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**The dismantling of renewable energy policies:  
the case of Spain and Czech Republic**

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## 1. Introduction

The expansion of renewable energy represents a major, accelerating trend in the global energy sector. Spearheaded by the introduction of feed-in tariff policies in Germany and a number of European countries, the diffusion of renewable energy now represents a worldwide phenomenon. Since 2015, global capacity additions in renewable energy have outstripped those in fossil-based electricity generation. This trend is closely linked to the dramatic cost reductions triggered by market developments in Europe. In many cases, the cost of generating a kWh of electricity from renewable sources is now less expensive than electricity from newly installed gas or even coal-fired power plants.

Despite these developments, market rules and existing grid infrastructure typically still favor investments in large-scale fossil-based power plants over investments in smaller scale, fluctuating renewable energy systems. Consequently, the growth of renewable energy markets still remains a policy-driven phenomenon. In the medium term, the transition to a low-carbon, renewable energy system will require the continuation of dedicated policies aimed at facilitating the further expansion of renewable energy.

As prices continue to drop, the pressure on governments to adopt such policies and join the bandwagon of renewable energy is increasing steadily. Indeed, renewable energy policies are now the rule rather than the exception in countries around the globe. At the same time, a number of countries, including some of the European policy pioneers, have reversed previous support for renewable energy and have dismantled their renewable energy policies with important implications for market and industry development in these countries (REN21, 2015). These examples show that continued policy support for renewable energy is not a foregone conclusion. Despite the impressive developments of the last years, the sector's continued dependence on policy measure makes it vulnerable to political changes.

In light of the accelerating growth of renewable energy around the world, the dismantling of renewable energy policies has captured comparatively less attention than the rapid, global spread of support schemes. This is also true for the literature on policy change, which has paid considerable attention to understanding what enables or constrains the introduction of new policy measures. Relatively less attention has been paid to the phenomenon of policy dismantling.

Given the urgency of a global transition to a low-carbon energy system, the lack of systematic analysis on policy dismantling in the renewable energy sector represents an important knowledge gap. A better understanding of the factors influencing the dismantling of renewable energy policies promises to yield insights on how to develop more robust policy support that is able to resist short-

term political pressure. Ultimately, the durability of policy support will decide the speed and scope of renewable energy development. Moreover, more durable policy support can help strengthen the overall credibility of support schemes and boost investor confidence. In other words, the robustness of policy support is likely to have a positive correlation with the effectiveness of policies.

This article seeks to fill this important knowledge gap by developing and testing a framework for the analysis of policy dismantling processes in the renewable energy sector. It applies the framework to conduct a comparative analysis of policy dismantling in Spain and the Czech Republic. Both countries represent European pioneers of renewable energy support who dismantled their policies after a relatively short period of time.

The paper is structured as follows. Section 1 provides an overview of the political science literature on policy dismantling and summarizes key concepts and insights from the literature. Section 2 outlines the proposed analytical framework for the analysis of policy dismantling in the renewable energy sector, drawing on and extending a framework proposed by Bauer and Knill (2012, 2014). Section 3 outlines the rationale and limitations of the selected case studies and describes the methods for data collection. Section 4 presents the empirical results of the two case studies. Section 5 provides a discussion of key insights and their implications for furthering a better understanding of policy dismantling in the field of renewable energy and how this might contribute to the broader literature on policy dismantling. Section 6 discusses key implications for policy making in the renewable energy sector.

## 2. Policy dismantling: a review of the literature

In comparison to other phases of the policy cycle, policy dismantling or termination has so far received rather limited attention in political science. Despite early works in the field of welfare policy (Bardach, 1976; Pierson, 1994), it was only recently that policy dismantling raised some interest in the field of environmental policy (Bauer & Knill, 2014). Policy dismantling comprises phenomena such as complete termination, weakening, replacement, or a lack of policy updates (Bauer, 2006, p. 161). In this paper, we employ this broad concept of policy dismantling in order to widen our analytical lens (see also Jordan, Bauer, & Green-Pedersen, 2013, p. 796).

Research on the more narrowly defined phenomenon of policy termination started in the 1970s in the USA (Bardach, 1976; Behn, 1978; Brewer, 1978; deLeon, 1978). With its focus on case studies, mostly in the American political system, the early policy termination literature contributed to understanding the effects of policy termination, and why complete termination has been rarely successful. Besides factors that hinder policy termination (Ibid. 1976, p. 128ff.), Bardach also identified five factors that facilitate policy termination, most of them in connection with a changing

political, economic, or administrative setting (1976, p. 130f.). We consider these factors as a basis for our expectations about factors causing policy dismantling in the next chapter. These factors include (1) a change in government, (2) the delegitimization of the ideology in which the policy is embedded, (3) a period of turbulence or economic uncertainty, (4) follow-up programs or policies that cushion the adverse effects of the dismantling, and (5) policy designs that imply possibilities for change or termination from the beginning (Bardach, 1976, p. 130).

The 1980s and 1990s saw extensive literature on *deregulation*, essentially describing policy dismantling processes. According to Hancher and Moran (1989), deregulation can happen *actively* (deliberately changing regulations or their implementation) or *passively* (through not updating policies). Besides *cancellation* and *substitution*, they emphasized *systematization* (simplification, revision etc.) as an additional form of deregulation. In that sense, *regulatory reform* (a combination of deregulation and re-regulation through the addition of new rules) is a common procedure, especially at EU level (Majone 1996). The focus of the deregulation literature was on the adjustment of policy instruments, while questions of actor preferences, dismantling strategies, and effects have been addressed as well (Jordan et al. 2013: 798). The term ‘deregulation’ is mainly used in policy fields such as competition or environmental protection where regulation is dominant (Bauer, Green-Pedersen, Héritier, & Jordan, 2012, p. 5).

In the 2000s, a new wave of *welfare state dismantling* or *retrenchment* literature developed. ‘Retrenchment’ has become the key term among social policy analysts who study the welfare state (Bauer et al., 2012, p. 5). Dismantling decisions were regarded in the context of austerity pressures (Pierson, 2001a), later also with regard to globalization and international regulatory competition (Christoph Knill, Tosun, & Bauer, 2009). Regarding actor preferences, different blame-avoidance games have been scrutinized (see e.g. Levy, 2010). In terms of opportunity structures, the existing policy design and the vertical and horizontal distribution of authority were addressed (Pierson, 1994). Overall, empirical contributions, cross-country comparisons, and theoretical development remained scarce (Jordan et al., 2013, pp. 796-797).

The different types of policy dismantling studies outlined above have focused primarily on welfare and social policies and to a lesser extent also on environmental policies. The analysis of other policy fields, e.g. on defense or economic policy, have remained exceptions. Early policy termination studies also focused on other areas of social policy, such as health, education, or research and development, mainly in the US (Bardach, 1976). Due to a rather narrow definition of termination, limited empirical work and a lack of engagement with mainstream approaches in public policy analysis, the impact of these contributions remained limited (Jordan, Green-Pedersen, & Turnpenny, 2012, pp. 9-11).

In an effort to outline elements of a comparative approach to policy dismantling, Jordan et al. (2012) have identified *motivations (preferences)*, *opportunity structures*, *strategies*, and *effects* as main analytical categories. In the book “Dismantling public policy” (Bauer et al., 2012), the editors assemble three studies from the field of welfare policy and three from the field of environmental policy. In another comparative article, (Bauer & Knill, 2014, p. 34f.) compare social and environmental policies in 24 OECD countries. This research has shown that patterns of dismantling appear more often in social policy than in the relatively young field of environmental policy. Similarly, Paul Pierson (2001b, p. 11) has demonstrated that the politics of dismantling, i.e. the specific dynamics, strategies, opportunities etc., shows important variation across different policy fields.

Building on this comparative research, this paper focuses on the particular dynamics of policy dismantling in the field of renewable energy policy or energy transition policy. In the field of renewable energy, dismantling or termination of individual policy instruments may well be a result of policy success. When the share of renewable energy reaches a certain threshold, initial policies aimed at market formation may be superseded by instruments tailored to the next stage of market development. For the sake of our analysis, however, we focus on the dismantling of policies, which result in the termination or a significant reduction in the ambition of renewable energy expansion more broadly. Specifically, we consider the case of feed-in tariffs for renewable energy as a policy instrument that is embedded in program aimed at the promotion of renewable energy. Our interest is in the dismantling of the broader program, while we understand FiTs as a key component of this. We expect our case study to offer insights on the dynamics of policy dismantling in the field of renewable energy policy in particular as well as the field of policy dismantling more generally.

### 3. Analytical Framework

Within the recent literature on policy dismantling, Bauer and Knill (Bauer & Knill, 2012; C Knill, Steinebach, Hanschmann, Bianculli, & Juanatey, 2014) provide the most comprehensive analytical framework for studying policy dismantling processes. As part of a book on the dismantling of public policy, this framework has already been applied to several case studies in the above-named policy fields in different countries (Bauer et al., 2012). We therefore look to their works for guidance on how to examine the dismantling of the renewable energy support schemes in Spain and the Czech Republic.

Bauer and Knill (2012, p. 35) define policy dismantling as:

*“A change of direct, indirect, hidden or symbolic nature that either diminishes the number of policies in a particular area, reduces the number of policy instruments*

*used and/or lowers their intensity. It can involve changes to these core elements of policy and/or it can be achieved by manipulating the capacities to implement and supervise them.”*

The authors understand policy dismantling as a subcategory of the broad field of policy change, with the direction of reducing, decreasing or even terminating existing policy arrangements. Following their framework, we subscribe to this approach. This specific direction of policy change is thought of as being subject to particular dynamics of causes, conditions and strategies, which demand a distinct analytical approach (Bauer et al., 2012, p. 204). Thus, the authors carve out an analytical framework for explaining policy dismantling for subsequent testing against different empirical backgrounds. In that sense, their framework is supposed to be able to “travel across different policy areas” (Bauer & Knill, 2012, p. 34). As the analytical system boundary, Bauer and Knill (2012, p. 33; 2014, p. 32f.) suggest the examination of policy dismantling to focus on policy outputs, rather than overall policy outcomes. The overall societal outcome of a policy is usually affected by multiple causal mechanisms and intervening factors. Grasping all of them in one analytical framework is virtually impossible. However, analyses of policy dismantling should still take into consideration not merely single regulatory measures but encompass policy changes within thematic policy fields. Furthermore, the authors identify politicians with an assumed meta-preference for (re)election, as the most central group of actors in policy dismantling and therefore build their framework accordingly.

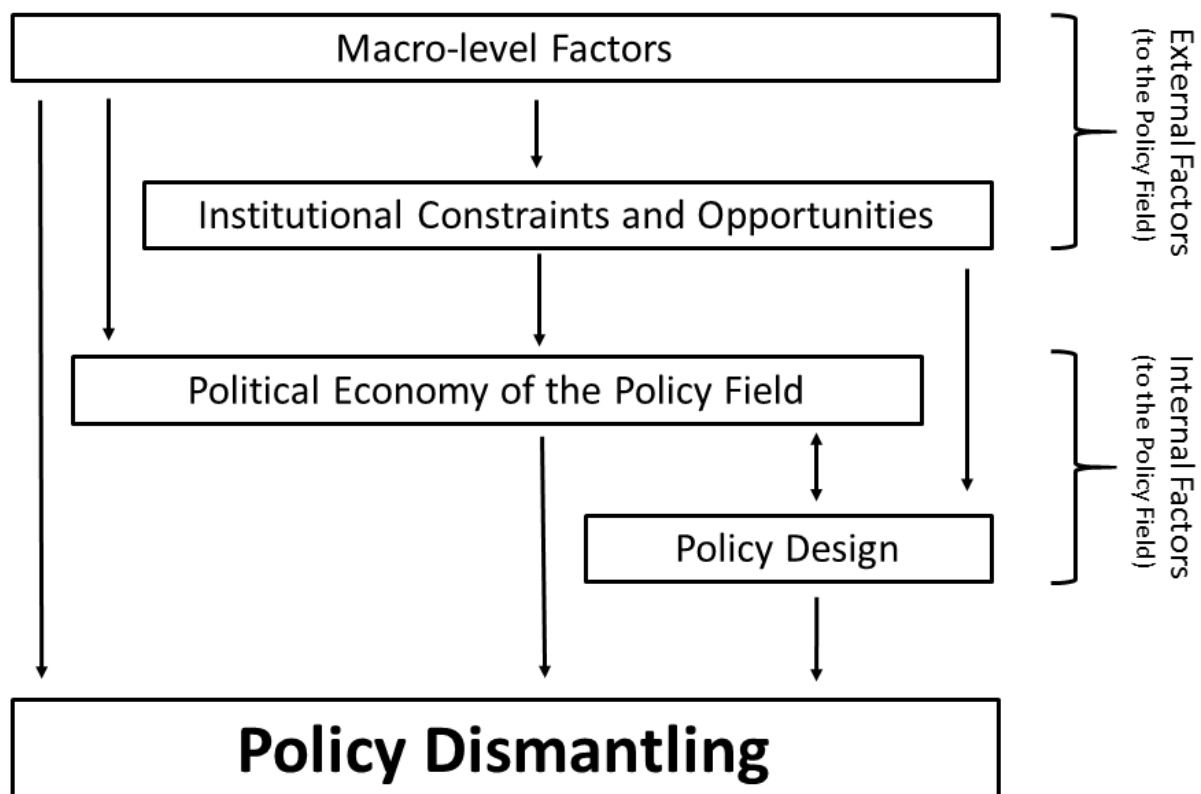
Bauer and Knill (2012, 2014) propose their analytical framework for the explanation of policy dismantling mainly for further investigation of two different sets of questions: First, why do politicians engage in (redistributive) policy dismantling? And second, why do politicians employ which type of dismantling strategy? For our analysis, we employ the aspects provided by Bauer and Knill’s framework (2012, 2014) that apply to the first set of questions, since our research interest lies in explaining the circumstance that the Spanish as well as the Czech FiT have been dismantled as the central policies for the respective countries’ energy transition.

Bauer and Knill (2014, p. 37) theorize the dismantling decision to be influenced by a “political opportunity structure” vis a vis the objectives and strategies of other actors involved. The assessment of the related political costs and benefits is assumed to be undertaken as subjective evaluations by the politicians rather than according to objective indicators of social costs and benefits. In addition to this struggle of interests, the dismantling decision is carved out to be influenced by three main groups of influential factors: (1) external factors, (2) institutional constraints and opportunities as well as (3) situational factors (Bauer & Knill, 2012, p. 38f.; 2014, p. 38).

In the following, we set out to reshape and develop further their proposed framework to make it more suitable for a comparing and contrasting policy dismantling in different policy fields. For this, we argue that it is necessary to further elaborate the underconceptualized category of “situational factors”. While the other two categories relate to factors that are external to the chosen policy field, “situational factors” are intended to capture factors that result from the dynamics within the field of policy itself. To enable a more structured comparison of the latter, we propose to replace the category of “situational factors” with the following two categories: (1) factors relating to the political economy of the policy field and (2) a group of determinants concerning policy design aspects (see Figure 1 for our revised framework). While the former captures the dimension of *politics* within the policy field, the latter focuses on the dimension of *policy*. Continuing this logic, the existing category of “institutional constraints and opportunities” represents the dimension of *polity*, i.e. the overall configuration of the political system, and how it influences policy dismantling. The category of external factors relates to broader socio-political and economic trends and events, which may have an influence on policy dismantling. The latter two categories are considered external to the policy field, while the former are considered to be endogenous to the policy field, i.e. actors within the policy field are able to exert a strong influence on their development. For sake of analytical clarity, “external factors” are relabeled as “macro-level factors”.



**Figure 1: Overview of revised analytical framework for the analysis of policy dismantling based on Bauer and Knill (2014)**



Source: Authors own.

In the following, we provide a more detailed description of each set of factors within the proposed framework.

### Macro-level Factors

Macro-level factors represent factors relating to the wider exogenous environment. It includes major socio-political or economic changes or events. Macro-level factors are characterized by the fact that they are beyond the direct influence of actors, and therefore difficult to change deliberately. Nevertheless, they are not static. They can comprise macro-level changes or events, including but not limited to major economic shocks, political dynamics like changes in government, or supranational political pressures. Bardach (1976: 130) holds that economic uncertainty or crisis can trigger the dismantling of policies. He argues that periods of turbulences would shake many peoples' optimistic expectations, and therefore would make them morally less averse to dismantling measures that are detrimental to certain groups of people. There are several specific causal relations how economic recession might facilitate policy dismantling.

The distribution of executive and legislative power is another major macro-level factor, especially when it comes to a change in administration. Particularly the transfer of power to a different political party or coalition seems to provide a window of opportunity for the termination of policy measures.

Newly elected politicians feel less bound to their predecessor's policies or even incentivized to dissociate themselves from the past (Bardach 1976: 130). This involves a stark contrast to political office-holders who are reluctant to admit – or allow the impression to admit – past mistakes through policy dismantling. These arguments imply that there is generally an increased likelihood that new governments will break with some of the policies that their predecessors introduced.

We also consider other external events that have an important influence on the legitimacy of certain policy decisions. Bardach argues that a “delegitimation of the ideological matrix in which the policy is embedded” (Bardach, 1976, p. 130) may work as an enabling factor of policy dismantling. This might include major catastrophes, such as the Fukushima nuclear accident, as well broader societal trends as well as supranational political pressure.

### Institutional Constraints and Opportunities

Institutional constraints and opportunities refer to checks and balances within a specific political system or polity, which make policy dismantling more or less likely. These institutional factors comprise features of the legislative, executive and judicial branches of government as well as the overall party system and the election cycle (Bauer & Knill, 2012, p. 39f.; 2014, p. 37; Korte et al., 2012; Steinebach & Knill, 2017, p. 432; Tsebelis, 2002). The sum of these institutional constraints and opportunities – in number as well as intensity – determines to what extent a change in preference of a political actor may lead to a change in policy. Both the number of independent political institutions with veto powers in a given polity as well as the alignment or heterogeneity of the political actors' preferences within those institutions are considered. Relevant political institutions comprise the number of parties in the political system as well as the number of independent branches of government, such as executive, lower and upper legislative chambers, and the number of judiciary and sub-national political entities. These institutional veto points of the political system are strongly intertwined with the struggle of interest within those institutions for and against a dismantling decision. Policy dismantling is marked by politicians and political parties seeking to overcome or circumvent such veto points and thereby making policy dismantling more likely (Bauer, 2006; Behn, 1978, p. 151).

### Political Economy of the Policy Field

The political economy of the policy field refers to the specific political dynamics of the relevant policy field and the underlying institutional and structural features that shape these dynamics. These factors have received relatively little attention in the existing literature on policy dismantling. The focus has rather been on identifying generic factors, which enable or constrain policy dismantling. By addressing dynamics within the chosen policy field, we seek to identify features of the policy field

itself that may enable or constrain policy dismantling. In other words, we place the concept of policy dismantling within the specific context of the respective policy field, i.e. (renewable) energy policy.

To do so, it is necessary to relate the concepts outlined above to the specific policy field. For the field of energy policy, we define the political economy of the policy field as the inter-relationship between structural features of the energy system, on the one hand, and the configuration of actors, their interests and political power, on the other. Structural factors refer to the relatively static physical and institutional infrastructure of the energy system. This translates into specific actor constellations with particular interests and resources to pursue their interests in the political realm. We propose that this actor constellation and the structural features shaping actor interests have an important influence on whether renewable energy policies are more or less prone to dismantling.

In a first step, structural conditions create an environment that is more or less favorable to a continued expansion of renewable energy. This in turn translates into more or less pressure to dismantle existing policies to promote the deployment of renewable energy. For instance, in energy systems that exhibit strong growth in demand – as is the case in many developing countries – the interest of actors in dismantling renewable energy policies is likely to be weaker than in systems characterized by stagnating or even shrinking demand. In a second step, the specific actor configuration will determine whether such interests are translated into effective political pressure to dismantle policies. For example, energy markets characterized by one or a small number of large, state-owned energy companies with large fossil-based power generation capacities are likely to be subject to more targeted political pressure in favor of dismantling policies than markets characterized by a larger number of smaller, private suppliers with a more diverse set of investments. A systematic assessment of these structural features and how they translate into political actor constellations is essential to understanding whether the dynamics of the policy field are likely to favor the dismantling of renewable energy policies.

### Policy Design

While the political economy of the policy field addresses broader, pre-existing dynamics of the policy field, policy design refers to aspects related to how the specific design of policies and the resulting influence on political dynamics facilitate or constrain policy dismantling. For instance, policy design may have implications for the resulting distribution of costs and benefits across those affected by a policy. Thereby, the design encourages the emergence of social and economic networks of beneficiaries (and obligors) around a specific policy, which strive to lock-in or overcome previous decisions (Bauer & Knill, 2012; Pierson, 1994, p. 41; 2001a, p. 372; Steinebach & Knill, 2017, p. 432). Therefore, policy design mechanisms to flexibly deal with shifting distributions of costs between beneficiaries and obligors, for example due to changing macro-level conditions, can prove vital for

the dismantling or continuation of a policy. First empirical evidence suggests that distributive and redistributive policy designs appear more likely to be subject to dismantling than regulatory policies (Bernauer & Knill, 2012; C Knill et al., 2014; Korte et al., 2012).

These flexibility mechanisms need to be understood against the background of the fundamental trade-off policy-makers face when designing a policy: between valuable commitment and valuable flexibility (Brunner, Flachsland, & Marschinski, 2012; Helm, Hepburn, & Mash, 2003; Jakob & Brunner, 2014; Rodrik & Zeckhauser, 1988). On the one hand, commitment forms an integral part of policy design in order to allow regulated subjects to form related decisions on solid ground. On the other hand, flexibility for subsequent revisions and fine-tuning is of high value to policy makers considering the uncertainty over relevant future parameters, such as economic development, technological innovation or future public opinion (Brunner et al., 2012). Bardach (1976) points out that especially policy designs which imply possibilities for evaluation, change, or termination from the beginning on (for example in form of measurable and achievable targets) are likely to become subject to policy dismantling in the form of weakening or termination (Bardach, 1976, p. 130).

For studying the dismantling of the renewable energy support schemes in Spain and the Czech Republic the distributive effects of cost and benefits of the specific policy design need to be considered. Furthermore, the policy's adaptability to changing macro conditions along a continuum of commitment and flexibility can be derived from the literature as a potentially vital factor for dismantling as well as potential target achievement.

### 3. Methodology & Data

The cases Spain and Czech Republic were selected for in-depth analysis and comparison, as these countries were the first two European countries with substantial policy programs for the deployment of renewable energy which subsequently chose to abandon their feed-in tariff schemes along with a significant reduction or event termination of their overall support for renewables. Spain terminated its FiT for new installations in January 2012 (REN21, 2013, p. 68), the Czech Republic in January 2014 (REN21, 2014, p. 78). They both represent policy pioneers in the sector that chose to abandon this pro-active stance. Besides being among the first, Spain and the Czech Republic furthermore share several relevant characteristics partly due to their membership in the European Union, such as renewable energy targets for the year 2020 negotiated within the EU and a similar level of economic development as well as democratization in global comparison. This relative similarity helps increase the comparability of emerging empirical results.

The empirical data constitute the results of semi-structured interviews with open-ended questions, which are commonly used for expert interviewing (Leech, 2002, p. 665). 15 interviews were

conducted between July 2015 and October 2015. Interviewees included consultants, NGO members, scientists, lawyers, interest group members, a journalists and public officials from ministries. Interviews included in-person, phone and Skype interviews. Since some of the interview partners preferred to answer anonymously, we will use a shortcut for country code and interviewee number in the following (e.g. ES01 or CZ02). Our conclusions are drawn from statements made in the interviews based on both frequency as well as persuasiveness of the arguments expressed. The information gathered from the interviews have been matched by findings from relevant primary sources such as annual reports or policy documents as well as secondary sources, including articles published in specialized media and academic journals.

## 4. Result & Discussion

The following section presents the detailed empirical results of the two case studies. Each case study begins with a brief introduction of the case. The systematic analysis begins with the category of policy design, the analysis of which offers the highest level of granularity. This is followed by the political economy of the policy field, institutional constraints and opportunities and, finally, macro-level factors. The latter represents the most generic set of factors and hence offers the lowest level of granularity in the empirical analysis.

### 4.1 Spain

#### Overview of Renewable Energy Policy Dismantling in Spain

Spain was a leader in the promotion of renewable energy technologies for nearly a decade up to approximately the year 2008 (Pew Report, 2014; REN21, 2015). Between 2008 and 2013, Spain then applied a number of retroactive cuts and finally ended support by imposing a full moratorium on further renewable energy promotion through FiTs.

Renewable energy promotion started in 1997 when Spain introduced a Special Regime for the promotion of RENEWABLE ENERGY in its Electricity Sector Law (1997), but the number of newly connected installations remained low until 2004 (del Río & Mir-Artigues, 2014). Royal Decree 661/2007 finally kick-started the accelerated deployment of renewable energy facilities in Spain. Main features included priority access to the grid, more favorable conditions for larger facilities above 100 kW, and a revision of the FiT rates only every four years. These conditions resulted in a solar boom: solar PV capacity installations rose from 103 MW in 2006 to 544 MW in 2007 and to 2,708 MW in 2008. Within a few months, new installations were connected to the grid at an unusually fast pace.

End of September 2008, the Spanish government pulled the emergency brake and applied several amendments to the renewable energy support scheme. The most severe changes included an annual

400 MW cap on new PV installations, a subsequent reduction in tariff levels, and a maximum period the subsidy was available (Royal Decree 1578/2008). In 2010, FiT rates were further reduced and a limitation on the hours of production that facilities could deliver electricity was introduced (Royal Decree Law 14/2010).

In January 2012, under a new government, an indefinite moratorium on new installations was announced (del Río & Mir-Artigues, 2014, pp. 16-20; see also European Photovoltaic Industry Association (EPIA), 2013, pp. 19-21; Royal Decree Law 1/2012). A special electricity tax of 7 percent for all electricity generators was introduced in December 2012 (Law 15/2012). Mid-2013, the remuneration system was completely changed (Royal Decree Law 9/2013). Renewable energy installations no longer receive a FiT for the energy produced, but a *special remuneration* in reference to the installed capacity, which shall guarantee a so-called *reasonable return* for the installation (Bird & Bird, 2014). Resulting uncertainty and reduced profitability have led to a more or less complete stagnation in the expansion of renewable energy sector (Red Eléctrica de España, 2015, p. 51). After a four-year period of standstill, Spain restarted renewable electricity auctions in 2017 (Clean Technica, 2017). For an overview of key policy changes to Spain's renewable energy policy, see table 1.

**Table 1: Key policy changes to Spain's renewable energy policy since 1997**

<b>FiT Dismantling in Spain</b>	
<b>1997</b>	Electricity Sector Law (Law 54/1997) introduces FiTs.
<b>June 2007</b>	Royal Decree (RD) 661/2007 revises FiT and introduces increased remuneration for PV installations between 100 kW and 10 MW.
<b>2007/2008</b>	Installation rate of solar PV rises to extraordinary levels due to favorable conditions ("solar boom") – parallel rise in subsidy costs.
<b>September 2008</b>	RD 1578/2008 revises tariff levels and sets quarterly capacity quotas to regain control.
<b>November/December 2010</b>	RD 1565/2010 reduces duration of support for existing installations (to 25 years); RD Law 14/2010 implements a cap on operating hours for existing solar PV plants.
<b>January 2012</b>	RD Law 1/2012 introduces an indefinite moratorium on new installations.
<b>July 2013</b>	RD Law 9/2013 completely changes remuneration scheme and replaces FiT.

#### **The role of policy design**

In the case of Spain, design flaws and inflexibility contributed significantly to the decision to put a moratorium on the feed-in-tariff. Firstly, a number of flaws in the design of the feed-in tariff led to a rapid and relatively uncontrolled growth of renewable energy, in particular in the solar photovoltaics sector, followed by an abrupt end to the support scheme. Similar to the German scheme, Spain's FiT lacked a mechanism for controlling the amount of new installations as well as the resulting costs.

Instead, the government introduced a poorly designed technology-specific FiT termination mechanism. Based on a set of technology-specific targets, this led to a dramatic boom and bust cycle in Spain's solar PV market. When 85% of any given target was achieved, the government could announce a termination of the respective FiT with a minimum transition period of 12 months. For solar PV, this point was reached in September 2007. The announcement of the FiT phase-out resulted in a sudden and exponential increase in investment from developers eager to make use of the remaining window of opportunity. This made Spain the country with the highest annual installed solar PV capacity in 2008. This was underpinned by FiT rates considered to be significantly higher than needed by numerous experts (ESO8, see also del Río & Mir-Artigues, 2014, p. 12). Moreover, the scheme lacked a mechanism to reduce FiT rates in line with the cost of technology. As a result, the 2008 solar boom generated a very significant cost burden to the Spanish electricity system.

A second, inter-related problem with the Spanish FiT design was that it did not clearly state who would be responsible to ultimately pay for the costs of the subsidy. Due to a so-called tariff deficit (TD) in Spain's electricity market, the paid tariffs could not cover the total costs of the system. While the feed-in tariff scheme did not create the TD, it contributed significantly to its increase. In the absence of an approach for dealing with the growing TD, this fomented resistance from the affected utilities.

The TD is the result of a difference between fixed consumer electricity prices and higher reported actual costs by the energy companies. In the late 1990s, Spain saw liberalization in the electricity market in accordance with the European Internal Market in Electricity Directive 96/92/EC. To ensure support for this liberalization, the Spanish government promised consumers that they would pay an artificially low price for electricity (Royal Decree 2019/1997). The final electricity price consists of regulated grid access tariffs (i.e. the regulated costs<sup>1</sup>) and a component related to the wholesale price of energy. This made it impossible to pass on the full costs for the FiT to ratepayers, unlike in many other countries. The remuneration of renewable electricity generators contributed to the rapid growth of the TD. The TD began increasing from 2000 (EC, 2014, p. 27f.; based on data from Comisión Nacional de Energía (CNE)) and reached € 28,5 billion at the end of 2013, which equals nearly 3% of Spain's Gross Domestic Product (GDP) (EC, 2015, p. 63). It is the highest accumulated TD among EU countries (EC, 2014, p. 23). According to the European Commission, the share of renewable energy subsidies accounts for approximately 50% of all regulated costs (EC, 2014, p. 28). Opponents of renewable energy expansion made the contribution of renewable energy subsidies to the TD a central point of political debate. A fundamental issue was the unresolved nature of the

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<sup>1</sup> Regulated costs refer to costs for transport and distribution network costs, but also other regulated costs such as subsidies for RES-E or capacity payments to conventional power plants.

problem, as the TD remained on the balance sheet of the affected utilities without a clear method for its resolution. Only in 2009, after the dismantling of renewable energy policies had commenced, was a securitization fund, which provided a guarantee for the resulting debt burden, finally established (RDL 6/2009).

#### Political Economy of Policy field

The growing TD is closely intertwined with a number of structural features of the Spanish electricity sector, which pose a particular challenge for the continued expansion of renewable energy in Spain. Firstly, Spain has significant overcapacity in its electricity system, i.e. a relatively high installed capacity in comparison to the electricity demand (Deloitte, 2015, p. 11). In 2014, the maximum peak power demand was 38,666 MWh, while the installed capacity was 102,262 MW (Red Eléctrica de España, 2015, p. 11). The growth of renewable energy generation added to the high existing capacities, but unlike in other countries, there were no mechanisms in place to phase-out other energy sources, such as nuclear energy in Germany. Consequently, increasing renewable energy capacities led to decreasing load factors (and thus profitability) of gas-fired power plants in particular. Excess capacity is also one of the reasons for relatively high electricity prices in Spain. To make this situation worse, the Spanish electricity system represents an energy island with very limited possibilities to export power to its neighboring countries. Despite the EU internal market in electricity, interconnection capacity with Spain's neighboring countries is negligible (Deloitte, 2015, p. 12) Therefore, nearly all of the power produced has to be consumed within the country (del Río & Mir-Artigues, 2014, p. 8; Red Eléctrica de España, 2015, p. 18). These structural features, coupled with the inability to price electricity at cost, contributed to the increasing TD, which translated into mounting economic pressure on the major utility companies.

Liberalization and privatization in the electricity market as well as the fusion of several electricity supplies in the field led to the creation of a few major transnational companies. The two incumbent utilities – Endesa and Iberdrola – and three smaller competitors (Gas Natural, EdP, and Viesgo) dominated the sector and continue to do so. Together with their umbrella association UNESA (Asociación Española de la Industria Eléctrica), these incumbent utilities aimed at maintaining their market dominance (Haas, 2017, p. 231). They have been supported by the Industry Ministry MITYC (Ministerio de Industria, Turismo y Comercio), which is responsible for energy policy (Haas, 2017, p. 234). On the opposite side, a coalition of “green” actors has formed, although it remained more fragmented. Small and medium enterprises from all stages of the value chain played a role here. Several industry associations represent the interests of different renewable electricity sectors (for details, see Haas, 2017, pp. 238-241). In the political system, the Environment Ministry MMAMRM (Ministerio de Medio Ambiente y Medio Rural y Marino) was an important ally of the renewables



advocates. Several civil society organizations such as Greenpeace or Ecologistas en Acción (EeA) supplemented the “green” coalition.

Experts agree that lobbying by the incumbent energy utility companies played an important role in driving the policy dismantling process (ES01, ES02, ES03, ES04, ES06, ES08). Although some incumbent utilities, especially *Iberdrola*, had invested in renewable technologies, they were increasingly perceived as competitors and as a threat to the business model of incumbent utilities. Moreover, their investments were mainly in the wind energy sector, while the solar PV sector constitutes the domain of smaller competitors (ES03, ES08). Renewable energy producers, especially solar PV generators, had a much weaker position in influencing the government (ES01, ES06, ES08). Experts pointed to the close personal connections between energy utility companies and the main political parties in Spain (ES02, ES06, ES08). With regards to the Rajoy cabinet in particular, which took office in 2011, they pointed out that “this government is much closer to the utilities than to the renewable energies” (ES08).

#### **Institutional Constraints and Opportunities**

The institutional landscape in Spain is also favorable to the process of policy dismantling and can be considered an enabling factor. Based on the constitution of 1978, Spain is a parliamentary monarchy with the prime minister being the president of the Government and holding executive power (Government of Spain, 2018). In the bicameral parliament, the *Cortes Generales*, legislative power is divided between the Congress of Deputies and the Senate. The lower chamber, the Congress of Deputies, exerts greater legislative power, while the Senate can veto decisions. These veto decisions can then be outvoted by an absolute majority of the Congress of Deputies. Tsebelis (1995, p. 305) argues that imperfect bicameral systems in which the lower chamber can ultimately overrule the objections of the upper chamber have to be considered as *de facto* unicameral systems. The veto power can only delay but not prevent policy decisions. Moreover, in Spain, the two chambers do not exhibit significant difference in their political configuration. As both legislative bodies are elected at the same election date, political power relations are usually similar in both chambers. This is a relevant difference compared to, for instance, Germany, where the second chamber acts as a real veto player, as deputies are determined by the *Länder* governments.

In addition, in the last decades, the two main political parties – the currently ruling People’s Party and the Spanish Socialist Worker’s Party – have governed alternately without the formation of coalition governments<sup>2</sup>. This further reduces the number of veto players – such as a partner in a coalition government - that might prevent a dismantling decision (Tsebelis, 1995, p. 302). Finally,

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<sup>2</sup> The development towards a slightly more fragmented party system is a very recent phenomenon.

although the Spanish political system delegates a degree of authority to the regional level (Söderlund, 2005), decision-making in the case of the FiT dismantling took place mainly through Royal Decrees and Royal Decree Laws adopted at the national level. These legislative provisions are issued in case of urgent and extraordinary need by the central government. They have to be confirmed *ex post* by the Congress of Deputies. All in all, the relevance of institutional veto points for impeding the dismantling of the Spanish FiT was limited.

### Macro-level Factors

A key macro-level factor enabling the decision to dismantle the promotion of renewable energy was the global economic crisis in 2008 and 2009, which hit Spain particularly hard. This had a number of negative repercussions for the economic situation of Spain's utilities and placed increasing pressure on the government to reign in the increasing TD.

Due to the economic crisis, electricity demand decreased considerably between 2008 and 2014 (Red Eléctrica de España, 2015, p. 26). This in turn decreased utility revenues, increased idle capacity in the Spanish electricity system and hence further enhanced the impact that the continued expansion of renewable energy was having on the TD. The government responded by issuing guarantees for the resulting debt burden. While alleviating pressure on the utilities, these financial obligations added to the concerns of financial analysts, assessing the credit worthiness of a struggling Spanish government during the Euro crisis (Robinson, 2013, p. 3) (see, for instance, Moody's, 2013). As raising electricity prices did not represent an option during the economic crisis, the Spanish government turned to the only available lever to reduce the TD – the curtailment of renewable support.

In Spain, these economic shocks were accompanied by a change in government from the Socialists to the Conservatives after the 2011 elections. The Socialists, who retained power after a general election in 2008, had already introduced a number of measures, including retroactive reductions in support, to dampen the budget impact of the FiT. The conservative government that took power in 2011 then delivered the final blow to the renewables support scheme by introducing a moratorium on new installations, essentially ending government support for renewable energy in 2012 (moratorium on new installations, electricity tax; for details, see del Río & Mir-Artigues, 2014, pp. 36-42). According to a number of interviewees, the subsidy cuts applied under the Socialist government (Zapatero II, 2008-2011) were mainly a result of the austerity imposed on the Spanish state by the financial crisis, while the *de facto* termination of renewable support was heavily influenced by more fundamental political opposition among conservatives (Haas, 2017, p. 218).

## 4.2 Czech Republic

### Overview Renewable Energy Policy Dismantling in the Czech Republic

Over the past decade, the Czech Republic has made significant progress in increasing the share of renewable energy in the final consumption, especially in the electricity sector (CZ Energy Regulatory Office, 2017, p. 24; EEA, 2014, p. 10). The main support policy for renewable electricity was a FiT, established in 2005 under the Renewable Energy Support Act No. 180/2005 (Czech Parliament, 2005). The FiT policy successfully promoted private investments in various renewable energy technologies (ERU, 2012a, p. 3). The share of electricity generated from renewable sources out of the gross electricity consumption rose from 3.7% in 2005 to 12.8% by 2013 (Eurostat, 2015). The largest increase took place between 2010 and 2011, where the share of renewable electricity rose by about 40%. Within the different renewable electricity sources, this sharp increase was mostly caused by new photovoltaic installations (ERU, 2012a, p. 3).

The dismantling of renewable support began in 2010 with the introduction of a levy of 26% on the income of operators of solar PV systems built after 2008 (CZ Constitutional Court, 2012). In 2012 the initial Renewable Energy Support Act (Czech Parliament, 2005) was replaced by Act No. 165/2012 on promoted energy sources (Czech Parliament, 2012). The new Act contains measures to slow down the development of renewable energy and to minimize consumer energy prices, while remaining committed to the latest European target of having a 13% share of renewable electricity by 2020 (Directive 2009/28/EC; (EUR-Lex, 2015). Act No. 165/2012 prolonged the levy of 26% of the FiT on the production of solar power, which was subsequently reduced to 10% in 2013 (Government of Czech Republic, 2013). The solar levy is heavily debated among experts with regards to the question whether it had a retroactive character. In 2012, the Constitutional Court of the Czech Republic decided that the levy was in line with EU and Czech legislation (CZ Constitutional Court, 2012).

While the Czech FiT has been dismantled incrementally since 2010, this process led to a *de facto* termination of the remuneration scheme for all new renewable energy installations, except small hydro-power plants, by the end of 2013 under the amendment No. 310/2013 Coll. (RES Legal, 2017). No alternative renewable energy scheme of comparable scope has been established since. The FiT dismantling resulted in a stagnating share of renewable energy since 2013 (CZ Energy Regulatory Office, 2017, p. 24). In May 2014 another amendment was drafted, including most prominently a review mechanism that would retrospectively adjust the investment conditions for each project after 10 years in operation and level the return on investment for all projects to about 3.5% per year (EurObservER, 2015, p. 5). Naturally, this was faced with opposition by the renewable energy sector organizations (see for example ALIES and CZEPHO, 2014). The approval of the Czech FiT under EU state aid rules by the European Commission was also made conditional on this review mechanism,

which is supposed to allow for more retrospective flexibility of reducing support in case of aid cumulation (European Commission, 2016, p. 11; Fouquet & Nysten, 2015, p. 17). For an overview of key policy changes to Czech renewable energy policy, see table 2.

**Table 2: Key policy changes to the Czech renewable energy policy since 2005**

<b>FiT Dismantling in the Czech Republic</b>	
2005	Renewable Energy Support Act No. 180/2005 introduces FiTs.
2010	Amendment No. 402/2010 Coll. introduces levy of 26% on operators' incomes.
May 2012	Initial Law is replaced by Act No. 165/2012. Substantially slowing down RENEWABLE ENERGY development.
September 2013	Amendment No. 310/2013 Coll. de facto abolishes FiT (except small hydro).
May 2014	Amendment drafted for retrospectively adjusting investment conditions to yearly ROI of 3.5%, final status unclear.

#### The role of policy design

The Czech FiT was, like most FiTs, financed by the final electricity consumers as a surcharge included in the electricity bill (EC 2014: 15). Distinct from other FiT designs, the Czech FiT includes no exceptions for electricity-intensive industries (CEER, 2015, p. 50). In addition, the FiT did not differentiate between roof- and ground mounted photovoltaic, making the remuneration exceedingly favorable for the latter (CZ01, CZ03). Another important design feature is the mechanism for adjusting the level of remuneration, which allows the FiT to be adjusted by a maximum of 5% per year. Included to provide stability and investment security, it deprived Czech policy makers of their ability to respond appropriately to the changing market environment (Czech Parliament, 2005, p. 5).

The majority of interviewees considered the policy's inflexibility to adapt to a changing market situation as amongst the most important reason for the dismantling (CZ01, CZ02, CZ03, CZ04, CZ06). The price drop of photovoltaic (PV) modules between 2009 and 2011 (Frauenhofer ISE, 2015, p. 29) led to an overly rapid expansion of PV installations in the Czech Republic. This in turn increased the costs of the FiT considerably, significantly exceeding the targeted amount (EEA, 2014, p. 4). The electricity price for household consumers rose steadily from 0,11€/kwh in 2007 to about 0,17€/kwh in 2013, after which it fell back to around 0,14€/kwh (Eurostat, 2018a). The cost of the FiT as a share of the total electricity price rose from around 2% in 2009 to 16% in 2011 (Pavelková & Živělová, 2016). Initially a payback period for investments on PV installations of around 15 years was envisaged by the FiT. The time required to recover the cost of PV investments came down to nearly five years after the price drop in 2009. Non-household consumers, such as industry, had to pay about the same as households for electricity in 2007, spiking to 0,13€/kwh in 2011 and falling back to 0,09€/kwh in

recent years (Eurostat, 2018b). Increasing electricity prices for industry triggered extensive lobbying from heavy industry against the FiT scheme (see also next section on the political economy of the policy field), as the maximum yearly reduction was set at 5% (Czech Parliament, 2005, p. 5).

Another critical factor concerning the policy design was that the FiT was explicitly introduced to achieve the renewable energy target introduced by the European Directive 2009/28/EC (EUR-Lex, 2015). This mandated a share of 13 percent of renewables in total electricity generation by 2020. Due to the dynamic development of the sector in the Czech Republic and globally, this target had been met as early as 2013 (CZ Energy Regulatory Office, 2017, p. 24; EUR-Lex, 2015). Interviewees viewed it as politically infeasible to prolong the support of renewable energy along with the related costs to the electricity consumer after the target had been met (CZ04, CZ05, CZ06, CZ07).

#### Political economy of policy field

Next to renewable energy, overall electricity production in the Czech Republic is dominated by locally produced coal with a 54% share in the energy mix in 2015 (IEA, 2016, pp. 75-79). This is followed by nuclear energy with a share of about 30%. Since 2005 there has been a slight shift towards nuclear and renewables with coal falling from an initial share of 63.8%. The most dominant actor in the Czech electricity market is the ČEZ Group. It is majority state-owned utility and integrates more than 60% of total generation capacity as well as large parts of distribution and supply. While ČEZ also undertook smaller investments in several types of renewable energies, its core business remains the operation of coal-fired power plants and nuclear power plants in the Czech Republic. Partly due to the rising share of renewables, ČEZ share of total generation capacity has been declining over the last decade (IEA, 2016, pp. 75-79). One interviewee claimed that ČEZ, with its strong ties to the government, has exerted strong influence on the Czech government against the further development of renewable energy to protect its core business in nuclear and coal-fired power generation.

The lobbying efforts by ČEZ were supported by a business sector, which was dissatisfied with the fact that they had to pay for the profits of the renewable electricity installations via increased electricity prices. In particular, heavy industry, dependent on low electricity prices, strongly opposed the FiT scheme, illustrating links to policy design. Had the Czech government opted for exemptions from costs related to the FiT for its energy intensive industry, the opposition of influential industrial players may have been avoided.

Concerning the representation of renewable energy firms, several small Czech associations exist, such as the Czech Wind Energy Association, the Czech Solar Association or the Alliance for Energy Self-Sufficiency. The Czech Renewable Energy Agency has been inactive since 2013 (RES Legal, 2017). Interviewees pointed out that renewable energy interest groups also increased their lobbying activity but were less successful than the incumbent industry (CZ04; PV Magazin, 2013b).

### Institutional Constraints & Opportunities

The Czech Republic is a pluralist multiparty parliamentary representative democracy (IEA, 2017, p. 17). Like all European democracies it is marked by separation of powers between legislative, judicative and executive, indicating a rather high level of institutional constraints (Kábelová, 2010). The prime minister serves as the head of government and the president as the formal head of state. The parliament is bicameral, with the Chamber of Deputies and the Senate. The Chamber of deputies is elected every four years, whereas the Senate is elected only every six years. This makes it more likely that the political majorities in the lower and the upper house diverge, increasing institutional constraints in the political system. Both houses had to pass the bills and amendments dismantling the FiT. However, except for changes to constitutional and procedural laws, the Chamber of Deputies can outvote the Senate (Kysela, 2018), making it a de facto unicameral system, where the upper chamber can only delay, but not veto regular legislative proposals (Tsebelis, 1995). Still, overall the institutional constraints can be regarded as rather high, which indicates that institutional opportunities did not substantially fostered the dismantling of the FiT in the Czech Republic. This was supported by the interviewees, who did not mark it as a relevant factor. The role of partisan power constellations within the depicted institutions will be analyzed in the following under political macro-level factors.

### Macro-level factors

The Czech Republic faced several changes in government during the considered time span (Government of Czech Republic, 2017). When the dismantling sharpened in 2011, the Czech government was led by the conservative Petr Nečas, who was followed by the independent but former social-democratic Jiří Rusnok in July 2013. In January 2014 a new cabinet under the social-democratic Bohuslav Sobotka came into office. Nečas' and Rusnok's coalition enjoyed majority support in the chamber of deputies but not in the Senate during the two major FiT dismantling decisions in May 2012 and September 2013 (Czech Senate, 2018). Still, the bills were passed at first attempt in both the Chamber of Deputies and the Senate (PV Magazin, 2013a, 2013b). Whether these macro-political factors substantially influenced the FiT dismantling was disputed among experts. The conservative government under Petr Nečas was heavily criticized for mismanaging the FiT (CZ01, CZ02), going as far as suspicions of postponing legislation changes in order to secure personal investments in renewable energy (CZ02; Schwartzkopff, Schulz, & Goritz, 2017, p. 7). Still, it needs to be pointed out, that the incremental dismantling of the Czech FiT took place over several years, outlasting the change in government in 2013.

Looking at the developments regarding the FiT from its introduction in 2005 onwards, it is important to also keep in mind the economic development during that time. The Czech Republic was hit by the global economic crises rather severely (Tvrdoň, 2010), leading to a shrinking of gross domestic

product by -4.8% in 2009 (Eurostat, 2016). After 2009 the economy recovered, but negative growth rates returned in 2012 and 2013. Like the influence of macro-political factors, the influence of the economic recession on the dismantling of the FiT was disputed among experts. The fact that end-consumers had to bear the costs for the support scheme was seen as playing into the need for the dismantling in general, with some interview partners seeing it as intensified by the economic crisis. Due to the ambiguous responses, we evaluate the influence of political and economic macro-level factors as modest for the Czech FiT dismantling.

## 5. Comparison and Discussion of Key Findings

Table 3 provides a comparative overview of findings from the two case studies. While all analytical categories yielded relevant findings in both cases, the dynamics of the Spanish case provide a stronger validation of the analytical framework. The dismantling of renewable energy support in Spain was clearly a result of a confluence of all four factors. A combination of structural and institutional features of the Spanish electricity system – manifested in the form of a growing TD - provided a relatively hostile environment for continued renewable energy support. This was exacerbated by a number of policy design features, leading to the boom in solar energy and its related impacts on the TD. The economic fallout from these developments was further aggravated by the onset of the global financial crisis in 2008/2009. Nevertheless, it took a change of the national government for the full dismantling of the support scheme to take shape, underlining the importance of government change in the Spanish case. Finally, the absence of relevant veto points - for instance by regional political players – provided a favorable institutional environment for the new government to dismantle policy support for renewables in 2012.

**Table 3: Policy Dismantling in Spain and Czech Republic – Comparative Results**

	<b>Main Causes of FiT Dismantling Spain</b>	<b>Main Causes of FiT Dismantling Czech Republic</b>
<b>Macroeconomic Conditions</b>	<p>Economic Crisis</p> <ul style="list-style-type: none"> <li>- Shrinking power demand</li> <li>- Government securitization for “tariff deficit” put Spanish government under pressure in times of budget constraints/ economic crisis</li> </ul> <p>Government Change</p> <ul style="list-style-type: none"> <li>- Dismantling process was reinforced after election of conservative government</li> </ul>	<p>Economic Crisis</p> <ul style="list-style-type: none"> <li>- Mixed evidence found for payment problems of electricity consumers during the economic crisis causing the CZ FiT dismantling</li> </ul> <p>Government Change</p> <ul style="list-style-type: none"> <li>- Mixed evidence found for changes in government causing the FiT dismantling</li> </ul>
<b>Institutional Constraints and Opportunities</b>	<ul style="list-style-type: none"> <li>- Centralized decision-making on FiT through Royal Decrees and Royal Decree Laws in de facto unicameral parliament with single-party government facilitates dismantling process</li> </ul>	<ul style="list-style-type: none"> <li>- Czech bicameral system does not offer particularly easy path to policy dismantling</li> </ul>
<b>Political Economy of the Policy Field</b>	<ul style="list-style-type: none"> <li>- Overcapacities in the electricity sector with limited possibilities for electricity export; predatory competition</li> <li>- Lack of phase-out scenarios for other, fossil-based generation</li> <li>- Intensified lobbying efforts by incumbents</li> </ul>	<ul style="list-style-type: none"> <li>- Successful lobbying against FiT by energy intensive industries and conventional energy companies with vested interests in fossil-based system</li> <li>- Legacy of influential and still dominantly state-owned utility</li> <li>- Lack of phase-out scenarios for fossil-based generation</li> </ul>
<b>Policy Design</b>	<ul style="list-style-type: none"> <li>- Overgenerous FiT rates for certain technologies (esp. larger solar PV)</li> <li>- Lack of annual caps, inflexible FiT rate adjustment</li> <li>- Technology-specific FiT termination followed by transition phase leads to boom and bust in PV</li> <li>- Uncertainties regarding the ultimate responsibility to cover for the increased “tariff deficit”</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of industry exemptions in the CZ FiT</li> <li>- Inflexible policy design, unable to react to substantially changing market circumstances (especially PV modules’ price drop accompanied by accelerated development of PV)</li> <li>- Early achievement of Czech renewable energy 2020 target, making it politically troublesome to uphold the remuneration scheme</li> </ul>



Examining the Czech case overall, it became clear that a combination of factors played together bringing about the dismantling of the Czech FiT. Most importantly, three factors caused the policy dismantling: (1) an inflexible policy design, unable to react to substantially changing circumstances; (2) the lack of industry exemptions, which in turn caused extensive lobbying against the scheme; and (3) the early achievement of the Czech renewable energy for the year 2020. All three main explanatory factors are located at the intercept of the FiT's design and the political economy of the energy system, illustrating the close inter-relationship between policy design and the related political economy.

Similarly, the macro-economic crisis provided a hostile environment for continued support for renewable energy. However, interviewees did not emphasize this link as strongly as in the Spanish case. Also, institutional constraints in the Czech case were higher than in the Spanish case, as in the Czech Republic the diverging election cycles of the parliament chambers lead to less heterogeneity in the composition. Still, the FiT dismantling was adopted in both houses, indicating a cross-partisan consensus.

Both cases confirm that the newly created analytical categories - policy design and the political economy of the policy field – constitute a useful further specification of the analytical framework. The cases reveal the important influence that the political economy had on the decision to dismantle renewable energy policy. They demonstrate that the physical and institutional features of the energy system played a major role in shaping the political dynamics that ultimately led to the dismantling decision. Further comparisons within the renewable energy sector as well as systematic comparisons with dismantling processes in other policy fields could provide further lessons on how political economy-related factors shape policy dismantling, i.e. which factors are specific to the country or the policy field and which factors may be generalizable across policy fields. Regarding policy design, both cases confirm not only its relevance but the importance of considering design-related aspects in tandem with the political economy of the policy field. In Spain and the Czech Republic, a flawed design of the support scheme led to an uncontrolled boom in solar energy installations. In the Spanish case it was, however, the additional combination with the TD in the electricity sector - further exacerbated in its impact by the economic crisis - which increased the pressure to engage in policy dismantling.

As indicated, many of the factors discussed in the analytical framework are manifested clearly in the Spanish case. Policy dismantling in the Czech case, on the other hand, seems to have occurred in an environment where macro-level factors were present, but at a lower level of intensity. Institutional opportunities did not substantially foster the dismantling, which took place nevertheless. Instead the inflexible policy design as well as the achievement of an EU policy target shaped the political

economy to the disadvantage of the remuneration scheme. While this represents an important insight in itself, it does not fully explain the dismantling decision. Why in the presence of only weak enabling factors, did policy dismantling – rather than policy inertia – take shape?

The answer appears to lie only partially with the factors enabling the dismantling of the support scheme. Another relevant aspect might be how and why the scheme was introduced in Czech Republic. While Spain's support for renewable energy represents a long-standing policy legacy, the Czech scheme was introduced in response to policy targets negotiated at the European level. Hence, ownership among policy makers in the Czech Republic is likely to have been weaker than in Spain. This may explain why Czech policy makers took the decision to dismantle the policy without the strong set of enabling factors identified in Spain. This raises the question whether the pre-existing level of ownership for policies among policy makers may have an impact on the relative ease with which dismantling of policies may occur.

## 6. Implications for Policy-Making

A number of the findings related to the policy design offer important insights for policy making. Firstly and most fundamentally, it shows that the design of policy and how it interacts with the political economy of the policy field has an important influence on the dismantling of policies in the renewable energy sector. Specifically, the costs related to support-schemes had an influence on the dismantling process. For the design of durable policies in support of renewable energy, this implies that it is important to retain a degree of control over the costs of the support scheme, both to contain overall costs and to avoid the development of windfall profits. It is important that costs are not perceived as damaging by stakeholders as well as politicians and the general public. Moreover, the perception that policy costs are not providing a small stakeholder group (i.e. renewable energy developers) with excessive benefits at the expense of others. The shift to auctioning mechanisms witnessed over the past years already reflects this insight.

The distribution of the costs across actors is another important point, although policy implications may be less clear. Both case studies reveal the important role that lobbying by powerful incumbents had for the process of policy dismantling. In particular in the Czech Republic, energy intensive industry emerged as a strong opponent of the FiT, due to its impact on electricity prices for industry. The exemption of certain industrial consumers, as is the case in Germany, represents one strategy for mitigating this potential source of opposition. At the same time, such exemptions may represent a source of political resistance in their own right, given the unfair distribution of costs across actors that this implies. A middle way might be exemptions that are phased-out over time.

More generally, these examples suggest the need for an explicit strategy for managing the political economy of renewable energy deployment. As pointed out in Quitzow (2015), the political dimension of policy making remains a blind spot in the broader literature on policies for the promotion of environmental innovation and technological change. The findings derived from this study offer first entry-points for building such politically sensitive policy strategies. Controlling the development and distribution of costs via the smart design of support policies represents a first strategic building block. A second element will have to address the vested interests of powerful incumbents. In a first instance, this requires a sound understanding of the political economy of the policy field, in this case the energy sector. Depending on the particular configuration of the energy system, the interests of an incumbent power industry may be more or less affected by the expansion of renewable energy. For instance, the absence of viable export markets for surplus electricity in Spain resulted in strong economic interests from incumbent utilities to limit further renewable energy deployment. In this context, an active policy in support of increased inter-connections with France may have relieved some of this pressure.

In most mature electricity markets, i.e. in markets without increasing power demand, similar patterns are likely. The Spanish example demonstrates that strategies will benefit from context-specific considerations, such as the scarcity of inter-connectors in this particular case. More generally, it might be stated that renewable energy deployment policies will typically require strategies that address the challenge of declining load factors in fossil-based power plants. This comes on top of the multiple techno-economic challenges of integrating increasing amounts of renewable energy in electricity systems. In the absence of strategic interventions to mitigate the economic damage to incumbent industries, resistance to renewable energy deployment is likely to increase in proportion to the economic devaluation of these capacities. Alternatively, renewable energy expansion could be coupled with the increasing electrification of end-use sectors, such as transport or heating. This would shift the initial CO<sub>2</sub> reduction derived from the deployment of renewable energy to these end-use sectors, while offering a safeguard to renewable energy support schemes. This might represent a transition strategy to facilitate the development of stakeholder coalitions that are able to act as counterweights to political resistance from incumbent industries. Of course, in the medium-term, explicit phase-out policies for fossil-based electricity generation will be inevitable for enabling the continued expansion of renewable energy and the reduction of greenhouse gas emissions in line with global climate targets.

The importance of such supranational targets is underlined in the case of the Czech Republic. Both the introduction and the dismantling of the Czech renewable energy support scheme were linked to policy targets negotiated at the EU level. Critically, the early achievement of the renewable energy

target, as stipulated in the EU Renewable Energy Directive, disrupted the political momentum of Czech renewable energy support by legitimizing policy dismantling. This highlights the importance not only of the design of *national* policy but also supranational targets and related frameworks. The static European target setting could not be adapted to the dynamics of innovation and technological change, which led to the early achievement of the Czech target. A more adaptive framework, which rewards early progress and prevents stagnation in ambition, might have maintained needed political pressure on Czech decision-makers. The Paris Agreement's "ambition mechanism" offers an important point of reference for the design of such an adaptive approach to supranational target setting.

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