



UvA-DARE (Digital Academic Repository)

Institutional complexity and sustainable development in the EU electricity sector

Ciulli, F.

Publication date

2016

Document Version

Final published version

[Link to publication](#)

Citation for published version (APA):

Ciulli, F. (2016). *Institutional complexity and sustainable development in the EU electricity sector*. [Thesis, externally prepared, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, P.O. Box 19185, 1000 GD Amsterdam, The Netherlands. You will be contacted as soon as possible.

CHAPTER 3

REVIEW OF RESEARCH ON INSTITUTIONS AND THE ELECTRICITY SECTOR

3.1. INTRODUCTION

In the last decades the electricity sector has undergone multiple significant transformations and institutions and institutional change have come to play a critical role in the life of electric utilities, by affecting their ownership (e.g. Tsoukas and Papoulias, 2005), the energy technologies to adopt (e.g. Hoffmann, 2007), their commitment to sustainable development (e.g. Poisson de-Haro and Bitektine, 2015; Sharrat et al., 2007), their international investments (e.g. Holburn and Zelner, 2010), the structure of the sector in which they have operated and the number and types of competitors they have been confronted with (Sine and David, 2003).

Focusing on the past two decades (1994-2014), this chapter aims to examine the research conducted on institutions and the electricity sector. The study adopts three main lenses to the review of the literature. First, the institutional agents, i.e. those actors committed to creating, maintaining and disrupting institutions (Lawrence and Suddaby, 2006; Scott, 2014), have been analysed. Indeed, as institutionalists have emphasized through the concepts of 'agency' (Kostova et al., 2008), 'institutional entrepreneurship' (Battilana et al., 2009) and 'institutional work' (Lawrence and Suddaby, 2006), institutions are not static and actors do not always passively conform to them but they are actively engaged in creating, defending or changing them. Given the relevance institutions have in the electricity sector, it is particularly interesting to identify the institutional agents that the literature considers crucial, their goals and the means through which they engage in affecting electricity-related institutions. Second, the 'institutional consequences' (Scott, 2014) have been explored. It is indeed particularly relevant to assess not only *whether* the literature sees institutions as important for the electricity sector but *how* it conceptualizes their importance. The analysis of institutional consequences allows to shed light on the different types of impact institutions may have on electric utilities and on the structure and constituency of the electricity sector. The third lens consists of a review of the 'institutional processes' (Scott, 2014) associated with the electricity sector, as explored by scholars. As posited by Sine and David (2003), 'institutional conflict and change' have played a key role in the electricity sector, due to the transformations it has undergone in the last decades, after a long period of stability. From the literature, institutional processes

related to deregulation and sustainable development have emerged as dominant themes in the recent history of the electricity sector.

The literature reviewed in this chapter provides relevant insights on institutional agency, institutional consequences and institutional processes related to the electricity sector. Yet, two key topics have also been identified as receiving scant attention. In particular, as discussed in section 3.5, the (de)institutionalization processes involving the market, state and sustainable development deserve further investigation. Also, there is a need to explore the challenges faced by electric utilities operating in multiple heterogeneous institutional environments. The chapters following this one will explore these topics further.

3.2. METHODOLOGY

The selection of papers relevant for the literature review followed four main stages that reflect the approach adopted in chapter 2.

First, we selected twenty-five major peer-reviewed strategy, general management, and international business journals, based on the ABS (Association of Business Schools) 2010 ranking and the FT 2012 research rank, were selected, as well as the main business ethics journal (*Journal of Business Ethics*) and business strategy and sustainability journal (*Business Strategy and the Environment*). In addition, two top business history journals (*Business History Review* and *Economic History Review*) and two entrepreneurship journals (*Entrepreneurship Theory and Practice* and *Journal of Business Venturing*) were included among the selected journal outlets, in order to capture other potentially relevant papers (see Table 3.1, which is the same as Table 2.1). As also indicated in chapter 2, this selection has limitations but is assumed to provide a relatively good reflection of main debates amongst business and management scholars.

Then, the timeframe in which to focus the article search was set. As the research was conducted in 2015, a twenty-year period, from 1994 to 2014, was considered an appropriate period to explore the evolution of the management literature on institutions and electricity sector. Due to database access limitations or to the publication of the first issues of a journal in a later date, for eight journals it was not possible to collect papers since 1994 and the search was thus conducted from the first available year (see Table 3.1). One study, i.e. Poisson-de Haro and Bitektine (2015) included in the reviewed papers, was first made available online for early view in 2014, but later included in a 2015 journal issue. For each journal a separate search was done, either in a database that gave access (such as EBSCO or JSTOR) or through the specific journal website.

Journal outlets	Searched timeframe
Academy of Management Journal	1994-2014
Academy of Management Review	1994-2014
Academy of Management Perspectives	2006*-2014
Administrative Science Quarterly	1994-2014
British Journal of Management	1994-2014
Business and Society	1999*-2014
Business History Review	1994-2014
Business Strategy and the Environment	1996*-2014
California Management Review	1994-2014
Economic History Review	1994-2014
Entrepreneurship Theory and Practice	1994-2014
European Management Journal	1994-2014
Global Strategy Journal	2011*-2014
International Business Review	1994-2014
Journal of Business Ethics	1994-2014
Journal of Business Venturing	1994-2014
Journal of International Business Studies	1994-2014
Journal of International Management	1998*-2014
Journal of Management	1994-2014
Journal of Management Inquiry	1999*-2014
Journal of Management Studies	1994-2014
Journal of Operations Management	1994-2014
Journal of World Business	1997*-2014
Long Range Planning	1994-2014
Management International Review	1994-2014
Management Science	1994-2014
Organization Science	1994-2014
Organization Studies	1994-2014
Research Policy	1994-2014
Strategic Management Journal	1994-2014
Strategic Organization	2003*-2014

Table 3.1: Overview of the journal outlets and searched timeframe

* available only from this year in the University of Amsterdam journal database or publication of the journal only started from this year.

Subsequently, a set of keywords for the search of potentially relevant articles was established. The keywords selected were based on the terms mostly used by practitioners and scholars to refer to the electricity sector and firms. The keywords employed were: *electric/electricity*, *utility/utilities* and *energy*.

Once the articles were collected using the keywords, they underwent an additional selection process, in order to retain only the papers relevant for the literature review. For this purpose, the articles were examined to verify whether they fulfilled three main criteria.

1. As the core feature of the electricity sector is electricity generation and distribution, the articles needed to focus on **actors producing and/or distributing or aiming to produce and/or distribute electricity**. As a consequence, papers focusing on other actors, e.g. oil and gas companies or manufacturers of energy technologies, or with an unclear focus were excluded.
2. The articles needed to **only focus on the electricity sector**. As the literature review aims to examine the research interest raised by the electricity sector among scholars, articles mixing electric firms with firms from different sectors do not signal a motivation specifically for the sector of this study. Therefore, articles mentioning the electricity sector only as an example among others or using electric utilities within a sample including companies from other sectors were excluded.
3. Since this study focuses on reviewing the literature on the electricity sector and institutions, the articles needed to **address topics involving regulative, normative or cognitive institutions** (Scott, 2014); this is the only difference in the methodology compared to chapter 2. For regulatory institutions the selected articles included also studies focusing on regulations in the framework of other theories (e.g. political strategy theory) or without explicit reference to institutional theory. For normative and cognitive institutions, given the higher level of difficulty in identifying the focus on these institutions without the adoption of an institutional theory framework, only the studies explicitly adopting institutional theory were selected.

In total 45 articles published in 15 journals fulfilled the criteria and were selected for the literature review. Compared to chapter 2, which covered 41 articles in 15 journals, 26 articles and 12 journals are included in both sets. Once the general characteristics in terms of journals they belonged to, year of publication, and geographic focus were assessed (aspects which will be discussed in section 3.3), all the articles were read fully and examined through the three lenses presented in section 3.4: institutional agents, institutional consequences and institutional processes.

3.3. GENERAL CHARACTERISTICS OF THE RESEARCH PUBLISHED IN MAIN ACADEMIC JOURNALS

3.3.1. Journal outlets

The analysis of the coverage of the literature on institutions and the electricity sectors across the selected management journals shows that it spans a variety of publications (See Figure 3.1).

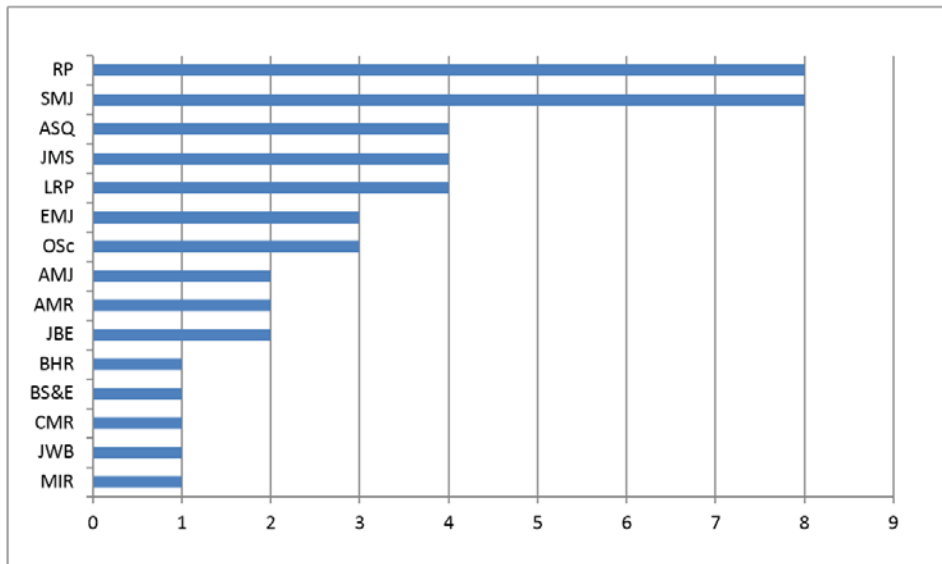


Figure 3.1: Number of articles per journal outlet

Interestingly, the journals with the highest number of articles are Strategic Management Journal (SMJ) and Research Policy (RP). In particular, the high presence of studies in SMJ signals that institutions are acknowledged by scholars as playing a key strategic role on the electricity sector. Compared to chapter 2, where Business Strategy and the Environment (BS&E) had most articles, a larger prominence of management and organization journals was found here more generally. The large number of articles in RP suggests that the sector has undergone significant technological changes in the last decades and institutions have been highly relevant in this transformation. The limited number of articles published in international business journals is striking. As illustrated and discussed in the following sections, this could be related to the fact that the internationalization of the electricity sector is rather recent, as the period between 1990 and 1999 is said to be “the industry’s first decade of internationalization” (Holburn and Zelner, 2010: 1291). However, as argued by Holburn and Zelner (2010), since an increasing number of countries have opened their

electricity sectors to foreign direct investment (FDI) in electricity generation facilities, the integration of an international business perspective to the analysis of institutions and the electricity sector would be particularly valuable.

3.3.2. Chronology of research

The analysis of the distribution of articles on institutions and the electricity sector over the last 20 years shows that the absolute number of papers per year is relatively limited, yet, researchers' attention has been maintained, with an increase in interest in the last 10 years (See Figure 3.2). This trend could be related to the increase in institutional complexity experienced by the electricity sector, driven by the contested push for pro-market reforms across a large number of countries and by the rising institutional pressures for sustainability. However, interestingly, chapter 2 showed that sustainable development as a theme in relation to the electricity sector had received much more limited attention, with an exceptional spike in 2014, the last year covered (see section 2.3.2). The following sections illustrate that these have been the two topics receiving the most attention in the literature on institutions and the electricity sector.

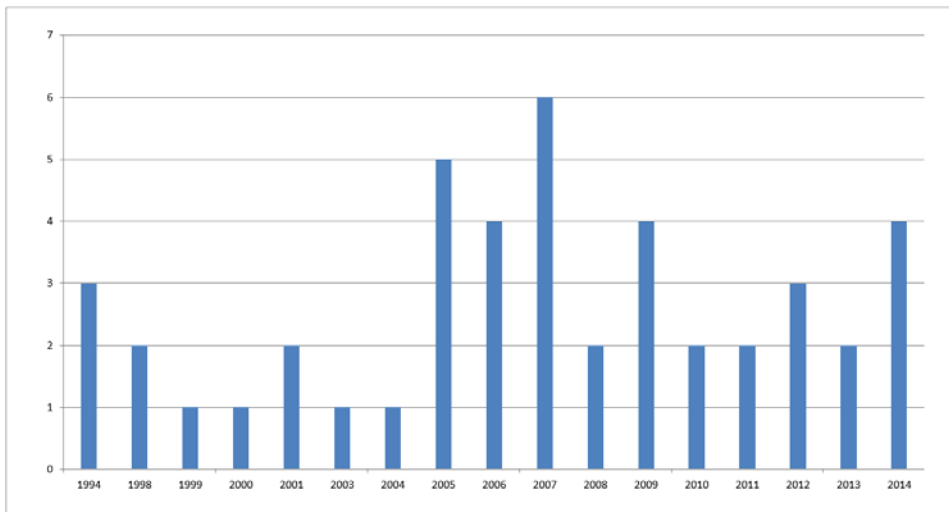


Figure 3.2: Chronology of research

* For the year 2014 also Poisson-de Haro and Bitektine (2015) is counted, as in the first version of the article 2014 was indicated as year.

3.3.3. Geographic focus

The analysis of the geographic focus of the literature on the electricity sector and institutions shows that, analogous to the research focusing on sustainable development, the main research setting has been the US (see Figure 3.3), which reflects a more general tendency of (usually US) journals and scholars to take this country as their focal point for data collection and publication. There have also been important developments that may justify the search for further insights in this location, including the deregulation of the US electricity sector since 1978 (Sine and David, 2003), the characteristics of different environmental regulations at the federal and state levels (e.g. Majumdar and Marcus, 2001; Marcus and Geffen, 1998), the significant increase in the number of nongovernmental organizations (NGOs) “dedicated to renewable energy and energy conservation” (Pacheco et al., 2014: 1618), and the heterogeneity of institutions and institutional actors across US states (e.g. Pacheco et al., 2014; Russo, 2001).

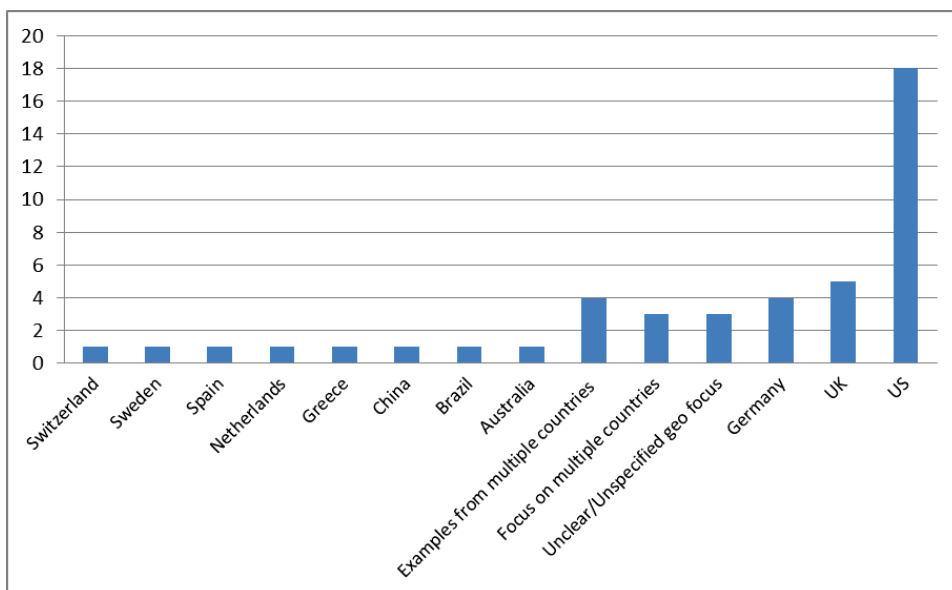


Figure 3.3: Geographic focus

From this analysis it emerges that the second geographic space that has attracted significant interest of researchers studying institutions and the electricity sector has been the European Union (EU), with a particular focus on Germany and the UK. Yet, the main reasons driving scholars’ interest in Germany and the UK were different. Specifically, Germany was considered an interesting location for studies focusing on institutional pressures for sustainability, in particular due to the contested legitimacy

of nuclear energy in the country (Beelitz and Merkl-Davies, 2012; Patriotta et al., 2011) or due to the fact that the “German electricity industry [was] one of the largest emitters of greenhouse gases (GHG) in Europe” (Hoffmann, 2007: 465). The UK instead was considered particularly suitable for studies focusing on the consequences of liberalization/deregulation, given the significant degree of privatization and liberalization compared to other European countries by the 1990s (Hood and McArthur, 1994).

As the main location of the studies has been the US, comparative research on institutions across multiple locations has mainly concerned institutional differences between US states (e.g. Russo, 2001; Sine et al., 2005; Sine et al. 2007). Such intra-national institutional divergences are also highlighted by Hafsi and Tian (2005) for China and Griffiths et al. (2007) for Australia. Although intra-country institutional differences proved relevant, the institutional variance observed by these studies is limited compared to those existing between countries. Yet, studies encompassing a comparison of institutions across countries are scarce (e.g. Bergara et al., 1998; Holburn and Zelner, 2010; Zelner et al., 2009).

In particular, the literature makes very limited reference to the comparison between home and host countries’ institutions; an exception is Holburn and Zelner’s (2010) comparison of the degree of policy risk in electric utilities’ home and (potential) host countries. However, all these studies address cross-country institutional differences in relation to electric utilities’ entry choice, overlooking an exploration of electric utilities’ behaviour within the different national institutional environments in which they operate.

Interestingly, one set of studies makes more or less strong reference to supranational or international institutions. In particular, some studies consider regulations developed at the level of the EU. While Hoffmann (2007) and Hoffmann et al. (2009) refer to the EU regulations for the reduction of CO₂ emissions, Boscheck (1994) focuses on EU electricity deregulation policies. Symmetrically, some scholars consider international institutions, either with regards to CO₂ emissions, i.e. the Kyoto Protocol (Poisson-de Haro and Bitektine, 2015; Hoffmann, 2007; Hoffmann et al., 2009) or electricity sector deregulation, i.e. the Washington Consensus and the coercive pressures of the International Monetary Fund (IMF) (Zelner et al., 2009).

3.4. THE CONTENTS OF RESEARCH ON INSTITUTIONS AND THE ELECTRICITY SECTOR: THREE LENSES

Drawing on Scott (2014), the literature on institutions and the electricity sector can be viewed through three different 'lenses'. First the institutional determinants, i.e. "by whom [...] institutions [are] constructed" (Scott, 2014: xii) will be examined. I will thus assess the types of 'institutional agents' (Scott, 2014) investigated by the literature, i.e. the actors that have engaged in the creation, change or disruption of institutions targeting the electricity sector (see section 3.4.1). Second, I will analyse the 'institutional consequences' (Scott, 2014) illustrated by the selected articles, i.e. the intended but also, importantly, the unintended impact of institutions. The studies exploring the impact of institutions on the electricity sector will therefore be reviewed (section 3.4.2). Third, the 'institutional processes' involving the electricity sector will be discussed. The focus will be on the studies focusing on "the ways in which institutions [targeting the electricity sector] are maintained; how they spread, diffuse across time and space; and how they weaken, decay and fall into disuse" (Scott, 2014: xii) (section 3.4.3). Table 3.2 presents an overview of the main findings of the literature review, which will be discussed in the next three subsections for each of the three lenses adopted.

3.4.1. Institutional actors

Institutional theory has for a long time overlooked the issue of 'agency', focusing on the impact of institutions on different actors but not on the latter's influence on institutions. In order to address this limitation, DiMaggio (1988) acknowledged the possibility for field constituents to create or change institutions, by positing that "new institutions arise when actors with sufficient resources see in them an opportunity to realize interests that they value highly" (Sine and David, 2003: 187). As argued by Scott (2014: 117), the institutional theory literature has found that a wide range of actors can "leverage resources to create new institutions or to transform existing ones". In particular, the institutional agents identified by the studies on institutions and the electricity sector can be categorized in three major groups: government, business and civil society.

Lens 1: Institutional actors		Lens 2: Institutional Consequences		Lens 3: Institutional Processes	
Government	<i>Goals</i>	<i>Electricity system focused</i>		<i>Institutionalization of the market over the state</i>	
	Deregulation/privatization Sustainable development	Potential for regulatory capture Threats for welfare and public interest		Deregulation and liberalization Deinstitutionalization of the state	
	<i>Agency</i>	<i>Incumbent focused</i>		Institutionalization of the market Deinstitutionalization of the state-ownership	
	Authority and coercion Inducement Information or Exhortation	Unprecedented challenges / (new) risks Unprecedented uncertainty Changes in electric utility strategy Environmental differentiation opportunities Make or buy decisions International strategies and competition Changes in innovation degree and preferences of sector Comparative efficiency of governance structures Heterogeneous and changing impact of pressures for sustainability		Legitimation of private ownership Shift from logic of centralized (state) to decentralized (market) control International institutional pressures <i>(Partial) Re-institutionalization of the state</i>	
Business	<i>Incumbents</i>	New Entrants		Civil society's pressure for state intervention Government's retrenchment of deregulation Delegitimation of private ownership Deinstitutionalization of the market	
	<i>Goals</i>	New Entrants		<i>Coexistence and conflict between state and market</i>	
	Institutional change Institutional maintenance	Institutional change Institutionalization		Coexistence and conflict between market- and state-based coordination	
	<i>Agency</i>	Strategic legitimating actions Industry Associations		<i>Institutionalization of new actors and (sub-) sectors</i>	
Civil Society	Corporate political strategy Discursive strategy Industry Associations	Founding of independent power generation facilities Technological heterogeneity Adoption of novel (green) technologies		Institutionalization of independent power producers Institutionalization of the wind energy sector Institutionalization of the wind energy sector	
	<i>Goals</i>	<i>Incumbent and new entrant focused</i>		<i>(De)institutionalization of energy generation technologies</i>	
	Institutionalization of independent power production Institutionalization of renewables Deinstitutionalization of new and traditional energy sources Deinstitutionalization of deregulation and private ownership	Perceptions of sustainability (Comparative) effects of national institutional arrangements		Institutionalization of new, green energy technologies (De)institutionalization of conventional energy technologies	
	<i>Agency</i>	Cultural-cognitive change Advance socio-political change Media coverage Normative pressures Framing			

Table 3.2: Overview of the literature on institutions and the electricity sector

Government

In his illustration of ‘the major categories of institutional agents’, Scott (2014: 142) presents the ‘nation-state’ as playing a “high profile role[...] in institutional constructions”. Yet, Scott (2014) overlooks other public bodies which have been taken into consideration by the literature on institutions and the electricity sector: regions/states within a nation, e.g. the US federal states, supranational regulatory organizations, e.g. the EU, and international organizations, e.g. the IMF. We decided to include these three types of actors in the same category of institutional agents because the power of sub-, supranational and international public bodies generally derives from the power that national governments decided or agreed to delegate. Two key features are particularly relevant in the literature on public bodies’ institutional agency: the **goal** and the **type** of the institutional agency undertaken (see Table 3.3).

		Goals of government’s institutional agency	
		<i>Deregulation/privatization</i>	<i>Sustainable development</i>
Type of Institutional Agency	<i>Authority and coercion</i>	Regulations imposing the deregulation and privatization of the electricity sector (e.g. Boschek et al., 1994; Delmas et al., 2007; Sine and David, 2003) Retrenchment of deregulation and privatization (Henisz and Zelner, 2005; Zelner et al., 2009)	Regulations imposing social obligations (Sharrat et al., 2007) Regulations imposing CO ₂ emission reduction (Hoffmann, 2007) Regulations mandating the use of renewables (Fremeth and Shaver, 2014) Regulations imposing the phase-out of nuclear energy (Olerup, 1999) Regulations setting waste, water, air pollution requirements (Majumdar and Marcus, 2001)
	<i>Inducement</i>	Support for new independent power producers (e.g. Russo, 2001; Hafsi and Tian, 2005)	Support for specific (cleaner) energy technologies (e.g. Markard and Truffer, 2006; Poisson de Haro and Bitektine, 2015)
	<i>Information or exhortation</i>	(De)institutionalization of private ownership (Hafsi and Tian, 2005; Henisz and Zelner, 2005)	(De)institutionalization of specific energy technologies (e.g. Patriotta et al., 2011)

Table 3.3: Government's institutional agency in the literature on institutions and the electricity sector

The literature describes the **goals** of the government's institutional agency to be either related to *deregulation/privatization* or to *sustainable development* (cf. Chapter 2). In particular, the institutional agency undertaken by national governments to deregulate the electricity sector and/or to institutionalize deregulation (e.g. Boscheck, 1994; Delmas et al., 2007; Hafsi and Tian, 2005; Henisz and Zelner, 2005; Kim, 2013; Sine et al., 2005), often due to the pressure of supranational or international public bodies (Boscheck, 1994; Tsoukas and Papoulias, 2005; Zelner et al., 2009), has received significant research attention. Interestingly, within the literature reviewed, two studies highlight the possibility of an opposite objective of the government. Indeed, Henisz and Zelner (2005) and Zelner et al. (2009) signal that a government's goal can also be one of retrenching or deinstitutionalizing deregulation in favour of a return to "the state-centered model's political objectives" (Zelner et al., 2009: 383). This is particularly associated with the aim of gaining political support among local actors.

Another key set of goals of governments' institutional agency is related to *sustainable development*. In particular, as mentioned also in chapter 2, institutional agency by national, sub- and supra-national regulators in the electricity sector has as objectives: the increase of nuclear safety (Patriotta et al., 2011), the reduction of fuel poverty (Sharrat et al., 2007), the cut of CO₂ emissions (e.g. Griffiths et al., 2007; Hoffmann, 2007) and, more widely, of air pollution (Majumdar and Marcus, 2001), and the decrease of water and waste pollution (Majumdar and Marcus, 2001). The studies largely focus on the institutional agency related to one specific sustainability-related objective, with limited attention assigned to concurrent pressures on electric utilities for multiple and conflicting sustainability-related goals.

The **types** of institutional agency adopted by the government have been categorized drawing on the literature, which developed classifications of 'policy instruments' (Bemelmans-Videc et al., 2010) and 'policy tools' (Schneider and Ingram, 1990). Specifically, in these categorizations three main types of institutional agency have been distinguished.

The first type is institutional agency involving the use of '*authority*' (Schneider and Ingram, 1990) and coercion. This encompasses the formulation of "rules and directives which mandate receivers to act in accordance with what is ordered in these rules and directives" (Bemelmans-Videc et al., 2010: 10). A large set of the reviewed literature focuses on this type of institutional agency. In particular, a range of studies concentrates on deregulation/privatization-related regulations, with similarities and differences across countries. For example, as regards the US, which is the setting of the majority of the studies on deregulation, the regulations examined in the literature include revoking utilities' "exclusive franchise rights" (Delmas and Tokat, 2005: 442), "forcing utilities to purchase electricity from private generators" and "requir[ing]

utilities that owned transmission lines to provide non-discriminatory access to their grids” (Delmas et al., 2007: 192). For China, Hafsi and Tian (2005: 564) mention the adoption of ‘new resource allocation rules’ which required “[s]tate-owned enterprises (SOEs) [...] to seek loans from banks for investment and growth”, the requirement that “all firms [to] becom[e] autonomous with appropriate governance systems” and the “separation of power generation from distribution networks”.

Other studies focus on the use of authority and coercion by the government to enforce higher sustainability performance requirements on electric utilities. Policies encompassed in this domain include, among others, obliging electric utilities to reduce their greenhouse emissions (e.g. Marcus and Geffen, 1998; Hoffmann et al., 2009; Poisson-de Haro and Bitektine, 2015), “mandat[ing] the use of renewable power” (Fremeth and Shaver, 2014: 630) or of other cleaner technologies (Majumdar and Marcus, 2001; Marcus and Geffen, 1998); imposing the phase-out of nuclear power (Olerup, 1999), setting waste requirements (Majumdar and Marcus, 2001; Raven, 2006) and imposing social obligations to reduce fuel poverty (Sharratt et al., 2007) (cf. Chapter 2).

Another type of institutional agency identified in the literature involves the use of ‘*inducements*’ “to encourage participation in policy-preferred activity” (Schneider and Ingram, 1990: 515). In particular, some studies illustrate deregulation-related policies intending to support the emergence of new actors (e.g. independent power producers) in the electricity sector (e.g. Hafsi and Tian, 2005; Russo, 2001; Sine and David, 2003; Sine et al., 2005, 2007). This is consistent with US policy makers’ view of independent power producers “as essential to the transition to a deregulated future” (Russo, 2001: 61). Different measures, aimed at promoting the emergence of independent power producers have been mentioned by the literature. These include, for example, ‘state financial support’ (Sine et al., 2005), certification (Sine et al., 2007) and policies reducing the “transaction costs of exchange between new entrants and incumbent[s]” (Russo, 2001: 58). In the particular case of China, Hafsi and Tian (2005: 564) refer to regulations “allow[ing] ‘non-state’ sources to invest in ‘stand-alone’ power stations” and “providing investors with a state-guaranteed protection against political and competitive changes” and those dismantling the state-owned monopolists “into regional company groups” to ensure new power producers’ access to the distribution network (Hafsi and Tian, 2005: 567).

The literature also highlights the role played by the government’s inducements for the emergence and diffusion of new energy technologies, which in several cases were “at first a non-competitive, high risk endeavor” (Markard and Truffer, 2006: 617), such as renewables and nuclear energy. Key measures illustrated by the studies comprise financial support for “R&D programs and pilot installation”, provision of liability

coverage for nuclear accidents (Levendis et al., 2006), “construction incentives like investment subsidies and production incentives such as feed-in-tariffs or tax exemptions” (Markard and Truffer, 2006: 618) and “over-rul[ing of] legislative restrictions” (Watson, 2004: 1076). Government regulations may play a key positive role in the “stabilization of networks and actor relations” around an innovation, as was the case for biogas in Switzerland (Markard et al., 2009: 661). On the other side, the strong involvement of the government to support nuclear energy is argued by Levendis et al. (2006: 38) to limit innovation in terms of “safer applications of nuclear technology”.

The third type of institutional agency involves the use of ‘*information (or exhortation) instruments*’ (Bemelmans-Videc et al., 2010) or ‘symbolic and hortatory tools’ in the words of Schneider and Ingram (1990), which attempt to “influenc[e] people through the transfer of knowledge, the communication of reasoned argument, and persuasion” (Bemelmans-Videc et al., 2010: 11). Research on institutions and the electricity sector signal the role that government communication can play in the (de)institutionalization of the sector’s deregulation. In particular, Henisz and Zelner (2005: 366) refer to politicians mounting “public relations campaigns to convince citizens of the need to shift from government to private ownership” or, vice versa, trying to gain political support by “cit[ing] the extraordinary profits earned by foreign infrastructure investors as justification for the imposition of a retroactive emergency profits tax” (Henisz and Zelner, 2005: 371). Hafsi and Tian (2005: 561) explain that, in order to institutionalize the ‘liberal’ reforms they were conducting, “Chinese policy makers emphasized that a market-coordinated economy would be combined with central intervention to correct social ills and avoid social strife and this was seen as both appropriate and legitimate”. The literature also shows the use of information (or exhortation) instruments to (de)institutionalize a specific energy technology. In particular, Patriotta et al. (2011) illustrate how the German government and political parties used their ‘discursive practices’ to shape the public debate that emerged on nuclear energy after an accident in one of Vattenfall’s nuclear plants. This is consistent with Markard and Truffer (2006: 617) who, with reference to the emergence of nuclear energy, stress the importance of combining “public information campaigns and [...] specific regulations to protect the new technology”.

Business

We identified two types of institutional agents within the ‘Business’ category: *incumbent electric utilities* and *new entrants*. New entrants in the electricity sector are represented, in the studies, as belonging to the industries emerging within it, e.g. the wind energy or the independent power industry. As stated by Pacheco et al. (2014:

1610) emerging industries are “industries that are still in the growth phase and have not stabilized in sales or firm numbers (Aldrich and Ruef 2006, Klepper and Graddy 1990), face the liability of newness (Stinchcombe 1965) and encounter challenges in gaining critical resources and legitimacy for their practices (Zimmerman and Zeitz 2002, Zott and Huy 2007)”. In addition, as argued by Sine et al. (2007: 591), emerging industries “provide[...] alternative methods of meeting increasing energy demands in ways that typically have less impact on the environment than traditional forms of electricity generation”. For both types of firms two main features will be examined, i.e. the **goal** and the **types** of the institutional agency undertaken (see Table 3.4), first incumbents and then new entrants.

		Business’ institutional agents	
		<i>Incumbents</i>	<i>New entrants</i>
Institutional agency features	<i>Goals</i>	<p>“Gain explicit or implicit political support for a merger” (Holburn and Vanden Bergh, 2014: 452)</p> <p>Change institutions related to US electric utilities’ financial rate of return (Bonardi et al., 2006)</p> <p>Maintain nuclear energy legitimacy after an accident (Beelitz and Merkl-Davies, 2012; Patriotta et al., 2011)</p> <p>Influence the direction of social obligations (Sharrat et al., 2007)</p> <p>Eliminate the need for future regulations on CO₂ emissions reduction (Delmas and Montes-Sancho, 2010)</p>	<p>Institutionalization of independent power generation (Russo, 2001; Sine et al., 2005; Sine et al., 2007)</p>
	<i>Type</i>	<p>Individual political strategy i.e. constituency building, financial support and/or information (Bonardi et al., 2006; Holburn and Vanden Bergh, 2014)</p> <p>Collective political strategy, i.e. voluntary agreements (Delmas and Montes-Sancho, 2010)</p> <p>Trade association’s institutional agency (Boschek, 1994)</p> <p>Discursive strategy (Patriotta et al., 2011)</p> <p>Corporate communication (Beelitz and Merkl-Davies, 2012)</p> <p>“Embracing social obligations, business as usual, management deliberation and conflicts with commerce” (Sharrat et al., 2007: 1511)</p>	<p>‘Strategic legitimating actions’ targeting regulators (Sine et al., 2007)</p> <p>Trade association’s institutional agency, i.e. industry promotion to the media, advocacy and lobbying targeting regulators, normative influence on their members (Russo, 2001; Sine et al., 2005)</p>

Table 3.4: Business' institutional agency in the literature on institutions and the electricity sector

As regards the **goals of the incumbents'** institutional agency, Holburn and Vanden Bergh (2014) and Bonardi et al. (2006) focus on firms' attempts to 'shape policies' directly limiting their profits. In particular, Holburn and Vanden Bergh (2014: 450) examine electric utilities' attempts to "protect economic rents created by mergers and acquisitions against dissipation by regulators". Since the objective of electric utilities' campaign contributions is "to gain explicit or implicit political support for a merger" (Holburn and Vanden Bergh, 2014: 452) before the regulators decide on its approval, the goal seems to be the institutionalization of the merger among key political constituents. Bonardi et al. (2006: 1210) analyse incumbents' work to change existing institutions concerning the "financial rate of return that a US electric utility may earn" and that is fixed by the government.

Beelitz and Merkl-Davies (2012), Patriotta et al. (2011), Sharrat et al. (2007) and Delmas and Montes-Sancho (2010) instead focus on incumbents' institutional agency concerning social and environmental sustainability-related issues. In particular, Beelitz and Merkl-Davies (2012) and Patriotta et al. (2011) concentrate, respectively, on institutional agency aimed at maintaining organizational legitimacy and the legitimacy of nuclear energy after a nuclear accident. Specifically, Patriotta et al. (2011) explore the institutional agency of the electric utility Vattenfall to maintain nuclear power's legitimacy, while Beelitz and Merkl-Davies (2012) focus on legitimacy maintenance of Vattenfall itself. Sharrat et al. (2007), instead, make reference to the institutional work adopted by UK electric utilities to influence 'social regulations', yet without a clear identification of their goal. Delmas and Montes-Sancho (2010) examine institutional agency in relation to climate change and emissions' reduction. This institutional agency, although not overtly related to institutional maintenance, could be considered as having this aim, since the objective of electric utilities' participation in the Climate Challenge Program was to "negate the need for future greenhouse gas regulation" (Delmas and Montes-Sancho, 2010: 580).

As regards the **type** of institutional agency, different actions, adopted by the electric incumbents to influence institutions, have been identified (see Table 3.4, highlighted in italics below). Bonardi et al. (2006), Holburn and Vanden Bergh (2008, 2014) and Delmas and Montes-Sancho (2010) draw on the literature on (non-market) *political strategies*, "defined as the coordinated actions firms undertake in public policy arenas (Baron, 2003; Baysinger, 1984; Hillman, Schuler, & Keim, 2004; Shaffer, 1995)" (Bonardi et al., 2006: 1209). In particular, Bonardi et al. (2006: 1210-1211) analyse electric utilities' attempts to influence institutions by "providing votes through, for instance, constituency building; financial support, such as campaign contributions; and information regarding policy consequences and alternatives (Hillman & Hitt, 1999)", while Holburn and Vanden Bergh (2008, 2014), focus only on the electric utilities'

political campaign contributions. Delmas and Montes-Sancho (2010: 579) examine a specific “*collective corporate political strategy*”, namely the creation of and participation in ‘voluntary agreements’, which aim to “shape and control the way that norms and public policies are defined (Oliver and Holzinger, 2008)”. Specifically, their study focuses on electric utilities’ involvement in the ‘Climate Challenge program’, set up by the US Department of Energy and the US electricity industry to reduce emissions. Through this voluntary agreement electric utilities sought to ‘promote voluntary approaches’ in order to avoid ‘future greenhouse gas regulations’. Delmas and Montes-Sancho (2010) distinguish between different types of electric utilities’ participation in the Climate Challenge program, i.e. substantive vs. symbolic and early vs. late participation, and examine the factors explaining the kind of participation adopted.

As argued by Lawrence and Suddaby (2006: 239), “institutional work is often language-centred”. Consistently, drawing on Boltanski and Thévenot’s theory of justification, Patriotta et al. (2011: 1806) analyse Vattenfall’s ‘*discursive strategy*’, consisting of mobilizing ‘orders of worth’ (cf. Chapter 2) to “settle the controversy and maintain the legitimacy of the institution at stake, namely nuclear power”. In particular, Patriotta et al. (2011) argue that, after the accident occurred to one of its nuclear plants, Vattenfall’s stakeholders mobilized a number of higher order principles, e.g. civic, industrial, green, market-related principles, to support or contest nuclear energy’s legitimacy. As illustrated in more detail in section 3.4.3, Vattenfall’s institutional maintenance work consisted of embracing and accommodating these multiple and conflicting orders of worth to justify and maintain nuclear energy’s legitimacy. Despite presenting relevant differences from the study conducted by Patriotta et al. (2011), Beelitz and Merkl-Davies (2012) share with the former the focus on the ‘public controversy’ emerged after a nuclear accident affecting Vattenfall, and the attention for Vattenfall’s discursive work for legitimacy maintenance. More specifically, Beelitz and Merkl-Davies (2012), by analysing Vattenfall’s ‘*corporate communication*’, examine its adoption of substantive vs. symbolic management strategies to restore organizational legitimacy.

Sharrat et al. (2007: 1511) identify a set of electric incumbents’ possible responses to social regulations, i.e. “*embracing social obligations, business as usual, management deliberation and conflicts with commerce*”, which encompass different types and degrees of institutional agency. For example, while electric utilities embracing social obligations view the ‘relationship to regulation’ as “lobbying, influencing, working in partnership and shaping the agenda” (Sharrat et al., 2007: 1513), those seeing social obligations as conflicting with commerce make only limited attempts to ‘cooperate’ with regulators.

Some studies also address the *institutional work of electric utilities' trade associations*. In particular, the study by Delmas and Montes-Sancho (2010), beside the institutional agency of individual electric utilities, also examine the institutional pressures of electric utilities' trade associations on their members. Indeed, participating in a trade association increased the likelihood for electric utilities "to be exposed to normative pressure exerted by their peers" (Delmas and Montes-Sancho, 2010: 582) and to comply with the association's rules. Based on Delmas and Montes-Sancho (2010)'s findings, membership in a trade association led electric utilities to be early participants in the Climate Challenge Program. Interestingly, Boscheck (1994), mentions the institutional work of the EU electricity sector association, Eurelectric, against the deregulation conducted by the European Commission. In particular, Boscheck (1994: 119) refers to Eurelectric's contestation of the non-discriminatory third party access rule "as detrimental to public service, efficiency and consumer interest".

While the literature reviewed above reveals the actual electric utilities' influence on institutions, other studies illustrate their potential institutional agency, by focusing on electric incumbents' *'political capabilities'*. This literature is also particularly relevant because it provides insights on electric utilities' power to affect regulatory institutions in order to gain more lenient sustainable development obligations (Poisson-de Haro and Bitektine, 2015), "to attain and defend attractive positions or industry structures" in host countries (Holburn and Zelner, 2010: 1290) or to keep their interests 'well vested' by successfully "portraying new entrants as a destructive or destabilizing element in the sector" (Russo, 2001: 69).

While the objectives of incumbents emerging from the literature are rather varied (Russo, 2001; Sine et al., 2005; Sine et al., 2007), the **goal of new entrants'** institutional agency is fundamentally the institutionalization of their activities, i.e. independent power generation (Sine et al. 2007). The studies are grounded in the transition of the US electricity sector from monopoly to deregulation, which as previously mentioned had as key pillar the obligation for incumbent electric utilities "to interconnect and purchase power from any small-party generating power" (Russo, 2001: 59). The 'entrepreneurial opportunity' (Sine and David, 2003) emerging from this regulation and consisting of the "building [of] new facilities for the sole purpose of producing electricity for sale to utilities" (Russo, 2001: 60), was defended and promoted by the new power generators. Indeed, as illustrated by Sine et al. (2007), after the deregulation of the US electricity sector, the emerging independent power sector was initially "viewed with much skepticism" (Sine et al., 2007: 579) by prominent actors in the field.

The literature identifies different **types** of institutional agency adopted by new entrants. Sine et al. (2007: 591) examine independent power producers' *'strategic*

legitimizing actions’, consisting of “working to *create* an external endorsement for their ventures”. The electricity entrepreneurs actively requested from regulators the creation of an “official commission certification’ to demonstrate that a particular proposal to build a generator met the regulations” (Sine et al., 2007: 584). Russo (2001) and Sine et al. (2005) instead focus on the *institutional agency of independent power generators’ trade associations*. Indeed, as stated by Sine et al. (2005: 211), “collective actors, such as professional and trade associations, are major sources of normative institutions (DiMaggio and Powell, 1983)”. In particular, Russo (2001) and Sine et al. (2005) emphasize that the independent power producers’ trade associations actively worked to “construct[...] an institutional framework” (Russo, 2001: 68) where their members’ interests were guaranteed. Key actions conducted by trade associations comprised: actively participating in debates on the electricity sector, “promot[ing] the industry to the media” (Sine et al., 2005: 212); advocating with the regulators that “further [independent power generators’] development was in the state’s long run interest” (Russo, 2001: 68) and lobbying the government on critical issues for new entrants, e.g. the “interconnections with utilities [and] tax credits” (Sine et al., 2005: 212). Sine et al. (2005) also illustrate the normative influence exerted by the independent power producers’ associations on their members’ technology choices.

Civil society

Cohen and Arato (1994: ix) defined civil society as a “a sphere of social interaction between economy and state, composed above all of the intimate sphere (especially the family), the sphere of associations (especially voluntary associations), social movements and forms of public communication”. In keeping with this definition this section illustrates the **goals** and **types** of institutional agency of NGOs, media and domestic audiences, as examined by extant literature. The key features have been summarized in Table 3.5 per category of actor.

Within the literature on institutions and the electricity sector, four studies have examined the institutional work of *NGOs*, which in these studies are often referred to as ‘social movement organizations’. All the studies, except Raven (2006), who focuses on the Netherlands, examine NGOs’ institutional agency in the US. The type of NGOs studied varies across the studies. Sine and David (2003) and Raven (2006) adopt a wider perspective, referring to ‘diverse movements and groups’ (Sine and David, 2003) or to ‘environmental groups’ (Raven, 2006). Sine and Lee (2009: 139), instead focuses on the Sierra Club, “one of the three largest environmental social movement organizations in the United States”. Finally, Pacheco et al. (2014: 1610) distinguish the ‘generalist’ NGOs, like the Sierra Club, from the ‘technology-focused’ clean energy

NGOs, i.e. “specialized [NGOs] that exclusively focus[...] on supporting the development and adoption of a specific technology to advance its social goals”.

		Institutional agents of the civil society		
		NGOs	Media	Domestic audiences
Institutional agency features	<i>Goal</i>	<p>Institutionalization of ‘alternative structures [...] for power production and distribution’ (Sine and Lee, 2003)</p> <p>Institutionalization of the wind energy technology (Sine and Lee, 2009)</p> <p>Deinstitutionalization of the biomass co-firing technology (Raven, 2006)</p> <p>Deinstitutionalization of the conventional energy technologies (Sine and Lee, 2009)</p>	<p>(De)institutionalization of the independent power industry (Sine et al., 2005; Sine et al., 2007)</p> <p>(De)institutionalization of the nuclear energy technology (Patriotta et al., 2011)</p>	<p>Deinstitutionalization of the liberalization of the electricity sector (Henisz and Zelner, 2005; Zelner et al., 2009)</p> <p>Rise of investments in low emission technologies by electricity incumbents (Hoffmann et al., 2009)</p>
	<i>Type</i>	<p>Engagement in promoting cultural-cognitive change (Pacheco et al., 2014 ; Sine and Lee, 2009)</p> <p>Engagement in advancing socio-political change (Pacheco et al., 2014 ; Sine and Lee, 2009)</p>	<p>Positive/negative media coverage (Sine et al., 2005; Sine et al., 2007)</p> <p>Mobilization of orders of worth (Patriotta et al., 2011)</p>	<p>Normative pressures (Hoffmann et al., 2009 ; Henisz and Zelner, 2005 ; Zelner et al., 2009)</p> <p>Framing and contrast with reference points (Henisz and Zelner, 2005)</p>

Table 3.5: Civil society’s institutional agency in the literature on institutions and the electricity sector

In terms of the **goals** of NGOs’ institutional agency, the four studies have stressed the institutionalization of new electricity subsectors, new energy technologies, and new organizational forms (Sine and Lee, 2009; Pacheco et al., 2014; Sine and David, 2003), but also their work for the delegitimation of the incumbent electricity industry structure and organizational forms and of existing (Pacheco et al., 2014) or new (Raven, 2006) energy technologies. In particular, Sine and Lee (2003) examine the commitment of ‘diverse movements’ for the institutionalization of ‘alternative structures [...] for power production and distribution’. With a more specific focus,

Pacheco et al. (2014) and Sine and Lee (2009) analyse NGOs' work to institutionalize the emerging wind power sector. This agency combines the delegitimation of existing technologies, i.e. "oil, coal, and nuclear fuels" as cause of "environmental degradation and public health concerns" (Sine and Lee, 2009: 135), with the legitimation of wind energy technology as 'solution' (Sine and Lee, 2009). As shown by Raven (2006), NGOs' engagement in delegitimation can also target new energy technologies, which have been introduced and framed by incumbent electric utilities as cleaner than the existing ones. This was the case of the biomass co-firing technology, supported by the Dutch electric utilities and government to replace coal firing, but with uncertain prospects of diffusion due to the strong opposition of 'several social groups' (Raven, 2006). Although the Dutch government had categorized biomass as renewable energy source, the environmental groups contested co-firing "on the basis of the (both normative and regulatory) rule that waste prevention is better than waste combustion" (Raven, 2006: 590).

The four studies focusing on NGOs' institutional agency illustrate two main **types** of institutional agency. First, they engaged in promoting the emerging electricity sub-sector, organizational form and/or the new technology, through 'cultural-cognitive change' (Pacheco et al., 2014). The targets of this type of institutional work were the public, whose awareness had to be raised (Pacheco et al., 2014; Sine and Lee, 2009) and potential power producers, which had to be convinced of the 'entrepreneurial opportunity' embedded in wind energy (Sine and Lee, 2009). This agency consisted of "generating credibility and visibility for a technology" (Pacheco et al., 2014: 1617) and, more specifically, in "constructing and propagating the 'problem' of environmental degradation and industrial pollution and the 'solution' of renewable energy" (Sine and Lee, 2009: 128). Second, NGOs committed to 'advance sociopolitical change' (Pacheco et al., 2014) by promoting the creation of 'favorable regulatory regimes' (Sine and Lee, 2009) and, specifically as regards wind energy, of 'market-based incentives' (Pacheco et al., 2014). In particular, after the energy crisis that affected the US electricity sector, social groups "presented their arguments to federal and legislative fact finders, in an effort to reframe those institutional logics that provided the foundations for the current industrial structure and hence influence legislation" (Sine and David, 2003: 203).

Three studies have incorporated the *media* as institutional agents. The literature illustrates the (de)legitimizing power of the media concerning the emerging independent power industry (Sine et al., 2005; Sine et al., 2007) and a contested energy technology such as nuclear energy (Patriotta et al., 2011), although an explicit **goal** to (de)institutionalize them does not emerge from the studies. Positive or negative media coverage emerges as an effective **type** of institutional agency. In

particular Sine et al. (2007: 581) find evidence that the rise in positive media coverage of independent power production “increase[d] the likelihood that a new venture [would] be able to reach operational start-up” and, vice versa, negative media coverage decreased it. In addition, positive media coverage emerged as positively influencing the founding rate of independent power generators and, more strongly, of those using novel technologies (Sine et al., 2005). Patriotta et al. (2011), instead, emphasize the role played by the German media in shaping the national debate on nuclear energy through another type of institutional agency, involving the mobilization of different ‘orders of worth’ (as discussed in the previous subsection) to support or challenge nuclear energy as an institution.

Three studies examine the institutional agency of *domestic audiences* towards the electricity sector with regard to deregulation and sustainability (Henisz and Zelner, 2005; Hoffmann et al., 2009; Zelner et al., 2009). This literature signals that the beliefs, values and ‘preexisting cognitive constructs’ of local constituencies can significantly affect electric utilities, both indirectly, due to their influence on governments (Henisz and Zelner, 2005; Zelner et al., 2009), and directly, through pressures on the firms’ themselves (Hoffmann et al., 2009). Henisz and Zelner (2005) and Zelner et al. (2009) stress domestic audiences’ and interest groups’ institutional agency with the **goal** of driving governments to pursue the retrenchment of liberalization policies, shortly after their adoption. Hoffmann et al. (2009) instead document domestic actors’ institutional agency aimed at pushing German utilities’ to not postpone their investments in cleaner technologies, despite regulatory uncertainty.

In terms of **type** of institutional agency, all the three studies describe domestic actors’ normative pressures. In particular, Henisz and Zelner (2005) illustrate that in a number of countries with a history of state ownership, the local population’s belief that private ownership was illegitimate, and that it was the cause of inefficiency and injustice in the electricity supply system, raised strong contestation of this emergent institution, expressed through demonstrations and riots, (Henisz and Zelner, 2005). According to Henisz and Zelner (2005), citizens’ negative perception of private ownership was boosted by local organized interest groups, called ‘change agents’ (Henisz and Zelner, 2005), which ‘framed’ this emergent institution so as to convince the population of its illegitimacy. As tested by Zelner et al. (2009: 384), the negative “domestic sentiment toward private enterprise [was] positively associated with the incidence of retrenchment in recently adopted neoliberal electricity liberalization policies”. The likelihood of retrenchment was particularly threatening for ‘foreign investors in electricity generation’ (Henisz and Zelner, 2005).

3.4.2. Institutional consequences

A key focus of institutional theory is on “how [...] institutions affect organizations” (Scott, 2014: 141). Within the literature, we have identified the consequences of three main types of institutions: deregulation/privatization, sustainability-related institutional pressures and national institutional arrangements, which will be consecutively discussed below. As sustainability was the subject of chapter 2, and extensively addressed in section 2.4.3, here only the aspects most relevant from the perspective of institutional theory will be highlighted. Table 3.2 already provided an overview of the main findings of this ‘second lens’ more generally, divided into consequences for the electricity system, incumbents and new entrants (or both of them). Especially with regard to the consequences of deregulation/privatisation, literature has examined the impact of the electricity industry’s deregulation/privatization on the ‘electricity business system’ (Boscheck, 1994), on electric incumbents’ behaviour or on new entrants, i.e. independent power producers, as will be further explained in the next subsection (see also Table 3.6).

Consequences of deregulation and privatisation

Scholarly interest for the consequences of the electricity sector liberalization is in keeping with the view that “deregulation is metamorphosing th[e] industry” (Delmas et al., 2007: 204) and that it exposes firms to ‘previously untapped opportunities’ (Kim, 2013) but also to ‘unprecedented challenges’ (Lomi and Larsen, 1999) and uncertainty (Delmas and Tokat, 2005). Boscheck (1994: 113) uses the UK context as an illustration of market-based coordination’s impact on “supply security, investment and resource efficiency, and competition”, in order to highlight advantages and drawbacks, for the **electricity business system**, of the electricity market’s deregulation designed by the European Commission. The case of the UK did not, according to Boscheck (1994: 117), signal *risks for security of supply* or for the “efficiency of investments and resource used”. Yet, at the same time, Boscheck (1994: 118) highlights the *threats for welfare and “national and international public interest”* originating from electric utilities’ quest for profits driven by deregulation and the incumbents’ abuse of their market power, which “may turn into new regulatory challenges”. According to Boscheck (1994), thus, the European Commission’s electricity deregulation reform would not be harmful if adopted fully. Threats would come, instead, from its *partial and biased implementation*, as a result of national regulators’ surrender to “affected interests or other sources of critique” (Boscheck, 1994: 118).

Deregulation: Types of consequences of deregulation		
<i>For the electricity system/sector</i>	<i>For incumbents</i>	<i>For new entrants</i>
<p>Threats deriving from a partial and biased implementation of deregulation caused by regulatory capture (Boschek, 1994)</p> <p>Threats for welfare and “national and international public interest” (Boschek, 1994: 118)</p>	<p>Environmental differentiation through power generation from renewable energies (Delmas et al., 2007; Kim, 2013)</p> <p>Make or buy decision: decision to buy electricity from independent power producers vs. to produce it internally (Fabrizio, 2012)</p> <p>Internationalization strategies (Hood and McArthur, 1994)</p> <p>Commitment to more radical technological innovation (Markard and Truffer, 2006)</p> <p>Innovation in nuclear energy technology (Levendis et al., 2006)</p> <p>R&D investments and patenting activities (Jamasp and Pollitt, 2008, 2011)</p> <p>Comparative efficiency of governance structures (Delmas and Tokat, 2005)</p> <p>Incentives management (Cuevas Rodríguez et al., 2007)</p> <p>Corporate planning (Jennings, 2000)</p> <p>Learning (Lomi and Larsen, 1999)</p>	<p>Founding rate of independent power generation facilities (Russo, 2001)</p> <p>Technological heterogeneity and adoption of novel (green) technologies (Sine et al., 2005).</p>

Table 3.6 : Institutional consequences of deregulation in the literature on institutions and the electricity sector

A number of scholars have focused on the consequences for **incumbents** and/or on their ‘strategic adjustments’ (Boschek, 1994) in the face of the deregulation of the sector. The focus has been on environmental differentiation (Delmas et al., 2007; Kim, 2013), make or buy decisions (Fabrizio, 2012), internationalization (Hood and McArthur, 1994), innovation (Markard and Truffer, 2006; Jamasp and Pollitt, 2008, 2011), learning (Lomi and Larsen, 1999), incentives management (Cuevas Rodríguez et

al., 2007), corporate planning (Jennings, 2000), productive efficiency and governance structures (Delmas and Tokat, 2005).

Two studies (Delmas et al., 2007; Kim, 2013) examine whether deregulation triggered US electric incumbents' environmental differentiation, i.e. *power generation from renewable energies*, and obtained rather different findings. On the one hand, Delmas et al. (2007: 190) find that deregulation drove US electric incumbents' differentiation "in the form of increased generation of 'green' power" in US states with a higher environmental sensitivity. Incumbents characterized by high percentages of coal generation or by high productive efficiency emerged as less likely to adopt environmental differentiation following the sector's deregulation. On the other hand, Kim (2013: 1166) observes that both wholesale and retail deregulation were "associated with lower [degrees of] entry into the renewable generation market by investor-owned electric utilities", due to the fact that the incumbent's existing resources and competitive advantage were based on low prices and economies of scale. Nevertheless, an increase in utilities' investments on renewables was more likely to emerge in the US states with higher 'actual green demand' or, similarly to Delmas et al. (2007)'s findings, if the utility had already invested in renewables.

Hood and McArthur (1994: 26) discuss the impact of deregulation on "*internationalization strategies* within the European electricity industry", with particular focus on the UK, where the more advanced liberalization of the sector, at the time of the study, had driven a rapid increase in the interest of international investors. The study illustrates how the changes driven by the UK electricity sector's deregulation had engendered pressures on both 'generating companies' and 'regional electricity companies'. Their responses to the pressures had opened opportunities for foreign companies to invest in the country, for example through joint ventures. Hood and McArthur (1994: 45) highlight the case of EDF, which they consider 'unique', as it had the most "dense and diverse set of international linkages yet to emerge in Europe", and relate to the French government's intervention to support its internationalization.

The impact of liberalization on *innovation* in the electricity sector has been addressed by four studies (Levendis et al., 2006; Markard and Truffer, 2006; Jamasb and Pollitt, 2008; Jamasb and Pollitt, 2011), which obtained divergent results. Markard and Truffer (2006)'s research, using examples from various countries without a specific geographic focus, emphasizes the role of the electricity industry liberalization as driver of radical technological innovation in nuclear, CCGT and wind power. In particular, Markard and Truffer (2006: 623) argue that, under monopoly conditions, radical innovations were strongly opposed by electric incumbents and, thus, "depended on strong and enduring support by government policies in order to penetrate the sector". Conversely,

liberalization triggered a reduction in the role of regulatory institutions and a change in the electric utilities' commitment "from incremental, technology-oriented innovation to more radical customer-oriented product innovations and organizational innovations" (Markard and Truffer, 2006: 623). Although not focusing on deregulation, Levendis et al. (2006) reach similar conclusions for the US as regards the benefits of market-based coordination on innovation in nuclear technology. To a situation of heavy government intervention, which, according to Levendis et al. (2006), hindered nuclear power firms' innovation while fostering risky behaviours, the authors oppose the advantages of 'a free-market in nuclear power', where the firms would be "free to succeed or fail on its own" (Levendis et al., 2006: 37). In this context, innovation would be encouraged due to firms' need to find less risky solutions and "the total benefits and costs (including health and environmental costs) [would] be allowed to determine the contours of the energy industry" (Levendis et al., 2006: 46).

Different from Markard and Truffer (2006) and Levendis et al. (2006), Jamasb and Pollitt (2008, 2011) observe a negative effect of liberalization on electric utilities' innovation. Specifically, Jamasb and Pollitt (2008), looking at results of previous studies on different countries, highlight a negative impact of liberalization on electric utilities' R&D investments and thus on "long-term technological progress and innovations in the sector" (Jamasb and Pollitt, 2008: 1007). Similarly, Jamasb and Pollitt (2011: 323), find that in the UK context "electricity-related patents as a whole and those specific to non-nuclear and renewable technologies initially increased in the post-liberalisation period, but in recent years, the trend is towards a steady decline".

Delmas and Tokat (2005) examine the impact of deregulation on the *comparative efficiency of governance structures* of US electric utilities. According to Delmas and Tokat (2005) deregulation had a short-term negative effect on electric utilities' productive efficiency, as it increased 'regulatory uncertainty'. In this context, vertical integration or reliance on the market for electricity supply emerged as more efficient governance structure than "hybrid structures combining vertical integration and contracting" (Delmas and Tokat, 2005: 443).

Fabrizio (2012) examine the effect of two new policies, issued within the framework of the US electricity sector's deregulation, on electric incumbents' *make or buy decisions*. In particular, Fabrizio (2012: 1268) focuses on the uneven introduction by US states of 'institutional safeguards' aiming "to clarify the rules under which power producers contracted for access to utility-owned transmission grids", to thus reduce transaction costs. Fabrizio (2012: 1264) shows that, in the US states where the institutional safeguards were in place, electric incumbents bought more electricity from independent power producers and produced less internally, "to meet increases in demand". Different from the other studies which focus only on the incumbents,

Fabrizio (2012) makes a connection between incumbents and new entrants, implicitly signalling the growth of independent power generation driven by deregulation.

The rise of **new entrants** in the US electricity sector was initiated by PURPA, a regulation which “created a new set of opportunities for entrepreneurs to found firms that generated electricity and sold that electricity to established utilities for distribution (Sine and David, 2003)” (Sine et al., 2007: 584). In this context, two studies, Russo (2001) and Sine et al., (2005), examine the influence of institutions on the emergence of US independent power sector and on the founding of firms within this sector, with particular consideration of the risk reduction potential of institutions. Specifically, Russo (2001) finds that regulations which reduced transaction costs for newcomers, by formally defining the avoided costs on whose basis the price paid by incumbents for new entrants’ electricity is calculated, positively affected the *founding rate of independent power generation* facilities in the US. Conversely, the presence of a ‘regulatory climate’ favouring the electric incumbents reduced the founding rate of newcomers’ power generation facilities.

Sine et al. (2005: 200) analyse how “the development of cognitive, regulative and normative institutions” targeting the new independent power sector in the US influenced the ‘*technological heterogeneity*’ in the sector and, more specifically, the founding of independent power producers using novel (green) technologies. Evidence shows that regulative and cognitive institutions, i.e. increases in state financial support, in the sector’s density and in (positive or neutral) media coverage, fostered technological heterogeneity of independent power producers, in particular promoting the founding of firms using novel technologies (Sine et al., 2005). On the contrary, normative institutions, i.e. the creation of trade associations in the new sector, promoted technological homogeneity, supporting independent power producers that adopted established technologies over novel ones (Sine et al., 2005).

Consequences of institutional pressures for sustainability

A number of studies investigate the impact of institutional pressures for sustainability on electric utilities and/or electric utilities’ responses to them. As this literature has been reviewed extensively in section 2.4.3., here only the key features related to institutional theory will be mentioned.

First, the research shows that the same institutional pressures for sustainability may have heterogeneous impacts across electric utilities; this is due to different reasons, among which the ‘technical core’ of the firms plays a key role (e.g. Olerup, 1999; Poisson-de Haro and Bitektine, 2015). Also, the studies signal that electric utilities do not always passively conform to institutional pressures, but they may engage in

actively shaping, adjusting and interpreting them (e.g. Marcus and Geffen, 1998; Sharrat et al, 2007). The consequences of institutional pressures for sustainability are thus not always consistent with the expectations of the actors exerting them. In addition, the literature signals the importance of adopting a longitudinal perspective to study the impact of sustainability-related institutional demands, as both the pressures on a specific sustainability issue and the way the firms perceive them can change over time (e.g. Olerup, 1999). Finally, the research indicates that the impact of institutional pressures for sustainability may extend beyond the institutional environment for which they have been designed (Fremeth and Shaver, 2014).

The studies focusing on the impact of sustainability-related institutions, however, also present some underexplored areas, which are particularly relevant from an institutional perspective. Indeed, although the literature as a whole has shown the presence of multiple sustainability-related institutional pressures on electric utilities, to date it focuses on the consequences of specific (single) pressures, giving scant attention to the impact of multiple simultaneous heterogeneous institutional demands for sustainability. The impact of sustainability-related institutional complexity on electric utilities thus remains under investigated. Moreover, while research considers the presence of heterogeneity in sustainability-related institutions across US states and countries, an analysis of the consequences of this diversity on electric utilities operating in multiple institutional contexts is lacking.

Consequences of national institutional arrangements

While the majority of scholars focus on specific institutions, Henisz and Zelner (2005), Bergara et al. (1998) and Holburn and Zelner (2010) pay particular attention to the 'reliability' of wider national institutional arrangements for foreign investors and to the degree to which a national institutional configuration allows policy makers to change and overturn regulations and conditions once investments have been made. These wider institutional arrangements are argued to be particularly crucial for electric utilities because "first, the technology involves large specific, sunk investments; second, it is characterized by important economies of scale and scope, and third, outputs are massively consumed" (Bergara et al., 1998: 19). In particular, Henisz and Zelner (2005: 372) assign attention to the impact on liberalization policies of the "country-level institutional configurations", defined as "the internal structures of and relationships among the legislature, the executive branch, the judiciary, and regulatory agencies". They argue that national configurations with stronger 'checks and balances' reduce the likelihood that domestic interest groups' pressures on regulators to retrench electricity liberalization policies will succeed. This is due to the fact that, as argued by Henisz and Zelner (2005: 372-3), institutional configurations with stronger

check and balances make a policy change extremely costly ‘in terms of time and effort’, due to the need to reach an “agreement across a broader range of political actors”.

A similar conceptualization of national institutional arrangements is adopted by Bergara et al. (1998) and Holburn and Zelner (2010), who examine the impact of country-level ‘policy’ (Holburn and Zelner, 2010) or ‘political’ (Bergara et al., 1998) risk on international investments of electric utilities in/from multiple countries. Holburn and Zelner (2010: 1296) define policy risk as “the extent to which the formal relationships among a country’s branches of government (i.e., executive, legislative, and judicial) and the partisan composition of the individual actors inhabiting these branches constrain any one institutional actor from unilaterally effecting a change in policy”. Bergara et al. (1998), find a positive correlation between a country’s reliable institutional arrangements and electric utilities’ investments in new generation capacity. Holburn and Zelner (2010) complement these findings by documenting that electric utilities from countries with high policy risk are less ‘sensitive’ to the presence of high policy risk in the host countries. Indeed, due to the home country’s controversial institutional configuration, electric utilities acquire political capabilities which lead them to “seek out riskier host countries for their international investments” (Holburn and Zelner, 2010: 1291).

3.4.3. Institutional processes

According to neo-institutional theory, “institutions [are] routinized structures and behaviours that are taken for granted” (Sine and David, 2003: 186), yet scholars have increasingly acknowledged that “institutions change over time, are not uniformly taken-for-granted, have effects that are particularistic and are challenged as well as hotly contested” (Dacin et al., 2002: 45). As argued by Sine and David (2003: 188), the electricity sector is particularly suitable to the “study of institutional conflict and change because the nature of the structures, practices, and exchange relationships in the industry [...] remained stable and taken for granted” for decades, until the 1980s, to be then radically transformed in the last decades.

In keeping with this development in institutional theory, a number of studies of institutions and the electricity sector have considered different institutional change processes affecting the electric industry. In particular, the focus was on the (de)institutionalization of the market- or state-based coordination of the sector, on the institutionalization of new actors or sub-sectors within the wider electricity industry and on the (de)institutionalization of specific energy technologies (see Table 3.7). These three themes will be addressed consecutively below.

Within the literature focusing on the **(de-)institutionalization of the market- or state-based coordination** of the sector (first column of Table 3.7), three main subcategories have been identified. First, a number of studies focuses on the *institutionalization of the market over the state*. This encompassed more specifically a deregulation and privatization process, i.e. the shift from the “state ownership and operation of the electric industry” (Zelner et al., 2009: 382) to its market-based coordination. A part of this literature (e.g. Delmas et al. 2007; Kim, 2013), which has been discussed in detail in section 3.4.2., refers only indirectly to the institutional process itself, instead focusing on the impact of deregulation and/or privatization on electric utilities’ strategies. Conversely, the studies by Tsoukas and Papoulias (2005) and by Hafsi and Tian (2005) concentrate on examining the institutional change process towards liberalization, respectively from an organizational and from a field perspective.

Tsoukas and Papoulias (2005) analyse the transformation of the Greek electric monopoly PPC from a ‘state-political firm’, i.e. a monopoly and state-owned organization embedded in a web of political relationships, into a conventional electric utility driven by ‘market-based values’ (Tsoukas and Papoulias, 2005). The path undergone by PPC, to become a conventional electric utility, had both ‘technical’ and ‘discursive’ dimensions. While the former comprised shifts in organizational mechanisms, the latter consisted of changes in values, in favour of a gradual acceptance and adoption of market-based values. Tsoukas and Papoulias (2005: 81) argue that such strategic change “not only involves the transformation of the organization in focus, but, through it, impacts on the broader institutional environment of which the organization is a member”.

A wider perspective is adopted by Hafsi and Tian (2005: 555-556), who, through an institutional change lens, explore how in two decades the Chinese electricity industry, from being “a single firm, or in fact a ministry”, became “mostly decentralized, with more than 4000 autonomous companies” involved in different stages of the electricity value chain. The institutional change process went through three stages, with the “idea of a market in the electricity industry” (Hafsi and Tian, 2005: 565) increasingly becoming taken for granted in China. This encompassed a gradual ‘cultural-cognitive’ change, which consisted of calling into question the dominant, socialist, ‘ideology’ and in parallel the increasing legitimacy gained by private ownership in electricity production (Hafsi and Tian, 2005). This shift was followed by changes in the industry norms, from ‘party norms’ to “new norms of dynamism, entrepreneurship, problem solving, and efficiency” (Hafsi and Tian, 2005: 566). In the same phase, key regulations consistent with a market-based coordination of the sector were approved. Finally, in the third cycle, the changes concerned mainly product-market aspects and ‘professional norms and behaviour’ at the firm level.

Institutional change processes		
<i>(De)institutionalization of market- or state-based coordination</i>	<i>Institutionalization of new actors and (sub-)sectors</i>	<i>(De)institutionalization of energy generation technologies</i>
<p>Institutionalization of the market over the state (Tsoukas and Papoulias, 2005; Hafsi and Tian, 2005)</p> <ul style="list-style-type: none"> - Deregulation and privatization - Deinstitutionalization of state-based coordination - Institutionalization of market-based coordination - Delegitimation of state-ownership - Legitimation of private ownership - Shift from logic of centralized (state) to decentralized (market) control <p>(Partial) re-institutionalization of the state (Henisz and Zelner, 2005; Zelner et al., 2009)</p> <ul style="list-style-type: none"> - Retrenchment of deregulation and privatization - Civil society's pressure for state intervention - Deinstitutionalization of the market-based coordination - Delegitimation of private-ownership <p>Coexistence and conflict between market- and state-based coordination (Macchione Saes, 2013)</p>	<p>Institutionalization of independent power producers (Sine and David, 2003)</p> <p>Institutionalization of the independent power sector (Sine et al., 2007)</p> <p>Institutionalization of the wind energy sector (Pacheco et al., 2014; Sine and Lee, 2009)</p>	<p>Institutionalization of new, green energy technologies</p> <ul style="list-style-type: none"> - Institutionalization of independent power generation through wind energy (Sine and Lee, 2009; Pacheco et al., 2014) - Institutionalization of solar PV (Smith and Raven, 2012) <p>(De)institutionalization of conventional energy technologies (nuclear energy) (Beelitz and Merkl-Davies, 2012; Patriotta et al., 2011)</p>

Table 3.7: Institutional change processes in the literature on institutions and the electricity sector

A second set of studies (Henisz and Zelner, 2005; Zelner et al., 2009) focuses on an opposite institutional process, which consists of the *(partial) re-institutionalization of state-based coordination* and thus of the the return to a certain degree of state

intervention in the electricity sector. In particular, as mentioned in section 3.4.1., Henisz and Zelner (2005) illustrate the impact of national interest groups' opposition to liberalization and the government's "attempts to overturn, alter or reinterpret" it in developing countries. Also, they posit the role played by "exogenous shocks" such as financial crises, which are instrumentally used by organized groups to raise the sentiment of unfairness among the citizens, increasing the likelihood of retrenchment. Zelner et al. (2009) extend the analysis of retrenchment of electricity liberalization policies by examining the impact of other institutional forces. In particular, they observed that national factors, i.e. a prevalence of negative 'domestic sentiment toward private enterprise' and a high degree of 'political conflict', and the behaviour of peer countries, i.e. the retrenchment of the reform by trade partners and competitors, drove governments to retrench the electricity liberalization policies. Conversely, since neoliberal reforms have been largely driven by global institutional pressures, the country's degree of 'indebtedness to multilateral lenders' has been found to negatively affect the retrenchment and thus pushed the government to maintain the newly enacted neoliberal electricity reform. With their studies, Henisz and Zelner (2005) and Zelner et al. (2009) thus stress that the liberalization of the electricity sector is not a straightforward institutional change process and national pressures may lead governments to retrench it in favour of the return to a condition of state intervention. As argued by Zelner et al. (2009: 405), neoliberal reforms "require careful attention [...] to the domestic and global institutional context in which policymaking occurs".

Finally, a third category is represented by Macchione Saes (2013), who provides some insight into a constant *coexistence and conflict between market- and state-based coordination*, with the dominance of one over the other depending on the location, the actors and interests involved. Indeed, through the analysis of the dispute between a foreign electric utility and a national electric utility in Brazil between 1889 and 1930, Macchione Saes (2013) illustrates the conflict between the concept of 'free enterprise', supported by the Brazilian utility aiming to increase its market share, and the 'monopoly of a public service', defended as legitimate by the Canadian electric incumbent, which wanted to preserve its privileged and dominant position in the country.

While the studies focusing on the deregulation of the electricity industry have mainly given attention to the incumbents, the institutional change towards a market-based coordinator of the electricity sector opened opportunities for new actors and new electricity subsectors. A range of studies has thus focused on the **institutionalization of new actors and (sub-)sectors** within the deregulated electric industry (second column of table 3.7).

Sine and David (2003: 185) address the *institutionalization of new actors*, and more specifically of *independent power producers*, by discussing “the relationship between institutional change and entrepreneurial opportunity” in the US electricity sector. Indeed, opportunities for independent power entrepreneurs are illustrated as emerging following the deinstitutionalization of the electricity industry structure of ‘regulated regional monopol[y]’, which had been taken for granted until the environmental jolt represented by 1973 oil crisis. The crisis caused by OPEC’s embargo of oil supplies to the US, with consequent substantial increases in electricity prices, had unveiled the inefficiencies of the monopoly structure, driving the regulators’ search for alternative solutions. In this context, ‘fringe voices’ promoting “small power plants fueled by alternative energy sources” (Sine and David, 2003: 200) played a more central role and contributed to the approval of electricity deregulation policies, which generated considerable opportunities for entrepreneurs. Sine and David (2003) see this institutional change process as a transformation in the institutional logics driving the electricity sector. Indeed, according to Sine and David (2003: 200) “the dominant institutional logic of regulated monopolies was significantly eroded, and alternative power generation technology and logics [...] became salient and widely adopted”.

Sine et al. (2007) examine more in depth the entrepreneurial opportunities emerging in the US electricity sector, by exploring the *institutionalization of the independent power sector*. In particular, the study finds evidence of the impact of legitimation processes at the firm and the sector level on independent power producers’ transition to an operational start-up condition. At the firm level, legitimation through certification “help[s] entrepreneurs proceed from business plan to operational start-up” (Sine et al., 2007: 580). At the sector-level, ‘legal endorsement’, ‘positive media coverage’ and ‘high numbers of recent operational start-ups’ are argued to increase the legitimacy of the independent power sector, thus enabling power ventures to reach operational start-up. Sine et al. (2007) also identify a combined effect of the two legitimation processes, where the increase of the independent power sector legitimacy reduces the importance of certification and, vice versa, a decrease in the sector’s legitimacy, e.g. due to high negative media coverage, increases the relevance of the legitimation process at the firm level.

Sine and Lee (2009) and Pacheco et al. (2014) focus on the process of *institutionalization of the wind energy sector*. As illustrated in section 3.4.1, Sine and Lee (2009) examine the crucial contribution of NGOs’ institutional work which, both directly and indirectly, enabled “a significant shift in the values and norms surrounding electricity generation” (Sine and Lee, 2009: 147) and thus enabled the emergence of the wind energy sector in US states with high NGO presence. Although Sine and Lee (2009)’s study is quantitative and analyses the effect of ‘environmental group

membership' on 'wind energy entrepreneurial activity' in US states, the illustration of the institutional work conducted by NGOs provides insights into the institutional change process itself. In particular, the engagement of NGOs in "framing problems" related to existing energy sources, "theorizing solutions" represented by wind energy and "mobilizing resources" (Sine and Lee, 2009: 132) succeeded in legitimizing wind energy, both among potential entrepreneurs and among regulators, thus encouraging and enabling the emergence of new wind energy firms.

Pacheco et al. (2014: 1610) adopt a coevolutionary perspective to examine NGOs' role in the institutionalization process of the emerging wind energy sector and identify an 'interdependence' between "industry emergence, social movement diversification, and institutional change". Specifically, they identify three main influences between the US emerging wind energy sector, institutions and NGOs. First, 'generalist' NGOs advocated for institutional change, both in terms of formal and informal institutions, in favour of the wind energy sector. In turn, the sector's growth, driven by the increased regulatory and public endorsement promoted by NGOs' institutional work, fostered the emergence of technology-focused NGOs, with exclusive commitment for the development of clean energy technologies. Finally, exploiting their specialized knowledge, technology-focused NGOs promoted further institutional change and thus greater growth of the emerging wind sector.

Finally, a set of studies focus on a third type of institutional process which consists in the **(de)institutionalization of an energy generation technology** (third column of table 3.7). Within this literature, some studies focus on the *institutionalization of new, green energy technologies*. In particular, Pacheco et al. (2014) and Sine and Lee (2009) focus on the institutionalization of a new electricity sub-sector, which also passes through the institutionalization of its core green power generation technology, wind. Smith and Raven (2012) examine the institutionalization of a technology itself, focusing on solar PV as 'pathbreaking innovation' and drawing on the transition literature. Smith and Raven (2012: 1034) explore its empowerment, which consists of 'political' "processes that make niche innovations competitive within unchanged selection environments (fit and conform) or processes that change mainstream selection environments favourable to the path-breaking innovation (stretch-and-transform)". They argue that for the institutionalization of solar PV both types of empowerment unfolded and were epitomized by discourses and narratives mobilized by respective 'advocates'. While in the case of 'fit-and-conform' the promotion of PV encompassed the support of the "centralised form of PV socio-technical configuration" among electric utilities, "a stretch-and-transform narrative argue[d] small solar PV units [...] across hundreds of thousands of buildings [could] facilitate a transition to much more decentralized electricity systems" (Smith and Raven, 2012: 1033).

As shown by Patriotta et al. (2011) the use of discourses is crucial, not only for the institutionalization of a new power generation technology, but also for the *(de-)institutionalization of a conventional, incumbent energy technology*. In particular, Patriotta et al. (2011) examine the orders of worth employed in Vattenfall and its German stakeholders' discourses over time, for the (de-)institutionalization of nuclear energy, to maintain or challenge its legitimacy. An accident that occurred to one of Vattenfall's nuclear plants in its home country (Sweden) had put its legitimacy into question in its host country (Germany), where the firm operated other nuclear plants. Patriotta et al. (2011) show that, after the nuclear accident, Vattenfall's stakeholders emerged as having heterogeneous views about nuclear energy and they mobilized and combined 'a diversified mix' of orders of worth, either to delegitimize nuclear energy or to defend its legitimacy. Facing a dynamic and 'multi-polarized' debate on nuclear energy and a 'collision of multiple orders of worth', Vattenfall mobilized "a more balanced mix of rationales" (Patriotta et al., 2011: 1826), in order to negotiate and achieve a compromise with the stakeholders. Vattenfall's justification increasingly encompassed the legitimization of nuclear energy as a cheaper energy source (market rationale), as contributor to 'solving the problem of energy in Germany' (civic rationale) and as critical for 'enhancing Germany's energy autonomy' (domestic rationale). Interestingly limited reference was made by Vattenfall to nuclear as a green energy source (green rationale).

Through the case of Vattenfall, Patriotta et al. (2011) provide insights into the institutional complexity faced by an electric utility when involved in the process of legitimacy creation or defense of an energy generation technology. While based on a similar event, i.e. an accident to Vattenfall's nuclear plant, the focus of Beelitz and Merkl-Davies (2012) is instead on the 'negotiation' of the legitimacy of the firm with its stakeholders. In particular, Beelitz and Merkl-Davies' (2012: 111) study documents Vattenfall's first adoption of a technocratic response, consisting of the "us[er] facts and figures as a means of convincing organisational audiences of the insignificance of the incident". This response engendered a growing stakeholder opposition and was therefore followed by another type of response, which involved 'stakeholder engagement' and consisted of "emphasizing understanding and consideration" (Beelitz and Merkl-Davies, 2012: 112). According to Beelitz and Merkl-Davies (2012: 115), stakeholder engagement was adopted by Vattenfall to maintain its legitimacy by "signalling a change in stakeholder orientation, yet maintaining the status quo".

A final consideration of the 'drivers' of institutional change has to be made. The wide majority of the studies illustrated in this section more or less explicitly refers to the introduction of regulations (e.g. Sine and David, 2003), accidents (Beelitz and Merkl-Davies, 2012; Patriotta et al., 2011) or other 'exogenous shocks' (Henisz and Zelner,

2005) as initiating the institutional change process. Indeed, as argued by Sine and David (2003: 185), “environmental jolts serve as catalysts for action” which “prompt institutional actors to engage in problemistic search processes that can both delegitimize existing institutional structures and uncover alternative arrangements”. Interestingly, studies on the impact of disruptive events focus on a specific setting, but without a comparison of the effect on institutions in different locations.

3.5. DISCUSSION AND CONCLUSIONS

The analysis of the literature on institutions and the electricity sector provided an overview of the multiple approaches and perspectives adopted by this set of studies. Most importantly, it shows that, for different reasons, institutions play a crucial role in the lifecycle of the electricity sector and the strategies of new and incumbent organizations. This section discusses two key topics that have emerged from the analysis of the extant literature and that we deem to deserve further investigation. These are: 1) national and cross-national institutions 2) the interaction between three institutions: state, market and sustainable development.

National and cross-national institutional environments

The literature review has indicated that, beside the critical importance of institutional pressures exerted on a specific domain, wider institutional arrangements play a key role in electric utilities’ behaviour. Scholars have adopted different categorizations, e.g. policy risk (Bergara et al., 1998; Holburn and Zelner, 2010), institutional governance systems (Griffiths et al. 2007), and national business systems (Tsoukas and Papoulias, 2005), to capture electric utilities’ embeddedness in country-specific institutional configurations. This reference to national institutional arrangements stems from the high political salience of the electricity sector. Indeed, given the significant political attention raised by electric utilities’ activities, the presence of a state-dominated vs. a market-based coordination system and/or the strength of the ‘checks and balances’ characterizing the policy-making process (Henisz and Zelner, 2005) of a country are particularly crucial for electric companies.

Yet, despite the acknowledgment of differences in national institutional configurations across countries, the analysis of the impact of this heterogeneity on electric utilities’ behaviour has raised limited scholarly attention. Indeed, some studies, e.g. Tsoukas and Papoulias (2005) or Griffiths et al. (2007), focus only on a specific country, respectively Greece and Australia. Other studies, i.e. Bergara et al. (1998) and Holburn and Zelner (2010) examine the impact of national institutional arrangements on electric utilities’ international investment decisions. They thus focus on whether electric utilities invest in a country given its national institutional configuration, but not

on how electric utilities behave in that country once they have entered it. Drawing on the relevance of the national institutional arrangements highlighted by the literature reviewed, and related to the analysis in chapter 2, we thus posit the potential for a comparative study of an electric utility's behaviour across countries with different institutional configurations to provide valuable insights into the international strategies of electric utilities.

This is also in keeping with the need for examining electric utilities' practices in an international context. Indeed, as argued by Holburn and Zelner (2010: 1295), "prior to 1990, only a handful of countries permitted private investment of any sort in electricity generating facilities, and none permitted inward FDI". In the last decades electric utilities have however increased their presence in international markets, facing challenges related to the persistent political salience of the electricity sector (Holburn and Zelner, 2010). Yet, as illustrated in section 3.3.3, research on this topic is rather limited. While a literature that to a certain degree compares different institutional environments exists (e.g. Sine and Lee, 2009; Fabrizio, 2012, Pacheco et al., 2014), it focuses on intra-country institutional heterogeneity, overlooking the considerably higher complexity electric utilities face when operating in multiple countries. The only studies to some extent encompassing an institutional perspective of electric utilities' international activities, as mentioned previously, either focus on the likelihood and/or the risk of entry in a new market (Bergara et al., 1998; Henisz and Zelner, 2005; Holburn and Zelner, 2010) or only mention, but do not explore, the home-host country dimension of electric utilities' international activities (Macchione Saes, 2013; Patriotta et al., 2011).

We aim to address this gap in chapter 4, which presents a study comparing electric utilities' behaviour across countries with different wider institutional arrangements in terms of the state-market balance. It emphasizes the multinational nature of electric utilities and the challenges they face by operating in multiple national institutional environments with important idiosyncrasies.

The interaction between state, market and sustainable development

A large number of the studies reviewed addressed the relationship between market and state coordination of the sector from different perspectives. On the one hand, scholars emphasized the shift towards a liberalized and deregulated electricity sector completed or ongoing in a number of countries (e.g. Delmas et al., 2007; Hafsi and Tian, 2005; Kim, 2013; Sine and David, 2003; Tsoukas and Papoulias, 2005). On the other hand, some studies signalled that the transformation from a state-dominated to a market-based coordination of the sector has been uneven, controversial and not immune from stops and relapses. For example, with regards to electricity sector

deregulation/liberalization, Delmas et al. (2007) showed that it was adopted unevenly in terms of time and content across the US states; Hafsi and Tian (2005) illustrated the creation of a unique “socialist market” economy in China, while Henisz and Zelner (2005) and Zelner et al. (2009) pointed to the deinstitutionalization of liberalization in different countries.

In addition, scholars illustrated and critically reviewed the role of the state and/or of the market in the development of new energy technologies (e.g. Levendis et al., 2006; Jamasb and Pollit, 2008), with heterogeneous conclusions. Furthermore, a set of studies signalled the concurrent mobilization of market and state-related frames by different constituents of the electricity field (e.g. Henisz and Zelner, 2005; Macchione Saes, 2013; Zelner et al., 2009). Finally, the literature focusing on sustainability, on one side, highlighted the intervention of national and supra-national regulators, as institutional agents, to constrain electric utilities’ practices (e.g. Hoffmann, 2007; Majumdar and Marcus, 2001; Sharrat et al., 2007). On the other side, other authors posited that more sustainable technologies (Marcus and Geffen, 1998) and more effective accounting for health and environmental costs would be allowed by market-based coordination (Levendis et al., 2006).

The review of the literature thus signals that the shift towards a full institutionalization of the market and private ownership and a concurrent deinstitutionalization of the state and public ownership has not been accomplished entirely in the electricity sector. Instead, the market and state, as institutions, are still both present in the electricity sector, with a changing degree of (de)institutionalization depending on time and location. Through institutional agency, both electric utilities and other actors can attempt to (de)institutionalize state- or market-based coordination to attain their objectives. In particular, the ‘revival’ of state intervention, in a process aiming at market-based coordination, emerges, from the studies, in relation to sustainability issues (e.g. Sharrat et al., 2007) and to the development of new electricity subsectors or technologies (e.g. Russo, 2001). These aspects are often combined because emerging subsectors generally “provide[...] alternative methods of meeting increasing energy demands in ways that typically have less impact on the environment than traditional forms of electricity generation” (Sine et al., 2007: 591).

Although the literature review, as a whole, highlights the concurrent presence of the market and the state in electric utilities’ institutional environment, and their mobilization by different actors, no study has examined the possible dynamics involving these two institutions and how these are impacted by the irruption of sustainable development concerns. Yet, deregulation is a crucial process affecting the electricity sector and it is particularly relevant to explore whether and how a re-institutionalization of state intervention occurs. In chapter 6 we aim to address the

interaction and balance between state and market and their (de)institutionalization, with particular focus on the role played by sustainable development, given the relevance this 'disruption' has in the electricity sector (cf. Chapter 2). As the interaction between state and market does not only occur at the national level, but also at the supranational level, as epitomized by the EU Emission Trading Scheme (ETS) (see Hoffmann, 2007), chapter 6 will explore the state-market-sustainable development dynamics at multiple levels of analysis.