7. **The Carbon Capture and Storage (CCS) Act**

7.1 **“Clean Coal” – a Chance for Climate Protection?**

Climate protection belongs to the major global challenges humankind is facing. Dangerous global warming can only be avoided if anthropogenic greenhouse gas emissions are deeply cut in order to limit the increase in global average temperature to less than 2º C until the end of the century (UNFCCC, 2010, p. 3). A transformation of the current energy supply from fossil fuels to renewable resources is vital to protect the stability of the ecosystem.

Yet, the question is still out how to handle the greater than ever and, as for in large threshold countries as China and India, even growing capacities of coal power plants. Carbon Dioxide Capture and Storage (CCS), a technology in development, is therefore discussed as a feasible and presumably necessary option to mitigate climate change. CCS separates CO₂ from plant emissions and injects it into deep geological formations, such as saline aquifers or abandoned natural gas fields, for permanent storage. Indeed, the entire range of 2º C climate scenarios on hand reveals that the severe reduction in global greenhouse gas emissions needed to successfully mitigate climate change cannot be achieved without the use of CCS technologies, unless extraordinarily ambitious reductions in global energy consumption are assumed (IPCC, 2005, p. 3).

*Fig. 43: How CCS works*
Energy suppliers consider CCS as an opportunity to keep coal-fired power plants environmentally sound and meet climate change concerns as well as economically worthwhile to save costs for emission allowances within the European Emissions Trading Scheme (see chapter 8) that are set to rise in the future. Indeed, also numerous climate scientists and environmentalists believe that CCS might play a constructive role in climate protection. However, also concerns and uncertainties are virulent. As the technology is expected for large-scale use earliest in 2020, many critics fear that the “clean coal” pledge merely serves as proverbial “green fig leaf” to buy acceptance for new coal power plants that, once erected, are not likely to in fact use carbon capture since this process comes with significant costs and efficiency losses. Only if conventional coal power plants without CCS become more expensive to operate than coal power plants equipped with CCS, an economic interest of energy corporations is present to retrofit existing power plants. In particular, large and inflexible base-load coal power capacities might also present a hurdle for the expansion of renewable energies. Moreover, the storage of abundant volumes of carbon dioxide in the underground brings about worries of local residents concerning the safety and leak tightness of the storage sites. In the light of these conflicting goals and values, fears and uncertainties, CCS is controversially discussed.¹

Heads of states and governments in the European Union prepared the ground for the development of the CCS technology by the European Energy Strategy launched in March 2007 (EC, 2007, p. 20). Based on this strategy, the EU CCS Directive 2009/31/EC adopted in April 2009 aimed to set up CCS demonstration projects until 2015 in order to develop the technology to market maturity until 2020, with financing provided by EU funds. The Directive obliged member states to establish national CCS legislation while leaving large room for national implementation and even explicitly allowing for the exclusion of CO₂ storage sites from national territory.²

In Germany, the CDU/CSU/SPD government under Chancellor Angela Merkel positively embraced CCS for large-scale coal power plants, as means of climate protection, secure energy supply and technology development. Even though political will was given and majorities under the grand coalition appeared luxuriously broad, two advances for national implementation failed due to the refusal by parliamentarians and state governments in 2009 and once more in 2011, along with massive resistance of citizens’ initiatives, before an utterly restrictive compromise was eventually passed in 2012.

The final legislation entailed quite strict limitations on storage volume and approval period, and confined CCS to small research projects instead of enabling large-scale “clean coal” power plants. Most outstanding, a state clause (Länderklausel) empowered single states to effectively ban CCS storage sites in their territory. Hence, the CCS Act was essentially turned into a “Non-CCS Act”. Given the prolonged delay of the passage of the law and the
restrictive statutory provisions, energy corporations gave up all large-scale CCS ventures for lost. Grassroots citizens’ initiatives, farmers and other CCS critics captured a victory all along the line against energy corporations.

In a political science perspective, this political success achieved by civil society appears unlikely. Power resources approaches would suggest that the big corporations win, due to their high conflict capacity and organizational capacity, but this was not the case. Rather, so-called “weak” interests of loosely organized citizens’ initiatives won. Likewise, path dependence would propose that the continuance of the centralized fossil energy supply helps CCS, but this was not the case either. Third, the political parties in government pursued the programmatic goal to promote CCS and controlled both chambers of parliament, so all veto points were closed – yet the CCS Act still did not pass the votes two times. Conventional theoretical approaches encounter difficulties to account for the defeat of energy corporations and the victory of local protest groups along with some environmentalists.

This chapter investigates the genesis of the CCS Act from the first draft in 2009 until the final legislation in 2012. It seeks to answer the question: Who wins, why, and how? My argument is: The key factors for the success of CCS opponents were the alliance formation between heterogeneous actors from private and public interest groups that linked economic interests with idealistic motivations, in conjunction with the high public trust in actors from civil society vis-à-vis the serious distrust in coal corporations. As soon as the issue has moved onto the public agenda, the influence of professional lobbyists in the arcane sphere ceased. The high number of veto points in the German political system, in particular the Bundesrat as chamber of states, helped the CCS opponents to attack the legislation. Rather than by professional lobbying, the political decision-making rationale was informed by the strategic care for the own constituency in conjunction with the pressure by affected states. Politics are directed by votes rather than by “big money”.

7.2 Constellation of Actors

At an aggregated level of analysis, actors can be clustered into two advocacy coalitions: The Economic Coalition pushing for the prompt entry into large-scale CCS coal power plants, vis-à-vis the Environmental Coalition fighting against any new coal power plants at least as long as CCS is not technically available yet and for demanding safety requirements for the storage sites. Even though the assignment of some actors is not clear-cut due to varying positions over time, this aggregation enables a heuristic approximation towards the role of interest groups in policymaking without neglecting the internal conflicts within both camps. The pro-CCS Economic Coalition, consisting of coal power plant operators – equal to the big four electricity utilities – and industry, positively embraced the development and large-scale
use of CCS to make new coal power plants less harmful to the atmosphere and save costs for CO\textsubscript{2} emission allowances. Also CDU/CSU, SPD and FDP had in the first place clearly committed to CCS as key technology for future coal use (CDU, 2007; SPD, 2007a, p. 6; SPD, 2007b; FDP, 2006, p. 8; Barbara & Stechow, 2009; von Goerne, 2009, pp. 8-10), albeit they gradually changed their positions in the course of time. In the view of the Economic Coalition, CCS would create employment and open promising export markets. The Economic Coalition therefore pursued the following core demands:

- passage of the CCS Act as soon as possible, in order to establish the legal grounds for investments and enable EU subsidization;
- promotion of large-scale CCS-ready coal power plants, focusing on two concrete pilot plants already in planning and applying for EU funding;
- wide scope for approval period and storage volume;
- discretion of energy companies in utilization of geological formations against competing options such as geothermal energy or compressed air energy storages, i.e. de-facto priority of CCS;
- least rights of appeal for landowners against expropriation for pipelines and storage sites;
- low liability standards, environmental protection and safety requirements.

The large energy corporations with stakes in coal constituted the key drivers for CCS and had also pushed for the EU CCS Directive. They placed their bets on the CCS technology, striving to use coal further on as a domestic and reliable base-load energy source while avoiding the utmost negative carbon balance attached, as greenhouse gas emissions have been forecasted to get costly along with increasing prices for emission allowances. The energy corporations Vattenfall and RWE planned pilot facilities that should be erected until 2015 to fulfill the application criteria for the access to EU funding.

Vattenfall runs the small R&D pilot plant “Schwarze Pumpe” for carbon sequestration and supports the CO\textsubscript{2}Sink research project at Ketzin in collaboration with the GFZ German Research Centre for Geosciences, both in operation since 2008 in the state of Brandenburg.\textsuperscript{3} The storage site was approved under mining law for temporary storage of a minor volume of CO\textsubscript{2}, and has been well accepted by local public and politicians. Vattenfall planned to build a demonstration coal power plant at Jänschwalde (Brandenburg) and a nearby storage site in the Oderbruch area around Beeskow. Although engineering was set to start in 2010, the company first postponed and then gave up her plans in 2011 due to absent political support (Vattenfall, 2011b; 2012).

RWE planned a CCS demonstration plant in Hürth nearby Cologne (North Rhine-Westphalia) where plans for a new coal power plant had already existed anyway. The CO\textsubscript{2} emitted was supposed to be transported via a 530km pipeline across Lower Saxony to a new storage site
in Schleswig-Holstein. Yet, the corporation suspended her plans in 2009 and completely cancelled them once for all in spring 2011 due to public protests and the enduring absence of supportive legal grounds (RWE, 2009; 2012).

E.ON pursued intentions to erect a CCS power plant in Wilhelmshaven (Lower Saxony). The corporation early pulled back more ambitious CCS plans in Germany, inter alia due to her strategy of internationalization. Only small R&D activities at several power plants remained (E.ON, 2013).

The manufacturing industry welcomed CCS as a chance to make coal a pillar of a sustainable energy mix. The Federation of Germany Industry (BDI), the German Association of Energy and Water Industry (BDEW) and the German Industrial Energy Association (VIK), followed overlapping policy goals (BDI, 2010c; BDEW, 2011c; VIK, 2011d). Also power station construction companies such as Hitachi and Siemens welcomed CCS. For public relations work, companies from energy and manufacturing industry founded the Information Center for CO₂ Technologies (IZ Klima) to promote CCS in public and media (IZ Klima, 2012). Among the large unions, the Trade Union for Mining, Chemistry and Energy (IG BCE) had stakes in coal power and strongly supported CCS, in line with the industry associations (IG BCE, 2011, pp. 2, 7). However, the industry remained rather passive, as CCS did not promise economic gains in the foreseeable future and the unpopular endeavor would only harm her public reputation (Dirschauer, 2013, interview; Treber, 2014, interview).

In contrast, the anti-CCS or CCS-skeptical Environmental Coalition fought against new coal power plants, be it with or without CCS. The safety, health and environmental concerns and fears over CO₂ underground repositories and possible leakages met with the resistance against new coal power plants whose construction would slow down the expansion of renewables and perpetuate the fossil energy path. The safe storage of CO₂ over thousands of years was held unrealistic, and the costs and efficiency losses associated with CCS would make coal power uneconomic anyways. At a lower level of abstraction, the Environmental Coalition was internally differentiated – yet not sharply divided – into two sub-coalitions:

(a) a “radical” non-CCS camp of absolute CCS opponents, made up by farmers, landowners, some water suppliers, local citizens’ initiatives, and a part of environmental NGOs, all of them categorically denying the need for CCS per se;

(b) a “moderate” camp of more differentiated CCS critics, comprising the majority of environmental NGOs and the largest part of the environmental scientific community.

Notwithstanding their different findings on how to qualify the CCS technology, both camps stood united in their joint fight against new coal power plants and kept co-operation in the field of climate politics. The joint opposition against new coal power plants united both camps despite their different evaluation on the climate protection value of the CCS technology per
se (Becker 2013, interview; Anonymous B, 2013, interview). Also the Greens took a skeptical but generally supportive position similar to the mainstream of environmental NGOs, while the Left Party utterly rejected CCS (Grüne, 2007, p. 7; Die Linke, 2007, p. 23; BT 2011, doc. 17/6507, pp. 7-8; Barbara & Stechow, 2009; von Goerne, 2009, pp. 8-10). The Environmental Coalition pursued the following core demands:

- early passage of the law but sufficient time for consultation required;
- restriction of legal purpose and scope to research and development (“radical” camp);
- priority for industrial process emissions such as from steel, lime and cement industry where greenhouse gas emissions cannot be avoided by other means;
- priority in utilization of geological formations for geothermal energy and compressed air energy storages, i.e. subordinate status for CCS;
- limitations on approval period and storage volume to be set either very restrictive (“radical” camp) or relatively restrictive (“moderate” camp);
- comprehensive rights of appeal for landowners against expropriation;
- high liability standards, environmental protection and safety requirements.

The majority of environmental NGOs along with a large number of the environmental scientific community took a skeptical and differentiated position towards CCS but did not reject the technology per se. They blamed the energy corporations to abuse CCS as a “green fig leaf” to legitimate the construction of new coal power plants and herewith block renewable energies. Therefore, they rejected approvals of new coal power plants as long as CCS is not technically available and obligatorily prescribed. Additionally, they pledged for demanding liability and safety provisions to manage potential ecological risks such as pollution of drinking water reservoirs and the unintentional release of CO₂. All in all, this camp of “moderate” CCS critics – including Germanwatch (2009; 2010), WWF (2009; 2011) and Deutsche Umwelthilfe (DUH, 2009; 2011) – considered CCS as “necessary evil” in the fight against climate change, and hence agreed to research and development of CCS, including a limited number of demonstration projects, albeit with a narrow scope confined to (1) industrial process emissions which cannot be reduced by other means without cutting the industrial output itself, and (2) research of “clean coal” only to promote technology transfer to large emerging countries with vast coal reserves such as China and India, where CCS is useful as bridging technology as long as renewable energies cannot satisfactorily meet the ever-growing energy demand. In contrast, the camp of “radical” CCS opponents – including Greenpeace (2010) and BUND (2009; 2011, pp. 3-4) – strongly rejected CCS per se and sought to limit the scope of the law to research only. A split of the environmental movement was manifest, and also several coordination meetings could not moderate the fundamental dissent (Treber, 2014, interview).
The renewable energy industry was concerned that CCS could force geothermal energy and compressed air energy storages out of the underground. Moreover the “clean coal” approach was criticized in general, as new large coal power plants would block renewable energies (BEE, 2009a; 2009b; 2009c, p. 5). Yet, the Renewable Energy Federation (BEE) remained rather passive, as other issues such as the reform of the Renewable Energy Sources Act (EEG) were considered more important (see chapter 6).

Local protest groups emerged after the first CCS plans became public, in particular in the affected territories in Schleswig-Holstein and Brandenburg. They worried about the safety of the storage sites and argued that drinking water could be contaminated, and that gas leakages could lead to asphyxiation. Furthermore, the CCS storage sites could harm the reputation of their hometowns, deter tourists and reduce the value of their property. They felt that their rights and the “common good” alike were mistreated to the benefit of a few big corporations’ profit (Heisterkamp, 2010, pp. 11-12; Bürgerinitiative gegen das CO2-Endlager, 2009, p. 2; BI „Kein CO2-Endlager Altmark“, 2011). Even in rural regions that were not densely populated, more than 1,000 citizens united to undertake protest marches against CCS (Klimaretter.info, 2010). Also farmers, landowners and water suppliers shared the concerns of local citizens’ initiatives and pushed for a moratorium or at least a very restrictive handling of CCS (Bauernverband, 2011; ARGE Grundbesitzer, 2011; AöW, 2010; Wasserwirtschaft im BDEW, 2010). Their view also informed the position of the German Federation of Cities and Municipalities (DSt, 2010).

Most environmental research institutions, advisory bodies and climate scientists counted among moderate CCS critics and explicitly turned against the total demonization of CCS (Öko-Institut, 2011; UBA, 2009b; WBGU, 2011; PIK, 2011; WI/DLR/ZSW/PIK, 2007, pp. 17-22). For instance, the well-known climate scientist Hans Joachim Schellnhuber, director of the renowned Potsdam Institute for Climate Impact Research that enjoys an outstanding reputation within the environmental community, explicitly endorsed CCS as means to reduce carbon dioxide emissions and mitigate dangerous climate change, and held that CCS opponents have become blind for the threats of the greenhouse effect. Countries such as India or China would not abandon coal power; hence it would be imperative to consider CCS as important contribution to climate protection (stern, 25.6.2009). In contrast, the Advisory Council on the Environment (SRU) fiercely opposed CCS and demanded to limit the legal scope to small demonstration projects only (SRU 2009a, pp. 33-34; 2009b).

In a comparison of the actual policy output with the articulated preferences of interest groups, as sketched in table 37 further below, it is observable that the Economic Coalition lost all along the line. Yet, as the Environmental Coalition was differentiated into two sub-coalitions, it is however not that obvious if, vice versa, the Environmental Coalition captured a victory: The moderate camp, comprising the largest part of environmental NGOs and scientists, has
rather promoted CCS as means of climate protection in the industrial sector and for research and demonstration – but failed. In contrast, it was the radical camp that won the battle: All CCS projects have been abandoned, the volumes allowed for the CCS storage are too little to operate a power plant, and states with suitable geological formations are granted an exit clause to opt out from CCS storages. In the remainder of this chapter, I explore how and why this sub-coalition was capable to unfold such an impact on political decision-making.

Table 39: Constellation of Interests and Policy Output

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passage of the law</td>
<td>as soon as possible</td>
<td>sufficient time for consultation</td>
<td>failed</td>
<td>failed</td>
</tr>
<tr>
<td>Scope and legal purpose</td>
<td>research and demonstration, large-scale use, no specific limitation</td>
<td>(a) research only (b) research and demonstration, limitation to process emissions</td>
<td>research and demonstration, large-scale use</td>
<td>research and demonstration</td>
</tr>
<tr>
<td>Approval period and storage volume</td>
<td>extensive</td>
<td>(a) restrictive (b) medium</td>
<td>extensive</td>
<td>medium</td>
</tr>
<tr>
<td>Exit option (state clause)</td>
<td>no</td>
<td>(a) yes (or: ban) (b) no</td>
<td>no</td>
<td>yes (indistinct)</td>
</tr>
<tr>
<td>Utilization competition</td>
<td>de-facto priority of CCS</td>
<td>priority of geothermal/energy storage use</td>
<td>de-facto priority of CCS</td>
<td>priority of geothermal/energy storage use</td>
</tr>
<tr>
<td>Landowners rights against expropriation</td>
<td>poor</td>
<td>comprehensive</td>
<td>poor</td>
<td>medium</td>
</tr>
<tr>
<td>Liability, environmental and safety requirements</td>
<td>low</td>
<td>high</td>
<td>medium</td>
<td>medium</td>
</tr>
</tbody>
</table>

Notes: * divided into two sub-coalitions: (a) “radical” (b) “moderate”. Sources: own compilation, based on data:
The gas mask became the symbol of anti-CCS movements. Residents feared that the CO₂ could escape from underground disposal sites and poison breathing air and drinking water. Source: Bürgerinitiative “Stoppt das CO₂-Endlager”, 2009, p. 1

“Who will be most happy about our investments the most? Our climate.” In this advertisement, RWE argues that new, cleaner coal power plants will – thanks to CCS – reduce CO₂ emissions and herewith protect climate and environment. Source: RWE, 2009.

7.3 First Failure of the CCS Act (2009)

The first attempt to pass the CCS Act failed in 2009 under the CDU/CSU/SPD grand coalition under Chancellor Angela Merkel (CDU). The governmental law proposal (BT, 2009, doc. 16/12782), issued on 1 April 2009, was subject of intense debate in parliamentary committees. It was scheduled for passage prior to the parliamentary summer break and the approaching elections on 27 September 2009. As both coalition partners CDU/CSU and SPD welcomed CCS in their programmatic objectives and the grand coalition controlled the Bundesrat, the smooth passage of the law appeared secure. Politicians and lobbyists believed that legislation would be accomplished soon and without great political tensions – even more since also renowned climate scientists with links to the environmental movement along with the majority of environmental NGOs endorsed the technology, while public protest seemed absent (Dirschauer 2013, interview; Holtfrerich 2012, interview).

On 15 June 2009, the final law proposal was settled. The compromise took up environmental concerns yet was oriented towards the interests of energy companies, deliberately meant to enable CCS coal projects in Germany. In detail, the draft entailed the following contents (BT, 2009, doc. 16/12782):
Scope and purpose of the law: The scope encompassed research, demonstration and large-scale commercial usage of CCS. Particular limitations did not apply. The draft provided for the approval of CCS-ready coal power plants but without compulsory CCS use, i.e. there was no clearly binding obligation for new coal power plants to be retrofitted with CCS once technologically available.

Approval period and storage volume: There was no specific limitation of approval period or storage volume.

Utilization competition: Competing usage possibilities for the underground between CCS, geothermal energy and compressed air energy storage were not clearly regulated and would, in fact, grant priority to CCS on a “first come, first served” basis. 

Landowners’ rights: The right of legal action of landowners against geological survey and expropriation was restricted.

Environmental, safety and liability requirements: A large number of environmental and safety issues was left open and should be tackled in statutory orders later, such as proof of safety, construction, operation and decommissioning of CO₂ storages, measures in case of irregularities and/or leakage. The liability of operators was limited to 30 years after decommissioning and should be transferred to the state governments thereafter, with indefinite preconditions. The operator was obliged to set aside funds to cover liability and aftercare, yet not quantified more specifically.

Although the passage of the law seemed certain in the light of large party majorities and broad political support, the CCS Act surprisingly failed from one week to the next. The draft as of 15 June 2009 was scheduled for passage in the upcoming Bundestag plenary session on 19 June, just in time before the parliamentary summer break. Yet the CDU/CSU unexpectedly postponed the vote by one week. On 22 June, group leaders agreed to confine the law to a limited number of demonstration projects only and to make some liability provisions more restrictive, in order to still be able to pass the CCS Act prior to the federal elections despite internal disagreements over some parts of the contents, while unresolved issues should be addressed in the next legislative term. Regardless of the new understanding, the CDU/CSU still surprisingly withdrew the entire law two days thereafter (24 June). The next day (25 June), Chancellor Angela Merkel announced in a speech at a conference of the German Energy and Water Industry (BDEW) to postpone the law to the next legislation period, because it would not make sense to pass a law which did not provide reliable legal grounds for infrastructure planning, and promised to make a new advance in the next legislative period (Bundesregierung, 2009, pp. 8-9).

Industry associations and energy corporations were upset. BDEW director Hildegard Müller spoke of a “catastrophe for our industrial location” (Reuters, 2009). After two years of
deliberation, the CCS Act was buried from one week to the other – a surprise for all political actors. How did this abrupt change in the political course of the government come about? In this chapter, I argue that the resistance of state governments highly impacted decision-making, tracing back to a vigorous local protest movement supported by a small number of environmental NGOs, in conjunction with the fundamental failure of the communication policy of energy corporations.

Inter-Ministerial Conflicts

The environmental ministry under Sigmar Gabriel (SPD) and the economics ministry under Theodor zu Guttenberg (CSU) shared equal responsibility for the CCS Act, as an agreement on the lead of one of the ministries could not be reached. However, as the SPD environmental minister considered CCS as contribution to both climate protection and the SPD-close coal industry, while the CSU economics minister appreciated CCS as necessity of industrial policy, both houses were able to meet on the middle ground.

Environmental minister Sigmar Gabriel regarded CCS as to marry climate protection with coal power, and therewith to satisfy both the SPD intra-party environmental wing and the strong traditional pro-coal economic wing. In his words, CCS enabled the “climate neutral use of coal” (Seils, 2009). “We do not grant a blank check to CCS. On the contrary, the law proposal prescribes high environmental standards, with no discount”, Gabriel stressed (BMU, 2009a; 2009b). Also economics minister Theodor zu Guttenberg stated: “Here we can reconcile coal and climate protection” (Seils, 2009). He considered CCS as “precondition for the maintenance of a balanced energy mix in Germany” (BMWi, 2009).

Although both ministries promoted CCS, they disagreed on a number of controversial issues regarding competences, time limits, environmental values and aftercare. The environmental ministry proposed a relatively restrictive regulation based on waste legislation (i.e. handling CCS sites like a waste disposal site) and therewith the authority of the environmental ministry for approval and supervision, whereas the economics ministry pushed for a less restrictive regulation based on mining legislation (i.e. handling CCS sites like a gas field) and therewith the authority of the economics ministry for approval and supervision (RNE, 2008; von Trotha, 2012, interview). The need for consensus between both ministries with equal responsibility delayed the elaboration of the law proposal. Facing the time pressure imposed by the limited approval periods for EU subsidies and urged by energy companies to provide a legal basis, the ministries finally agreed on a compromise in order to pass the law just in time to enable EU subsidies for the CCS projects at stake (Seils, 2009; von Trotha, 2012, interview).
Numerous controversial details, however, were left open and should be clarified in consecutive statutory orders in the upcoming legislative term, since an understanding between ministries and parliament was not achievable in due time.

**Energy Industry: Jeopardizing Trust**

Mainly RWE and Vattenfall, to a lesser extent also E.ON and some industrial corporations, engaged in lobby efforts to influence the CCS Act. The CCS lobby started early to foster political support. Already in 2007, energy corporations and some industrial corporations such as the power station construction company Alstom and the steel manufacturer ThyssenKrupp set up the public affairs institute “Information Center for Climate-Friendly Coal Power Plants” (later renamed in “Information Center for CO₂ Technologies”), short: IZ Klima, to contribute to public and media debate (www.iz-klima.de). The IZ Klima, staffed with former CDU minister Klaus von Trotha as its director, organized conferences and panel discussions, issued publications and engaged in public relations. As the funders of the institute were not always clearly indicated in publications and media coverage, the CCS lobby has been criticized for “astroturfing”, i.e. masking the sponsors of a message to pretend the appearance of an independent scientific institute.⁵ When lengthy negotiations between the economics and the environmental ministry turned into policy gridlock, the CCS-affiliated industry had an own detailed law proposal drafted, serving the economics ministry as outline (RNE, 2008; von Trotha, 2012, interview). Lobbyist activities of the energy industry ran at full blast after the government passed the first law proposal on 1 April 2009. Lobbyists foremost from RWE and Vattenfall engaged in endless inquiries to parliamentarians to endorse their view of the matter, advertising for least regulatory constraints and least liability provisions for power plant operators (Bülow, 2010b, pp. 2-3). On the other hand, BDI and BDEW remained rather passive. The BDEW coped with internal conflicts, as water suppliers and non-coal energy firms were also members of the association, so that the BDEW addressed the need for safety requirements and the concern over utilization conflicts in a large preamble to its position paper, yet still took a general pro-CCS position (Anonymous C, 2013, interview).

As EU subsidies were only granted to CCS projects approved until 2010, energy corporations as well as the federal government urged for a quick passage of the law. As the political will to enable CCS project was present, the energy industry was confident that a favorable CCS Act will be passed in time, all the more since most environmental NGOs welcomed CCS and climate scientists pursued rather positive and differentiated positions. At the time, CCS had been barely discussed in media and the general public, and the CDU/FDP
state government in Schleswig-Holstein had welcomed CCS plans with the outlook for fiscal contributions to the state budgets, job creation and climate protection, and had approved geological surveys in the administrative districts Nordfriesland and Schleswig-Flensburg already in March 2008 (Heisterkamp, 2010, p. 11), seemingly without creating local resistance. Taking political and social acceptance for granted, the energy industry and in particular RWE lured into a false sense of security and displayed an inadequate communication behavior.

Yet, emerging local resistance in Schleswig-Holstein where RWE pursued plans for a CCS storage site dropped a bomb onto the feet of energy corporations. The failure started with a speech of RWE CEO Jürgen Großmann at the laying of the foundation stone for the new RWE coal power plant in Hamm in the state North Rhine-Westphalia on 29 August 2008, in presence of state prime minister Jürgen Rüttgers (CDU) and Chancellor Angela Merkel (von Trotha, 2012, interview; Anonymous C, 2013, interview). Besides diverse sideswipes against the profits of the energy industry, the Chancellor’s key message was to “deliberately support the modernization of coal power plants” (Merkel, 2008, p. 1; see also: Staud, 2009, pp. 189-190). Yet more important, Großmann announced plans to build a CCS disposal site for the CO₂ from a new coal power plant in Hürth (nearby Cologne, North Rhine-Westphalia) (Großmann, 2008, p. 9; RWE, 2008b). As soon as these plans became public in Schleswig-Holstein, severe criticism emerged: Originally, the CO₂ for the disposal site should come from a new coal power plant in Brunsbüttel in Schleswig-Holstein. Now, “waste” from a coal power plant outside the state should be imported and disposed there. This evoked discontent and unrest among politicians and the public. RWE claimed to have instructed the state government about the plans prior to the announcement, whereas the state government felt deceived and denied to have been informed in advance. “The appearance of RWE was very clumsy. With this manner you cannot win people for your cause”, as former CCS lobbyist Klaus von Trotha remarked (2012, interview).

Soon, rumors circulated that RWE was about to force her way into farming land to conduct exploratory drillings for CCS storage sites. In fact, albeit exploratory drillings were approved and hotel rooms for the staff have been booked, the exploration work had not started yet and there was no single incidence of legal enforcement of land expropriation under conventional mining law. Farmers and landowners, however, believed that energy corporations were underway to confiscate and contaminate their land. As a consequence, the farmers association promptly put up opposition against CCS.

In RWE’s view, however, there was nothing delicate associated with the technology. Indeed, scientific literature available yields that hazards and risks of CCS are not implicitly higher than other large-scale industrial technologies and can be held manageable, according to reviews conducted by neutral sources such as the Office for Technology Assessment of the
German Bundestag and the UN International Panel on Climate Change (TAB, 2007, pp. 6-7) (IPCC, 2005, p. 12). All the more, similar infrastructure projects did not meet public resistance. For instance, the CCS research site run by Vattenfall at Ketzin (Brandenburg) has been at least quietly tolerated by the local communities (Dütschke, 2011, p. 6235).

Second, also carbon monoxide pipelines (such as nearby Leverkusen operated by the chemical corporation Bayer) are significantly more dangerous and harmful in terms of technological risk levels known than the intended carbon dioxide pipeline but did not stumble over any complaints or protests at all. Third, thousands of kilometers of gas pipelines run across the country, and huge underground natural gas reservoirs are already in operation – not least in the underground of Berlin-Spandau –, yet likewise without public attention even though methane is way more explosive and toxic than carbon dioxide. Hence, the energy industry did not anticipate societal resistance.

RWE’s communication strategy proved insufficient to take care for political and societal acceptance: The company only stressed technical aspects to assert the safety of the CCS infrastructure, in absence of sensitivity for safety concerns. In the beginning, RWE attempted to set up CCS sites in secret, then it downplayed potential risks and deficiencies, and just finally – when her trust was already severely damaged and many political actors had already taken decisions – sought to frame CCS as means of environmental protection, yet not meeting public resonance. Her insufficient communication caused distrust and anger, and evoked the resistance of farmers and local citizens who felt ill informed, feared possible expropriation, and were not willing to accept that they should be made responsible for the disposal of an apparently dangerous gas (Bürgerinitiative gegen das CO2-Endlager, 2009, p. 2). This account of a massive communication failure is shared by all politicians and interest groups representatives involved in decision-making on CCS and interviewed in the scope of this doctoral thesis. Energy companies rather used misleading advertising with a lack of transparency; this manner of communication was deemed to misfire, as Klaus von Trotha (2012, interview) holds, IZ Klima director at the time. “The very first factor for the failure of the CCS Act was the disastrous appearance of RWE in Schleswig-Holstein and the egomania and overconfidence of her CEO. This behavior severely compromised also the communication in Brandenburg which used to be favorable before that”, as Vattenfall head of climate policy and former SPD advisor Wolfgang Dirschauer states (2013, interview). The behavior of RWE resembled a “lord of the manor” and battered the company’s image, the CDU climate politician Andreas Jung said (2014, interview). FDP energy politician Horst Meierhofer (2012, interview) criticized the “unbelievably stupid communication policy”, and the SPD energy advisor Eckhard Fischer (2013, interview) spoke of a “communication disaster”. In the opinion of Joachim Hein, BDI energy expert, the CCS Act failed because many citizens felt that they were not being taken seriously anymore. Following Hein, RWE’s
behavior simply “messed it up” due to her confrontational attitude towards farmers and the lack of citizen participation (Hein, 2014, interview). In hindsight, a former leading CCS lobbyist elaborates: “These [corporations] are heavy-weight tankers, as is known, and many mistakes were made, in particular with a totally underdeveloped strategy for acceptance. In the way they dealt with the issue they had to lose. To simply say: ‘CCS is climate protection, and we also join in now’, has to fail. RWE has not reflected the issue of acceptance when announcing the storage in Schleswig-Holstein. The issue was entirely in the dark. [They only started to develop a communication concept] when things had already gone wrong” (Anonymous C, 2013, interview).

In all, RWE failed to take care for social acceptance of the CCS technology and evoked massive protests by concerned citizens. RWE got its fingers burned and lost any chance to survive as legitimate partner in a constructive dialogue. Henceforth, no matter what the energy industry said, true or not: no one believed the company, as it lost credibility and integrity. Regardless of her financial power and the economic weight, the deep-seated distrust in the corporation, activated by a communication fiasco in a critical region, turned out as decisive factor for the failure of the CCS Act.

Public Pressure: The Emergence of the Anti-CCS Movement

Remarkable public resistance came into appearance in the state of Schleswig-Holstein just after the law proposal was issued and CCS legislation moved onto the political agenda in concrete terms. The local protest groups spread quickly also to other states, formed alliances with other interest groups and unfolded pressure on politicians. Just briefly after the federal government passed the CCS Act proposal on 1 April 2009, citizens in Schleswig-Holstein formed the initiative “Stop the CO₂ Final Disposal Site!” (“Stoppt das CO₂-Endlager!”) on 19 May 2009. The group grew rapidly to some 4,000 members and carried out intense and effective lobbying and media activities, such as weekly demonstrations and a successful petition with more than 50,000 signatures collected within a few weeks (Heisterkamp, 2010, pp. 11-12), later increasing to about 100,000 signatures. Even in small towns, numerous information events attracted several hundred visitors. The protest spread quickly and received prompt support from the state farmers association (Bauernverband SH, 2009), the mayors of affected municipalities (Amt Schafflund, 2009), the four opposition parties SPD, Greens, Left and the political minority party South-Schleswig Voters’ Association (IZ Klima, 2009b, p. 2; SSW, 2009) as well as a great number of further local and regional associations. Soon, virtually every association in Schleswig-Holstein
passed a declaration against CCS. BUND und Greenpeace advised and supported the citizens’ initiatives (Anonymous C, 2013, interview).

A grassroots movement across heterogeneous societal milieus came into existence, based on concerns for health and environment along with the fear for losses in value of private land and homes. In a few weeks only, the entire state was full of billboards and banners with slogans against CCS. RWE’s jovial appearance and intransparent communication policy provoked broad local resistance, deeply rooted in the middle class. Many citizens assumed that corporations were out to “literally poison them” (Meierhofer, 2012, interview; similar also other interviewees, e.g. Fischer, 2013; Schwabe, 2013; Jung, 2014). While the resistance in the first place still resembled a classical “Not In My Backyard” (NIMBY) pattern, i.e. contained to protest against local CCS projects only, the protest against local CCS projects rapidly turned into categorical rejection of CCS as such, denying the universal legitimacy and necessity of the technology per se (Fischedick et al., 2009, p. 4784).

A particular feature in Schleswig-Holstein was the strong renewable energy community and especially the strong community wind farms movement, widely overlapping with the farmers who owned most wind turbines. The mood among the general public in Schleswig-Holstein and the conservative farmers milieu – thus a core constituency of the CDU – was informed by preferences towards renewable energies and the protection of their property against corporations. Albeit the Renewable Energy Federation (BEE) or the Wind Energy Association (BWE) did not play a visible role in lobbying or public relations, the informal networks of the wind energy community still effectively functioned. When RWE invited farmers for a non-public dialogue meeting, they already had a solid opinion set, immune to attempts of persuasion. “The farmers did not listen at all to RWE, they immediately acted just as in the ‘Wendland’ protest against the nuclear waste repository” (Becker, 2013, interview).

A second particular coincidence was that the planned CCS storage in Nordfriesland was the electoral district of the CDU prime minister Peter Harry Carstensen. As a consequence thereof, the prime minister was day by day confronted with local protests in his electoral district. For weeks, he could not arrive at barely any appointment without the citizens’ initiatives showing up (Becker, 2013, interview). Therefore the effects of local protest were exacerbated.

From the epicenter in Schleswig-Holstein, the protest movement spilled over to other states, in particular Brandenburg where Vattenfall pursued plans for a CCS storage site, and partly to Lower Saxony where the pipeline from RWE’s coal power plant was supposed to cross. The spillover effects were facilitated through the support of professional environmental NGOs and the farmers association. Also online communication helped the collaboration between
local initiatives. “The local resistance did not remain locally contained but, so to speak, got both digital and material feet” (Dirschauer, 2013, interview).

Public debate started off from an utterly poor level of awareness and knowledge, and, consequently, a lack of public pressure in the first place (Treber, 2014, interview). In a survey conducted in 2009, only 1% of respondents could describe the very technical basics of CCS, whereas 75% intuitively believed that large problems were associated with the storage of CO₂. 73% of respondents wrongly assumed that CO₂ is toxic, whereas only 41% knew that CO₂ is contained in mineral water (IZ Klima 2009, pp. 12-15, 27-28). In another survey in 2009, more than 60% stated that they had never heard about CCS, and 30% indicated they had heard “a little bit”. Asked for their intuitive opinion about CCS as means of climate protection, a large share of respondents refused CCS, with refusal reaching the highest share in the state of Schleswig-Holstein (Schumann et al., 2010, 54; cf. WI, 2010b, pp. 16-27). As sociological research reveals (Renn, 2011, pp. 6-7, 10-11; WI, 2010b; Schumann et al., 2010), the poor knowledge about CCS can easily translate into abstract yet virulent fears. Experimental studies demonstrate that even the input of positive information, i.e. in support of CCS, does not result in a positive but surprisingly negative (!) shift of opinion of previously undetermined respondents (Schumann et al., 2010, p. 54), which illustrates that more information does not automatically create acceptance and that opinions are often based on emotional, spontaneous judgments rather than on rational weighting of facts (IZ Klima, 2009a, p. 37). For instance, a wide-held belief was that CO₂ stored underground could escape and cause the suffocation of whole towns. Even the astonishing warning against “flying cows” came up, in the case if a sudden and rapid release of CO₂ occurred. However, according to IPCC (2005, p. 6), such a sudden release of large amounts of CO₂ at one push does not withstand scientific evidence. “If CO₂ is injected into suitable saline formations or oil or gas fields, […] various physical and geochemical trapping mechanisms would prevent it from migrating to the surface” (ibid.), since the gas is transformed via chemical reactions into a liquid substance that cannot escape at one push. However, other risks still remain present, such as the risk of gradual leakage and hereby leveling out the positive climate effects, as well as the risk of freshwater poisoning (IPCC, 2005; TAB, 2007, pp. 44-50). “Local health, safety and environment risks of geological storage would be comparable to the risks of current activities such as natural gas storage, EOR [enhanced oil recovery] and deep underground disposal of acid gas”, according to the IPCC (2005, p. 12).

Even though the risks of CCS are not greater than other, socially accepted technologies, some environmental NGOs accepted the spread of wrong beliefs in the public. Campaigners from Greenpeace and BUND, in collaboration with local CCS opponents, used a terminology analogous to nuclear waste (Kopp, 2013, interview; Treber, 2014, interview). By associative patterns labeling CCS sites as “final disposal sites” (Endlager) and “CO₂ toilets” (CO₂-Klo)
and using the same black-yellow color combination in their posters as in the anti-nuclear protest, they successfully made an advantage out of the negative public opinion towards nuclear waste, even though this comparison of CO\textsubscript{2} storage sites with nuclear waste is not accurate and in fact trivializing the risks of nuclear waste (Kopp, 2013, interview; Treber, 2014, interview).

**Fig. 45: Protests against Nuclear Waste Storage and CCS in Comparison**

The majority of environmental NGOs wanted to give CCS a chance. They generally welcomed CCS as necessary evil in the fight against climate change, despite demands for restrictive safety requirements and harsh criticism against new coal power plants. Deutsche Umwelthilfe, Germanwatch and WWF, along with renowned scientific institutes with links to the environmental movement, such as the Potsdam Institute for Climate Impact Research (PIK), Institute of Applied Ecology (Öko-Institut) and the Wuppertal Institute for Climate, Environment, Energy (WI), pursued a differentiated yet positive attitude toward CCS. The WWF, for instance, welcomed the government draft as a preliminary legal framework to make CCS investments at least possible at all, while unresolved issues should be addressed in later legislation. However, the WWF and other NGOs with a supportive position on CCS largely refrained from public appearance and contained themselves to direct policy advising, as they feared a reputational risk for their credibility as agents of the common good and the interests of their membership (Kopp, 2013, interview). In the end, local protests stopped CCS – not professional environmental NGOs, all the more since Germanwatch, WWF, Öko-Institut and others generally endorsed the technology. With professional lobbying alone, the law proposal would not have been blocked; the main task of radical opponents among the environmental NGOs, i.e. BUND and Greenpeace, lied in the support of local protest groups (Becker 2013, interview).

Turning to the role of media, a comprehensive media analysis found balanced news coverage of CCS in 2007 (WI et al., 2008, p. 117), yet a representative media analysis for
the year 2009 is not available. Following statements of experts, media reports have been rather absent or neutral in the first place and largely adopted a critical stance towards CCS and the energy industry later (Fischer, 2013, interview; Anonymous C, 2013, interview).

Energy corporations suffered a decisive loss in societal trust and, by fatal communication failures, triggered resistance from citizens. A decentralized, heterogeneous and strongly committed protest movement linked a broad range of private and public interest groups – farmers, local residents, water suppliers, environmental NGOs and renewable plant operators – and raised critical awareness among the general public and local politicians, relying on high levels of public trust.

**CDU/CSU: turning away from CCS**

The anti-CCS movement just emerged in the run-up to federal elections and the state election in Schleswig-Holstein on 27 September 2009. As the vote particularly in Schleswig-Holstein was very narrow and political party competition was high, politicians were vulnerable to political blackmail (von Trotha, 2012, interview). Incumbent members of the Bundestag, foremost Ingbert Liebing from Nordfriesland where RWE was about to conduct geological surveys, took up complaints from farmers and citizens and started to actively work against CCS (Liebing, 2009). Also the regional associations of the CDU Nordfriesland and Schleswig-Flensburg positioned against the CCS storage site and criticized RWE’s communication behavior (CDU KV SF, 2009; CDU KV NF, 2009). Also CDU prime minister Harry Peter Carstensen after all concluded that CCS is going to prove relevant in the election campaign and turned against CCS, breaking with his previous position (Schleswig-Holsteinischer Landtag, 2009, pp. 7597-7598; Bülow 2010a, pp. 177-179; 2010b, p. 3; Anonymous B, 2013, interview; Anonymous C, 2013, interview). "In a democracy it is impossible to push through anything against almost 100 percent of the population", he declared (Leersch, 2009). On 16 June 2009, just the day after the federal government had adopted her proposal, Carstensen requested the Chancellor to withdraw the CCS Act (Landesregierung Schleswig-Holstein, 2009). The day thereafter, the state parliament of Schleswig-Holstein voted unanimously to reject the CCS Act in the Bundesrat (SHZ, 17.6.2009). Albeit CCS was not of major salience among the overall population (Forschungsgruppe Wahlen, 2009), it had developed into a key regional issue and threatened to evoke electoral losses (Jung, 2014, interview). Recalling the recent protests against the controversial Stuttgart 21 train station project, which escalated into a fierce conflict with nation-wide impact and shifted party majorities in the state of Baden-
Württemberg, politicians were sensitive and chose to clear the CCS issue from the agenda before public pressure became even more massive (Anonymous C, 2013, interview).

The turn in Schleswig-Holstein had a contagion effect on other states. In the neighboring Lower Saxony – with the planned RWE pipeline across its area – the CDU/FDP state government under prime minister Christian Wulff now also demanded to stop the law (stern, 25.6.2009). Only the Brandenburg SPD/CDU state government under Matthias Platzeck (SPD) still stayed openly positive towards CCS. Economics minister Ulrich Junghanns (CDU) remained one of the most active supporters of CCS. The local protest movement in Brandenburg seemed weaker, given that Vattenfall had invested to foster local acceptance through pilot projects, long-term communication and citizen participation, as well as alliance-building with unions and the state government (Hein, 2104, interview). However, also in Brandenburg increasing protests in the drilling regions and critical remarks by regional SPD and CDU associations impacted the debate (IZ Klima, 2009b, pp. 2-3). Politicians in Brandenburg felt pressured to only accept CCS in their territory if also other states would do so, as they were unwilling to burden only their own population with the risks coming with the technology (Flasbarth, 2014, interview).

Via the farmers association, the protest spilled over to Bavaria. Gerd Sonnleitner, president of both the Federal and Bavarian Farmers Association, intervened with CSU politicians as well as Chancellor Merkel against CCS. The farmers criticized that pipelines and storage sites implied environmental risks to drinking water and farming land. Concerned about dismay with farmers, the CSU reviewed her position, particularly claiming more comprehensive property protection for farmers and landowners. The CSU top candidate for the federal elections ahead, CSU parliamentary group leader and federal minister for transport, Peter Ramsauer, played a key role (interviews: Dirschauer, 2013; Jung, 2014; Schwabe, 2013; Treber, 2104; von Trotha, 2012). His electoral district Traunstein was geologically suitable for CCS storage and might therefore be affected by future CCS plans, despite the absence of any plans for CCS in Bavaria at the time. Raumsauer was also personally in dismay with energy corporations as he had made some bad experiences with an energy corporation’s behavior with regard to a local power line for a small-scale water power plant he owned (Anonymous B and C, 2013, interview). This particular coincidence catalyzed the change in position of the CSU and the Bavarian state government. On 16 June, Ramsauer along with other CSU parliamentarians and the state government of Bavaria (Söder, 2012) turned against the CCS Act and insisted on the priority of property rights of farmers and more restrictive requirements against the pollution of drinking water (Bülow, 2010a, pp. 178-180; 2010b, p. 3; FAZ, 16.6.2009). “We won’t do the farmers wrong with CCS”, Ramsauer put it into unmistakable words (stern, 25.6.2009). Politicians from Bavaria
and Schleswig-Holstein stopped CCS within the CDU/CSU parliamentary group, picking up a change in the public mood (Jung, 2014, interview).

After the intervention of the state governments and the pressure from regional parliamentarians, the CDU/CSU group withdrew the CCS Act from the plenary session agenda and eventually cancelled the CCS Act. Chancellor Merkel informed the SPD group leader that she has to uphold the CCS Act due to absent majorities in her group. Therewith the CCS Act was buried for the ongoing legislation term. After months of tedious compromise building and intense deliberation, the CCS Act was suddenly off the table (Bülow 2010b, 3; interviews: Dirschauer 2013; Schwabe 2013; von Trotha 2012; Steinmeier, 2011; Heisterkamp, 2010, p. 8). “That all happened at a moment’s notice”, as a former CCS lobbyist remarks (Anonymous C, 2013, interview).

**SPD: Public Pressure and Intra-Party Conflicts**

In the course of 2009, intra-party resistance against CCS intensified within the SPD, owed foremost to activities by the parliamentarian Hermann Scheer, a leading figure in the renewable energy movement and unsalaried president of the renewables association Eurosolar. He had a map drafted that indicated the regions affected by potential CCS storage sites and pipelines (see figure # below), i.e. in the states Schleswig-Holstein, Lower Saxony, Brandenburg, Mecklenburg-Vorpommern and Bavaria. On 8 June 2009, he sent a letter with the map to all SPD parliamentarians (Scheer, 2009) and distributed the map at the SPD party congress on 14 June 2009 in a large print run. He furthermore circulated it through the channels and networks of Eurosolar that enjoys broad anchoring within in the environmental community. By turning CCS from an abstract issue into a conceivable matter, Mr. Scheer’s CCS map triggered concerns among politicians and party members in the affected states, helped the local protest groups and evoked a considerable media echo (Lölhöffel, 2009b).

At the SPD party congress on 14 June, Scheer achieved a significant tightening of the CCS compromise in the SPD electoral manifesto, against the draft by the party leadership: The further development of carbon capture was still endorsed, including demonstration projects subsidized by EU funds, yet the recycling of CO₂ – as raw material in the chemical industry – should have priority over storage, and the companies should be forced to guarantee the long-term safety of storages based on highest environmental standards (SPD, 2009a, p. 28; 2009b, pp. 72-75). The originally clear commitment to CCS was therewith replaced by a vague, CCS-skeptical formulation – which can be considered as triumph of the environmental wing against the strong coal-friendly economic wing (Lölhöffel, 2009a; 2009b).
The policy adjustment was supported primarily by the SPD Schleswig-Holstein (SPD, 2009b, pp. 77-78) that had early pronounced her fundamental refusal of CCS (Schleswig-Holsteinischer Landtag, 2009, pp. 7593-7594, 7600-7601).

*Fig. 49: Potential CCS Storage Sites*

Regardless of the adjusted programmatic objective, the SPD and her parliamentary group alike were deeply divided concerning coal power and the desired role of CCS. The environmental wing was generally willing to give CCS as chance as promising contribution to climate protection yet did not want to overly accommodate the interests of power plant operators (Tillack, 2015, p. 44-45), whereas the economic wing considered CCS as sheer necessity of a sound industrial policy. In an internal compromise, the law should be confined to demonstration projects only to enable CCS projects at stake to apply for EU subsidies, while a succeeding law for further power plants should address the concerns in the next legislation period after more intense deliberation (Anonymous C, 2013, interview).

Given the disagreements within and between SPD and CDU/CSU parliamentary groups and between the economics and environmental ministry, only a minimal consensus was
achievable, which did not sufficiently clear out liability, safety and environmental concerns. The latest draft as of 15 June 2009 represented a tediously achieved intra-coalitional compromise that contented the energy corporations’ needs yet evoked criticism from the entire range of environmental NGOs. To secure the compromise despite intra-party disagreements, SPD group leader Peter Struck instructed the environmental politician and CCS rapporteur Ulrich Kelber to organize majorities for the current compromise to be passed in time, arguing that it was too late to stop the CCS Act anyway and that a failure would only harm the reputation of the SPD environmental minister Sigmar Gabriel (Dirschauer, 2013, interview). The SPD parliamentary group agreed to the compromise elaborated by the specialized politicians with the coalition partner (Bülow 2010a, pp. 166-177; 2010b, pp. 2-3). The sudden end of the CCS Act took the SPD by surprise; not the SPD but the veto of the CDU/CSU was responsible for the failure of the CCS Act (Bülow, 2010a, pp. 174-178; Steinmeier, 2011; Dirschauer, 2013, interview). Leading SPD politicians exploited the opportunity to blame the coalition partner for irresponsible and unreliable behavior. Environmental minister Sigmar Gabriel requested the intervention of the Chancellor after the failure of the CCS Act in the CDU/CSU group, highlighting that there was a completed law proposal waiting for approval and that he awaited a clear positive vote of the CDU/CSU (Leersch, 2009; stern, 25.6.2009). The decisive line of conflict therefore ran within the parties between the environmental wings and the economic wings within the incumbent parties, rather than between the political parties.

**Bundesrat**

In terms of Bundesrat majorities, the approval had appeared trouble-free in the first place. Albeit the federal government could rely on only 30 votes of states with matching party composition and thus lacked a majority (of at least 35 out of 69 votes), the approval was still considered secured as most neutral states were governed by a CDU/FDP coalition (additional 29 votes) and also the Brandenburg SPD/Left government supported CCS (additional 4 votes). Hence, with respect to CCS, the federal government assumed to rely on an extremely broad majority of 63 out of 69 votes (30+29+4). In the first consultation on 15 May 2009, however, the Bundesrat requested substantial improvements of a large number of details, as for instance a new balance for the distribution of risks and burdens between federal level, states and operators; the priority of geothermal use over CCS; and the improved involvement of states in decision-making. However, the chamber of states explicitly welcomed CCS as such (Bundesrat, 2009). The criticism was taken up by the government in
the continued negotiations about the CCS Act and accommodated in the second draft as of 15 June 2009, in order to address the concerns of the states and to secure the approval of the chamber of states.

After Schleswig-Holstein, Lower Saxony and Bavaria reviewed their positions, the number of assumed votes dropped from 63 to 47. Although this was still a broad majority, the federal government did not consider it as politically feasible to circumvent those states that would need to implement CCS projects. Even though the consent by the Bundesrat still appeared realistic, a minority of states unfolded enough pressure on the federal government to abandon the CCS Act even before the legislation made its way to the vote in the Bundestag. The anticipatory obedience to states whose consent was considered important turned out as a decisive momentum in the making of the CCS Act.

Shifting intra-party conflict lines within CDU/CSU severely impacted the majorities in the Bundesrat, putting pressure on Chancellor Merkel to call off the CCS Act. The key state governments positioned themselves independent from their party affiliation, prioritizing specific regional interests over the federal party’s programmatic objectives. Most striking, the CCS Act was put to a stop even before the vote in parliament because the government recognized the lack of acceptance of key states and therefore postponed the legislation.

**Interim Summary**

The lack of trust in the large energy suppliers, foremost RWE, proved as key factor for the failure of the CCS Act. Stumbling over her poor communication strategy, RWE provoked political and societal distrust and triggered the emergence of a vigorous protest movement. From its epicenter in prospective drilling regions in Schleswig-Holstein, anti-CCS protests spilled over to other states. The alliance with farmers as core constituency of the CDU/CSU as well as the support by professional campaigners from environmental NGOs decisively helped the protests. The protest movement successfully linked private interests – more precisely, the economic interests of farmers and local residents – with idealistic goal of the protection of health and environment, grounded in the idea of defending citizens and the “common good” against corporations and “big money”. The protest movement pushed parliamentarians and state governments to bring CCS to an end. The imminent state elections with narrow majorities furthermore created electoral pressure. As soon as the issue advanced to the public agenda, public opinion overpowered the elite discourse and professional lobbyists lost influence. In the polarized discursive setting, differentiated proposals did not survive.
The CSU as partisan veto player in government, the absent majority in the Bundestag due to unresolved conflicts within the CDU/CSU parliamentary group as well as the dwindling majority in the Bundesrat – or at least the refusal by important states – turned out as effective barriers in the institutional setting that blocked policy change.

After shifting intra-party majorities foremost within the CDU in Schleswig-Holstein and Lower Saxony and the severe resistance of the CSU in Bavaria, Chancellor Merkel picked up the shuffled constellation and postponed the CCS Act to the next legislation term. The fact the CDU/CSU finally put a stop on the CCS Act demonstrates that the decisive lines of conflict did not run between political parties but within between rival camps within the parties, and that electoral pressure activated by interest groups can shift the balance of power within the parties unpredictably within very short time.

The CCS Act failed due to lacking societal acceptance in the affected regions along with the insufficient communication management of the corporations. Facing cracking support from the affected states and the low acceptance amongst the electorate, all the more with a federal election ahead, the Merkel government eventually stopped the CCS Act and postponed it to the next electoral term.

7.4 Second Failure of the CCS Act (2011)

After federal elections on 27 September 2009, the new CDU/CSU/FDP government under Angela Merkel took office in replacement of the previous CDU/CSU/SPD grand coalition. Prima facie, the new majorities appeared to ease the re-issue of the CCS Act, as both coalition partners CDU/CSU and FDP embraced CCS coal power plants, according to their programmatic objectives (CDU/CSU, 2009, pp. 24-25; FDP, 2009, p. 56). The coalition agreement, however, only included a reserved formulation: “We will timely implement the EU Directive for Carbon Capture, Transport and Storage. We want to promote acceptance and commission a geothermal atlas to tackle utilization competition between CCS and geothermal energy. We will improve research programs on opportunities to use CO₂ in the business cycle” (CDU/CSU/FDP, 2009, pp. 28-29).

After lengthy negotiations between the environmental ministry, the economics ministry and the state governments – foremost of Schleswig-Holstein and Lower Saxony –, a compromise was achieved. The government draft (13 April 2011) passed the Bundestag (7 July 2011) but failed in the Bundesrat (23 September 2011). The chamber of states therefore proved as decisive veto point.
In the meantime, the EU deadline for the national implementation of the EU CCS Directive expired end of June 2011. As a consequence thereof, the EU Commission started infringement proceedings against the federal government of Germany on 18 July 2011, with large sanction payments threatening.

The revised CCS Act proposal reacted to criticism from states, environmentalists and citizens’ initiatives. The law was restricted to testing and demonstration of CO2 storage only, in order to clarify the contribution to greenhouse gas reduction, technical safety and economic viability. The law aimed at the “gradual, unbiased and risk adequate regulation” of CCS and should provide legally sound conditions for the realization of “at least one” demonstration project. In detail, the draft provided the contents as follows (BMU, 2011i; BT, 2011, doc. 17/5750):

**Scope and purpose of the law:** The scope was restricted to research and demonstration. CCS should be evaluated in 2017 by a government report. Only if the evaluation turns out positive, CCS may be used on a larger scale. A limitation on industrial process emissions, as requested by CCS critics, was not provided.

**Approval period and storage volume:** Storages may only be licensed if the approval application is filed until end of 2016 and the volume does not exceed 3 million tons per facility and year and 8 million tons in total nationwide per year.

**Exit option:** A so-called “state clause” (“Länderklausel”) empowered states to designate areas permissible or non-permissible for CO2 storage, based upon consideration of either competing energy options (e.g. compressed air energy stores, geothermal energy), particular geological characteristics or the “common good”. According to the mainstream legal opinion, the state clause did not allow for the exclusion of the entire territory by mere political declaration, and also the vague legal figure of “common good” created legal uncertainty and was subject of different interpretation and constitutional concerns (WD, 2011; Bundestag, 2011; BT 2011, prot. 17/120, pp. 13959-13965; Verheyen, 2011, pp. 6-15).

**Utilization competition:** Competing use options for the underground, such as between geothermal energy and compressed air energy storage, were granted greater consideration.

**Landowners’ rights:** If land must be accessed or used for exploration, better protection of the rights of landowners was ensured.

**Environmental, safety and liability requirements:** Statutory provisions were made more definite. The demonstration storage facilities were only approvable based upon planning permission hearings including an environmental impact assessment and precautions to be taken in accordance with the state of science and technology. The liability of operators was limited to 30 years after decommissioning and should be transferred to the state thereafter,
yet the latter was only possible after proof of long-term safety. The operator was obliged to set aside funds for aftercare.

In all, the new version of the CCS Act was oriented towards the interests of the Environmental Coalition. It restricted the scope to research and demonstration only, inserted an exit option for states, enhanced the priority of competing usage possibilities and improved landowners’ rights and environmental and safety requirements. The energy corporations were not capable to assert their interests.

Disputes between economics and environmental ministry: Constrained

The structural conflict between the economics and the environmental ministry were constrained by the need for negotiations with state governments that limited their scope for influence.

The growing resistance of the states, even more so as ruled by CDU-led governments, strengthened the recently appointed new federal environmental minister Norbert Röttgen (CDU) who early took a CCS-critical position to avoid a second “Endlager” debate similar to nuclear waste and therefore articulated his reservations, stating that any storage site must not be pushed through without regional acceptance and that he did not consider CCS as strategic element of energy supply (Märkische Oderzeitung, 28.10.2011). The environmental ministry accepted the state clause and strived to make sure that large-scale CCS would not become feasible. In the words of Klaus von Trotha (2012, interview), IZ Klima director at the time, Röttgen’s “populist” course was directed against any realistic chances due to his support of the state clause.

His competitor, the new economics minister Rainer Brüderle (FDP), still positively advocated a CCS-friendly legislation, rejected the state clause and sought to provide solid legal grounds to make large-scale CCS projects economically viable. However, also Brüderle “did not recognize CCS as a matter close to his heart” (von Trotha, 2012, interview), so that the ministry did not play a constructive role and the working level staff and the state secretary finally surrendered against the pressure of state governments and environmental ministry (ibid.).

Both ministers eventually settled their dispute due to the need for common ground with the states and given the time pressure imposed by EU deadlines, and had to make the best out of the compromise achieved. Röttgen stated: “The draft act sets a legal framework for testing CCS technology. This is an important contribution to ensuring better climate protection in Germany as an industrial location. We will proceed step by step and take the concerns of the public very seriously.” Brüderle agreed: “Climate protection is a global task. Due to an
increasing world population and rising energy demand, developing and newly industrializing countries will not abandon the use of fossil energy sources at any time soon. CCS is therefore a necessary technology, since billions of tons of CO2 will have to be permanently disposed of in the decades to come. By agreeing on the draft act, we are giving German industry the opportunity to swiftly develop this key technology and use new export opportunities worldwide” (BMU, 2010c).

**Bundestag: Keeping the Hands off**

The Bundestag did not constitute a critical hurdle. The parliamentary groups largely left decision-making to the negotiations between the ministries in charge and state governments. The issue did not play a big role on the groups’ agenda and was only dealt with by the relevant specialized politicians (Anonymous C, 2013, interview). The parliament passed the law draft on 7 July 2011 unchanged, in order not to put the government’s compromise with the states at risk. Moreover, since CCS had acquired a sensitive image, many politicians did not want to invest too much time and attention for an unpopular issue and left policy formulation to states and ministries (Holtfrerich, 2012, interview; von Trotha, 2012, interview).

**Bundesrat: Effective Veto Point**

The Bundesrat vetoed the CCS Act on 23 September 2011, regardless of preceding agreements with the federal government, and effectively stopped the law. The critical point of conflict was the insufficient legal certainty of the exit clause that should allow states to designate areas where CO2 storages should be permissible or not. While Schleswig-Holstein and Lower Saxony only wanted to vote in favor of the law if a sufficient exit option is given – which is why the revised law proposal introduced a state clause –, Brandenburg rejected the exit option per se because it would allow other states to evade their responsibility and roll off the risks to Brandenburg alone (Die Zeit, 23.9.2011).

As the government could not rely on a congruent party majority (Bundestag, 2012), the Bundesrat constituted an open veto point. Yet, the absent party congruence was only one side of the coin. Indeed, party affiliation did not feature a reliable indicator for a state government’s take on CCS. The position of a state government was highly informed by public pressure from citizens’ initiatives rather than by the programmatic objectives laid down in the federal party manifesto: Schleswig-Holstein, Lower Saxony and Bavaria, i.e. three
CDU/CSU-led states, recognized CCS as a sensitive issue with electoral importance, so that relevant party state associations turned against CCS, along with a growing number of Bundestag members from affected electoral districts. The recently elected SPD/Left government of Brandenburg, on the other hand, pursued CCS and rejected the exit option. In detail, the particular role of the states was as follows:

**Schleswig-Holstein (CDU/FDP):** The state elections on 27 September 2009 brought significant losses for CDU and SPD. The CDU dropped to its worst result since 1950, the SPD to its worst result ever. FDP, Greens, Left Party and the political minority party Südschlesischer Wählerverband (SSW) turned out as strong as never before (Forschungsgruppe Wahlen, 2009). The CDU, however, remained the largest party and a new CDU/FDP coalition replaced the CDU/SPD coalition. Prime minister Peter Harry Carstensen remained prime minister. The high electoral pressure in the light of significant vote losses and scarce majorities incentivized the political parties to avoid sensitive unpopular issues, which has strongly impacted the political landscape and especially the positions of CDU and SPD who have turned into determined CCS opponents. "We do not want this in Schleswig-Holstein", prime minister Carstensen stated (Die Zeit, 23.9.2011).

**Brandenburg (SPD/Left):** The Brandenburg state government was, indeed as only state around, willing to accept a CO₂ storage on its territory, yet not willing to take the entire responsibility alone – other states also must take burdens. As a consequence thereof, Brandenburg voted against the CCS Act, in objection of the state clause (BR 2011, doc. 214/2/11, p. 2). "We will not accept this 'Lex Brandenburg'. Either we employ this way in industrial policy together or not at all", prime minister Matthias Platzeck said (IZ Klima, 2011b, p. 2). "We need a nationwide uniform solution", the state's economics minister Ralf Christoffers (Left) seconded (Die Zeit, 23.9.2011).

Protests in Brandenburg did not grow as big and influential as in Schleswig-Holstein, due to the more sensitive communication strategy of Vattenfall and the economic weight of coal in the region. Furthermore, the incumbent SPD did not face the threat of losing office. However, also politicians in Brandenburg had at least to consider the rising local protests, and local party associations advanced anti-CCS statements (IZ Klima, 2009b, pp. 2-3; Anonymous C, 2013, interview).

In particular the economic and cultural weight of the coal industry in the state highly informed the SPD with its traditionally strong coal wing. Due to the cultural heritage of coal mining and coal utilization in the state, coal is deeply entrenched in the traditions of the population, with a lot of people having strong links to the coal industry. Vattenfall constitutes one of the largest employers as well as the main energy supplier in Brandenburg. 80% of the state’s electricity production are generated from coal power. Prime minister Matthias Platzeck (SPD)
declared that, due to the weight of coal power, “it is a strategic goal of the state government to establish Brandenburg as international important and pioneering location for [CCS] energy technologies – for their research as well as for their production, utilization and export. This is our mission” (SPD Brandenburg, 2008, pp. 37-38, 54-58). Günter Baaske, SPD group leader in the state parliament, referred to the continued use of soft coal as “not negotiable” and said that there are “no alternatives” to CCS (IZ Klima, 2009b, pp. 2-3). The coalition agreement considered CCS as the only feasible way to maintain coal power and still fulfill the CO\textsubscript{2} reduction targets – all the more since Brandenburg features the highest CO\textsubscript{2} emissions per capita of all German states – and therefore advocated the usage of CCS, though stressing high ecological and safety criteria and advocating measures to raise public acceptance (SPD/Die Linke, 2009, pp. 9-10). The state’s economics minister Ralf Christoffers (Left Party) formed an unlikely alliance with the FDP federal economics minister, striking his pro-CCS course contrary to the anti-CCS and coal-critical Left party manifesto (Die Linke, 2009, p. 13), taking position against the state’s environmental minister Anita Tack (also Leftist Party) who pursued a CCS-skeptical position (Werdermann, 2011; Reimer, 2009; Dirschauer, 2013, interview). Such an FDP-Left alliance is very unusual, and underlines that the decisive divide in energy politics runs through the mid of the parties rather than between political parties.

Lower Saxony (CDU/FDP): The state government under prime minister David McAllister (CDU), since 1 July 2011 successor of Christian Wulff who was elected as federal president, took a critical position on CCS in the state’s territory but agreed on the CCS compromise as it empowered the states to designate permissible areas and decide themselves about the usage of CCS (Landesvertretung Niedersachsen, 2011). McAllister declared that CCS causes fears among the public, hence other states in favor of CCS should lead the way if they really held CCS to be safe. Since Lower Saxony already coped with large problems with the nuclear waste disposal sites in Gorleben and Asse, McAllister was not willing to accept additional burdens (McAllister, 2012, p. 26). He therefore intended “to designate no according trial areas” (Braunschweiger Zeitung, 13.4.2011). The state’s economics minister Jörg Bode (FDP) defended the state clause: “There is no consensus in our society for the use of the CCS technology” (Die Zeit, 23.9.2011).

North Rhine-Westphalia: Prime minister Jürgen Rüttgers (CDU) embraced CCS as such and the new construction of a CCS coal power plant in Hürth, although he did not devote much effort to CCS and employed a “wait and see” strategy (Anonymous C, 2013, interview). With the elections on 9 May 2010, a new SPD/Green government under Hannelore Kraft (SPD) took office. The SPD state association was in favor of CCS at the time (SPD-NRW, 2010), in the light of strong traditional links with the coal industry and the mining unions; for instance, the SPD group leader Norbert Römer has worked for the IG BCE since 1974 and was trade union secretary since 2006. However, RWE had already canceled her CCS plans at the time
so that CCS was of less relevance for the energy industry in North Rhine-Westphalia. Therefore, the coalition treaty stated that CCS for coal power plant has failed and the state government took a CCS-critical position (SPD-NRW/Grüne-NRW, 2010, p. 34).

Bavaria: The CSU/FDP state government in Bavaria was accommodated by improved rights for landowners, the priority for geothermal energy usage and the restriction to demonstration projects, so the government took a more positive position and finally voted in favor of the law (StMWIVT, 2013; Anonymous C, 2013, interview).

Mecklenburg-Vorpommern: Also the SPD/CDU state government Mecklenburg-Vorpommern rejected the CCS Act, as the law proposal at stake did not provide for sufficient freedom of decision for states (LU MV, 2010).

In the face of severe disagreements over the state clause, stalemate was inevitable: The primary CCS opponents Schleswig-Holstein and Lower Saxony only wanted to agree if the law provides sufficient exit options, whereas Brandenburg was only willing to agree if other states cannot opt out (interviews: Fischer, 2013; Holtfreich, 2012; von Trotha, 2012). In the end, the CCS Act lacked the majority in the Bundesrat mainly due to the controversial state clause. “The majority of states did not want CCS – except Brandenburg, but this state again did not want to admit toward their own population that only they are doing CCS and nobody else. CCS failed because three states – Schleswig-Holstein, Lower Saxony and Brandenburg – passed the blame on each other”, as SPD expert Eckhard Fischer recapitulates (Fischer, 2013, interview).

Energy Industry: Coming to Terms with the Defeat

Given the revised draft at stake, energy corporations regarded large-scale CCS as economically not viable, with no perspective for a significant role for “clean coal” in Germany (BDEW, 2011c, pp. 2-3). IZ Klima director Klaus von Trotha called the CCS Act in its revised version “a law directed against climate protection”, as the newly inserted state clause would threaten “promising CCS demonstration projects”, “jeopardize several hundreds of million Euros from funds from Brussels” and therefore mean “a setback in climate policy and a stupidity in industry policy” (IZ Klima, 2011a). Meanwhile, RWE had already put her CCS ambitions on hold, since deadlines for EU funds have expired and facing the lack of political and societal support. Only Vattenfall’s venture in Brandenburg still survived, but was also bound to an ambitious time schedule to be able to receive EU grants (Dirschauer, 2013, interview). Vattenfall representative Hartmuth Zeiß announced that the company was “not be able to promote this technology in Germany further on” with the new legal framework (Vattenfall, 2011a).
Also the IG BCE trade union complained about the revised version of the CCS Act, criticized the exit option and organized a demonstration in front of the Bundesrat building in favor of improved conditions for CCS coal power, as thousands of jobs in the coal industry were at stake (Die Zeit, 23.9.2011). IG BCE chairman Michael Vassiliadis commented the failure of the law in the Bundesrat: “This is not a good day for climate protection. We need modern soft coal power plants also in the future to make the energy transformation successful. At the same time, Germany has set [...] ambitious CO₂ reduction targets. If now solutions for climate protection are buried, this is an absurdity”.

The draft did not address industrial process emissions, as claimed by environmental NGOs and the scientific community, although the issue appeared at the fore in parliamentary debate. Yet, the absence of regulation and special promotion with regard to industrial emissions is conceivable since the industry did not express any interest in the use of CCS and remained very passive. Industrial corporations held the costs to be not economically viable compared to the purchase of emission allowances, were not willing to damage its reputation by promoting a technology with a negative “coal image” and pursued a wait-and-see-strategy in climate policy (Dirschauer, 2013, interview; Anonymous C, 2013, interview). In addition, any new projects were not able to apply for EU subsidies, so there was no incentive given to engage in CCS projects (ibid.; also: Kopp, 2012, interview).

Interim Summary

The second draft for a CCS Act addressed environmental and safety concerns of CCS-critical states in order to enable political feasibility, but still failed in the Bundesrat. The energy industry suffered another defeat: A law proposal that was already unpleasant enough but still failed due to the veto of the states.

Despite intense negotiations between federal government and states, the bill failed to obtain a sufficient majority in the chamber of states, mainly owed to the resistance of state governments with specific regional interests quite independent from party affiliation. Facing the pressure by a heterogeneous protest movement, the intra-party environmental wing within CDU/CSU and SPD gained influence and successfully pushed the party to adopt a more CCS-critical position. Although a high salience of the issue for the overall electorate cannot be demonstrated, politicians were sensitive for an issue of high regional relevance.

The patterns of issue dualism remained intact: Most striking, both the FDP federal economics minister and the Left economics minister of Brandenburg strongly advocated CCS, although the political differences between their parties remained profound. This fact underlines that the divide in energy politics runs between the economic camp and the environmental camp across parties rather than between parties.
7.5 “Non-CCS Act” (2012)

After the second failure of the CCS Act due to the veto of the Bundesrat, the federal government decided on 26 October 2011 to call the mediation committee. As the mediation committee could not agree on a solution and the Bundesrat adjourned the decision over and over, an informal working group of politicians from federal and states level chaired by CDU politician Peter Altmaier was set up to work on a common solution. After prolonged negotiations, federal government and state governments agreed on a compromise that was passed by the mediation committee (28 June 2012) as well as Bundestag and Bundesrat (29 June 2012), albeit with narrow majority. The new CCS Act featured the following major changes (BT, 2012, doc. 17/10101):

Exit option: The state clause was made more comprehensive and more definite, empowering states to explicitly designate areas where CCS storage was allowed or prohibited and therewith effectively ban CCS storage from their entire territory.

Storage volume: The permitted CO₂ storage volume was significantly reduced so it was just sufficient to cover the minimal conditions to operate Vattenfall’s planned demonstration plant at Jänschwalde (which is why the law acquired the label “Lex Vattenfall”). In detail, the storage volume allowed was reduced from 3 m. to 1.3 m. tons per facility and year and from 8 m. to 4 m. tons per year in total nationwide per year. For comparison: A blast furnace in steel manufacturing emits roughly 4 m. tons per year, a hard coal power plant emits significantly more, and a soft coal power plant (as projected by Vattenfall) still even more.

Landowners’ rights: The conditions for geological survey were tightened. As a result, electricity companies could only access land in private ownership against the will of the landowner if engaging in time-consuming legal disputes, which would hold up the entire planning process and make CCS projects economically unfeasible.

Liability requirements: The liability of operators was extended from 30 years to 40 years after decommissioning of the facility. Also further safety and environmental requirements were tightened and specified.

Altogether, demands of CCS opponents were met throughout the law proposal. The energy industry again suffered a clear setback. The CCS opponents gained a victory, whereas more differentiated positions could not endure.

In the course of the ongoing debate, the SPD adjusted her position towards the CCS critics. The SPD party congress in December 2011 rejected the rather supportive CCS section in the energy policy main motion proposed by the party leadership. Instead, the decision explicitly spoke out against subsidization of new CCS coal power plants and limited CCS to research, development and demonstration. The purpose of the technology should be focused on industrial emissions (SPD, 2011, p. 23).
The Bundesrat constituted an open veto point. The federal government could rely on 21 votes held by states with congruent party composition, whereas the opposition held 30 and neutral states 18 votes. However, the Bundesrat passed the law thanks to substantial concessions to the states agreed on in preceding negotiations in an informal working group. In the face of early elections in Schleswig-Holstein in May 2012, parties were exposed to high electoral pressure and had to address the concerns of citizens. Only Brandenburg was still willing to enable a demonstration project for the sake of the domestic coal industry, so the state government pressed for a compromise.

For the energy corporations, the final legislation was both too late and too restrictive. After RWE, also Vattenfall finally annulled her plans for a CCS power plant (Vattenfall, 2012; rbb, 2012). Eventually, all endeavors for “clean coal” did not meet sufficient ground for viable investments. Since then, all energy-related CCS demonstration projects were completely off the agenda (BDEW, 2011c, pp. 2-3). Indeed, the CCS Act effectively turned into a “CCS Obviation Act” (interviews: Dirschauer, 2013, Meierhofer, 2012; Treber, 2014; Anonymous C, 2013). Also CCS opponents were fairly contented: “It’s not the best thing, but it’s okay”, BUND energy expert Thorben Becker remarked (2013, interview).

The states were making use of their exit option: Schleswig-Holstein immediately began to prepare a law to ban CCS (MELUR SH, 2012). Lower Saxony passed a moratorium on CO₂ storage (Niedersächsische Staatskanzlei, 2012). Mecklenburg-Vorpommern adopted a “Law for the Exclusion of CO₂ storage” (Landtag MV, 2012). In July 2012, federal environmental minister Peter Altmaier (CDU) ultimately buried CCS in Germany: “We have to be realistic. We cannot store carbon dioxide underground against the very will of the population. And I do not see any political acceptance in any German state for the CCS technology for hard coal and brown coal power plants” (Die Zeit, 23.7.2012).

Apart from the political failure of a favorable CCS legislation, also the economic context was fundamentally shifted. Still in 2008, large GDP growth rates and high financial investment capacity met with the likelihood of high and rising CO₂ prices under the European Emissions Trading Scheme, hence both leeway and need for low-carbon coal technologies were present. In 2011/12, in contrast, the European economies have been severely hit by the financial crisis, with negative impacts on GDP growth along with correlating lowering effects for CO₂ prices and the ample oversupply of emission allowances (see chapter 8). Moreover, the investment capacity of energy corporations has decreased by the government’s decision to accelerate the nuclear exit in the aftermath of the Fukushima incident in March 2011, causing huge losses for the large energy suppliers. In retrospect, energy corporations might not have been overly sad about the failure of the CCS Act, as shifting economic conditions have made investments in CCS less desirable anyhow (Dirschaue, 2013, interview).
Local protest groups, farmers and environmentalists achieved to obviate CCS in Germany – within a very short time period and despite only poor financial resources at hand. A relatively small group of environmentalists, farmers and local residents triumphed against large energy corporations, relying on not more than grassroots lobbying. Even though energy corporations clearly prevailed in economic power and threatened to refrain from investments into clean technology politically desired by both large parties and encouraged by the EU, they were not able to succeed.

Although also the most important industry associations BDI and BDEW advocated CCS, the pro-CCS coalition in fact narrowed down to only two main drivers: RWE and Vattenfall, given their large stakes in coal and anticipating high CO₂ prices under the emissions trading system. E.ON had early abandoned its CCS endeavors in Germany, while the manufacturing industry remained passive.

The key factor that turned out to constitute the beginning of the end of CCS was the failure of RWE’s communication strategy in Schleswig-Holstein. With lacking sensitivity for concerns of the local population and a tactless and haughty attitude, RWE ruined her image as responsible partner and turned the local population and politicians against her. After initial absence of public debate, now the issue moved onto the public agenda. Making fatal communication failures in Schleswig-Holstein, RWE triggered distrust among politicians and the public and unleashed concerns over the safety and environmental compatibility of the CCS technology – a distrust that soon translated into a vigorous protest movement. Politicians as well felt misled by RWE and lost their trust in the corporation. In the fear that vivid civil society groups with high trust in the public would blame them for helping untrustworthy corporations to force through dangerous projects against the will of the people and to the benefit of a few outside investors, politicians turned against CCS and pushed the federal government to postpone the CCS Act. This change of course was catalyzed through imminent state elections under conditions of intense political competition, which made politicians highly sensitive to electoral punishment.

The change of course of the CDU-governed Schleswig-Holstein prompted a chain reaction. The protest spread through the farmers association to Bavaria where the CSU took a more skeptical position and – being a partisan veto player in government and with a self-confident parliamentary group – vetoed the law proposal.

Professional environmental groups moreover helped the protest groups to organize demonstrations, collect signatures and acquire technical know-how. Eventually, a cooperation of farmers, local residents, water suppliers, renewables operators and environmentalists successfully pressured politicians. This linkage of economic interests and
idealistic motivations of a broad range of actors with high public trust was decisive in the attack on an energy corporation that suffered from a quite problematic public image. The conflict acquired the frame of a proxy war between “citizens” against “corporations”, which made it difficult even for supportive politicians to argue in favor of CCS without being blamed as allies of corporations and – consequently – rivals of citizens.

The anti-CCS movement achieved to exploit the various veto opportunities despite contrary programmatic goals of incumbent parties: In the first advance, CCS critics successfully exerted pressure on state governments, the CSU as partisan veto player in government, and the incumbent parliamentary groups so that the government was pushed to withdraw and postpone the law proposal before it was even voted on in Bundestag and Bundesrat. In the second advance, the federal government was forced to make substantial concessions to concerned states that were determined to veto down any undesired proposal, regardless of congruent party affiliations. Only in the third advance, the Bundesrat gave its consent after the government had acknowledged far-reaching demands of CCS opponents. Although the incumbent parties were originally willing to provide supportive legal grounds to promote CCS demonstration projects, the government had no choice but to accommodate the interests of state governments to be able to pass a CCS Act at all.

State governments pursued specific regional interests fairly independent from party composition. Their party positions are matter of ongoing intra-party compromise building and can differ severely between state associations or intra-party factions. Veto players or veto points are therefore no homogenous entities but marked by inner inconsistency, torn between rival intra-party camps. Pressured by a vivid protest movement and facing imminent state elections, CDU/CSU and SPD adopted CCS-critical positions. The Greens did not play a major factor; rather, the large mainstream parties CDU/CSU and SPD brought about the policy turn.

Table 38: The CCS Act and Veto Opportunities

<table>
<thead>
<tr>
<th></th>
<th>government</th>
<th>parliament (Bundestag)</th>
<th>chamber of states (Bundesrat)</th>
<th>courts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 first failure</td>
<td>ECON</td>
<td>ECON – closed</td>
<td>ECON – closed</td>
<td>open</td>
</tr>
<tr>
<td>2011 second failure</td>
<td>ECON</td>
<td>ECON – closed</td>
<td>mixed – open</td>
<td>open</td>
</tr>
<tr>
<td>2012 &quot;Non-CCS Act&quot;</td>
<td>ECON</td>
<td>ECON – closed</td>
<td>mixed – open</td>
<td>open</td>
</tr>
</tbody>
</table>

Source: own table. Note: A veto point is “closed” if party majorities are identical with the federal government or the veto point’s approval is not required; a veto point is “open” if the approval is needed and, if applicable, party majorities are incongruent. ECON or ENVI mark the advocacy coalition that matches with the programmatic objectives of the party majorities. The classification follows the manifesto of the parties on federal level.

Remarkably, it was the radical camp among the CCS critics who proved most assertive. Many environmental NGOs as well as scientific institutions with a renowned reputation among the environmental scene – such as WWF, Germanwatch, Deutsche Umwelthilfe,
Öko-Institut and PIK – were willing to promote CCS research and demonstration projects for the sake of climate protection. Yet, they were not able to ally with private interests of local residents and could not come through with their differentiated position in the polarized communication conditions, and even hesitated to advocate more explicitly for a moderate use of CCS to avoid damages in their reputation. When public opinion came in, the limits of elite lobbying were reached. Just as long as the issue was negotiated in elite circles only, professional interest representatives had an influence. With RWE’s fatal communication errors in Schleswig-Holstein, the decisive political arena moved to the public sphere, and elite discussions ceased in importance. The CCS story tells that “big money” does not necessarily translate into much power. Once public opinion is activated and politicians pick up a change in public mood, lobbyists have trouble to act against the new political will.
## Timeline

<table>
<thead>
<tr>
<th>When</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 2005</td>
<td>IPCC launches Special Report on CCS</td>
</tr>
<tr>
<td>March 2007</td>
<td>EU heads of states and governments pass the Integrated Energy and Climate Strategy, including 12 CCS demonstration projects until 2015 to develop CCS until 2020</td>
</tr>
<tr>
<td>09/19/2007</td>
<td>Joint CCS Report of German Economics Ministry, Environmental Ministry and Research Ministry is handed in to the government</td>
</tr>
<tr>
<td>12/05/2007</td>
<td>Report of German Environmental Ministry and Economics Ministry on the federal government’s Integrated Energy and Climate Program</td>
</tr>
<tr>
<td>01/23/2008</td>
<td>EU Commission forwards the draft of the EU CCS Directive to the European Council of Ministers and the European Parliament</td>
</tr>
<tr>
<td>03/12/2008</td>
<td>The state government of Schleswig-Holstein, represented by environmental minister Boetticher and economics minister Austermann, and RWE Dea launch a CCS project. Nordfriesland and Schleswig-Flensburg are referred to as optimal locations</td>
</tr>
<tr>
<td>07/01/2008</td>
<td>TAB publishes report on CCS</td>
</tr>
<tr>
<td>07/02/2008</td>
<td>Advisory Council on the Environment (SRU) launches Report with a first assessment of potentials, costs and risks of CCS</td>
</tr>
<tr>
<td>Oct 2008</td>
<td>Lead Study of the federal environmental ministry on the future energy supply is issued</td>
</tr>
<tr>
<td>10/12/2008</td>
<td>The companies Alstom, Babcock Borsig, EnBW, Eon, RWE and Vattenfall present a law proposal on CCS in Germany</td>
</tr>
<tr>
<td>10/12/2008</td>
<td>SPD Environmental Forum Schleswig-Holstein rejects CCS</td>
</tr>
<tr>
<td>12/17/2008</td>
<td>European Parliament passes EU CCS Directive in the framework of the European Energy and Climate Strategy. Therewith, a legal framework for CCS is given. After approval by the European Council of Ministers, the Directive must be implemented by member states within two years</td>
</tr>
<tr>
<td>01/11/2009</td>
<td>SPD Schleswig-Holstein invites CCS opponents Hermann Scheer (member of German Bundestag and Eurosolary president) and SRU member Olav Hohmeyer to a conference on the energy transformation. Both guest speakers strongly reject CCS</td>
</tr>
<tr>
<td>Jan 2009</td>
<td>Annual conference of Green Party Schleswig-Holstein rejects CCS</td>
</tr>
<tr>
<td>01/23/2009</td>
<td>IZ Klima organizes a conference “CCS – A Have-to for Climate Protection”. Envirnomental minister Sigmar Gabriel (SPD) calls for CCS but highlights the absence of public debate, warns against emotionally driven resistance and demands restrictive safety requirements.</td>
</tr>
<tr>
<td>02/19/2009</td>
<td>Economics ministry and environmental ministry issue a joint CCS law proposal</td>
</tr>
<tr>
<td>02/27/2009</td>
<td>Business and environmental associations are invited to a short-term hearing on the law proposal</td>
</tr>
<tr>
<td>03/03/2009</td>
<td>BUND, Greenpeace, Deutsche Umwelthilfe reject current law proposal</td>
</tr>
<tr>
<td>03/21/2009</td>
<td>SPD Schleswig-Holstein party congress rejects CCS</td>
</tr>
<tr>
<td>04/01/2009</td>
<td>Federal government issues CCS law proposal</td>
</tr>
<tr>
<td>04/01/2009</td>
<td>BUND criticizes risks of CO2 pipelines</td>
</tr>
<tr>
<td>05/02/2009</td>
<td>Economics ministry confirms the approval of seismic exploratory work, so the affected regions are now in public disclosure for the first time. Radio stations start to regularly report about the CCS project.</td>
</tr>
<tr>
<td>05/06/2009</td>
<td>SRU pledges for a restrictive research law</td>
</tr>
<tr>
<td>05/06/2009</td>
<td>First reading in the Bundestag takes place</td>
</tr>
<tr>
<td>05/06/2009</td>
<td>RWE informs major in Schafflund for the first time, meeting concerns</td>
</tr>
<tr>
<td>05/07/2009</td>
<td>Press release of the SPD parliamentary group of the state parliament Schleswig-Holstein rejects CCS site in Nordfriesland</td>
</tr>
<tr>
<td>05/07/2009</td>
<td>BUND criticizes CCS law proposal, as risks are not carried by corporations but imposed on states</td>
</tr>
<tr>
<td>05/14/2009</td>
<td>RWE informs the press and announces several 1000 shots for seismic exploration. Regional newspapers start to regularly report about the CCS project.</td>
</tr>
<tr>
<td>05/14/2009</td>
<td>BUND criticizes risks of CO2 pipelines</td>
</tr>
<tr>
<td>05/15/2009</td>
<td>Bundesrat requires improvements of the current law proposal, rejects to impose financial risks on the states</td>
</tr>
<tr>
<td>05/19/2009</td>
<td>“Citizens’ initiative against the CO2 final repository” is founded</td>
</tr>
<tr>
<td>05/24/2009</td>
<td>Industry Association BDI urges for the fast passage of the CCS Act.</td>
</tr>
<tr>
<td>05/25/2009</td>
<td>Chancellor Merkel visits Flensburg in Schleswig-Holstein and expresses her position in favor of the CCS project. Local action groups protest</td>
</tr>
<tr>
<td>05/26/2009</td>
<td>TV broadcasts a critical report about CCS (in the magazine “ZDF Frontal 21”)</td>
</tr>
<tr>
<td>06/03/2009</td>
<td>CCS hearing in Husum/Nordfriesland with Dahmke (Institute for Geo-Sciences), Matthes (Öko-Institut), Oppermann (head of CO2-project at RWE Dea), Boehringer (UBA), Becker (BUND), attracting 300 participants. Another hearing organized by citizens’ initiatives with Prof. Hohmeyer</td>
</tr>
</tbody>
</table>
### CCS in Germany (2009-2011)

**06/03/2009** Schleswig-Holstein’s prime minister Carstensen pledges for CCS if the CO2 comes from the coal power plant in Brunsbüttel.

**06/08/2009** CCS hearing in Bredstedt with representatives from RWE, BUND, BWE, Water Suppliers (Wasserverband Nord) and Prof. Hohmeyer attracts 600 participants. Water Suppliers first time pronounce against the CCS project.

**06/10/2009** EU Commission issues draft on co-financing of CCS demonstration projects

**06/10/2009** Regional parliament (Kreistag) Schleswig-Flensburg votes against CCS, with an all-party majority.

**06/10/2009** Farmers Association Schleswig-Holstein rejects CCS. Farmers want to deny the access to their land for RWE projects.

**06/14/2009** SPD takes a critical yet still explicitly pro-CCS position

**06/15/2009** Federal government coalition agrees on a final CCS law proposal, taking objections of the Bundesrat into account, law is scheduled to be passed by the Bundestag within a few days.

**06/15/2009** Position paper of CDU regional district Nordfriesland rejects CCS and pledges for a factual discussion without time pressure.

**06/15/2009** Letter by majors from Schleswig-Holstein to Schleswig-Holstein’s prime minister Carstensen and Chancellor Merkel articulates reservations and objections towards CCS

**06/15/2009** Local demonstration attracts 300 participants.

**06/16/2009** Prime minister Carstensen declares that he will not approve the CCS law proposal in the Bundesrat due to massive lack of acceptance.

**06/16/2009** Ramsauer (transport minister, CSU) criticizes CCS law proposal, due to concerns over landowners’ property rights.

**06/16/2009** CDU/CSU parliamentary group takes CCS Act off from the plenary agenda on 16/06/2009.

**06/17/2009** Greens call for protests against CCS in front of the state parliament in Schleswig-Holstein. Farmers association, local citizens’ initiatives and BUND support the protest. Churches start weekly prayers against CCS. In Berlin, citizens’ initiatives hand over 25,500 signatures from Schleswig-Holstein alone to their local members of parliament.

**06/17/2009** State parliament of Schleswig-Holstein decides to reject the CCS Act in the Bundesrat, with an all-party majority.

**06/18/2009** RWE cancels CCS information event due to the “political situation”

**06/21/2009** Environmental minister Gabriel says that CCS Act can still be passed prior to the federal elections, yet restricted to two or three demonstration projects and CCS mainly being a technology for export.


**06/23/2009** Merkel announces to postpone the CCS Act.

**06/24/2009** CDU/CSU cancel reading of the CCS law proposal in the Bundestag, law failed to be passed prior to the next elections.

**Second Failure 2011**

**06/28/2009** CDU/CSU include a pro-CCS position in their electoral platform.

**07/01/2009** CCS hearing by local authorities in Schafflund with Prof. Hohmeyer (SRU), State Secretary de Jager (State economics ministry), Prof. Dahmke (University of Kiel), with 1400 participants.

**07/13/2009** CCS hearing by local authorities in Südtondern with 400 participants; RWE spokesperson announces that seismic shots are not possible given the current situation.

**07/15/2009** CDU/FDP coalition in Schleswig-Holstein breaks, new elections.

**09/26/2009** Federal and state elections with majorities for CDU/CSU/FDP.

**06/26/2010** New environmental minister Röttgen (CDU) states that CCS should not be pushed through against the local population and the will of the state government.

**07/14/2010** Röttgen and economics minister Brüderle (FDP) issue new CCS law proposal, no state clause included.

**08/19/2010** Jost de Jager (economics minister Schleswig-Holstein) demands improvements in the law proposal.

**08/24/2010** Local politicians send open letters to prime minister Carstensen and environmental minister Röttgen, expressing severe concerns about the CCS Act.

**08/27/2010** Hearing in the economics ministry in Berlin.

**02/08/2011** Greenpeace releases map with potential CCS repository, large media echo.

**02/17/2011** A first draft of the CCS Act gets to public disclosure, including the state clause. Schleswig-Holstein criticizes that the state clause is not clear enough and announces to vote against the CCS Act in the Bundesrat if no improvement is made.

**04/13/2011** Adjusted CCS Act passed by federal government, including a more definite state clause, approved by Schleswig-Holstein.
### Remarks

1 For a review of the technological state of the art at the time, see IPCC (2005), Bundesregierung (2007), WI/DLR/ZSW/PIK (2007) and TAB (2007). A number of authors have also already grasped the political and societal conflicts. The first assessment on societal acceptance was performed by WI et al. (2008), followed by several other studies and surveys, such as Fisedick et al. (2009), IZ Klima (2009), Schumann et al. (2010) and Dütschke (2011). A glimpse on policy preferences of various societal and political actors is given in von Goerne (2009), Fischer et al. (2010) and Heisterkamp (2010). For a jurisprudential approach, see for instance Ekardt et al. (2011). For a review of the international legal regulation of CCS, see IEA (2010).

2 “Member States shall retain the right to determine the areas from which storage sites may be selected pursuant to the requirements of this Directive. This includes the right of Member States not to allow for any storage in parts or in the whole of their territory.” (Art. 4(1) EU Directive 2009/31/EC). Austria passed a Federal Law for the Prohibition of Geological Storage of Carbon Dioxide (BMWFJ 2011: 2-3). Yet, this prohibition does not affect the storage of limited volumes of CO\(_2\) for exploratory research purposes (Umweltbundesamt 2012: 56-57). However, significant parts of legal opinions claim that this restrictive national implementation does not meet the spirit and purpose of the EU Directive and challenge the compliance with EU jurisdiction.

3 A further GFZ research project is the „CLEAN“-project in a nearly depleted natural gas field in Sachsen-Anhalt, running 2008-2011.

4 The author conducted interviews with lobbyists that had to be transformed into anonymous form due to protection of sources. The professional functions of the anonymous sources are indicated in the appendix.

5 see http://www.klima-luegendetektor.de/tag/iz-klima/


7 A “NIMBY” is “[s]omeone who objects to the building of an undesirable structure in their neighborhood, especially in public policy debate; Not wanting to have to deal with unpleasant or distasteful things near them” (Wiktionary). We do explicitly not seek to delegitimize the protest of local residents by assuming exclusively selfish motives.

8 Bavaria and Lower Saxony hold 6 votes each, Schleswig-Holstein holds 4 votes.


10 The constitutional court declared some elements of the election system for unconstitutional and directed new elections.