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**Institutional complexity and sustainable development in the EU electricity sector**

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# **CHAPTER 1**

## **INTRODUCTION**

In the last decades the European Union (EU) electricity sector has undergone multiple radical transformations, driven largely by EU deregulation and privatization policies and by the rise in societal concerns about electric utilities' economic, societal and environmental sustainability. These key phenomena have critically affected both the sector's structure and the core activities of its major constituent firms and they have been so unsettling that recently the very survival of the big European electric incumbents, for years considered examples of solid and stable businesses, has started to be questioned (Postma, 2016).

In the 1990s, a process of deregulation and privatization of the EU electricity sector was started, reflecting the "global diffusion of [...] 'neoliberal' policies" (Zelner et al., 2009: 382). The complexity of this crucial shift has been increased by the heterogeneity of its implementation across EU countries (Eurostat, 2012), as a number of EU governments have attempted to retain some control over this sector they consider politically salient and 'nationally strategic' (Musacchio et al., 2015). This is epitomized by the presence of electric utilities that are still partially state-owned (Bruton et al., 2015; Musacchio et al., 2015), like EDF whose share capital was 84.9% owned by the French government as of 31 December 2015 (EDF, n.d.). However, although unevenly adopted, the deregulation process indeed engendered a reduction in the allowed state support to electric utilities across the EU member states and the emergence of new competitors in all national markets. The deregulation of the sector, together with the related policy process promoting a single European energy market, has encouraged electric incumbents to expand into foreign (European) markets, further confronting them with higher complexity, especially related to the need to manage (EU member) country-specific state-market relationships.

While experiencing deregulation, electric utilities have also been confronted with the rise of societal demands about the sustainability of their operations. Indeed, until the 1990s sustainable development issues either were addressed without too much discussion through monopoly and public ownership, like security of supply (E.ON, 2003), or received limited attention, as in the case of climate change. In the last two decades instead, with the rise in global concerns about climate change and with liberalization and privatization processes, electric utilities have been confronted with sustainable development demands of increasing number and intensity. The compliance with regulations, norms and values related to economic, social and

environmental sustainability has thus become a critical requirement for power generation and supply. The complexity for electric utilities of attaining these goals at the same time has been emphasized by the expression 'energy trilemma', adopted by World Energy Council (2013) with reference to the three objectives of environmental sustainability, security of supply and energy affordability.

As regards the first dimension of environmental sustainability, the increasing concerns with regard to climate change have driven the launch of measures, e.g. the EU Emission Trading Scheme and national support mechanisms for renewable energies, which have had major consequences for electric utilities. First, they changed the legitimate technologies for electricity generation, imposing the transition from fossil fuels to renewable energies. Second, they contributed to the diffusion of distributed generation, with customers starting to produce electricity themselves. The fact that in 2012, 46% of renewable generation capacity in Germany was owned by 'private citizens and farmers', and only 5% by the four major electric utilities (Agora Energiewende, 2015), signals the relevance of this transformation. Third, the rise of energy produced from renewable energies caused a fall in electricity prices and the consequent unprofitability of keeping in operation conventional power plants owned by electric utilities. Economic sustainability, especially with respect to security of electricity supply, has also raised increasing concerns, in particular related to the intermittent nature of renewable energies and to the need to maintain in operation conventional plants in order to guarantee a stable and continuous electricity supply. The relevance of the controversy regarding security of supply is epitomized by the discussion, at national and EU levels (e.g. BMWi, 2015; Eurelectric, 2015; European Commission, 2016), on remunerating electric incumbents for keeping in operation their unprofitable conventional plants when necessary. In addition, electric utilities have been confronted with pressures for social sustainability. Demands have been formulated in particular with regards to energy affordability, due to the energy poverty affecting around 54 million European citizens (European Commission, 2015a). Noteworthy is the proposal to 'freeze' electricity bills, made by the Labour leader Ed Miliband in 2015, in order to address the 'chronic overcharging' imposed by electric utilities in the UK (Wintour and Perraudin, 2015).

The assessment of the three sustainability dimensions has been affected by events in the external environment of the European electric utilities. For example, the Fukushima nuclear disaster that occurred in 2011 contributed to an increase in the complexity faced by European electric utilities, by rekindling worries about the legitimacy of nuclear energy as socially and environmentally sustainable energy source. Electric utilities operating nuclear plants were confronted with complexity arising from the differentiated responses to the Fukushima disaster across EU member

countries, ranging from the anticipated phase-out of nuclear energy in Germany, to the decision to reduce the national reliance on this energy source in France and the confirmation of nuclear projects in the UK.

'Institutions', i.e. the "regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott, 2014: 56), have played a significant role in the transformations that have challenged the structure, the practices and, lately, the very existence of incumbent European electricity utilities. Given the political saliency of the electricity sector, particularly regulative measures have been critical in shaping electric utilities' behaviour, as exemplified by the effects of deregulation- and privatization-related rules, sanctions for polluting power installations, imposition of nuclear plants' shutdown, inducements to renewables and incentives to conventional plants ensuring baseload capacity. Regulative measures have been complemented and affected by the dominant norms and values and societal debates in the various EU countries, regarding for instance what degree of government intervention is acceptable and what energy source seems most legitimate and appropriate. For example, the fact that "opposition to nuclear energy has a long and deep-rooted history in Germany" (Patriotta et al. 2011: 1812), had a strong impact on the decisions taken by the German government after the Fukushima disaster.

The multiple and heterogeneous institutional pressures on the electricity sector, within and across EU countries, makes it a particularly valuable research setting for exploring *how firms manage sustainability-related institutional complexity within and/or across national organizational fields*. Although "the complexity of institutional processes and their influence on organizational behaviour has been implicit within the institutional perspective since Meyer and Rowan [...] (1977)" (Greenwood et al., 2011: 320), only recently have scholars started exploring the implications of multiple conflicting institutional demands for firms and their responses to them (Greenwood et al., 2011). While relevant advancements have been made for the understanding of institutional complexity (e.g. Greenwood et al., 2010; Lee and Lounsbury, 2015; Purdy and Gray, 2009), still key areas have been left unexplored and this dissertation aims to shed light on some of them.

The dissertation has been inspired by calls for the development of 'phenomenon-based research' (Doh, 2015) and 'problem-driven research' (Davis and Marquis, 2005). Doh (2015: 609) sees phenomenon-based research as "any research that takes as a principal focus the ability to accurately and insightfully inform a real-world phenomenon or phenomena". Davis and Marquis (2005: 340) consider problem-driven research to be research that "make[s] sense of more or less singular historical

occurrences in institutional fields” and “create[s] an understanding of how historical shifts in economy and society have their impact on the ground”. These calls share the strong importance assigned to key transformations, events and dynamics occurring ‘in the real world’ as the focus of management research. Exploring whether and to what extent existing theoretical frameworks and constructs ‘inform that reality’ (Doh, 2015) allows at the same time to advance management literature and to increase the understanding of crucial contemporary events. The empirical studies presented in chapters 4 and 5 and the conceptual study in chapter 6 adopt this approach, by examining sustainability-related transformations, disruptive events and/or shifts that affected the electricity sector in the last decade through an institutional perspective. This approach aims to attain three objectives. First, it helps advance institutional theory and improve its explanatory power with regards to the institutional complexity firms have been experiencing. It also provides a contribution to corporate sustainability literature, by developing insights on sustainability-related complexity. Second, it provides insights into these real-world phenomena and contributes to research on the electricity sector. Third, given the societal relevance of the topics addressed, it aims to inform policy-makers and/or practitioners in the electricity field.

In order to reach these three objectives, it was considered necessary to conduct a review of the research on the electricity sector published in management journals. Initially only one chapter was planned to be dedicated to this review of extant research on the electricity sector. Yet, from the analysis of the collected literature two perspectives, i.e. a sustainable development perspective and an institutional perspective, emerged as adopted alternatively or in combination by a significant number of studies. Given the subject of this dissertation, it was then considered relevant to dedicate not only one but two chapters, i.e. chapter 2 and 3, to the review of the research on the electricity sector, each focusing on one of the two perspectives.

### *The chapters in this dissertation*

Chapter 2 comprises the review of the management literature investigating sustainable development in the electricity sector. The chapter illustrates and discusses the key characteristics of this research stream by adopting three main lenses. The first lens examines the types of sustainable development issues addressed by extant literature. The reviewed studies encompass diverse environmental, social and economic sustainability issues, signalling the multifaceted nature of the sustainable development challenge faced by electric utilities. Among the three main sustainable development-related principles environmental sustainability raised the most scholarly interest. The increased societal concern in the last decade over climate change seems to be the driver for the rise in the number of studies published since 2005. The review

also reveals the limited attention assigned to relationships and tensions between different sustainability issues experienced by electric utilities. The second lens adopts a new industry emergence and technological system perspective. This allows a set of studies to be reviewed, which in keeping with the interest in environmental sustainability, focus on the rise of new, greener, technologies for electricity production. Scholarly attention given to these phenomena signals the significant sustainability-related transformations undergone by the electricity sector. The third and final lens focuses on electric incumbents' responses to sustainable development demands. Extant research depicts incumbent electric utilities as adopting a wide array of responses, ranging from reactive, through defensive and accommodative, to proactive. Among the multiple drivers of these different responses, market-based coordination or 'deregulation' stands out as a relevant but also controversial factor, determining alternatively more or less sustainable behaviours. While extant research has provided an extensive picture of sustainable development in the electricity sector, the literature review highlights relevant unexplored areas, which have inspired the studies presented in chapters 4, 5 and 6. These comprise: 1) a cross-country perspective to electric incumbents' responses to sustainable development challenges, 2) the evolution of electric incumbents' responses to tensions between sustainable development issues and 3) the nexus of the market, state and sustainable development.

Chapter 3 subsequently presents and discusses the key features of the management research focusing on the electricity sector and institutions. The literature reviewed highlights the critical role played by institutions and institutional change in different aspects of electric utilities' ongoing activities. In particular, three key lenses are adopted to conduct the literature review. First, the institutional agents, i.e. the actors engaged in creating, maintaining or disrupting the institutions targeting the electricity sector, are analysed by examining their goals and the type of agency adopted. The review shows the attention assigned by extant research to three types of actors: governments, business actors and the civil society. Government's agency related to deregulation and sustainable development emerges as a significant interest of scholars. The second lens is represented by the 'institutional consequences' (Scott, 2014) identified by the reviewed studies. The literature depicts the impact of three main types of institutions: deregulation, sustainability-related institutional pressures and national institutional arrangements. In particular, scholars describe varied effects of deregulation on the electricity sector's structure and constituency and on the strategies of electric incumbents and new entrants. National institutional arrangements' impact on the international investments of electric utilities is also highlighted. Third, the 'institutional processes' (Scott, 2014) investigated with regards

to the electricity sector are assessed. Institutional processes involving deregulation and, more widely, the relationship between state- and market-based coordination, those focusing on the institutionalization of new sectors and sustainable development-related (de)institutionalization processes have raised the most interest among scholars. The literature reviewed in chapter 3, similarly to the one examined in chapter 2, provides a comprehensive picture of the crucial role played by institutions in the electricity sector. However, two overlooked research topics are identified and considered crucial for understanding the relationship between institutions and the electricity sector. These topics, which will be addressed in the following chapters are: 1) national and cross-national institutions, and 2) the interaction between the three institutions of state, market and sustainable development.

The two literature review chapters are followed by two empirical studies, included in chapter 4 and 5, and a conceptual study, presented in chapter 6.

Chapter 4 presents the first study research of the dissertation.<sup>1</sup> In keeping with the approach illustrated in the previous paragraphs, it aims to provide insights into MNEs' responses to the institutional complexity faced across national organizational fields, while, at the same time, shedding light on key underexplored areas of the literature on institutions and sustainable development in the electricity sector. Scholars have argued that isomorphism, a core concept in institutional theory, cannot be applied to MNEs as they are embedded in multiple institutional environments and they tend to engage in actively changing institutions instead of passively adapting to them (Kostova et al., 2008). The challenge posed by MNEs to isomorphism is particularly critical during institutional change processes, often triggered by disruptive events. This study thus explores how the patterns of multiply-embedded MNEs' responses to deinstitutionalization after a disruptive event challenge the concept of isomorphism. A multiple case study design is adopted, with a specific type of European electric utilities, i.e. those involved in nuclear energy, as units of analysis. The chapter explores nuclear energy firms' responses to different deinstitutionalization processes in the French, German and the United Kingdom organizational fields for nuclear energy before and after the 2011 Fukushima nuclear disaster. The Fukushima nuclear accident is a disruptive event with a different impact on the national nuclear energy fields in the three focal countries, each having a unique constellation of nuclear MNEs and country-specific market-state relationship. The findings indicate the limits of the current 'monolithic' conceptualization of isomorphism and suggest new categories of isomorphism, which integrate the institutional complexity MNEs experience and MNEs'

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<sup>1</sup> This chapter is co-authored with the two supervisors of this dissertation, Ans Kolk and Johan Lindeque.

active agency. These are inter-country isomorphism, intra-country isomorphism and isomorphic agency. The study also contributes to the literature on institutions and the electricity sector, by providing insights on the impact of national institutional configurations' heterogeneity on the behaviour of electric MNEs. Finally, by focusing on countries with different dominant views of nuclear energy's legitimacy as sustainable energy source, it signals how electric firms tackle the misalignment of sustainability-related institutional demands across countries. The study also highlights other dynamics that we consider deserve further investigation and will thus be addressed in chapter 5 and 6.

Chapter 5 presents the second empirical study of the dissertation and is inspired by previous chapters. In particular, as shown in chapter 2, electric utilities have been facing multiple, and in some cases conflicting, sustainable development-related demands. Chapter 4 has signalled that the deinstitutionalization of nuclear energy has been strongly intertwined with multiple institutional processes involving other energy sources in the last years. In addition, it has indicated that these processes were based on the framing of the energy sources as economically, socially and/or environmentally sustainable. These phenomena can only to a limited extent be informed by extant theoretical frameworks and constructs. Although the literature on firms' responses to multiple, conflicting sustainability-related demands is growing, limited attention has been given to the conceptualization of the multiple sustainable development beliefs and values firms face and embrace. Also, the dynamics in firms' adoption of these different sustainable development principles during strategic change processes, driven by shifts in the business environment, have been overlooked. The study thus firstly integrates the corporate sustainability and the institutional logics literature by conceptualizing a compound and multifaceted sustainable development logic both in terms of 'beliefs' and 'material practices' (Thornton and Ocasio, 1999). The sustainable development logic is constructed as composed of three sub-logics i.e. the environmental, social and economic sustainability logics. Then the sustainable development logic concept is employed to explore how firms respond to sustainability-related institutional complexity during a strategic change process driven by external transformations. This question is investigated through a single case study research design, examining longitudinally the German electric utility multinational E.ON from June 2000, the date of its foundation, to December 2015. The study analyses whether and how E.ON addressed each sustainable development sub-logic both in terms of values and in terms of practices and what relationship, if any, the company established between the three logics over time. The findings from the E.ON case allow a process model to be developed, that is composed of three main stages, each comprising a different type of response to SD-related institutional complexity.



Chapter 6 is a conceptual study which draws from key phenomena regarding deregulation and sustainable development emerging in the previous chapters and from additional evidence gathered from the media, electric utilities and government sources. On the one hand, as illustrated in chapter 3, the electric field has been undergoing a deregulation and privatization process, which has been 'metamorphosing' (Delmas et al., 2007) the industry. Yet, the results of the study presented in chapter 4 have indicated a still present complexity related to state intervention in the European electricity sector, with heterogeneous state-market relationship across countries. On the other hand, as signalled by the previous chapters, sustainable development concerns related to electricity generation and supply have increased in the last two decades, in particular in the EU. Given the ongoing shift from state- to market-based coordination, debates have arisen, in EU member countries, on whether a deregulated electricity sector would be able to tackle environmental, economic and social sustainability issues or, instead, whether only government intervention could allow these problems to be addressed (e.g. E.ON, 2003; Eurelectric, 2008; Policy Exchange, 2015). These occurrences in the European electric field have been used as an illustration to explore, more widely, the complexity enacted by the irruption of the sustainable development logic in a deregulating organizational field and the processes unfolding from this. From the identification of these dynamics, four main state-market-sustainable development logic configurations have emerged, which have provided the basis for a discussion of the interaction between state, market and sustainable development logics in three key contexts. First, the application of state-market-sustainable development configurations to fields where state-owned enterprises operate is addressed. A second involves the interactions between market, state and sustainable development logics in a field which is experiencing intra-institutional complexity, due to the compound nature of sustainable development that has been highlighted in chapter 5. Third, the application of the state-market-sustainable development configurations in the context of the relationship between different organizational fields is examined.

Chapter 7 presents the conclusions of this dissertation. This concluding chapter provides an overview of the dissertation and of its main contributions to institutional theory, to the study of the electricity sector and in terms of societal relevance. While the dissertation provides insights on several topics, a number of relevant topics have not been covered. Chapter 7 thus notes the limitations of the dissertation and the areas considered highly promising for further research from both an academic point of view and for reasons of societal relevance.