permanent agenda item...
Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

for the board of management; or new hires for emission accounting. At the same time, inconsistent pursuit of the mechanisms has slowed down the process. Such factors as business principles that place instant revenue growth front or insufficient resources to improve and promote a green product portfolio contribute to slowing down the process. Additional repetitive patterns of obligatory passage points are technical limitations such as issues that arise in system data integration, coordination of boundary-spanning relationships, and missing individual green targets. However, DPDHL employees have many constructive ideas for improvements to green SCM. The majority view environmental responsibility as a social need to be worked on. Moreover, a growing number of large customers are pleased with the available green supply chain solutions and demand even more green options. Consequently, the cognitive-facilitative pillar increasingly stabilizes the institutionalization path.
Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

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<td>Habitualization (pre-institutionalization)</td>
<td>Objectivation (semi-institutionalization)</td>
<td>Start of sedimentation (full-institutionalization)</td>
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### Exogenous events and actions

| 2000 Launch of Euro III emission standards | 2007 G8 agreement to a 50% GHG reduction | 2010 Gulf of Mexico oil spill, LA |
| 2005 Launch of Euro IV emission standards | 2008 Launch of Euro V emission standards | 2010 US adopts CA's emissions standards |

### Endogenous events and actions

#### Regulative-episodic

| 1997 DP starts global expansion | 2007 Cost-cutting programme IndEx started | 2010 Launch DHL EX strategy Focus 2010 |
| 1997 DHL's first floating distribution centre | 2007 Supplier Code of Conduct approved | 2010 Launch of DP Mail e-letter |
| 2001 Corporate environment team founded | 2007 DHL Innovation Center founded | 2010 CREST carbon reporting rollout completed |
| 2002 Launch green tonnage in SE | 2008 Frank Appel appointed as CEO of DPDHL | 2010 Yearly sale of one billion GoGreen shipments |
| 2003 Corporate environmental policy and strategy | 2008 Launch GoGreen programme | 2010 Launch AP Sustainable SC Centre in SG |
| 2004 Launch green 6 step programme for EU | 2008 Group-wide target emission reduction | 2011 Over 3,000 non-conventional vehicles |
| 2004 First non-conventional vehicles introduced | 2009 New GoGreen restructure and investment policy | **Normative-dispositional** |
| 2005 Launch green parcel pilot in DE | 2007 First time participant in Carbon Disclosure Project | 2010 First-time scope 1 and 2 emission in annual report |
| 2005 Fleet emission reduction target: to 5% under 1990 | 2008 Initiative for the Alliance for European Logistics | 2010 Delivery Tomorrow – Towards Sustainable Logistics study published |
| 2006 Launch First Choice programme | 2008 SmartTruck project | 2010 Only logistics company participating in the road testing for the new GHG protocol |
| 2006 Launch GoGreen services (carbon offsetting) | 2009 GoGreen services offered by all divisions | 2010 Key driver of Europe’s first SmartWay project together with, e.g. TNT and UPS, to improve Scope 3 transparency |
| 2006 Code of Conduct for employees | 2009 Launch Corporate Strategy 2015 | 2011 First Sustainability Day exchange with industry experts and leading politicians |
| 2006 First-time scope 1–3 emission report | 2009 Testing of hybrid trucks with Daimler and Volvo | **Cognitive-facilitative** |
| **Normative-dispositional** | 2009 Several PR initiatives and awards, e.g. Delphi study, DJSI listing, German Sustainability Award, logistics partner for COP15, and WBCSD member | 2010 Launch of first climate protection project |
| 1997 DHL’s first ISO certification | 2009 Cross-divisional road subcontractor team | 2010 SimplyGreen project informed employees about their individual business footprint |
| 2005 Project to explore options for lowering emission and fuel consumption in EU road transportation | 2009 Launch of Corporate Responsibility Award | 2010 EOS: 88% of employees know about GoGreen |
| 2006 The UN Global Compact (UNGC) signed | 2009 Fuel-saving idea competition | **Cognitive-facilitative** |
| **Cognitive-facilitative** | | |
| 2002 First training sessions in fuel-saving at DHL EX DE | | |
| 2006 First Group-wide Employee Opinion Survey (EOS) | | |

Table 6  Summary of DPDHL’s phases towards the institutionalization of green SCM
Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

3.8 Towards an integrative process model of institutional development

The initial goal was to enhance understanding of how institutional power activities influence the dynamics of an institutionalization process. External disruptive events like the Kyoto Protocol and the Global Reporting Initiative forced DPDHL to move from the wider institutional environment to legitimise its actions under ecological impact. The study deduced that management decided to create a small GoGreen team starting with three people. The GoGreen team developed strategic and structural ideas of green SCM using a top-down approach. An array of mostly *regulative-episodic* and *normative-dispositional* activities followed that affected the development process of a green SCM approach in a medium to short time. For instance, the set-up of Corporate Environmental Policy and Strategy; the publication of a Corporate Environmental Report; a European fleet emission reduction target of 5% below 1990; membership in the UN Global compact; and the launch of the first shipment neutral services in Sweden and Germany. Within this habitualization process of green SCM programme, the GoGreen team took the lead in aligning with other organisational teams to facilitate new conceptual and innovative solutions. The normative alignment with experts working in other internal functions was a critical *passage point* to start endorsing sentiments and behaviour from a traditional towards a green SCM. For instance, the GoGreen team cooperated with the German country organisation in piloting GoGreen services. This paved the way for GoGreen Services to be successively deployed Group-wide. Another *passage point* for the next phase of institutionalization was the Group’s board of management decision to have regular carbon emission reporting and auditing for all divisions. This was in order to have transparency and control over the Group’s emissions (*regulative-episodic*). Thus, the GoGreen team aligned closely with Corporate Controlling to agree on a standardized emission measurement formula (*normative-dispositional*). In the phase of objectivation of green SCM, this altered the way in which the Group’s existing controlling system was modified in order to include emission reporting and how staff was trained for the system’s operation (*cognitive-facilitative*). DPDHL mostly selected existing structures and started modifying them towards green SCM rather than breaking ground with a new business model. It could thus gain quick wins with low resistance. DPDHL invested sparingly in the *cognitive-facilitative* pillar of institutionalization at the initial phase of green SCM development. A variety of factors contributed to this, for instance: the GoGreen team’s few resources; its disconnection from the field staff; and missing emission targets and monitoring tools. The Group’s *regulative-episodic* and *normative-dispositional* activities, however, gradually empowered the *cognitive-facilitative* mechanisms, but with some delay at the next phase. This leads to the first proposition:

*P1*: *The regulative-episodic and normative-dispositional activities are essentially required to overcome the obligatory passage points in shifting from habitualization to objectivation. The speed and stability of the transition are dependent on the characteristics and strength of these activities.*
The second instituting phase focused on the GoGreen’s strategic and structural endorsement at DPDHL. In this phase of objectivation, the Corporate GoGreen team obtained more power within the Group and it grew to ten people. Moreover, another central resource power was established, the DHL Innovation Center. As technological progress is often faster than the development of corresponding customer demand, the GoGreen team and the Innovation Center provided the arena for internal and external experts from science and industry to spin off and standardize green supply chain elements. The knock on effect was legitimisation based on professional appropriateness (Greenwood, Suddaby, and Hinning 2002: 75). Without such a resource centre, new institutional elements often had no chance of development because initially they are too small to comply with large companies’ growth needs (Pfeffer and Salancik 1978). Another significant passage point in this phase was the CEO change that induced a change of behavioural expectations within the Group. Appel promoted an open leadership style distinguished by maintaining work-life balance. In order to employ de facto a behavioural change within DPDHL, the new leadership concept needed to become ingrained in the company’s staff. The board of management decided to use the strategic pillars of GoGreen as influential institutional power instruments to theorize the activities and rules of green SCM. The pillars encompassed the cognitive-facilitative mechanisms. In addition, the change in investment policy towards more of a long-term orientation aimed to change managers’ behaviour. Top management also announced an official emission reduction goal to be tracked by the Corporate GoGreen team. All BUs were obliged to contribute to this goal. Although many of the activities were still regulative-episodic and by the normative-dispositional model dominated, the Group took into account that if it aimed to become effective in green SCM rather than just superficially rolling-out the topic, it needed to ingrain the idea as well as the common meaning in employee awareness to stabilize the process in daily operations. Once that was done, the green SCM approach became known and mostly accepted within the Group. It was reflected in particular in the GoGreen services found in the Group’s portfolio, driver training, and investments in fuel-saving aircraft. However, in a difficult economic downswing, staff was overloaded so that there was little energy for bottom-up activation of green SCM activities. In order to remove any barriers, the Corporate GoGreen team and its business unit representatives supported the implementation of green activities that targeted short-term efficiency and encouraged staff to develop voluntary ideas for fuel saving. Thus, they created a legitimation for green SCM on an economic and pragmatic basis. This leads to the second proposition.

P2: To move up from objectivation to sedimentation all three institutional power activities are necessary. The speed and stability of the transition are dependent on the characteristics and strength in all three activities.

The third instituting phase entailed leveraging towards professional pragmatism and social acceptance of green SCM. External pressures were heeded such as compliance
with environmental regulations on road transport; aircraft emissions and facilities energy usage; increasing fuel prices; and competitors also going green. The Group responded once more by empowering the Corporate GoGreen department in its steering role of a green SCM programme bundling responsibility for all environmental management issues. Moreover, the financial accounting system for tracking the divisions on their emission consumption was completed. The sale of GoGreen services grew steadily in the divisions although it still played a minor part in their overall portfolios. On a normative-dispositional level, the Group was engaged with other industries and scholars to accelerate new standards and it accomplished great media work. Thus, to the outside, it maintained a pretence of green responsibility. It was less successful, however, in having its regulative-episodic and normative-dispositional activities penetrate the business units. It had tried some cognitive-facilitative mechanisms such as voluntary days, best employee awards, and GoGreen training. Fundamentally, it would have needed to endorse the mechanisms more consistently in the field. In addition, it would have been necessary to justify newly developed green supply chain solutions in a more compelling way as compared to traditional supply chain solutions. Business principles that put instant revenue growth at center stage or the absence of sufficient resources to improve and promote a green product portfolio blocked the process. Employees had started to more strongly consider the fuel costs of shipment transport associated with emission consumption. They continued, however, to mostly look into short-term efficiency solutions for supply chains, known as low hanging fruit. Larger long-term investments were left to field operations. The lack of cognitive-facilitative effects made it clear that DPDHL’s institutionalization of green SCM was still wavering. Priorities varied: Some saw it as a nice to have social topic rolled out by a small central community. Others saw the green concept as a real business challenger pursued by employees and facilitated by the line functions. The great challenge resided in convincing the line functions to incorporate the objectives of green SCM into their daily work and to make it a way of doing business that one took for granted. Until that point, a stable sedimentation according to its theoretical definition (Tolbert and Zucker 1996: 178; Greenwood, Suddaby, and Hinning 2002: 60), whereby the green supply chain elements penetrated a wider field within the entire Group, was not achieved. This leads to the third proposition:

**P3:** Activities in all three institutional power mechanisms must be distinctive to a high degree in order to accomplish a full-institutionalization (sedimentation). The stability of sedimentation is dependent on the consistency in the pursuit of the institutional power activities.

The institutionalization process at DPDHL reveals that the Group pursued institutional power activities within the boundaries of each phase (Clegg 1989; Scott 1995, 2008). They occurred in different strengths and volumes. Moreover, the activities took place in temporal parallelism. This led to DPDHL being able to move into the stage of sedimentation in its institutionalization of green SCM. The cognitive-facilitative activities,
Institutionalization and power management in the case of green supply chain management at Deutsche Post DHL (DPDHL)

however, remained behind in a stage of objectivation. As a result, the institutionalization process did not take a linear path as depicted in theory (Tolbert and Zucker 1996: 176; Greenwood, Suddaby, and Hinning 2002: 60), but became non-sequential. This observation was underlined by the collision of institutional power activities that induced temporal instabilities of the institutionalization process. Institutional power mechanisms suppressed each other. For instance, DPDHL’s regulative-episodic investment policies were set up to transfer to fewer emission processes and technologies. Its employees’ mindsets and habitual practices were, however, still more strongly steered by short-term earnings thinking, first responding to the demands of those customers with the highest revenue potential. Another example was the board of management’s rejection of the BCA to purchase hybrid vehicles for Canada. This rejection did not change the fleet manager’s conviction about non-conventional vehicles. Hence, the regulative-episodic measure had a short temporal effect on the institutionalization process, but no overall impact on its cognitive stability. Powerful network ties (Clemens and Cook 1999) caused additional temporal dynamics to the institutionalization process. The case shows that the initial governance structure of the GoGreen programme did not have enough political clout to insert green SCM into the Group. A large proportion of DHL Express employees was not convinced about GoGreen being a real business priority. Their customers did not quite understand that GoGreen services enabled quick revenue wins nor was there a clear mandate for GoGreen given by its divisional board. Staff questioned the value of green SCM and did other things first before spending time on ways to greener SCM. Their network ties served to block the institutionalization process, on the one hand. On the other, their questioning of the real value of green SCM was the trigger for staff to start to look into the efficiency of the Group’s supply chain and its compatibility with GoGreen. Stimulated by energy and fuel savings potential, employees critically challenged existing supply chain practices and found better solutions. This critical questioning is an indicator that cognitive-facilitative mechanisms have amplified.

The overall result of the study is an integrative model that incorporates institutional power activities within the phases of the institutionalization process, depicted on an abstract level in Figure 6. On the one hand, these circuits may act in a self-reinforcing way and, together with new disruptive events, can cause the move towards the next higher phase of institutionalization. On the other hand, the circuits do not necessarily help the instituting element to mature to the next phase of institutionalization. Instead, instabilities in institutional power activities cause repetitions or retreats of institutional phases. Taken to the extreme, this may lead to a new instituting circle.
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**Figure 6** Integrative process model of institutional development

### 3.9 Conclusion

This paper contributes to understanding the institutionalization process in the establishment of green supply chain management at an organisational level. The developed model shows in a systematic and structured way of how institutionalization takes place when influenced by institutional powers in a rapidly changing environment. The work proposes regarding the institutionalization process with repetitive and recursive phases. The study ends at the phase of sedimentation of green supply chain management at DPDHL. Full sedimentation may evolve in future: A stage in which practices, rules, and structures of green supply chain management are standardized and no longer questioned across industries. However, the development of green SCM can also fall back to a phase of habitualization in which the meaning of green SCM is fundamentally changed. An example of this would be a modification of the elements of
green SCM that have been defined by the World Economic Forum or the Council of Supply Chain Management Professionals. Another possibility is that a green SCM system loses the attention that it previously had due to a disruptive event and a resulting new institutionalization process with higher impact. Therefore, other supply chain activities such as virtualization or ascendency into a different dimension may prevail. Efforts to establish a green supply chain may become fads or even sides effects by default. A longitudinal study of how the development process evolves over the years ahead is needed. What efforts are organisations going to make to ensure that governments take the lead in initiating a greener approach over the coming years? It can be assumed that if the people in power convey the essential features of sustainability to their constituents, it should be easier to incorporate societal acceptance of GoGreen on an individual and thus also on an organisational level. For instance, the nuclear power disaster in Fukushima caused a swift change of political course on the part of the German government as concerns nuclear energy. The government decided to phase out use of nuclear power and to invest in obtaining a higher share of energy from renewable sources. It remains to be seen if and how companies will view this turn of events and whether they will thus be motivated to more strongly align their business models towards sustainability.

Moreover, the paper opens the space for critical exploration and future investigations if companies in an organisational area adapt their structures over the long run towards green supply chain management, not only outwardly but also internally. I observed that the staff of DPDHL reflected critically upon the actions taken to establish a green SCM that management mostly had pushed from the top down. Different interests and facets of institutional powers deduced that green SCM actions were steered towards a direct value chain contribution in the operational field. Do the customers, subcontractors, and competitors of other companies such as DPDHL assimilate their activities interchangeably? Or do they differ significantly in the activities that their green SCM engages in within the company? A comparative case study could provide valuable insights if diffusion and assimilation of the activities in green SCM occur. It could be ascertained what implications these insights might have on the sedimentation of a green supply chain.

The study also observed that DPDHL hardly had any structures that promoted collaboration between line functions. Management thus neglected the power of social network ties. Each function had its individual key performance indicators that mostly had no linkage to the Group’s emission reduction targets. If each division had commonly managed emission reduction targets with dedicated divisional process owners, would the internal social network ties be better aligned, thus facilitating the design of the daily processes and underlying systems for green SCM? Moreover, what if a green SCM system had arisen largely due to a bottom-up approach on the part of DPDHLs staff? How would this have affected the institutionalization path, in particular at habitualization? Tolbert and Zucker (1996: 179) propose that with growing social opponents,
institutionalization retreats. The study, however, illustrates that critical opinions of staff members about the value of a green SCM served to block the institutionalization process, while at the same time unveiling efficient development opportunities for a green SCM approach. Staff participation was also increased through intrinsic motivation. Staff started to develop new ideas about how to improve the Group’s supply chain in the direction of greater eco-friendliness, for instance, by using the already-existing structure of the network operations efficiency programme. Thus, pragmatic legitimacy evolved in support of a greener SCM.

Finally, another implication suggested by this paper is the importance of motivating purpose and common identity to facilitate a supply chain culture of sustainable entrepreneurship. Until the late 1990s, DPDHL had primarily trained its employees as entrepreneurs. In other words, it spurred them to take the right amount of risk and innovation to make profit in business. To a large part, DPDHL managed to create a culture of entrepreneurship by hiring many subcontractors and managers from consultancy firms, especially in the period when it was being transformed from a civil service organisation to a public listed company. Back then, considering employees as entrepreneurs was a paradigm change because the classical divide between the productivity of labour and of capital was abrogated. With the move towards green supply chain management at DPDHL, it was demanded of employees that they operate as entrepreneurs, but sustainably. Staff is being asked to make sacrifice for the good of generations of employees to come. George (2011: 1) contends that employees must devote themselves, beyond entrepreneurial success in their respective fields, “to personal development that cultivates their inner compass.” Acting as entrepreneur is already a difficult task for an employee whose own interests may stand in the way of the company’s interests. Individual target agreements for a specific period aim to leverage these differences of interests. Consequently, the paper suggests that it would be supportive to strengthen the cognitive-facilitative pillar of a green SCM system if DPDHL includes sustainability goals in individual target agreements.

“Entrepreneurship is characterized by high work involvement, strong achievement motive and willingness to perform, extended work hours, and a high engagement in work — in short, entrepreneurs are often characterized to be passionate in their work” (Hisrich 1990: 98).
4 Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

4.1 Abstract
This section analyses the strategic development of green supply chain management at Deutsche Post DHL. The research questions emerged from the observation that the company approaches the environmental aspects of a supply chain with different levels of effort. While institutionalists analyse how companies adapt certain structures, rules, and practices due to social meanings, strategists explain why companies choose certain strategies and structures for their economic fitness. The inductive case study aims to enhance understanding of how companies adapt their strategic approach when institutional and economic determinants collide. What strategy is followed when green activities will not pay off economically, but due to social beliefs are a must for modern organisations? If productive value aspiration and social meanings perceptibly diverge, DPDHL intends to determine its strategy by whichever dimension has the upper hand. The results also show that DPDHL is more likely to choose a proactive approach when green supply chain practices are aligned to the pressures of social meaning and to the company’s productive value aspiration. The findings are summarized into a framework for strategic direction that explains the nexus between institutional and strategic theory and provides implications for a proactive strategy for a green SCM.

4.2 Introduction
In the past, it was deemed sufficient for companies to provide high quality and cost-effective products and services. Today, in addition to this, products and services are increasingly expected to be green. Activists and media transparency bring public pressure to bear on corporations’ environmental responsibility. In order to balance the tension between the institutional demands of social legitimacy and their natural goal of profit, many companies have deployed, at least in a rudimentary way, corporate social responsibility programmes and introduced environmentally-friendly and organic products. However, several scholars criticise the fact that companies orient their operations predominantly towards profitability and consider generic value return to the wider society as detached from their actual firm strategy (Hoffman 2005; Kolk and Pinske 2007; Porter and Kramer 2006: 80): “They pit business against society, when clearly the two are interdependent.” Business and strategy are predominantly disconnected from conformity to social pressure. Conformity to social pressure is considered cost intensive, constraining, or a charitable deed rather than an opportunity that can generate competitive advantage. The reason for this bias is possibly of normative nature: Business schools focus in their teaching on profitability and economic growth, but undermine investigations into such matters as institutional expectations of environmental and social responsibility and redistribution of wealth that challenge these focuses (Goodall 2008: 416). Another reason for this predominance of economic considerations versus

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institutional expectations derives from the following practice. Depending on their ownership constellation, corporations tend to overplay stakeholder returns in the form of high dividends, and neglect anticipating institutional responses to their behaviours. For instance, in order to optimize stakeholder dividends, management embraces a cost-cutting strategy. However, what happens if important constituents disagree with these cost-cutting measures, and the measures in fact infringe on existing regulations? A strategy encompassing only a one-sided perception of economic determinants risks severe consequences such as boycotts, isolation, or asset destruction. These quickly counteract any economic advantages that were initially perceived. Another possibility is that competitors or new industry entrants gain market advantage by taking on disregarded institutional expectations.

This paper proposes a new way to look at strategic approaches: Institutional pressures are no longer deemed causal appendages or supplements to economic potential. Rather, they have become a significant variable in strategic assessment.

4.3 Rationale and relevance

The research questions emerged from the observation working on paper two of this dissertation that DPDHL approaches the environmental aspects of a supply chain with different levels of effort. I aimed to discover: What are the operational elements of green SCM at DPDHL and which determinants are decisive for their development? And how does the intensity of these determinants impact the company’s strategic approach in deciding their level of activity in going green? To what extent will conformity be demanded?

Existing institutional studies provide valuable insights into how institutional pressures influence strategic responses. Institutional pressures are expressed, for instance, by governments through regulations, by professions through norms and by public interests through beliefs and symbols. Institutionalists postulate that companies must adapt their structures based on institutional expectations. They assume, however, that practices and structures are adopted independent of competitive advantage and performance requirements of the organisation (Meyer and Rowan 1977; Suddaby 2010). Historically, institutionalists stress the isomorphism of organisations resembling others that face similar environmental conditions (DiMaggio and Powell 1983: 149). Contemporary institutionalists have shifted their view from arguing that institutional control implies isomorphism to understanding that organisations also have a strategic choice in conforming to the institutional environment or influencing it (Bresser and Millonig 2003; Delmas and Toffel 2008; Goodstein 1994; Oliver 1991, 1997). Theoretical approaches in strategic research\(^{21}\) have rather divergent foci in considering strategic choice, stressing “the functional importance for organisational performance” (Child 1997: 45). Under a

\(^{21}\) Theoretical approaches in strategic research are, e.g. contingent resource-based view (CRVB), capability-based view (CBV), knowledge-based view (KBV), evolutionary theory (ET) and organisational economics (OE) with property rights theory, agency theory, and transaction cost economics.
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

theoretical approach it is maintained that organisational performance results from a proper alignment of endogenous capabilities with exogenous environmental variables (Aragon-Correa and Sharma 2003; Donaldson 2000; Zajac, Kraatz, and Bresser 2000). Such an approach also encompasses the economic input and coordination of rare and valuable resources and capabilities which drive efficient transactions and profitability (Barney 1991, 2001; Eisenhardt and Martin 2000; Helfat and Peteraf 2003; Pfeffer and Salancik 1978; Russo and Fouts 1997; Teece, Pisano, and Shuen 1997; Williamson 1991, 2000).

The study aims to redress the divergent foci of the two theoretical streams. It highlights the interpretation, selection, and active modification of environmental conditions through strategic choice. I draw on Carbone and Moatti (2011) and Zhu and Sarkis (2007), who emphasize the importance of establishing a link between strategic direction of a company and the development of green SCM. Moreover, the study takes into account Scott’s (2000 et al.: 237) appeal that “organisations require more than material resources and technical information if they are to survive and thrive in their social environments.” I examine the relationship between social and performance expectations of green supply chain activities, rather than focusing in a lopsided way on profitability. (See lively discussion Does it pay to be green?[Busch and Hoffmann 2011; Delmas, Hoffmann, and Kuss 2011; Hart and Ahuja 1995; Lash and Wellington 2007; McWilliams and Siegel 2000; Porter and van der Linde 1995; Russo and Fouts 1997; Walls, Phan, and Berrone 2011]). This study aims to derive a new foundation for strategic direction-setting. It includes implications on counteracting institutional and economic determinants: What strategy is followed when green activities will not pay off economically, but social beliefs consider them a must for modern organisations?

4.4 A priori theoretical construct

Strategies are measures that aim to ensure the long-term success of a company. Strategic success depends on three propositions: 1) value that appeals to customers; 2) profit that is generated from the value proposition; and 3) employees that determine the quality of strategic execution (Kim and Mauborgne 2009: 75). A strategy develops and aligns the three propositions in order to alter the environments in which companies operate. Companies that are successful in aligning their strategies with their environments achieve higher performance and acceptance because of strategic fit (Dyer and Singh 1998; Peng 2003; Porter and van der Linde 1995).

4.4.1 Institutional environment and its pressures

The institutional environment represents “the rules, norms, and ideologies of the wider society” (Meyer and Rowan 1983: 84) with a common understanding about appropriate behaviour. The institutional environment exerts pressure. Meyer and Rowan (1977, 1983), DiMaggio and Powell (1983), Oliver (1991), Scott (1995, 2008), and Suddaby (2010) have contributed to the research on institutional pressures. Their studies explain
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why and how companies adopt practices, rules, and structures in service of their social values rather than their productivity.

Coercive pressures arise from political influence and legitimacy. Institutional change is a response to the legal coercion of regulations and the dependency on sources by authorities. When organisations come to believe that institutional control is useful to create legitimacy they are likely to conform to it. When laws and policies are not strictly enforced, company resistance to the loss of freedom of choice and decision-making authority is very intense.

Normative pressures are caused by professionalism, and they depend on collective norms and values. DiMaggio and Powell (1983) highlight two aspects of professionalism which develop and diffuse new business models rapidly. One rests on education and legitimation, the other on social embeddedness and professional networks. Normative pressures also arise from voluntary diffusion through intrinsic self-motivation: If institutional expectations are adopted and diffused through self-interest, more people are willing to conform or to shape them.

Mimetic pressures are exerted by beliefs that are taken-for-granted, expectations of important constituents and uncertainty. For example, modelling is a typical response to uncertainty. Organisations model themselves after similar ones which they perceive to be more legitimate and successful. They aim to have their organisational goals and structures in harmony with institutional contents and are more likely to conform to institutional pressures when they attain a high dependence on constituents.

4.4.2 Economic environment and the aim of economic fitness

While institutionalists underline the role of social meaning, scholars with an economic approach look to economic interest and technological change that shape the society and the future. Organisations are described in “technological, contractual and competence/knowledge-based perspectives” whereby efficiency arguments prevail over social power constellations (Williamson 2000: 611). Organisations aim for economic fitness through the generation of profit and the development of competitive advantage. Williamson (1991: 75) postulates that “economy is the best strategy.” He focuses on the efficiency approach to business strategy under the narrow lens of transaction cost economics (TCE). Williamson also recognizes that business strategy has a broader economic mandate than TCE, such as focus on revenue. The economics of industrial organisations explores strategic options based on the structure and development processes of sectors. Porter (1980) describes in his generic framework of competition
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

strategies\(^{22}\) how competitive advantage is created through differentiation, cost leadership, and focus\(^{23}\). He emphasizes that a company must unambiguously decide on differentiation or cost leadership. If not, it runs the risk of being stuck in the middle without clear positioning and competitive advantage. Gilbert and Strebel (1997) refined Porter’s postulation through their outpacing strategy: Based on market contingencies, an organisation needs to develop capabilities that allow a shifting of main emphasis between product differentiation and overall reduction of product cost. In the dynamic capabilities perspective (Eisenhardt and Martin 2000; Helfat and Peteraf 2003; Teece, Pisano, and Shuen 1997), companies have the ability to develop process-embedded competencies, which can maximize congruence in line with the demands of a changing environment. Managers must “integrate, build, and reconfigure” internal and external competencies in order to generate innovative value (Teece et al. 1997: 516)\(^{24}\). The attention paid to knowledge resources and organisational learning is especially critical in dynamic markets (Spender and Grant 1996). These permit overcoming the structural inertia which affects the evolutionary triad of variation, selection, and retention within or among organisations (Barnett and Burgelman 1996; Hannan and Freeman 1984).

Porter and Kramer (2006) differentiate three issues which organisations can address in their sustainability approaches: generic sustainable issues, direct value chain impacts, and sustainable dimensions of the competitive context. The latter has the strongest and most long-standing impact. Not only does it consider impacts on efficiency of the direct value chain, such as through asset and competence intensity, but it also encompasses external market evaluations, such as differentiation against the competitor.

### 4.4.3 Four strategies to alter the institutional environment

Oliver and Holzinger (2008) identified four strategic responses that organisations may apply in the strategic management of their political environment: defensive, reactive, anticipatory, and proactive.

- **Defensive strategy** is a form of resistance to social, economic, or technical pressures in order to maintain value. Organisations defy unwanted change and try to sustain the status quo. Tactics are lobbying, co-opting, manipulating, challenging, attacking, dismissing, constituency building, and ignorance of norms, values, and authorities.

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\(^{22}\) Before describing the generic framework of competitive advantage, Porter analysed five forces that determine overall industry profitability: established industry rivalry, new entrants, substitute products or services and, bargaining power of customers as well as of suppliers.

\(^{23}\) Focus is not a distinctive strategy per se. It defines the focused market segment against which the company competes based on cost leadership or differentiation.

\(^{24}\) The resource-based view focuses on Ricardo rents, which are based on immobile internal resources, versus the capability-based view, focuses on Schuhmpter rents. These are in turn based on venturesome and entrepreneurial decisions taken in a complex, dynamic environment.
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

- **Reactive strategy** is a shallow form of compliance to pressures in order to maintain value. The organisation focuses on end-of-pipe solutions in order to minimize risk, liability, and cost (Walls, Phan, and Berrone 2011: 73). Typically, this strategy disguises nonconformity below the surface. Tactics are compromising, concealing, decoupling, balancing, pacifying, substituting, appeasing, information filtering, and placating.

- **Anticipatory strategy** is a real form of compliance to pressures in order to create promises of future value. The organisation focuses on the implementation of effective solutions to pressures. Tactics are acquiescing to and obeying rules and norms as well as conforming to state-of-the-art models utilized by other organisations.

- **Proactive strategy** is an active form of influence to pressures in order to create value. Tactics are similar to the defensive strategy. However, there is a greater focus on opportunistic and future-oriented altering, steering, and dominating of a new institutional element in favour of the company in lieu of attacking, ignoring, or dismissing it. Organisations design and implement new technologies, processes, and products and establish best practices.

The four strategic responses are not mutually exclusive, but can be mutually reinforcing or neutralizing (Bresser and Millonig 2003; Kolka and Pinske 2007; Oliver 1991).

### 4.5 Research method and data analysis

Chapters 1.4 and 1.5 of this dissertation outline the qualitative research method and introduce case company Deutsche Post DHL (DPDHL). The section that follows will thus be dedicated to providing a more profound look into the data analysis performed for this paper.

The interview questionnaire referred to Strauss and Corbin’s (1994: 274) “generative” questions: Why does DPDHL pursue a green supply chain strategy? How is the strategy measured, reported, and cascaded throughout the organisation? What is the business impact on social and economic performance when executing a green supply chain? Are the decision processes for the execution of green SCM always justified for reasons of economic efficiency and growth? How strong are the pressures passed on from top management and from the national level to execute green SCM? How high on the priority list are green supply chain activities? What operative barriers does the green SCM strategy face and how are they managed? What roles do suppliers and customers play in the execution of green SCM? Who needs to be more empowered in order to drive a green strategy and which means and tools would be required?

The raw material of the interviews in combination with the secondary data culminated in a first iteration of research sampling in the form of memoranda. I did an in-depth analysis of the memoranda while coding my data. Five eco-friendly practices at DPDHL were identified: 1) process, route, and capacity improvements; 2) aircraft renewal; 3) road fleet
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

renewal and driver training; 4) subcontractor management; and 5) efficient facilities and their ISO 14001 certifications. Based on the illustrative content, the perceived chosen strategy for the given practice was identified. In combination, I evaluated the respective strengths of institutional pressures and economic potential. The analytic exercise was largely latent because in grounded theory the researcher interprets data based on his/her knowledge about the research subject, the data context, and the research field’s climate.

4.6 Eco-friendly supply chain operations at DPDHL

4.6.1 Process, route, and capacity improvements inducing green market services

Worldwide, DPDHL deploys a broad spectrum of process, route, and capacity improvement activities that focus on reducing shipment costs and emissions. Simultaneously, these activities enable DPDHL to create value through comprehensive and difficult-to-imitate products and services. A proactive strategic approach was evaluated. For instance, DPDHL’s Carbon Dashboard solution improves the customer’s supply chain cooperation, because in its as-is emission analysis, purchase, distribution, and warehouse managers become involved. An interviewee from the Carbon Dashboard team said: “Our customers recognize us as a facilitator, not only as a supplier. Carbon offsetting is easy to imitate, but competent measurement and consulting services are not. It’s like booking a package tour for your holidays in contrast to a customized tour.” The mindset of excelling in energy and emission solutions was affirmed by all BUs. The head of GoGreen at DSC said that DPDHL works on best practice solutions for emission and energy reduction that can be replicated for its customers across industries, e.g. concepts for Hewlett Packard, Australia have been applied to Fujitsu, Japan and Marks & Spencer, UK.

Besides productive value aspirations, the Group also faces institutional pressures that facilitate its activities. Coercive pressures are, for example, regulations in favour of urban logistics and intermodal transport. The world urban population is projected to increase by 84% until 2050, from 3.4 billion in 2009. Mega-cities with over 10 million people will arise, especially in India, China, and other developing countries in Asia and Latin America (UN DESA 2010). This forecast puts pressure on governments to take the precaution of looking into efficient supply systems. The governments pass on the pressures to businesses through regulations such as low-emission zones, minimum load factors, industry-specific time windows for city entry, tax credits, and noise regulations. In India, the government recently passed a green urban transport project in order to reduce carbon

25 The Carbon Dashboard’s “what-if” scenarios provide potential reductions in transport and fuel costs as well as improved lead times, transit times, product handling turnaround, and service level agreements.

26 DSC created a solution for Hewlett Packard (HP) Australia that cuts CO2 emissions by over 40%. It moved HP’s switching centre from Perth to Sydney which reduced 4,000 km of overland transport. It also opened an additional switching centre in Melbourne in order to directly offload containers for local wholesalers without additional reloading. Finally, it used trucks with higher load capacity.
intensity by 20 to 25% until 2020, based on May 2011 (Das Investment 2011). An interviewee from DHL Express Operations said: “We supported the project by providing traffic flow data to the authorities. We also presented carbon efficiency improvements of 7% (compared to 2009) despite growing volumes. We improved our pick-up and delivery processes. And we deployed the DHL Smart Truck. It is equipped with a real-time route planner and has the ability to synchronize shipment data and physical flow.” DPDHL also plans to deploy urban consolidation centres in India and China. It has already tested them in Kuala Lumpur, Dubai, Mexico City, Istanbul, and Singapore. The Group additionally runs public idea competitions to improve its concepts. Governments also enforce intermodal transport switches through the liberalization of rail systems, subsidizing private railway sidings, network enhancements, road usage charges, congestion pricing\textsuperscript{27}, speed limits, and driving and flight bans. DPDHL avoids a Sunday truck-driving ban by using an intermodal high-frequency rail from Malmö (Sweden), via Denmark, to Duisburg (Germany)\textsuperscript{28}. In China, it has switched from air to the high-speed train between Shanghai and Urumqi\textsuperscript{29}. The train is a vanguard project of the Chinese government. The interviews also revealed normative pressures arising from other logistics companies. For instance, UPS avoids left turns in their route planning which reduces fuel burn up to 10%. Maersk’s Triple-E container vessel shows an outstanding economy of scale for emissions per container. An interviewee from DHL Express Operations describes mimetic pressures in the form of beliefs that are taken for granted: “Ever since in our route planning we consider all relevant interdependencies to reduce our tours to an acceptable minimum.” In addition, strong consistency with existing solutions is perceived. For instance, DPDHL created the Carbon Dashboard as a complement to the lead logistics provider concept, the Control Tower.

In summary, process, route, and capacity improvements are driven on the corporate and local levels by strong institutional pressures. These are transport and infrastructure regulation; professionalism and keeping up with competitors; and the ingrained desire to excel. Strong economic potential is perceived through process improvement and service differentiation at all levels.

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<tr>
<td>Proactive</td>
<td>Coercive</td>
<td>Strong</td>
<td>Physical- and cost</td>
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\textsuperscript{27} Congestion pricing is enrolled, e.g. for Autoroute A1 in northern France and urban areas of Singapore, London, Rome, and Stockholm.

\textsuperscript{28} The intermodal high-frequency rail provides a “capacity of 1,700 tonnes gross weight per direction and train, resulting in the potential for carbon reductions of up to 20% for line haul” (Deutsche Post AG 2011b: 69).

\textsuperscript{29} The train from Shanghai to Urumqi followed by an air lift to Frankfurt takes around 49t of emissions and nine transport days for 10t of load. The traditional direct air lift produces 66t of emissions for the same load.
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

| Improved industry processes and new products | Regulative enforcement of modes of transport and infrastructure | efficiency  
Supply chain efficiency and fuel savings  
Product differentiation  
Product diversification through carbon transparency |
|------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------|
| **Normative**  
Professionalism; keeping up with competitors  
Mimetic  
Conformity with business goals and structures; ingrained desire to excel | **Regulative enforcement of modes of transport and infrastructure**  
**Efficiency**  
**Supply chain efficiency and fuel savings**  
**Product differentiation**  
**Product diversification through carbon transparency** | **Regulative enforcement of modes of transport and infrastructure**  
**Efficiency**  
**Supply chain efficiency and fuel savings**  
**Product differentiation**  
**Product diversification through carbon transparency** |

**Table 7**  
Extract coding for process, route, and capacity improvements

### 4.6.2 Central aircraft renewal and the interface to emission trading

DPDHL operates around 155 of its own aircraft (Deutsche Post AG 2012b: 56). Its intercontinental fleet was essentially replaced from 2008 to 2012 using the latest in aircraft technologies. For instance, the extended range freighter (F) on DHL’s transatlantic routes replaced the MD-11F Boeing 767. The latter uses 53% less fuel per trip supported by its blended winglets and has a better payload range, which makes more direct line hauls possible (Deutsche Post AG 2009e). Moreover, DPDHL influences emission regulations in the field of aviation. The executive vice president (EVP) of DPDHL’s Corporate Public Policy and Responsibility department was formerly active in the German parliament. Dedicated company representatives attend the working groups of the International Air Transport Association. Additionally, DPDHL initiated the Alliance for European Logistics through which it shapes aviation and transport regulations. At a very early stage, the Group aligned its emission reporting with European Emission Trading Scheme (ETS) standards and created new jobs to perform ETS tasks. The ETS manager in DHL Express said: “We voluntarily support the South Korean government in gathering air emissions in order to be involved in framing emission reporting and allowance requirements right from the start.” The interviews point to a proactive strategic approach.

A member of DHL Express Aviation summarized the institutional pressures and economic potential that DPDHL perceives in its central aircraft renewal process: “We base our aircraft replacement primarily on lease expiry, regulatory constraints like noise levels and emissions, age, service improvements, and economics like reductions in fuel costs and capacity improvements. The aircraft replacement plan permits reducing the costs per ATK (available ton kilometre) by about 15% and emissions by 22% until 2015 (compared to 2010).” The optimization in fuel and emissions through its fleet renewal allows DHL

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30 In 2009, 38 out of 136 own aircraft met the highest emission standard defined by the Committee on Aviation Environmental Protection (CAEP/6). In 2011, the number had increased to 59 out of 155 own aircraft. This is a compounded annual growth rate (CAGR) of 16% (Deutsche Post AG 2012b: 56).
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

Express to simultaneously reduce the purchase of emission allowances for the EU ETS: “We benefit directly from our target to reduce aviation’s fuel consumption. We estimate that our ETS costs total around €2 million in 2012. This is comparatively little (1%) if we look at our around 2 billion net annual aviation costs.” If DHL does not comply with the regulations, it loses its license to operate its aircraft fleet. This coercive pressure is very strong because it affects the company’s substance. The EVP of Corporate Public Policy and Responsibility said: “We support ETS. We have been involved in its framing. The statistics show to us that aviation is a key driver of our emissions. The reductions of emissions from aviation are an essential of our GoGreen programme.” He added that ETS might even have an advantage in that other carriers must buy more emission allowances than DPDHL due to their use of old aircraft.

In summary, aircraft renewal is fostered on the one hand by strong economic potential, such as fuel and emission allowance savings, as well as a greater number of direct lanes, which improves transit times. On the other hand, the company also shapes strong institutional pressures. Coercive pressures are perceived in the form of strict regulations by the EU ETS and airports’ noise levels. Normative pressures are perceived in statistics, such as those produced by the WEF (2009: 8) indicating that aircraft are the most carbon-intensive modes of transportation. In addition, mimetic pressures are perceived through an alignment with the Group’s GoGreen programme; in particular, because 61% of the Group’s overall emissions are caused by its air freight (Deutsche Post AG 2012a: 88).

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<td>Proactive</td>
<td>Coercive</td>
<td>Strong</td>
<td>Physical- and cost efficiency</td>
<td>Strong</td>
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<tr>
<td></td>
<td>Regulative enforcement through ETS and noise levels</td>
<td></td>
<td>Fuel and emission allowance savings</td>
<td></td>
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<tr>
<td></td>
<td>Normative</td>
<td></td>
<td>Product differentiation</td>
<td></td>
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<tr>
<td></td>
<td>Statistics that aircraft are the most carbon-intensive modes of transportation</td>
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<td>More direct lanes</td>
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<tr>
<td></td>
<td>Mimetic</td>
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<tr>
<td></td>
<td>Key driver in the GoGreen programme (61% of own emissions)</td>
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</table>

Table 8   Extract coding for central aircraft renewal
4.6.3 Road fleet renewal and driver training

DPDHL operated around 80,000 vehicles including 4,000 (5%) non-conventional vehicles (NCVs) in 2011. Its western European organisations hold around 80% of the NCVs. Outside of Europe, the largest portion was held by Brazil, with 285 ethanol-operated vehicles (Deutsche Post AG 2012c). Besides the ownership of NCVs, the vice president of Corporate GoGreen emphasized DPDHL’s participation in electric and hybrid vehicle tests sponsored by VW, IVECO, Volvo, Daimler, and Renault; the development of its own tailored electric vehicle; and globally developed training programmes for fuel-saving driving skills. The corporate activities point to an anticipatory strategic approach. In Western Europe, DPDHL’s country organisations pursue a strategy that is congruent with Headquarters. In the US, Mexico, and Central America, the country organisations pursue a rather reactive strategy. They buy predominantly conventional vehicles that comply with local emission standards and DPDHL’s network operation standards spur them on driver training.

An interviewee from DP Fleet GmbH, a subsidiary of DPDHL, said that fleet renewal is driven by the Total Cost of Ownership (TCO) principle, technical progress, and the many road sector regulations such as vehicle emission standards and incentives for aerodynamic improvements on heavy goods vehicles. In DPDHL’s western European organisations, the fuel costs of NCVs are about 50% lower than for diesel vehicles; in light of decreasing capital costs of NCVs they are gradually becoming more appealing. The automobile industry offers leasing options for electric batteries that improve the TCO. In many sites outside of Europe, however, the TCO for diesel vehicles is perceived as more attractive than for NCVs. Moreover, uncertainties within the country organisations, such as when a sale is pending, may stand in the way of long-term investments in green technologies. In Brazil, sugarcane ethanol has been in widespread use since 1976. The cumulative production of flexible-fuel vehicles (FFVs) reached over 10 million with around 70 different models in 2010 (Green Car Congress 2010). DHL’s Brazilian management orders FFVs as a matter of course. However, in their reporting figures, Corporate GoGreen categorizes them as non-conventional. In its public relations (PR) and policy work, DPDHL defends its brand image as the “world’s leading logistics company” (Deutsche Post AG 2010a: 7) and, as such, responsible for the development and usage of NCVs. An interviewee from Corporate GoGreen described the PR work: “We launched NCVs in Berlin and New York because we wanted to stress our environmental responsibility to the authorities locally.” Moreover, DPDHL’s carbon reports show that 23% of the Group’s own emissions are caused by its road transport (Deutsche Post AG 2012a: 88).

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31 Non-conventional vehicles are hybrid, electric, and alternative fuel vehicles, and those with aerodynamic improvements. In 2011, two-third of the 4,000 NCVs ran on aerodynamic improvements.
32 The European Commission 97/27 Directive involves exempting rear-end devices that reduce aerodynamic drag from the HGV-length definition.
33 Flexible-fuel vehicles run any blend of gasoline or hydrous ethanol (E100).
In summary, DPDHL perceives moderate institutional pressures from a corporate perspective for its road fleet renewal and driver training. Examples of these pressures are a tendency towards more stringent environmental regulations impacting the road sector; industry alliances for the development of NCVs; statistics showing that road freight causes almost 60% of worldwide logistics emissions (WEF 2009: 4); and DPDHL’s claim of being a role model in the diffusion of commercial NCVs. Institutional pressures are not yet perceived as acute compared to aviation. DPDHL does not risk its license to operate. The Corporate team perceives a moderate potential in TCO savings, mostly over the long-term, because market maturity and mass production of NCVs is growing. The evaluation of economic potential is mitigated with weak for DPDHL’s western European countries because they focus more on short-term savings and are still concerned about having the technical maturity for daily commercial use of NCVs. These countries perceive moderate institutional pressures. This is partially due to the physical closure of corporate control and environmental awareness in society at large (ETH Zurich 2011)\(^3\). The US, Mexico, and Central American country organisations perceive only marginal to weak economic potential for NCVs. This is due to their high production costs and comparatively low fuel prices. The perceived institutional pressures are weak. The physical distance from the Corporate Headquarters is large and social embeddedness less developed. The Central American states struggle more with infrastructure and security issues in particular than with establishing regulations and guidelines that promote NCVs and efficient driving.

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<tbody>
<tr>
<td>Corporate road fleet management</td>
<td>Anticipatory</td>
<td>Coercive</td>
<td>Moderate</td>
<td>Physical- and cost efficiency</td>
</tr>
<tr>
<td>Industry co-operations for NCVs; trend observing and purchase of small bulks of NCVs</td>
<td>Increasing road sector regulations</td>
<td>TCO savings (long-term)</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Normative Professional networks; statistics on road transport causing lion’s share of worldwide logistics emissions</td>
<td>Differentiation Brand image as clean logistics company</td>
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Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

| Mimetic | Meet expectations of important authorities; key driver of the GoGreen programme (23% of own emissions) |

**Local road fleet activities**

<table>
<thead>
<tr>
<th>Anticipatory to reactive</th>
<th>Coercive</th>
<th>Western Europe</th>
<th>Physical- and cost efficiency</th>
<th>Western Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small switches to NCVs versus implementation of minimum requirements</td>
<td>Regulative enforcement, e.g. high fuel taxes</td>
<td>Moderate</td>
<td>TCO savings; uncertainties about long-term investments</td>
<td>Weak</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>US, Mexico, and Central America</td>
<td>Differentiation</td>
<td>US, Mexico, and Central America</td>
</tr>
<tr>
<td></td>
<td>Intrinsic motivation and collective standard to drive using fuel efficiently; country’s social environmental awareness</td>
<td>Weak</td>
<td>Local image awareness</td>
<td>Marginal to weak</td>
</tr>
<tr>
<td></td>
<td>Mimetic</td>
<td>Meet Headquarters’ expectations</td>
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**Table 9** Extract coding for corporate and local road fleet

**4.6.4 Subcontractor management**

In 2007, Corporate Procurement enforced a Supplier Code of Conduct indicating that suppliers must comply with local environmental regulations and have an environmental management system. A standardized *Green Questionnaire* ensures the code’s implementation. Local transport departments must use it for subcontractor bids. Corporate Procurement has also joined in a project with Heineken, IKEA, Kraft, TNT, and UPS which aims to create a central database for subcontractors’ emission performance. Moreover, it participates in a roundtable of the Clean Cargo Working Group focused on establishing emission transparency standards for ocean freight (Deutsche Post AG 2011b: 68f). The activities point to a *proactive corporate* subcontractor emission management.
DPDHL’s voluntary emission target aims to improve carbon efficiency by 30% from 2007 to 2020. Subcontractors’ emissions account for about 75% of the footprint (Deutsche Post AG 2011a: 75). The target is a requirement for the Carbon Disclosure Leadership and Performance Index, which is becoming increasingly important to investors. DPDHL’s customers are asking more and more for accurate calculations of their shipments’ carbon footprint. Moreover, DPDHL aims to influence the transportation costs of its subcontractors. If they produce high emissions, it is an indicator for the usage of old technology causing higher transportation costs.

DPDHL site managers, being far away from Corporate Procurement, perceive subcontractors’ emission management as less important. They pursue a reactive approach. Their primary subcontractor criteria are price and performance. Emissions play a secondary role. The Gateway Support Manager for the Americas said, smirking: “Paper (Green Questionnaire) doesn’t flush. We have fixed transport prices and transit times.” An interviewee from DHL Express Global Operations said: “Our subcontractors’ response rate on emissions was less than 10%. The Green Questionnaire is nice to have. However, a change on the supplier side requires a more effective solution. Our systems are not linked and invoicing information is insufficient. We use ballpark figures, but we receive pressure from the top to work on a solution.” The key account manager for Allianz said that a customer had complained about the assignment of sooty trucks for their consignments in Freising, Germany. Allianz threatened DPDHL with stopping purchase of its GoGreen services if the Group keeps behaving in a contradictory way as concerns its subcontractor management. The local team had to replace the subcontractor promptly, especially since Headquarters had been alerted.

At air freight, I find that all central functions have implemented a system which allows for comparison of the emissions of charter flyers. However, the functions use it in a one-dimensional way for corporate reporting purposes, but not in taking booking decisions. An interviewee from DP Mail said: “At Global Mail (international mail offer), we book long-haul flights via brokers and subcontractors. We don’t pay attention to whether they chart emission-friendly. We calculate an average per airline for our emission accounting.” An interviewee from DHL Express Global Aviation added: “In our daily business, we don’t look at our tool when recommending a commercial airline for buying capacity. We couldn’t change their emissions anyway.” An interviewee from DGF admitted: “We have a carrier balance scorecard which includes environmental KPIs. The final buying decision, however, is still primarily driven by the network performance data”.

In summary, the institutional pressures for subcontractors’ emission management are moderate on a corporate level. Mandatory regulations for emission reporting of road and ocean freight are missing, but guidelines exist. DPDHL’s economic expectations of subcontractors’ emission transparency are strong. Headquarters is aware of the impact on the company’s reputation, its GoGreen services, and the subcontractors’ prices.
Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

The country organisations perceive weak institutional pressures. Completion of the Green Questionnaire is a case in point; respondents enjoyed ample leeway in filling it out. Economically, subcontractors’ emission transparency is perceived marginally. Volume and transit times have higher priorities due to their direct impact on the local managers’ profit and loss (P&L) responsibility.

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<tr>
<td><strong>Corporate subcontractor management</strong></td>
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<tr>
<td>Proactive</td>
<td>Coercive</td>
<td>Moderate</td>
<td>Physical- and cost efficiency</td>
<td>Strong</td>
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<tr>
<td>Shaping emission reporting and transparency standards across industries</td>
<td>Voluntary regulative enforcement</td>
<td></td>
<td>Long-term potential for pressure on supplier costs</td>
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<tr>
<td></td>
<td>Normative</td>
<td></td>
<td>Differentiation</td>
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<tr>
<td></td>
<td>Industry and regulatory bodies elaborate on emission transparency</td>
<td></td>
<td>Carbon footprint shipment provision; meet quality standards, brand image</td>
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<tr>
<td></td>
<td>Mimetic</td>
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<tr>
<td></td>
<td>Conformity to CO₂ target: subcontractors contribute 75% of DPDHL’s total carbon footprint</td>
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<tr>
<td>Reactive</td>
<td>Coercive</td>
<td>Weak</td>
<td>Differentiation</td>
<td>Marginal</td>
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<tr>
<td>Conforming to corporate standards on the surface; managing issues when they occur</td>
<td>Lacking legal enforcement, instead done internally through Headquarters</td>
<td></td>
<td>Customer retention (country-specific, only a few cases to date)</td>
<td></td>
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<tr>
<td></td>
<td>Normative</td>
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<td>Country’s environmental awareness</td>
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Table 10  Extract coding for corporate and local subcontractor management
4.6.5 Efficient facilities and their ISO 14001 certification

DPDHL reduces the CO₂ footprint of its facilities through intelligent lighting, heating and cooling solutions, and local energy production. Activities include replacement of conventional lights through LED or T8 bulbs in over 120 of its own facilities. DPDHL also draws about 40% of its Group-wide electricity from alternative energy sources. Moreover, I identified an array of own centrally managed construction projects targeting footprint reductions in leading metropolises. My evaluation points to a proactive strategic approach. If the facilities are only rented, depreciated and have low turnover, such as remote depots, I assessed that DPDHL pursues more of a reactive to anticipatory strategy. An interviewee from DP Real Estate, a subsidiary of DPDHL, puts it in a nutshell: “Big investment projects like the construction of a new facility are globally sponsored. We can build real state-of-the-art models. When the buildings are already depreciated, investments in expensive insulation generally don’t pay off. We invest what is needed to meet the local building requirements. Buildings which we rent are the responsibility of the investor.”

The economic potential of corporate facility projects is lucrative. Intelligent lighting concepts save 20 to 40% of energy. The payback period is under two years, depending on local electricity pricing and installation costs (Deutsche Post AG 2010a: 122). The European DHL Express hub has 1,000 m² of photovoltaic cells. The payback of photovoltaic installations is about eight years due to the feed-in tariffs (REN21 2011: 84). DPDHL’s facilities in the northeast of England are equipped with wind turbines. They far exceed the terms of the local Merton regulation, under which at least 10% of energy must be self-generated. DPDHL also applies its energy-saving concepts to customer warehouses. The Group has an in-house carbon consultancy, DHL Neutral Services. It developed, for instance, a carbon neutral warehouse together with the Dubai Department of Economic Development (Deutsche Post AG 2010a: 124). A coercive pressure is the ban until 2012 on all wattage and halogen light bulbs by the European Eco-Design Directive. Similarly, US legislation mandated increasing bulb efficiency. The European Energy Performance of Buildings Directive requires providing an energy pass of facilities. From a normative perspective, efficient facilities are required for ISO 14001 certification. The certification has developed to a common industry standard. An interviewee from Corporate GoGreen said: “The certification process is very bureaucratic and time consuming. Our customers, however, consider it as a hallmark of excellence and surely expect it from us.” The ISO certification supervisor at DP Mail added: “Since we also certify for ISO 9001, we can realize many synergy effects so that efforts can be minimized.”

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35 Facilities obtain information about their energy consumption through deployment of energy monitoring and carbon footprint systems such as “Smart meter”.
36 In 2010, around 50% of DPDHL’s over four hundred thousand employees worked under ISO 14001 (Deutsche Post 2011b: 80).


At a local level, I identified three BUs that have set formal targets for energy reduction at their facilities, e.g. 5% kW/m² annually. However, at DP Mail an interviewee from the Department for Environment acknowledged the constraints in target monitoring: "Already a mild winter can blur the figures. Since our sorting centres are treated as profit centres, energy efficiency goes without saying for their directors. They are, however, very tight with maintenance investments due to their cash flow impact." Another interviewee from DSC said: "The engagement of our staff is the trigger for local energy savings. We implemented savvy ideas like to flush the loo with rain water and movement detectors for our floors and washrooms." Moreover, from a mimetic perspective, DPDHL has incorporated environmental guidelines and standards into its training units for health and safety. Thus, employees develop energy saving habits, whether working in a warehouse or office.

In summary, DPDHL's centrally steered facility projects are facilitated by strong institutional pressures. Many states have energy regulations, ISO 14001 certification is a common industry standard, and public institutions offer support and expertise on energy efficiency for facilities. The economic potential is perceived as moderate to strong. Payback periods shorten due to improved technology and state subsidies. Eco-warehouse solutions dovetail with DPDHL's warehouse consulting. There is only marginal to weak economic potential perceived in maintenance and modernization of smaller local facilities. The site managers' budgets are constrained due to high upfront investments and their P&L responsibility. The institutional pressures are perceived as weak to moderate. Site managers must comply with divergent local facility standards and must meet the BU's facility energy-saving targets. Some staff members are self-motivated in energy saving, whereby their engagement is largely dependent on the social embeddedness of the country. Moreover, employees start developing energy saving habits through routinely conducted trainings.

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<td>Proactive State-of-the-art facilities</td>
<td>Coercive Enforcement through facility regulations</td>
<td>Strong</td>
<td>Physical- and cost efficiency Energy savings with short- to long-term payback periods; large investments</td>
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<td>Normative ISO 14001 as collective industry standard; elaboration of professional networks</td>
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Strategic responses to institutional pressures and economic potential in the case of eco-friendly operations at DPDHL

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<th>Local facility activities</th>
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<td>Mimetic</td>
<td>Constituents’ expectations; key driver of the GoGreen programme (16% of own emissions)</td>
<td>External regulations and internal facility reduction targets</td>
<td>Normative</td>
<td>Country’s environmental awareness; voluntary staff engagement</td>
<td>Energy reduction, but constrained by upfront investments and P&amp;L responsibility</td>
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<td>through efficient facility models; meeting quality standards; brand image</td>
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<td>Weak to moderate</td>
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**Table 11** Extract coding for corporate and local facility management

### 4.7 Towards a framework of strategic responses

The initial goal of this paper was to enhance understanding of the strategic response of companies to the collision of institutional pressures with economic potential. DPDHL perceives institutional and economic expectations which are either congruent or divergent in their strengths.

The first pattern relates to DPDHL perceiving both strong institutional and strong economic expectations in its Group-wide practices of process, route, and capacity improvements and in its centrally steered aircraft renewal (Figure 7, item 1 and 2). I elaborated a proactive approach. DPDHL sees these practices as helping to stay one step ahead of competitors in pricing as well as in service innovation and quality. Examples are more direct lanes through new aircraft technology and route and process improvements that offer environmentally-friendly and equally cost-effective services.
DPDHL generates social legitimacy through its assistance in defining emission regulations or urban logistic projects. It uses internal capabilities like the hiring of ex-government experts to lobby for its interests. DPDHL also builds coalitions and alliances with external stakeholders. Consequently, it is able to raise institutional and economic expectations for the entire industry. This can create a product monopoly and significant costs for competitors, who are unprepared for compliance. For example, China’s airlines resist the European Emission Trading Scheme whereas DPDHL is well prepared for it with its energy-saving fleet. Moreover, DPDHL has integrated sustainable logistics into its values and management systems and conducts the corresponding research. This leads to the first proposition.

\[ P1: \text{When institutional pressures and economic potential are perceived as strong in occurrence, a company tends to respond with a proactive approach.} \]

The second pattern relates to DPDHL perceiving moderate institutional pressures and economic potential in its corporate road fleet renewal (Figure 7, item 3a). I find an anticipatory approach. The Corporate team aligns with other companies in the same field. This gives DPDHL the security of not having missed out. It tries to anticipate and to deal with future public intentions and inventions for non-conventional vehicles in order to reduce environmental uncertainty and to create the legitimacy needed to conduct activities in good public faith (Meyer and Rowan 1977). In case of regulative enforcement such as of vehicle emission standards DPDHL invests in compliance measures. The company also takes advantage of governmental subsidies easing compliance. The subsidies balance profitability expectations, and the company’s active participation in social concerns increases its legitimacy. For instance, DPDHL tests and rolls out subsidised NCVs, and provides certified driver training for its employees to ensure active compliance in fuel savings.

\[ P2: \text{When institutional pressures and economic potential are perceived as moderate in occurrence, a company tends to respond with an anticipative approach.} \]

The third pattern relates to DPDHL perceiving weak institutional pressures and economic potential for its local road fleet management in the US, Mexico, and Central America (Figure 7, item 3c). There is a reactive approach. Site managers try to act as buffers and to compromise on the weak requirements imposed by corporate and local regulations. They mean to keep the weak institutional pressures to a minimum through, for example, realigning their local structures on a low-cost reconfiguration as a form of insurance against local regulations and corporate control. This also disguises the conformity which lies just below the surface. Meyer and Rowan (1977) call it symbolic compliance. In this scenario, organisations engage in ceremonies, myths, and symbols to gain acceptance. For instance, in 2011 in Manhattan, DHL US symbolically launched 30 electric vans and 50 hybrid trucks in order to dovetail with the mayor’s plan to cut emissions throughout
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New York City (Deutsche Post AG 2011c). The initiative served to distract from DHL’s relatively low NCV figures. At that point, DHL did not have any NCVs in the US. In contrast, its competitor UPS was operating around 1,200 (UPS 2011: 49).

**P3:** *When institutional pressures and economic potential are perceived as weak in occurrence, a company tends to respond with a reactive approach.*

I could not find any examples showing that DPDHL pursues a strategy of defiance towards eco-friendly operations. Oliver and Holzinger (2008) favour a defensive strategy, in which a company is persuaded to *keep* its actual winning strategy, but resists against a premonitory change in order to defend its current value chain. Since DPDHL has committed to the value of preserving natural resources and has acknowledged that changes must be made in order to have a sustainable business model, following a defensive strategy would be an utter contradiction of its statements. DPDHL would risk losing the trust and favour of important constituents like investors, policymakers, employees, and customers, in particular in the areas of lifestyle, health, and environment. Although in 2011, DPDHL’s volume of GoGreen services was still comparatively small at 4.8% (1.9 billion) of total mail and express shipments, its volumes and customers have doubled from 2007 to 2010. Especially in Germany, GoGreen services represented around 5% (1.1 billion) of total annual mail volume.

I also observed a strategy exercised when marginal institutional pressures meet marginal economic potential. This strategy is not described in Oliver and Holzinger’s model (2008). I call it a *laissez-faire* strategy; in other words, running business as usual and leaving things the way they are. This strategy is carried out only if the two parameters, institutional pressures and economic potential, are marginal. In the case of air freight subcontractor management, the central functions that book charters had originally pursued this strategy (Figure 7, arrow of item 4b). These central functions see no economic potential in including an emission comparison of the charter flyers in their buying decision. Booking the most ecological plane is perceived as more work without any effect. The central functions had perceived no institutional pressures until 2007 when Corporate GoGreen began expanding its power. Thus, the marginal economic potential was superseded by increased institutional pressure exercised by Corporate GoGreen supervision. The interviews showed no resistance against the pressure. Instead, the central functions changed from a *laissez-faire to a reactive* approach (see following proposition 5). The central air freight booking functions now use a placative tactic which decouples corporate control from its normal booking procedure. They retrieve the emission numbers of the charter flyers from their systems, but in the booking decision, they refer to the traditional network performance calculation.

**P4:** *When institutional pressures and economic potential are perceived as marginal in occurrence, a company tends to use a laissez-faire approach.*
The fifth pattern relates to the role of *divergent* institutional pressures and economic potential and the impact on the strategic approach. For instance, Corporate GoGreen and Procurement carry out a *proactive* strategy on subcontractors’ emission management (Figure 7, item 4a). They perceive *moderate* institutional pressures but *strong* economic potential. Corporate facility projects (Figure 7, item 5a) are also pursued in a proactive strategy. The institutional pressures are perceived as strong but the economic potential often only moderate. In both cases, a proactive strategy is carried out even though one parameter shows a lower participation level. Moreover, local subcontractors’ emission management including the BUs’ air freight booking functions (Figure 7, item 4b) are pursued in a reactive approach. As described in the last paragraph, the central air freight booking functions currently perceive weak institutional pressures but only marginal economic potential. Local eco-friendly facility projects (Figure 7, item 5b) are carried out in a reactive to anticipatory approach. Weak to moderate institutional pressures are perceived, but only marginal to weak economic potential. Local authorities and the Corporate Headquarters drive their institutional pressures mostly in a coercive manner. The local sites *do not dare* to defend themselves, but instead avoid the requirements through end-of-pipe solutions. For each practice, DPDHL has chosen the strategy of the *stronger* institutional or economic dimension.

P5: *If institutional pressures and economic potential are perceived to have divergent strengths as to occurrence, a company tends to determine its strategic approach by the dimension with the higher strength.*

Considering four strategic options (laissez-faire, reactive, anticipatory, or proactive), twelve different scenarios can be created if one dimension, either institutional pressures or economic potential, is perceived as stronger or weaker in occurrence than the other. This study is limited to illustrating only five examples of divergent strengths: strong associated with moderate and vice versa, moderate associated with weak or marginal and weak associated with marginal. Examples in which the strengths of the dimensions are profoundly controversial (strong versus marginal) were not found in this context. Is a company likely to pursue a proactive strategy if it perceives strong economic benefits, but the respective institutional pressures are perceived as too marginal to support the course of action? Logically, a company would intend to negotiate with important constituents to convince them of the company’s intentions. As a tactic, the company would eventually choose to provide policy makers, experts, and reporters with specific information about its views. Conversely, would a proactive strategy be likely if a company perceives strong institutional pressures but only marginal economic potential? The company would aim to increase the marginal projected wins, e.g. through requesting state subsidies for the development of new technologies.
The overall result of the study is a model of strategic responses, depicted in Figure 7. The drawing summarizes the relationships between the strengths of the institutional and economic determinants (x- and y-axis) and the dependent predictive forms of strategic responses (xy plane). The strengths of the determinants are subdivided into a scale of four: marginal, weak, moderate, and strong. Hence, four planes of strategic responses are built.

Figure 7 Integrative framework for strategic responses illustrating the case of DPDHL

4.8 Conclusion

DPDHL pursues diverse strategic responses in the matter of eco-friendliness. When eco-friendliness succeeds in establishing moderate to strong institutional pressures as well as in encompassing moderate to strong economic potential, DPDHL exercises an anticipatory to proactive approach. This is significant for its process, route, and capacity improvements; its centrally managed aircraft renewal; and in the corporate management of its road fleet, subcontractors, and facilities. DPDHL’s customers have also started to adapt the new developments. Thus, diffusion and theorization of eco-friendly operational practices take place, constituting the objectivation phase of the institutionalization process (Greenwood, Suddaby, and Hinings 2002; Tolbert and Zucker 1996). Operational practices on sustainability exhibited on a local level are pursued on less of a value-creating basis as compared to their respective central approaches. These practices include investments in prototypes of non-conventional vehicles, modernization of facilities with low carbon footprint and collaboration with subcontractors on emission reporting. The
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study is limited to assessing the precise strategic choices on the local level, due to the many different kinds and strengths of institutional and economic expectations for each country organisation and its sites. However, it can be maintained that other than various country differences, such as social embeddedness and environmental regulations, the differences between corporate and local strategies are also influenced through DPDHL’s organisational structure. While corporate management’s task is to ensure successful long-term positioning of DPDHL, the local challenge is to manage the company’s day-to-day operations and to follow corporate directives. For instance, in the context of green supply chain practices it is often difficult to provide positive feedback loops in many countries’ cash flows. These green practices are often short-changed in long-term investments because of budget constraints. The analysis recommends that if companies aim to increase stringency in their strategic approaches, they need to work on leveraging the corporate and local differences between the institutional and economic determinants. A great deal of future investigation is required before a viable organisational structure can be developed.

The paper also opens the space for critical exploration on the dynamics of a change in business strategy. How does a company react when institutional pressures or economic potential change to a different level of strength? For instance, the case study predicts a change of strategic approach in the eco-friendliness of local subcontractors at DPDHL. I argue that DPDHL’s current reactive strategy conceals a risk for the Group: If customers’ environmental awareness continues to grow and with it also the institutional pressures increase from weak to moderate, a reactive strategy will pose a severe danger for customer satisfaction with GoGreen services. An immediate reaction – such as replacing subcontractors for Allianz – will not be feasible if the complaints happen on a cumulative level. Consequently, the growing institutional pressures would entail that the local sites adjust their strategies to an anticipatory approach. This supports the elimination of environmental greenwashing. The assumption illustrates that when institutional pressures increase in strength, a company is likely to adapt its strategic approach to more proactiveness. By implication, it can be assumed that companies also shift to a more proactive strategy if their economic potential increases perceptibly. Future research should analyse what strategic approaches companies pursue if they perceive different strength of economic losses in association with institutional pressures. When are companies likely to pursue a defensive approach in order to avoid institutional pressures or to effect a change in direction for these pressures?

Overall, Oliver and Holzinger’s framework of political strategies was modified to apply to the strategic development of sustainable supply chain management. Moreover, the study expands theory by combining two competing views of institutionalists and strategists. In a strategic assessment, institutional pressures must be considered pari passu with economic potential: If institutional pressures are congruent with economic potential, sustainable advantage over the competition can be enhanced. Yet, if the company
disregards institutional expectations, it risks losing its social legitimacy through the discredit of its constituents. The study has its limitation in the theoretical generalization of the developed theoretical framework due to its finding through a single case study. Further empirical analysis needs to provide the evidence and rigor of the model. The dissertation encourages both governments and businesses to impose strong institutional pressures and promote economic potential, because each facilitates the triggering of a proactive strategy for a green SCM.
5 Concluding remarks

The aim of this dissertation is to deliver a theoretical extension for A) the process of institutionalization through its nexus with power management, and B) the predictive selection of strategies through the integration of institutional determinants. The broad empirical subject is sustainability. The work aims at providing managerial implications for this subject through abstraction of its empirical findings. In order to narrow the scope, the dissertation first investigates state governance in climate change through a deductive case study. It then builds a bridge to organisational insights through the inductive case study of sustainable supply chain development at Deutsche Post DHL. This section summarizes the findings concerning each research question.

5.1 Research objective one

Research objective one answers the question: What are the approaches to institutionalizing climate protection and sustainable development that can be identified in China, the US, and Germany, and how are these approaches influenced by institutional power mechanisms?

China, the US, and Germany differ significantly in their approaches to institutionalizing climate protection. Whereas China and the US increasingly deem it to be an additional vehicle for wealth and growth, Germany has a more holistic and solitary perspective on sustainability, which is ingrained in the quality of public life. The German government defines sustainability as the preservation of subsistence means based on a target triangle of environmental protection, economic capability, and social responsibility. The preservation of the earth’s capacity constitutes the “absolute äußere Grenze” (absolute limit) (German Federal Government 2012b: 28). The root cause of divergences between the countries has to do with the respective development of environmental responsibility. While China and the US have not yet reached full objectivation of climate change protection due to a cyclical repetition of theorization, diffusion, and implementation activities, Germany is at the sedimentation stage. Its long-term stability and cognitive legitimacy will depend on the government’s effectiveness in strengthening normative-dispositional and cognitive-facilitative institutional powers, in particular on the balance of cost efficiency and value for all institutional levels.

Research findings on institutional power mechanisms reveal explanations about the different paces of institutionalization and degrees of stability. As of today, China’s approach is primarily lopsided, regulative-episodic, and top-down. This process in China allowed the country to quickly overtake with Germany and the US in green technologies. However, NGOs and the public are encouraged in their climate change-related beliefs and actions only to a very limited extent. The social value of climate protection has largely been deemed as less important than the promises of economic growth through green technologies. The US approach to climate policy is driven predominantly by a bottom-up
approach with a strong normative-dispositional and cognitive-facilitative focus. The public is engaged in climate protection but does not reach consensus. There is a perceptible divide between coastal and inland Americans. Strong industrial powers lobby about the pros and cons of climate change. A lack of unanimity blocks the regulative-episodic powers of the US Congress; this in turn induces delays in the institutionalization process. In Germany, all three institutional power mechanisms are synchronized in climate governance. This has led to a more rapid institutionalization of climate change protection and the successful stabilization of Germany’s climate policy, bringing its institutionalization to the sedimentation phase.

The research results of the case investigations validate the study’s research propositions. The pace of the institutionalization process is mostly accelerated through institutional power activities of a regulative-episodic nature. It becomes progressively slower consequent to normative-dispositional and cognitive-facilitative activities. In turn, institutional stability increases through institutional power activities of cognitive-facilitative nature and becomes progressively looser consequent to normative-dispositional and, especially, regulative-episodic activities.

5.1.1 Theoretical contributions
The research results verify the complementary aspects of institutional pillars (Scott 1995, 2008) and of power processes (Clegg 1989). While institutional pillars are redressed by the impacts of pace emanating from power processes, power processes are redressed by the stability effects coming from institutional pillars. The one-dimensional links of institutional powers (regulative-episodic, normative-dispositional, and cognitive-facilitative) enhance and confirm the model of dynamic institutionalization as posed by Lawrence, Winn, and Jennings (2001). The paper’s regulative-episodic relationship goes beyond Lawrence’s et al. typology of force by including the influencing tactic of surveillance. Moreover, Lawrence et al. focus on typologies of power (influence, force, discipline, and domination) which are based on the relationship of target (subject/object) to the modes of power (systemic/episodic). Scott’s findings of institutional pillars are not incorporated. Hence, the dissertation applied a different methodical approach, but it arrives at similar findings on the pace of an institutionalization process and the stability of an institution.

Overall, paper one contributes to our understanding of how institutions work under the lenses of power mechanisms. By incorporating the element of power, it analyses the development and maintenance of institutions beyond the traditional institutional typologies (DiMaggio and Powell 1983; Scott 1995, 2008) and leverages the criticism that institutional theory focuses too much on beliefs, symbols, and values (Clegg 2010; Dillard, Rigsby, and Goodman 2004). Although institutional theory has taken into account facets of power, for instance, through agency and professions (Dacin, Goodstein, and Scott 2002; Greenwood, Suddaby, and Hinings 2002; Levy and Scully 2007; Maguire,
Hardy, and Lawrence 2004), rules (Burns and Scapens 2000; Clemens and Cook 1999), physical coercion (Haigh and Griffiths 2009), and structure (Clegg 2010; Dillard et al. 2004; Fligstein 1987, 1991; Giddens 1984; Seo and Creed 2002), it has undermined the temporal impact of power on institutions (Clegg 2010; Lawrence, Winn, and Jennings 2001). The work defines and investigates indicators for institutional power activities. Moreover, it aims to derive implications about the temporal impacts of these indicators on institutions (the event of institutionalization). It accords with the view of Jepperson (1991) and Scott et al. (2006) that these indicators are difficult to measure and to trace due to their complex social settings. The defined typologies of institutional powers allow indicators to be revealed which make institutional change and maintenance more systematically ascertainable. The analysis of the defined typologies provides testable explanations for the observations by many institutionalists (Greenwood, Suddaby, and Hinings 2002; Hoffman 1999; Lounsbury 2007) that institutions and institutional change vary in their pace, stability, and endurance.

Moreover, the paper makes use of a theoretical approach that differs from existing theory in exploring institutional instability. Many scholars (Bacharach and Baratz 1962; Clemens and Cook 1999; Cobb 1984; Fligstein 1987; Gramsci 1971; Levy and Scully 2007; Lukes 1974; Ruostetsaari 2010; Seo and Creed) derive their conclusions about institutional change based on powerful group coherence, consent, and openness of recruitment. If powerful groups succeed in articulating their interest before existing power structures reconstitute (elites), institutional change takes place. By implication, if elite powers reconstitute their structures quickly enough, they can maintain an institution through its reproduction. This reproduction process is a significant component “in understanding changes in the institutionalization process” (Dillard, Rigsby, and Goodman 2004: 510). The analysis of institutional power activities supplements insights about the temporal effects of how powerful groups articulate their interests and thus influence the reproduction process. An approach is elaborated that can reveal implications about whether activities of power groups result in an effective pace of institutionalization and whether advanced institutional change turns out to be durable.

5.1.2 Managerial implications

*Research objective one* provides several managerial *implications* for climate protection on a macro level.

The *first* implication involves the *principles of sustainability and its leaders’ strategy*. Albeit China, the US, and Germany have taken up the principles of sustainability in their governance, the definition of sustainability and its strategy towards climate protection need to be more *globally aligned*. For instance, the analysis of institutional power mechanisms reveals that China and the US, the latter mostly during the “Bush” era, have largely taken up the words “sustainability” and “climate protection” in their policies because they fit their targeted self-images and meet the approval of other leading...
industrial nations. The incorporation of sustainability into governmental announcements does not necessarily mean that these government’s authorities are strict proponents of its precepts. The World Bank (2012: 18) suggests that if China accounted for environmental depletion and degradation in its GDP growth, growth would be nearly 5% less than under the current mode of calculation. Research shows the importance of looking behind the scenes to understand and leverage the usage of institutional power mechanisms and their impacts. *Strong leadership* is an especially ambivalent element. The dominion of a small powerful group can be advantageous but also risky. Elite powers can enforce and implement sustainability development targets at a faster pace through *regulative-episodic* activities. However, they also risk the destruction of resources when conducting future activities in a present moment\(^\text{37}\). By doing so, there is also a tendency to cross borders by exploiting resources that go beyond what is generally available to their original organisational field\(^\text{38}\).

The second implication involves governments increasing the *active involvement* and influence of the *normative-dispositional* and *cognitive-facilitative* activities if they are to implement the principles of sustainability and climate protection over the long-term. The lack of active societal involvement during the habitualization and objectivation phase causes sustainability and climate protection to only be implemented on the *surface*. Moreover, weak and *non-transparent communication* provides an opening for measures to be introduced that conflict with the institutionalization of sustainability and climate protection. These conflicting measures may be even supported by governments. For instance, in 1997, US lobbyists opposed the Kyoto Protocol. They feared economic disadvantage through stricter emission rules. American politicians suppressed US scientists who contributed “close to half of all scientific articles about the changing climate” (Goodall 2008: 416). Another example comes from China where NGOs are encouraged to support climate protection as long as they continue to adhere to the official party line. Typically, they do not occupy nuclear power stations or analyze sewage water, unless they are that of foreign companies. If NGOs turned against China’s state-owned companies or institutional bodies, their offices would likely be closed the following day (RNE 2012). Carbon targets should not be audited by propaganda committees, but by media that operate with transparency as well as by scholars and experts whose actions are politically independent. On the *normative-dispositional* level, another positive cross-country enforcement would be to provide instruction on how to benefit from business opportunities as opposed to considering climate change as anti-business. Moreover, a thorough analysis of sources of resistance in climate policy favours designing the reform process so that resistance is mitigated.

\(^{37}\) For instance, Shanghai’s Transrapid high-speed, magnetic-levitation train track was constructed within a year, but was ultimately not a profitable project due to the short distances involved.

\(^{38}\) An example of extended organisational field is the exploitation of resources in foreign countries.
The third implication involves *regulative-episodic* activities. These are needed to build the climate protection framework through rules, guidelines, and holistic strategies. *Regulative-episodic* activities will help to remove the uncertainty behind investments made by businesses and private households. One measure is to agree on sustainability strategies that aim to *leverage transition costs* by maximizing short-term and local benefits. Pricing and quantitative incentives such as environmental taxes, tradable quotas/permits, and subsidies, in particular, can send the market effective signals (Stern 2006). Setting the *right price* will stimulate changes in *patterns of consumption*. A higher consumption of sustainable products and services stimulates the scale of production, technical maturity and innovation (World Bank 2012: 2, 19). For instance, feed-in tariffs boosted global demand for photovoltaic panels (PV) which simultaneously reduced production costs. In this light, at first glance China is a role model in catching up to and then outpacing Europe and the US in producing green technology. Higher energy and fuel prices are also a boost to consumers and companies exploring alternative technologies and efficient processes for reducing costs of ownership. However, “Financial Times Deutschland” (FT DE 2012) recently stated that it is still often cheaper for Chinese companies to pay environmental fines than to invest in new technologies. Consequently, it happens that green technologies, such as PVs, are produced in non-ecofriendly ways. Moreover, large Chinese subsidies for PVs lead to price dumping in their global market. The production strategy is steered by selling the cheapest, most primitive PVs rather than developing “the most efficient, highest value added solar technology that can compete at grid parity prices” (Hunt 2012: 1). Thus, price signals must be aligned carefully among the states, because price signals can become double-edged swords in a global market: subsidized feed-in tariffs boosting non-sustainable PV production. The question is raised: How can governments co-operate effectively in order to support sustainable business models in a global market? Beyond that, how can companies be convinced to invest in green technology and sustainable processes as part of their own business aims? This leads to the dissertation’s second research objective.

### 5.2 Research objective two

Research objective two answers the question: *What are the compelling events and actions which motivated DPDHL to change to green SCM, and how have institutional power activities influenced the dynamics of this process?*

Three *institutional phases* were identified in the development of green SCM at DPDHL. The analysis showed that within the boundaries of each phase, *institutional power activities* and disruptive events took place with *implications* for the *institutionalization process* (Clegg 1989; Scott 1995, 2008). The results show that the *pace and stability* of the institutional transition are dependent on the characteristics and strength of these activities. The case study also revealed that if *institutional power activities* and disruptive events were too weak in occurrence, they caused *stagnation* or, at the most extreme, caused institutional phases to *retreat* in the *institutionalization process*. In a set of
Concluding remarks

propositions, the impacts of institutional power activities on the instituting phases were formalized.

The genesis of green SCM at DPDHL was predominantly determined by regulative-episodic and normative-dispositional institutional power activities which were essentially required in order to shift into the next phase of objectivation. Mostly new rules of reporting and practices for energy saving were introduced through a top-down approach by a small GoGreen team. In the structural and strategic endorsement of green SCM, DPDHL had also started to gradually invest in cognitive-facilitative activities, in particular in training offensives, and to call to employees for ideas. The carrying out of all three institutional activities was necessary in order to progress from the phase of objectivation to sedimentation of green SCM. A bandwagon effect was observed by all business units which started to offer GoGreen services. The majority of staff had become aware of the Group’s GoGreen strategy, and investors grew to take DPDHL’s listing in the Dow Jones Sustainability Report for granted. Cognitive-facilitative activities lagged behind. They became stranded in the objectivation phase. In stark contrast to the CEO, few middle managers considered GoGreen to be a top business priority. Green supply chain solutions were implemented more in silos than in boundary-spanning relationships, and gaps in data integration blocked the instituting process. The discrepancies in cognitive-facilitative activities prevented the passing over of obligatory points that would have allowed for reinforcement of full institutionalization (sedimentation). The case study maintains that consistency is required in the pursuit of institutional power activities in order to obtain the stability needed for full institutionalization of green SCM.

5.2.1 Theoretical contributions

The research results support the first paper’s findings that the institutionalization process is not a linear path as typically depicted in current theory (Greenwood, Suddaby, and Hinning 2002: 60; Tolbert and Zucker 1996: 176) but can be non-sequential. Moreover, the collision of institutional power activities induced temporal instabilities of the institutionalization process. The study could refine existing theory about the findings on institutional power activities which are necessarily required to move from one phase of institutionalization to another. Moreover, the dissertation contributes to clarifying why the institutionalization process can come to a halt. Scholars often see disruptive events, shocks, force, ruptures, or jolts (Beckert 2010; Fligstein 1996; Lounsbury and Crumley 2007; Greenwood, Suddaby, and Hinings 2002; Maguire, Hardy, and Lawrence 2004; Meyer 1982; Tolbert and Zucker 1996) as underlying reasons. However, the imbalance of institutional power activities can also cause a halt, for instance, through mutual suppression.

This dissertation is one of the very few studies that investigate the dynamics of the institutionalization process under the lenses of dialectics of power and resistance. Institutionalists typically focus on “common understandings of what is appropriate and,
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fundamentally, meaningful behaviour” (Zucker 1983: 105; see also Meyer and Rowan 1983: 84). They undermine struggle and conflict in favour of institutional conformity (Clegg 2010: 6). Tolbert and Zucker (1996: 179) argue that with growing social opposition, the institutionalization process is impeded and becomes regressive. The study shows, however, that critical opinions of staff members about the value of green SCM revealed effective development opportunities. In other words, certain frictions about a new institutional element may motivate organisation members to step up their dealings with the subject. This process can contribute to theoretical objectivation. In their discussions and activities, decision-takers and experts evaluate the similarities to and differences from the new elements of existing practices, rules, and structures. Pragmatic legitimacy evolves for the new institutional element. This legitimacy is created through a social process “by which obligations or actualities come to take on a rule-like status in social thought and action” (Clegg 2010: 7). Afterwards, the new institutional element is adapted to established business procedures. For instance, questioning of the real value of green SCM served to encourage DPDHL employees to look into supply chain efficiency potential. GoGreen efforts were legitimised by applying accepted principles of traditional supply chain management, e.g. analysis of savings potential in fuel consumption. The critical questioning particularly amplified normative-dispositional and cognitive-facilitative mechanisms that anchor long-term stability for a new institutional element.

The dissertation contends that the understanding of de-institutionalization (Scott 2000; Tolbert and Zucker 1996) is as important as the focus on routine structuring. The powerful short-term profit thinking enforced by revenue and EBIT targets had a hegemonic position in the case study. Profitability in the DHL Express division was always achieved by fast and high pricing of shipments. Now a “green” way of thinking has been evolving, with counter-hegemonic effect, whereby efforts are being made to consider sustainable alternatives to processes and services which are highly compatible with profitability.

The work also contributes to the subject of sustainability in supply chain management – scarcely explored to date – under the theoretical lens of institutionalization (Carbone and Moatti 2011). Typical studies investigate green SCM through an operational research approach such as for product design, sourcing, production planning and control, purchasing and reverse logistics (Bretzke 2011; Doherty and Hoyle 2009; Halldorsson, Kotzab, and Skjøtt-Larsen 2009; Routroy 2009; Solér, Bergström, and Shanahan 2010; Srivastava 2007). The dissertation analyses the initial process of evolutionary convergence with the seemingly opposing core business objectives of speed and cost efficiency and the reinforcing aspects of green SCM. It depicts how green SCM practices have been evolving gradually over time in line with different institutional power activities.
5.2.2 Managerial implications

Research objective two provides several managerial implications for the development of green SCM at an organisational level.

For over ten years now, management has recognized a green movement in supply chain management. This green movement has been steadily growing. Today in developed countries, every logistics company must comply with fleet emission standards. However, successful logistics firms go beyond compliance with regulative rules and standards. They aim to institutionalize green SCM to cover the whole operational process and all products and facilities.

The case study shows that at the initial stage of a new practice, strong regulative-episodic mechanisms and unanimity among the organisation members are required in order to quickly insert a new institutional element into the organisation. Regulative-episodic activities ensure that the respective instituting element is acknowledged and sponsored by top management. For instance, DPDHL’s top management facilitated the institutionalization process of green SCM by incorporating the respective policies and guidelines into its company targets and beginning to translate them into key performance indicators for carbon measurement. Then they deployed regular carbon emission reporting and auditing for all divisions. Another effective step taken by top management was to create central resource areas (nested subsystems). Examples of these are the Corporate GoGreen team and the DHL Innovation Center. As technological progress is often faster than the development of corresponding customer demand, the GoGreen team and the Innovation Center have provided platforms for internal and external experts from science and industry to spin off new institutional elements. Without such a resource centre, new institutional elements often had no chance of development, as initially they are too small to meet the growth needs of large companies. The challenge of such central resource areas, however, is alignment with field operations. If the company is unable to build structures that connect the central resource area with field operations, isolated solutions result. These may be rejected by operations because they are not easy to apply.

A top-down approach, however, is not sufficient for incorporating green SCM into the company. The green SCM concept is too complex to be managed exclusively by policies, central resources, and performance-correlated indicators. Top management must find different ways to push the green SCM concept through to its middle management and, in turn, to its staff. Normative-dispositional and cognitive-facilitative activities must be considered for stabilizing behaviours and processes in daily operations.

Symbols are effective institutional power tools that help a company to facilitate sustainable behaviour. In terms of green SCM, examples include using recycled paper; having managers give up their “gas-guzzlers”; canteens offering local, organic food; and
titles and awards displayed on staff uniforms, e.g. for the most fuel-efficient driver of the month. Symbols can be very effective promoters of cognitive-facilitative power. On the one hand, they can build common meaning for employee awareness and promote the modelling of successful colleagues. On the other hand, they spur people on in their personal ambition to stand out from the crowd in the hope of obtaining status and privileges.

Personal initiative also serves as a central cognitive-facilitative activity. It enables the organisation to develop dynamic capabilities which generate strategic value and, thus, foster sustainable competitive advantage. Personal initiative involves employees setting green targets on their own and undertaking the corresponding green SCM actions without explicit instructions. Personal initiative also implies that employees have the stamina, self-motivation, and strength of will needed to overcome persistent opposition to the exercise of green supply chain initiatives. Unattractive economic potential or opposing institutional pressures can be associated with high persistence. The case study illustrated examples of business principles that put instant revenue growth at centre stage. Customers were hesitant in asking for green services and thereby undermined investments in green opportunities. Green solutions had to be backed up by large amounts of data and long approval hierarchies. Sufficient resources for developing a holistic green product portfolio were lacking. Finally, but importantly, staff members were overloaded with work, causing fatigue. In general, it can be maintained that green supply chain measures hardly have a chance for solid deployment when companies suffer structural constraints to investments and employment. This was observed in particular at DHL Express during its economic downswing in 2008 to 2009. In contrast, the case study also revealed initiatives that stimulate personal initiative-taking: Voluntary days allow staff to be engaged in off-the-job activities. Hahn et al. (2012: 109) confirm that social off-work activities positively influence the vitality level of employees at work. GoGreen training sessions facilitate new skills such as the design of efficient procedures and the use of alternative means to achieve operational goals. The study showed that carbon offsetting is easy imitated, but that competent consulting services are not. Fundamentally, these activities need to be endorsed consistently in the field.

In addition, it is not uncommon for managerial and employee interests to stand in the way of introducing a new institutional element. Therefore, crucial for the institutionalization process is that selected existing structures are modified towards green SCM rather than breaking ground with a new business model. Existing supply chain programmes are adjusted in such a way that they incorporate the goal of emission efficiency in their conventional optimization and value creation activities. For instance, they optimize the travelled distance, volume, weight, and time of consignments or reduce energy usage of fleet and facilities. These kinds of programme activities mean that middle management and their staff in particular gradually get used to a new principle gaining centre stage. People are less resistant because the new institutional element appears similar to their
familiar working tasks. In addition, the initiatives sustainably complement the ultimate company goal of profitability. Consequently, a pragmatic and economic legitimation for green SCM can be created. With this, ideas and initiatives need to be encouraged. For instance, throughout the organisational hierarchy individual target agreements must be set up for a specific period. These should aim to leverage employees’ own interests as opposed to the interests of the company. Employees are incentivized financially and professionally to make sacrifices for the good of staff generations to come.

5.3 Research objective three

Research objective three answers the question: What are the deciding institutional and economic determinants in the development of green SCM at DPDHL, and how does the respective weighting of these determinants impact the company’s strategic approach in terms of level of activity and conformity in going green?

The case study identified institutional pressures and economic expectations that determine the strategic approach to green SCM at DPDHL. It differentiates between regulative, normative, and mimetic pressures and the economic potential of cost efficiency and product differentiation. Each coded practice of green SCM was assessed with a perceived strategy, whether proactive, anticipatory, or reactive. A defensive strategy was not identified. In addition, the respective strengths of institutional and economic determinants were analysed as to their colliding impact on the perceived strategy chosen in the green SCM approach. Patterns were derived within and across the identified practices of green SCM. The paper formalizes the impacts of institutional pressures and economic potential in a set of propositions.

The study results show that a company aims at determining its strategy based on the stronger institutional or economic dimension. If economic potential is perceived as less strong than the corresponding institutional pressures, a company cannot afford to disregard the institutional pressures. It would risk losing its social legitimacy through the discredit of its constituents. In turn, a company tries to convince its constituents of the greater validity of whichever practice is more profitable by increasing political power and institutional legitimacy. Further, the dissertation reveals that a company is more likely to choose a proactive approach when a new institutional element, e.g. green SCM is aligned to the pressures of social meaning and to the company’s productive value aspiration.

The analysis also identified significant differences and interdependences for the perceived strengths of institutional and economic determinants within the organisational hierarchy. If the practices are pushed top-down with few compelling institutional and economic drivers perceived at a local level, the operational practices exhibited are pursued less proactively on site than are the centralized approaches. Local sites often implement end-of-pipe solutions in order to avoid causing a stir at Corporate Headquarters, e.g. subcontractor emission management. Conversely, if the sites are
directly affected by institutional and economic pressures, they take a more value-creating approach, e.g. for activities targeting process, route, and capacity improvements along the supply chain.

5.3.1 Theoretical contributions

Historically, much has been said about the distinction between institutional and economic explanations. Strong institutionalists have argued that there is no need for the distinction because the categorization of explanations is already socially determined. Hence, social constructivism is granted primacy (Suddaby 2010: 15). In turn, strong economists grant primacy to arguments that revolve around resources and efficiency (Barney 1991, 2001; Child 1997; Eisenhardt and Martin 2000; Helfat and Peteraf 2003; Pfeffer and Salancik 1978; Russo and Fouts 1997; Teece, Pisano, and Shuen 1997; Williamson 1991, 2000).

The dissertation project helps to mitigate this strict distinction. It assumes a critical perspective of institutional and strategic theory by contending that strategic responses are made based on both the strengths of institutional and economic determinants (Levy and Kolk 2002). An inter-relationship becomes apparent between a rational-economic assessment of the strategic situation and its embeddedness in a social-institutional environment. The study shows that businesses that decide on a strategic approach are not lopsided, as they evaluate costs and benefits from various strategies. Their evaluation is also grounded on institutional determinants. Market assumptions are produced, for instance, by governments through regulations, by professions through norms, and by public interest groups through beliefs and symbols. The dissertation contributes to a holistic theoretical understanding of the fact that organisations may take strategic approaches that are not rational-economic at first glance, but are triggered by strong institutional pressures. Conversely, strategic approaches initiated by strong rational-economic assumptions may serve as premises for the shaping of social constructs.

The theoretical contribution of the third research objective is also a critical reflection on the findings of the first two research objectives. The work equilibrates the focus on institutional pillars and aspects of power that implicate isomorphism in the institutionalization process: It is one of the few studies that analyses potential reactions of organisations to institutional expectations and institutionalization processes. The study discusses strategic reactions such as proactive altering, conformity, manipulation, and shallow compliance. In much institutional research work, organisations appear rather passive (Hirsch and Lounsbury 1997) and resemble others facing similar environmental conditions (DiMaggio and Powell 1983: 149). Contemporary institutionalists acknowledge that in institutional theory an impression is communicated that the behaviour of individuals and organisations is over-socialised due to being formed exclusively by norms and cognitive-cultural aspects. The study stresses that organisations also have a strategic choice in either conforming to the institutional environment or influencing it (Bresser and Millonig 2003; Delmas and Toffel, 2008; Goodstein 1994; Oliver 1991, 1997).
In order to redress the divergent focus of institutional and strategic theory, the dissertation adapts Oliver and Holzinger’s framework of political strategies (2008). It applies the framework for a new unit of analysis, the study on the strategic development of sustainable supply chain management. Investigations of green SCM under the lenses of institutional theory is rare; even more so is the combination of two competing theoretical perspectives: with institutional and economic perspectives dominating. A broad range of recent studies has examined the question: “Does it pay to be green?” However, notably lacking is a focus on understanding why and how organisations chose strategic approaches revolving around a green supply chain for institutional and economic value expectations (Busch and Hoffmann 2011; Hart and Ahuja 1996; Lash and Wellington 2007; Russo and Fouts 1997; Walls, Phan, and Berrone 2011). By including implications on counteracting institutional and economic determinants, research objective three has derived a new theoretical foundation for strategic direction. It provides insights into an assumptive paradigm of how and why companies pursue green activities for reasons of social acceptance, even if the activities do not prove to be lucrative.

5.3.2 Managerial implications

Research objective three provides several managerial implications for the development of green SCM at the corporate and local/functional level.

The study’s first implication involves the profound differences in pursuing strategic approaches to green SCM within a corporation. The institutional pressures and economic potential of green SCM differ significantly from the corporate to the local level. Corporate management’s task is to ensure successful long-term positioning. It interfaces strongly with the macro level. Hence, the case study showed that the corporate area perceives strong institutional pressure for green SCM coming from investors, global customers, competitors, international governmental and non-governmental organizations, industry bodies, and the media. These institutions convey pressure in the form of norms, regulations, guidelines, and image perception. Corporations such as DPDHL depend on compliance with these institutional pressures because of the risk of losing customer trust, operating license, or suffering other penalties. Consequently, in any strategic assessment, institutional pressures must be considered pari passu with economic potential: If institutional pressures are congruent with economic potential, sustainable advantage over the competition can be enhanced through proactive strategic initiatives. Yet if a company disregards institutional expectations, it risks losing its social legitimacy through the discredit of its constituents. On a country level, institutional pressure for green supply chain practices, e.g. attention through the media is often less strong and is different from that experienced at the corporate level. This is because on the local level, the challenge is managing the company’s day-to-day operations while following corporate directives. Especially in developing countries, legal requirements and the social embeddedness of the population create less of a focus for companies on environmental friendliness than on other basic needs, e.g. food, security, and infrastructure. Typically,
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once basic needs are met, greater weight is placed on “greening” the environment and as a result on green SCM. The Environmental Kuznets Curve\textsuperscript{39} may apply “an empirical finding linking rising per capita income levels with a first deteriorating and then improving environment” (Brock and Taylor 2010: 128).

The second implication involves \textit{shaping the local level} towards green SCM. Market failures, lax policies, and lack of incentives for technological progress can cause environmental degradation. However, if companies are committed to proactive green policies, they can make these policies more efficient. The dissertation reveals that either institutional pressure or economic potential, or both must be perceived as strong if a proactive strategy is to be pursued. If states and regions do not yet exert forceful institutional pressure and offer economic potential in support of a green supply chain, companies may \textit{influence} the increase of institutional and economic determinants. In the process, corporate management must be sufficiently aware of the surrounding circumstances to conceptualise green supply chain initiatives in such a way that they reflect \textit{local contexts}. The initiatives need to be meaningful for the local environment and serve as tools for alerting and preparing in the event that local conditions change. By implication, situational benchmarking is created among business units and their country organizations. In addition, corporate management needs to find ways to make green investment attractive for field managers. Therefore, the Corporate Sustainability Strategy should focus on important activities to be accomplished in the next five to ten years. This can avert decisions that opt for prompt local benefit and neglect other, more long-term options. Many DPDHL country organisations are still unable to see the positive impact of green supply chain practices over the short-term on their returns on investment (ROI). Since at DPDHL immediate ROI is seen to be an important key performance indicator, the economic expectations for green supply chain practices are perceived as weak or even marginal. In addition, diminished institutional and economic expectations bring about less proactive engagement in local enforcement of green SCM. Another activity is, for example lobbying on the part of corporate management for penetration of green supply chain solutions into new local markets. Economic potential is perceived through synergy effects. A corporation can horizontally expand its green SCM concepts and products. It can also respond to such institutional pressures as the demand for stringency in its strategic approach.

The third implication involves the \textit{integration} of sustainability into supply chain strategy. It is crucial that management integrate sustainability into its strategy and not simply with fashionable buzzwords. A sustainable supply chain strategy must be meaningful and backed by a \textit{well thought-out action plan and adequate budget}. Budgeting is fundamental to ensure that expenditures are aligned with green strategy goals, in particular when

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\textsuperscript{39} Kuznets postulates that when countries develop and national incomes rise, inequalities augment. However, when a certain national income level is reached, inequalities decline. The theory is extended to the environment, but was rejected for this study due to missing evidence (Brock and Taylor 2010).
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Green SCM objectives and growth objectives clash. Planning green SCM activities helps in attracting external grants and investment capital. Upper management needs to encourage and train middle management to take advantage of subsidies which many states and regions provide for research work and long-term investments for emission reduction, e.g. for usage of renewable energy, non-conventional vehicles, and alternative products and packaging. Planning also assists in the analysis of stakeholder interfaces and processes. Therefore, it can facilitate the deployment of social marketing tools for green SCM as well as complex green supply chain solutions. Finally, yet importantly, planning provides insights into the environment, e.g. into the approaches taken by other industries. As a consequence, absorption – “a subset of innovation that focuses on the use of new-to-the-firm technologies rather than the creation and commercialization of new-to-the-world technologies” (World Bank 2012: 73) – may be triggered. The planning and budgeting process for green SCM should be established through strict formal regulations. The study shows that, typically, when rules are not strictly enforced, there is a great deal of resistance to the loss of freedom of choice and decision-taking authority. For instance, line functions and local organizations implement green SCM processes only on the operational surface (environmental greenwashing) in order to generate attractive reports for corporate management. In contrast, when planning rules are strictly enforced and results are thoroughly audited, everyone will take for granted that they are part of the system. Consequently, strong isomorphic pressures evolve that help to accelerate the institutionalization process of green SCM. Green SCM planning becomes a product of ritual and conformity (Meyer and Rowan 1977).

5.4 General limitations and future research

Despite valuable contributions, this dissertation, like every study, has limitations which future work can address.

**Qualitative single case study approach:** From a methodological perspective, a first limitation concerns the application of a single case study to research objectives two and three. A single case study has constraints in validity and reliability (Barratt, Choi, and Li 2010; Stuart et al. 2002; Yin 1989). The findings are mainly derived through the collection and interpretation of interviews, documents, and publications about the case company. Some of the data gathered have been subjected to *ex post rationalisation* and *theorising* and may have undermined important past events. An incontrovertible fact, however, is that practitioners are *well versed* in their daily businesses. If the researcher is able to encourage them to reflect upon what they do and why they do it, fruitful new insights for theorising can be generated. During the interview or even afterwards, the researcher also can check back in order to *question and to substantiate* emerging interpretations together with the interviewee, thereby increasing reliability. Nevertheless, it cannot be denied that case study findings still depend on the *selective perception* of the individual researcher and the underlying theoretical lens (Suddaby 2006: 639). In order to avoid non-reflexive theorising and personal bias with the attendant risk of seeking evidence that matches
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theory, I drew on various theoretical streams other than institutional theory during the research process. In my analysis and explanations of empirical data, I referred, among other things to power management, network theory, strategic decision-making, the resource-, capability- and knowledge-based view, and transaction cost economics. Further, I affirmed the findings by discussing them with my doctoral supervisors and with other researchers.

Longitudinal study: “Most studies represent a specific moment in time while in many instances a longitudinal study would be far more informative” (Giunipero et al. 2008: 82). This dissertation reviews the institutional development over a longer period of global climate policy and green supply chain management for its case studies. However, the data collection itself was conducted with changing research objective foci in less than two years, from November 2009 to September 2011. The dissertation concludes that the institutional development of global climate policy as well as of green supply chains has reached neither the final phase of re-institutionalization nor for the most part the phase of sedimentation. Future research is encouraged to continue investigating the dynamics of institutional development in the framework of a longitudinal study. The realms of institution and action are both ongoing in a cumulative process of change through time (Burns and Scapens 2000). Data collected over a longer period allows the study of organisational processes to be done more intensively and corroborates the evaluation of causality (Giunipero et. al. 2008: 83). For instance, a longitudinal analysis of the cooperation between supplier and buyer or headquarters and subsidiaries in decarbonising the supply chain could provide further insight into the effectiveness of governance and management mechanisms for the institutionalization process. It must be recognized, however, that longitudinal studies are very time-consuming and their data collection is very difficult to conduct. For instance, common practical challenges of longitudinal studies are “issues of site selection; choices about data collection and degrees of involvement” (Pettigrew 1990: 268).

Cross-country focus: Research objectives two and three of the dissertation are based on data collected in Germany, North and Central America, and via interview calls in Asia. The German mother company Deutsche Post, however, has a significant impact on the cultural foundations of green SCM. On a national level, Germany’s environmental policy predominantly influences the micro-level actors such as the corporation DPDHL. Moreover, the top-down stream coming from German headquarters, influencing the operational sites within the Group’s countries, was clearly noticeable. This top-down approach served as a constraint on a study of bottom-up initiatives in the countries. The dissertation also has its limitations in capturing detailed data of all 220 operational countries and regions from the case company. It investigated the relationships between corporate headquarters and business units and foreign subsidiaries on a smaller scale than the actual Group’s size. Despite the smaller scale of the analysis unit, the dissertation could provide practical and theoretical insights into the institutional and
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economic relationships between headquarters and operational sites. The study pointed out the impact of these relationships, in particular on the strategic approach for green SCM. Moreover, it offers various connecting factors for additional research in this multi-level context, possibly with other country sites. For instance, are companies less likely to customize green supply chain activities to local environments if there is a high relatedness to the company’s core business? How do multi-national companies sustainably succeed in standardizing green SCM measurements globally? Many academic contributions in supply chain management have a single focus on a particular country (Schoenherr 2009). They also examine the effects of institutional pressures, mostly in isolation on a country or area level (Goodstein 1994; Liu and Chen 2009; Ingram and Simons 1995; Lowe and Gertler 2009; Spell and Blum 2005; Walls, Phan, and Berrone 2011). Comprehensive, clear research potential exists for green supply chain studies that collect data from institutional agents of different countries, and that compare results. Thus, researchers will be able to observe more system-wide phenomena (Guinipero et al. 2008: 82).

Cultural-facilitative micro scripts and the deployment of social marketing tools: In particular, research objectives one and two investigate the impact of cultural-facilitative activities on institutional development. The work shows that these activities are required in order to achieve stability of an institutional element such as the emerging practices of green supply chain management. Thus, only if emerging sustainability practices gain wide acceptance among staff members and management integrates them into their strategic control mechanisms within the organisation can they be considered as institutionalized (Barley and Tolbert 1997: 89; Burns and Scapens 2000: 12; Giddens 1984: 25). The study shows that cognitive-facilitative factors such as training, communication, network ties, and social embeddedness are crucial for the reproduction of institutional structures and actions tied to sustainability. This is so that rules that are taken for granted can be reproduced over a longer period. However, the dissertation is limited in providing an in-depth analysis of the cultural-facilitative micro scripts and institutional logic of institutional change (Barley and Tolbert 1997: 103; Thornton 2004: 69). Clemens and Cook (1999: 448) emphasize that in order to demonstrate the endurance of an institution, it is necessary to analyse the types of rule sets as one set of multiple parameters for socialization. On the one hand, behavioural rule sets may prevent environmental engagement. For instance, individuals tend to weigh immediate losses as more significant than future gains. They consider environmental costs as losses and are contemptuous of claims that future environmental damages could be prevented (Tversky and Kahneman 1992). Hence, they prefer keeping climate investment low and may even delay new climate policies. This is

40 Barley and Tolbert (1997: 89) define scripts as “observable, recurrent activities and patterns of interaction characteristic of a particular setting.”

41 Thornton (2004: 69) defines institutional logic as “the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality.”
also because individuals are inclined to avoid complex decision-taking (Tversky and Shafir 1992). But individuals tend to fear uncertainty and like to do things right. They want to have choices and obtain satisfaction through their personal contributions. Consequently, the framing of social messages is critical for how values are presented and for determining the efforts needed. For instance, environmental policies need to set ambitious and positive goals, such as to become green logistics provider number one, instead of conveying economic constraints through emission regulation. Another effective way to facilitate environmentally-friendly behaviour is selling green products as default options without removing the conventional product options. Pichert and Katsikopoulos (2008) tested user behaviours on two green default offers for electricity. Only 5% of customers requested a transfer to conventional power, which was a few cents cheaper. Some linguistic rules enable more actions through their conscious wording than others do. Thus, they influence the reproduction of institutional structures and actions. Future research may emerge as to reactions individuals have to differently-worded green SCM initiatives. How can social marketing tools be effectively deployed on green SCM? In addition, there is a clear need for further institutional research in strengthening the link between organisational practices and the influence of cultural-facilitative factors, and how these cultural-facilitative factors translate down to organisations and their actors.

**Professions influencing institutional change:** Scott (2008) underlines that those occupations which are coded as professions are themselves institutional models. They specify the characteristics of our society through their work and their expertise becomes increasingly specialized. The case study shows that in the fields of sustainability and green supply chain management it is noticeable that new professions have arisen which are highly specialized and compartmentalized. For instance, in recent years at DPDHL, new roles have come into being, such as executive vice president of Corporate Public Policy and Responsibility, Corporate GoGreen senior experts, regional sustainability directors, emission controllers and in-house carbon consultants. Many other larger and medium-sized corporations are also taking on so-called Chief Sustainability Officers (CSO). These specialized professions are leaders in various ways in the institutional creation of green SCM. The GoGreen team plots out normative prescriptions and cultural agendas to guide behaviour, and the CSO employs coercive authority and political power. Future research should further explore to what extent professions can engage in institutional work. For instance, how do they conceive and roll out general principles or convey their ideas to other professions? And how do professions at the organisational and organisational field level induce changes at the macro level and vice versa? This would also support tracing the origins of normative role concepts and templates of behaviour, and how these are diffused (Lounsbury and Crumley 2007; Scott 2008; Thornton and Ocasio 1999). Moreover, a study of the professional role identity of sustainability managers or officers in terms of their objectives and guidelines would contribute to the literature on professionalisation of corporate sustainability reporting,
emission accounting and energy consulting (Campbell 2007; Cliberti 2008; Ioannou and Serafeim 2011; Levy, Szejnwald Brown, and de Jong 2010; Okereke and Russel 2010).

**Strategic dynamics through changing institutional and economic determinants:**

The dissertation did not explore to what extent institutional pressures and economic potential must change for organisations to also adjust their strategic approach. The focus of analysis for research objective three was the assessment of existing institutional and economic determinants affecting a strategic approach rather than the changing dynamics in strategy. However, since research objectives one and two explored institutional power activities and their implications for the institutionalization process, cases of strategic change could be observed. For instance, China, the US, Germany, as well as case company DPDHL, adapted their sustainability strategies over time in order to achieve larger social and economic value growth. In the process, they were influenced by powerful institutions. It could be seen that the governments and organisations were likely to engage in the critical assessment of existing rules, practices, and structures as well as in the search for environmentally-friendly alternatives when existing rules and practices started to conflict with the economic and social criteria of efficiency and effectiveness (Oliver 1991; Seo and Creed 2002). Governments and organizations moved from a laissez-faire strategy with marginal institutional and economic pressures to a reactive, anticipatory, or even proactive strategy. For instance, within DPDHL the charter flight booking team opted for a decoupling from GoGreen. This approach enabled the booking team to keep up the appearance of legitimacy while varying its internal activities in response to rules, practices, and structures. Future research should conduct a comparative analysis that explores the delta of changing institutional and economic determinants that specify when institutions should consider changing or maintaining a certain strategy objective. This could provide valuable insight into the adaptation of value drivers which follow strategic approaches, e.g. the importance of emission performance. It would also broaden our knowledge of how and why some institutions are able to manage sustainable development while in others sustainable development successively diminishes or completely disappears. In addition, it would also open up critical exploration as to why institutions in one institutional environment are often very similar in their formal set-up, but practice diversity in their internal processes (Meyer and Rowan 1977: 357).

**Leveraging the disparity of collaboration and competition for strategic advantage:**

The research work showed that the case company collaborates with its competitors in certain environmental aspects. This is seen in the improvement of carbon emission transparency for subcontractors by defining an independent system for the monitoring of road transport emissions and in the design and testing of non-conventional vehicles in commercial transport, among others. Such collaborations have several benefits for DPDHL’s industry peers, such as the establishment of new industry standards in green supply chain management, the efficient bundling of resources, such as in truckload utilization, and the leveraging of public legitimacy and lobbying power. For instance, Jira
and Toffel (2011: 21) argue that suppliers are more likely to share emission information when they face increasing requests for information from buyers and are in a competitive industry. However, cooperations also risk providing insights into the cooperation partners’ internal capacities and processes. In the service industry in general, and in the supply chain industry in particular, the difficulty is that the competitive advantage of a company is mainly based on capacity capabilities and process-related knowledge. The latter is under threat of quickly being transferred, imitated or absorbed by the collaboration partners. Hence, there is a high impact on strategic positioning. In the matter of supply chain engagement in climate protection, the existing literature (Helmig 2010; Jira and Toffel 2011) draws little attention to the phenomenon of protecting capacity- and knowledge-based assets without hindering collaboration benefits. Researchers should explore the right balances of parameters and conditions for a proactive collaboration strategy in which partners are able to address climate change together while preserving their independent competitive advantage. Thus, future study should investigate the strengths of determinants that affect the perceived benefits and drawbacks to collaboration partners of disclosing information. Moreover, it should specify processes and institutional structures that leverage the parameters thus identified, for instance through contractual terms for roles, duties, rights, and investments of the collaboration partners and the involvement of independent third party institutions (Partanen and Möller 2012: 485; Wassmer 2010: 163). Overall, this would broaden our knowledge about the adoption of supply chain activities, which are distinguished by high uncertainty with regard to strategic benefits and drawbacks.
References


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Appendix

The interviewees who gave their insights from different hierarchical levels, functional areas, and geographies are listed below.

<table>
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<th>No.</th>
<th>Function</th>
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