Climatic Change (2018) 149:289–303
https://doi.org/10.1007/s10584-018-2241-z

The climate lobby: a sectoral analysis of lobbying spending on climate change in the USA, 2000 to 2016

Robert J. Brulle[1]

Received: 26 December 2017 / Accepted: 19 June 2018 / Published online: 19 July 2018
© Springer Nature B.V. 2018

Abstract Lobbying is considered to be an important factor in the success or failure of climate change legislation. This paper provides an estimate of lobbying expenditures related to climate change legislation in the U.S. Congress from 2000 to 2016. During this time period, over $2 billion was spent on this activity, constituting 3.9% of total lobbying expenditures. Major sectors involved in lobbying were fossil fuel and transportation corporations, utilities, and affiliated trade associations. Expenditures by these sectors dwarf those of environmental organizations and renewable energy corporations. Levels of expenditures on lobbying appear to be related to the introduction and probability of passage of significant climate legislation. Future research should focus on tying particular positions on climate legislation and lobbying expenditures at the corporate level.

Lobbying Congress has long been a practice of U.S. corporations. As far back as 1889, corporate lobbyists were portrayed as exercising undue influence over the legislative process. In his lithograph "The Bosses of the Senate" (Fig. 1), Joseph Keppler portrays the Senate chamber as dominated by oversized lobbyists for various interests, who loom over the lawmakers. Several senators are shown looking to the lobbyists for guidance, while the public is barred from entering. While amusing, this image of influence peddling is a stereotype of how lobbying is actually conducted. Lobbying has become much more sophisticated over the 129 years since this cartoon was drawn. It is now a big business. On an annual basis, between $3 billion and $4 billion are spent on directly lobbying U.S. Congress members, and about another $4 billion on indirect lobbying.

Climate legislation has often been the focus of intense lobbying. Despite the introduction of several major bills to limit carbon emissions in the USA, none of them have been passed.

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s10584-018-2241-z) contains supplementary material, which is available to authorized users.

✉ Robert J. Brulle
brullerj@drexel.edu

[1] Department of Sociology, Drexel University, Philadelphia, PA 19104, USA

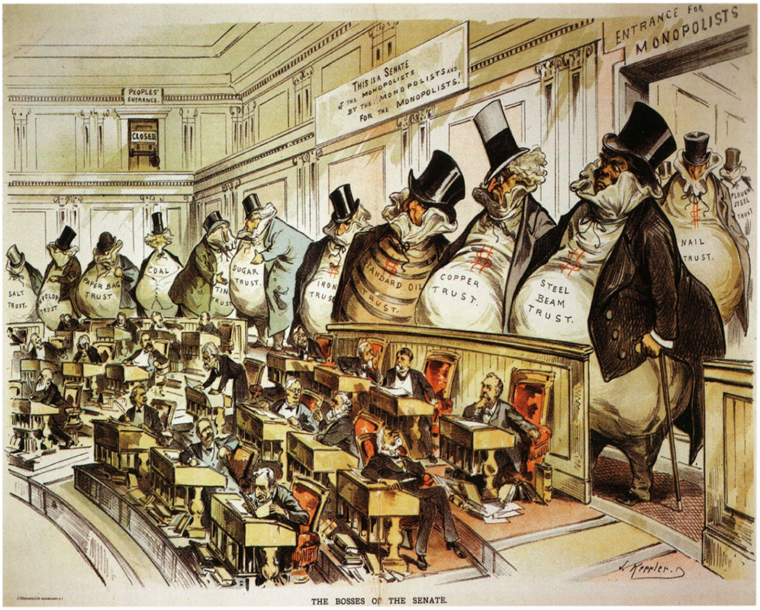

Fig. 1 The lithograph "The Bosses of the Senate" by Joseph Keppler

While many factors affected these outcomes, lobbying is seen as an important influence on legislative outcomes. Based on a series of interviews with policymakers, Downie (2017) maintains that this policy elite saw the extensive lobbying effort regarding the Waxman-Markey Bill in 2009 as one of the major reasons for the defeat of this legislation. Yet despite its importance in the legislative process, the role of lobbying regarding climate change legislation has not been a concerted focus of US scholarship. In this paper, I seek to build on the emerging literature on climate lobbying. The objective of this paper is to develop an empirical estimate of lobbying expenditures related to climate change by organizational type and industry sector over the time period 2000–2016. This descriptive compilation provides initial data on lobbying expenditures. In the first part of the paper, I review the literature on lobbying and its core characteristics. Informed by this review, I conduct an analysis of lobbying report filings to determine the levels and timing of lobbying expenditures on climate change-related legislation by a number of key sectors in climate change politics. I then discuss some of the factors that drive these expenditures in an anecdotal review of some of the factors that could influence lobbying expenditure levels. I conclude the paper with a discussion of the implications for legislation regarding climate change, and suggest steps to utilize this data compilation to further empirical research.

1 Lobbying and the institutional dynamics of policy formation

The disciplines of sociology and political science have devoted considerable work to understanding the processes that influence legislative and government policy outcomes. While institutional actors are increasingly emphasized in the analysis of climate politics (Brulle 2014; Farrell 2016), the majority of studies of climate politics have been focused primarily on the factors that drive public opinion on climate change (Brulle and Dunlap 2015). This focus on public opinion neglects the institutional dynamics of political decision-making and offers a partial and constrained understanding of public policy change (Shove 2010). To affect legislative outcomes, the public's preferences need to be organized into persuasive and coherent arguments and conveyed in an effective manner into the decision-making process (Burstein 2010, p. 74). Thus, organizations play a vital link in connecting public concerns and legislation via lobbying key decision-makers. Accordingly, to understand the translation of public opinion into the legislative process, there is a need to expand the analysis of climate politics through the consideration of an institutional level of analysis.

The institutional analysis of the policy process examines how organizational relationships influence the policy decision-making process (Baumgartner and Leech 1998). Focusing on the mobilization of organizational actors, it shows how organizations can shape policy outcomes by exerting political pressure on decision makers. In their book *The Organizational State*, Laumann and Knoke (1987, p. 9) adopt an organizational perspective in which "corporate entities – such as trade associations, professional societies, labor unions, public interest groups, government bureaus, and congressional committees – are the key state policy-domain actors." Accordingly, they focus on the intra-organizational networks of action that govern the decision-making process. The political process is viewed as an arena of conflict between and cooperation among different formal organizations. These organizations develop relationships with the other organizational actors in a policy arena, and take each other into account when developing their own strategies. These relationships define a network of the core of organizational actors that define and control policymaking in any particular policy arena.

Building on this insight, Grossman developed the idea of a governing network, which is defined as the organizational and political actors that regularly engage and are largely responsible for policymaking (2014: 183). He maintains that for the most part, public policy decisions are driven by a small group of established organizations that have become an institutionalized part of the public policy network. This line of research has shown that for most issues, policymaking is insular and based on the outcome of competition and compromise among the governing coalition. Accordingly, public opinion is only one, relatively minor input into these decisions (Grossmann 2014, p. 22).

One of the key activities in the building and maintenance of governing networks is lobbying. The stereotypical understanding of lobbying as portrayed by the lithograph *Bosses of the Senate* is one in which Congress members take their marching orders from well-off lobbyists, who parcel out campaign contributions and favors in return for favorable legislation. While instances of corruption and bribery are real, the lobbying process is much more complex and involves a whole series of tactics aimed at influencing governing decisions. The classical definition of lobbying comes from Milbrath (1963, p. 8), who defined it as "the stimulation and transmission of a communication, by which someone other than a citizen acting on his own behalf, directed to a governmental decision-maker, with the hope of influencing his decision." As this broad definition implies, communication is seen as the key component in lobbying influence. Milbrath (1963, p. 184) further maintains that officials make decisions based on their perceptions of reality. Thus, controlling the decision-maker's understanding of an issue via lobbying is central to influencing the decision-making process. As Drutman (2015, p. 23) notes, "Lobbying is most effective when lobbyists are trusted allies who have long-standing relationships with key decision-makers, and when information and argumentation on one side of an issue overwhelms information and argumentation on the other side of an issue."

Lobbying can be seen as a crucial part of a larger effort to build and maintain an organization's influence within a governing network. Network analysis has shown that social ties in the form of communications and repeated interactions can exert a powerful influence on both the perceptions and behaviors of actors (Knoke 1990). By increasing the flow of communications, lobbying helps to create a social network based on shared perceptions, and thus promotes a common cultural orientation (Knoke and Yang 2008, p. 6). As the exchange of information increases, these organizational actors form stable relationships with specific partners based on their knowledge regarding the specific competencies and reliability of other members of the network (Gulati and Gargiulo 1999, p. 1440). The result is that lobbying efforts assist in the creation and maintenance of a shared cultural repository that defines the perceived reality in a given policy arena (Fuchs 2001, pp. 272–275). Together, the shared understandings of a policy arena and the specific structural relationships between organizations come to define a governing network with a unique membership and orientation, akin to a field of practice (Podolny and Page 1998). The ability to control the flow of information to decision-makers is a crucial component regarding the influence of particular organizations within the governing network (Cook and Whitmeyer 1992). This was noted by Laumann and Knoke (1987, p. 7): "We stress the centrality of network structures among organized interest groups for the exchange of timely policy information and politically useful material resources essential to coalition-formation, influence-mobilization, and bargaining-negotiation processes that ultimately create state policies."

The task of lobbyists is to build and maintain an organization's influence in a governing network. This involves lobbyists in a number of tasks, including providing information or background materials to decision-makers, monitoring ongoing activities in the policy arena, and providing expertise and knowledge to influence media and decision-makers' perceptions of a policy issue. Drutman (2015, p. 79–83) conducted an analysis of the wide range of practices in which lobbyists engage, noting that they are influenced mostly by the resource levels of the organization. The most common practices involve contacting policymakers, monitoring congressional activities and hearings, and building political coalitions to influence policy outcomes. As organizations expend more resources on lobbying activities, this list of activities expands to testifying before Congress, media outreach, fundraising for favored politicians, and drafting legislation. One important component of lobbying involves attempting to shape the decision-makers' perceptions of a specific issue through the development and dissemination of policy reports on an issue area. Drutman (2015, p. 36) notes that organizations "are investing considerable sums in saturating the "intellectual environment," overloading the minds of policymakers and their staff so that when the time comes to make a decision, certain arguments and frames will come to mind more quickly than others, and certain ideas and solutions will have been pre-legitimated by a wide range of trusted experts (Drutman 2015, p. 36). Thus, rather than back-room dealing, modern lobbying efforts are part of a wide range of sophisticated techniques designed to influence government policy decisions. These activities include direct lobbying, funding of think tanks, grass roots mobilization, and public relations campaigns.

Modern lobbying firms have expanded into offering a wide range of services designed to influence political outcomes, and their activities encompass virtually all facets of political activity (Drutman 2015). To narrow this analysis, this paper adopts a limited viewpoint that sees lobbying as a form of advocacy "directed at government/legislators and carried out by actors with or on behalf of a group or organizations" (Somerville and Ramsey 2012, p. 47).

This definition is in line with the legal definition of lobbying as defined by the 1995 Lobbying Disclosure Act (109 Stat. 691):

> The term 'lobbying contact' means any oral or written communication (including an electronic communication) to a covered executive branch official or a covered legislative branch official that is made on behalf of a client with regard to (i) the formulation, modification, or adoption of Federal legislation (including legislative proposals); (ii) the formulation, modification, or adoption of a Federal rule, regulation, Executive order, or any other program, policy, or position of the United States Government; (iii) the administration or execution of a Federal program or policy (including the negotiation, award, or administration of a Federal contract, grant, loan, permit, or license); or (iv) the nomination or confirmation of a person for a position subject to confirmation by the Senate.

Even within this narrow focus, lobbying activity at the federal level has become a major arena for political expenditure. Annual lobbying reports (provided in Table S-3) show that direct lobbying expenditures run between $3 billion and $4 billion annually. This figure is approximately 12.7 times the amount corporations spend on political action committees (Drutman 2015, p. 16). In addition, the figure covers only reported lobbying spending. It does not count activities related to lobbying, including grassroots mobilization, media relations, and public relations (Drutman 2015, p. 14). It has been estimated that an equally large amount is spent on these activities (LaPira and Thomas 2017).

2 Climate lobbying efforts

Climate lobbying efforts in the USA have recently become the focus of scholarship. In perhaps the first paper to broach this topic, Kim et al. (2016) examine the lobbying activities of electrical utilities between 2009 and 2010, and concluded that the utility sector did not lobby as a unified block against climate action. Rather, utilities that were expected to benefit from passage of climate legislation, especially those with large natural gas power generation capacity lobbied in favor of climate legislation. Conversely, utilities with large amounts of coal generation capacity, which would suffer if climate legislation passed, lobbied against climate legislation. Delmas et al. (2016) examined the relationship between carbon emissions and lobbying expenditures. Their analysis showed a U-shaped curve, in which both low and high carbon-emitting corporations lobbied extensively on climate legislation, and firms with intermediate carbon emissions spent relatively little on lobbying. Firms that stood to either gain or lose a great deal from climate legislation due to their levels of carbon emissions perceived that substantial interests were at stake, and thus invested heavily in lobbying efforts. Firms in-between, with mixed levels of carbon emissions, perceived that this legislation would not impact them greatly, and so did not invest heavily in lobbying.

Expanding on this perspective, Grumbach (2015) argues that several corporations' apparent support for climate policy is a sophisticated strategy to simultaneously attempt to appear to support such legislation, while actually supporting efforts to undermine it. Citing such companies' dual memberships in coalitions both supporting climate legislation (U.S. Climate Action Partnership) and opposing it (American Coalition for Clean Coal Electricity), he maintains that analyses that fail to take these activities into account misperceive corporate support for climate legislation. Instead, the better way to see this type of corporate lobbying activity is as a hedge against unacceptable climate legislation in case their first preference (no action) is defeated. Thus, he concludes that many corporations are not advocates for emissions reductions. He notes that as soon as the threat passed, lobbying for climate legislation by the corporations associated with USCAP ceased.

This literature shows that there is no direct correspondence between lobbying positions and entire sectors of the economy. Within any sector, there can be variances among corporations in the nature and extent of their support of or opposition to climate legislation. Thus, the dichotomization of lobbying interests for or against climate legislation based on sectors is problematic. Any analysis on this basis requires a detailed study of individual organizational behaviors and is beyond the scope of this analysis (Delmas et al. 2016, p. 189).

These three papers focus only on lobbying by corporations on specific legislation. Thus, this analysis is time limited and does not provide any information regarding lobbying efforts by trade associations or interest groups. To develop an understanding of the role of lobbying on climate change legislation, this paper aims to provide an overview of the overall extent of climate lobbying over the range of time where data is available.

3 Research methods

To conduct this analysis, this paper relies on data from lobbying reports. Starting with the passage of the 1995 Lobbying Disclosure Act, all organizations that spend money on federal lobbying efforts are required to fill out quarterly lobbying reports. This information has been electronically coded since 1998, and is available for download on the Center for Responsive Politics web site. Lobbying reports are required for all lobbyists who are paid to lobby on behalf of a client, make more than one contact with the government officials designated in the law, and spend more than 20% of their time on lobbying activities. Thus, citizens' lobbying efforts or contacts with political representatives spending less than 20% of their time on lobbying are not included in this data set. Other activities, such as mobilization of outside groups, media contacts, and public relations campaigns, are not included. Thus, direct lobbying expenditures provided in these reports represent a conservative estimate of the total expenditures involved in attempting to influence legislative outcomes.

To conduct the analysis, the file LobbyIssues was downloaded from the Open Secrets web site (run by the Center for Responsive Politics). These data were then matched with the file Lobbying, also downloaded from the Open Secrets web site. This created a combined file of 1,934,446 records covering the period 1988 to 2016. Then, utilizing a sequential key word search of the description of the nature of lobbying, lobbying reports that were associated with climate change were identified. The key words utilized in this search were *climate change*, *global warming*, *greenhouse*, *Keystone*, *renewable energy*, *carbon*, *clean energy*, *Kyoto*, *cap and trade*, *CAFE*, *fuel economy*, *and renewable electricity*. This search yielded 64,162 individual lobbying reports. Utilizing this information, the percentage of climate-change-relevant lobbying reports was calculated for each organizational sector (as defined by the Open Secrets web site) by year, and the spending for each sector by year was apportioned based on this percentage. This process allowed the formulation of estimated annual lobbying spending by sector between 2000 and 2016. A complete description of the methods used to construct this data set is provided in the supplemental material file.

4 Climate lobbying expenditures over time

This analysis shows that from 2000 to 2016, more than $2 billion (all dollar amounts reported in 2016 values, adjusted for inflation) was spent on climate lobbying. In comparison to overall lobbying expenditures, which amounted to $53.5 billion over the same period, this figure represented a very small amount: only 3.9% of the total. However, the amount spent on lobbying on climate change issues varied significantly over time. As Fig. 2 shows, annual climate lobbying expenditures did not exceed $50 million or 2% of total lobbying expenditures between 2000 and 2006. However, during the 2007 to 2010 time frame, lobbying expenditures related to climate change increased rapidly, peaking in 2009 at $362 million, and amounted to more than 9% of total lobbying expenditures for that year. Following a slight decrease in 2010, lobbying expenditures then dropped dramatically, and now constitute around 3% of total lobbying expenditures.

To further examine the lobbying expenditures, the overall distribution by sector for the years 2006–2016 was calculated. The result is shown below in Fig. 3. The largest expenditures were from the electrical utilities sector. Organizations in this sector spent $554 million, which represented 26.4% of all lobbying expenditures on climate change issues. This was followed by the fossil fuel sector, with total expenditures of $370 million, and the transportation sector, at $252 million. The key word search also identified 231 unique industry organizational types that do not readily fit into a larger category. These organizational types accounted for lobbying expenditures of $628 million, or 30% of the total during this period. However, none of these organizational types accounted for more than 2% of the total lobbying expenditures. Thus, these data were not carried forward into the trend analysis.

The levels of lobbying expenditures in seven key sectors year by year are shown below in Fig. 4. (Complete data are provided in the supplemental material in Table S-4.) In line with overall lobbying expenditures on climate change legislation previously shown in Fig. 1, spending in this area remained low through 2006, and rarely exceeded $10 million for any sector. However, between 2007 and 2010, lobbying spending on

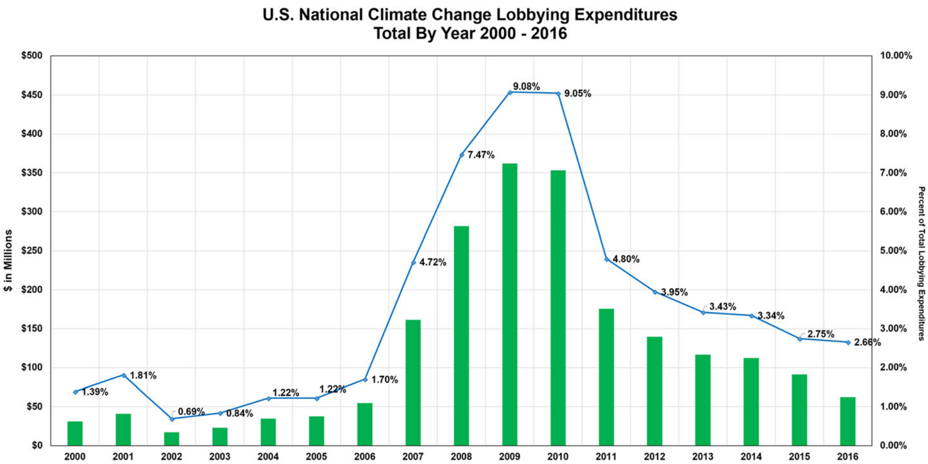

Fig. 2 US national climate change lobbying expenditures total by year 2000–2016

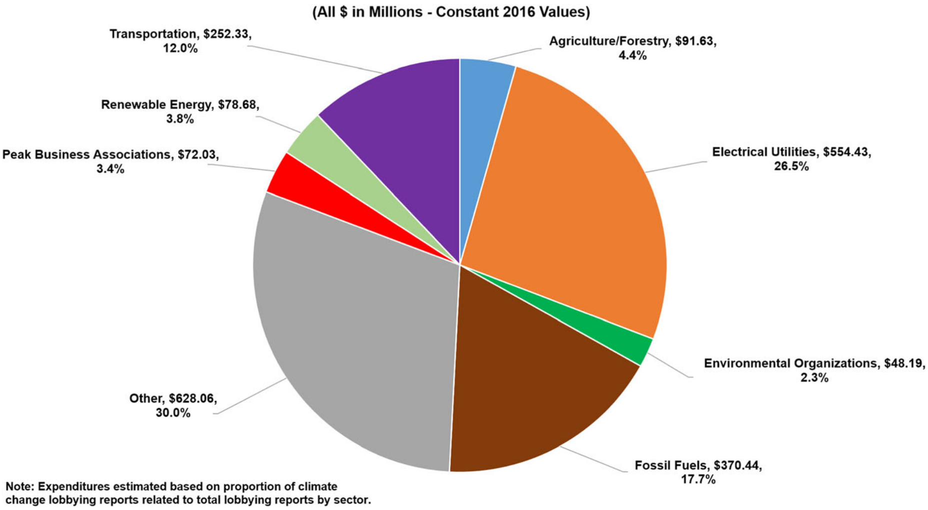

Fig. 3 US national climate change lobbying expenditures distribution of spending by sector, 2000 to 2016

climate change issues increased dramatically across all sectors. The largest increases were among the electric utility, fossil fuel, and transportation sectors. Spending peaked in 2009 for most sectors, except for utilities, which peaked in 2010 with a total of $97 million. Subsequently, lobbying expenditures continually declined. While they were not as low as they were in the 2000 to 2006 period, they declined dramatically since their peak in 2009/2010. It is evident that the spending of environmental groups and the renewable energy sector is dwarfed by the spending of the electrical utilities, fossil fuel, and transportation sectors.

An important divide over climate change action has been focused on legislation requiring mandatory limits on carbon emissions. However, as discussed earlier, lobbying on climate change does not follow strict dichotomous divisions, with some sectors favoring climate change legislation and others opposing it. Rather, positions in each

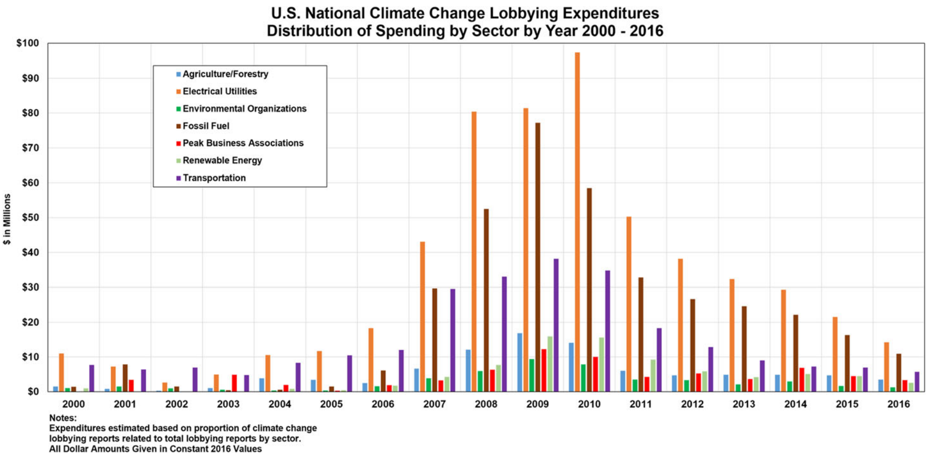

Fig. 4 US national climate change lobbying expenditures distribution of spending by sector by year 2000–2016

sector are variable in that different corporations typically push for whatever positions are advantageous to their economic well-being. For example, there has been considerable variation in support for or opposition to climate legislation in the utilities sector (Kim et al. 2016). There is no reason to suspect that the other industry sectors were also unanimous in their stance on climate legislation considered between 2000 and 2016.

However, what is possible to discern is the relative lobbying effort by sector. Drutman (2015, pp. 13–15) compared the overall proportion of lobbying spending by corporations to that of public interest groups and labor unions. This metric, defined as the "comparative power ratio," allows for a comparison of the relative organizational power and influence of various sectors in the lobbying arena. Drutman's analysis of the relative power ratio between corporate and public interest/labor unions' lobbying spending levels shows a range from 21 to 1 and 35 to 1 in favor of corporate interests. His conclusion is that corporations and trade associations are dominant in lobbying expenditures, and that their expenditures dwarf those of unions and other interest groups (Drutman 2015, p. 9).

To apply this approach to climate lobbying efforts, the relative power ratios of lobbying expenditures for seven sectors were calculated for the period 2000 to 2016. This is shown below in Fig. 5. As this figure illustrates, the renewable energy sector and environmental organizations were minor players in lobbying for legislation focused on climate change. Across the entire period studied, neither of these sectors accounted for more than 5% of total lobbying spending in any year, with one brief exception in 2002. Additionally, after a number of fluctuations during the initial period of 2000 to 2004, the electrical utility, fossil fuel, and transportation sectors have been the most dominant in terms of lobbying on climate change legislation.

To further examine the relative power ratios of key sectors, the expenditures for peak business associations (such as the Chamber of Commerce or the National Association of Manufacturers) and the transportation, electrical utilities, and fossil fuel sectors were combined and compared with the expenditures of environmental organization and the renewable energy sectors. Figure 6 shows the comparative power ratio, as defined by ratio of total direct climate lobbying expenditures. After a period of flux before 2005, the relative ratios between these two

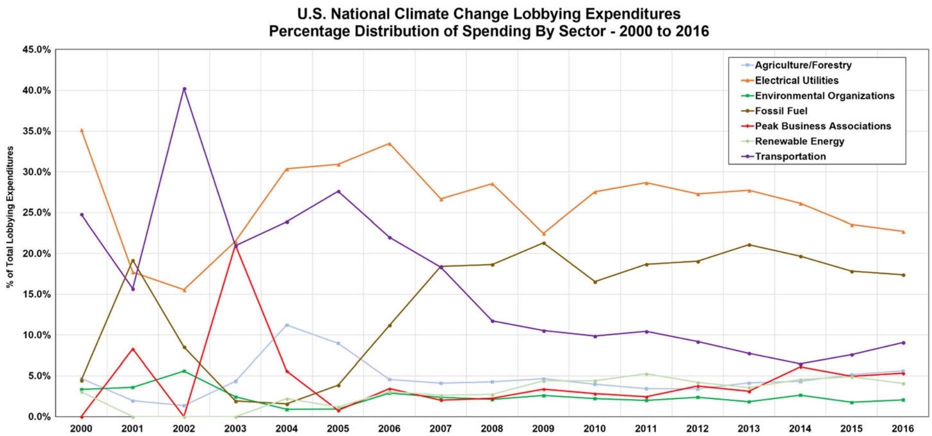

Fig. 5 US national climate change lobbying expenditures percentage distribution of spending by sector, 2000 to 2016

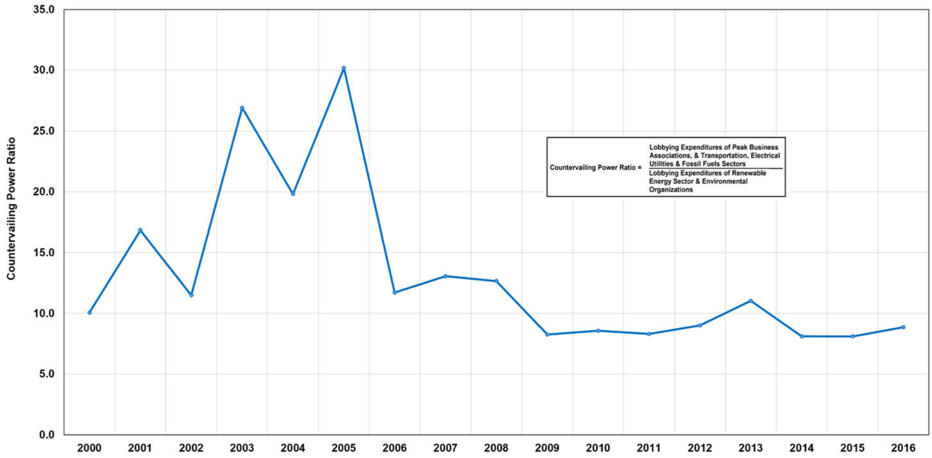

Fig. 6 US national climate change lobbying expenditures countervailing power ratio 2000–2016

combined sectors stabilized and have remained constant. Overall, the environmental organization and the renewable energy sectors were outspent by the corporate sectors involved in the production or use of fossil fuels by a ratio of approximately 10 to 1.

This analysis demonstrates that corporations with direct interest in the outcomes of climate legislation are the primary organizational actors engaged in climate-related lobbying. While environmental organizations and the renewable energy sector also have major direct interests in the outcome of climate legislation, they are relatively minor players in legislative lobbying at the federal level. Additionally, this analysis amplifies the findings of the earlier examinations of climate legislation, which found that intra-sector differences among corporations, such as the split between natural gas producers and coal producers regarding the Waxman-Markey Bill, are perhaps more influential regarding the shape of the final legislation than the efforts of environmental organizations and the renewable energy sector. However, expenditure levels alone do not provide a full picture of the influence of different lobbyists on the legislative decision-making process. A more detailed analysis of lobbying for and against specific climate legislation by different corporations and subsectors, as well as historical and qualitative research into the perceptions of governmental decision-makers, is needed to expand our understanding of the constellation of different coalitions lobbying on climate change legislation.

4.1 Factors driving lobbying levels

The previously reviewed literature on lobbying expenditures indicated that spending on lobbying expands when highly salient bills are considered that have a wide-ranging impact on a particular industry or economic sector. To examine if this generalization holds true for climate change, data on congressional activity related to climate change was compiled in three areas: (1) congressional hearings on climate change, obtained from Lexis-Nexus Congressional; (2) bills related to climate change, obtained from the summary developed by the Center for Climate and Energy Solutions; (3) and, party composition of executive and legislative branches, summarized for each 2-year Congressional session. These data are provided in Table 1. In addition, major legislative efforts, as identified by McGarity (2014), were listed for the Congress in which they occurred.

Table 1 Congressional sessions and climate legislative activity

Congressional session	Number of Congressional hearings	Number of climate change bills introduced	Climate change-related lobbying spending	Significant legislative events	Federal government party composition
107th 2001–2002	18	64	$58.1 M	Clean Power Act of 2002 Kerry-McCain amendment to Senate Energy	House – Democratic Senate
108th 2003–2004	7	80	$57.7 M	McCain-Lieberman Climate Stewardship Act	House – Republican Senate
109th 2005–2006	20	100	$92.5 M	McCain-Lieberman Climate Stewardship Act	House – Republican Senate
110th 2007–2008	157	124	$442.8 M	Lieberman-McCain Climate Stewardship Act	House – Democratic Senate
111th 2009–2010	107	248	$715.5 M	American Clean Energy and Security Act of 2009 Kerry-Lieberman American Power	House – Democratic Senate
112th 2011–2012	41	114	$315.3 M		House – Republican Senate
113th 2013–2014	53	234	$228.9 M		House – Republican Senate
114th 2015–2016	51	92	$153.8 M		House – Republican Senate

As this table shows, climate lobbying expenditures varied widely by congressional session. Lobbying spending on climate change legislation was relatively low and virtually identical for the 107th and 108th Congresses. At the same time, there were relatively few bills and hearings on climate change during these sessions. With Republicans controlling both the Executive Branch and at least one house of Congress, coupled with the long-standing opposition by Republicans to climate action, there was very little chance for meaningful legislation limiting carbon emissions to be passed by these two Congresses. Starting with the 109th Congress, however, there was a rapid increase in the number of hearings, bills introduced, and lobbying expenditures. This trend corresponded to the rise of concern over climate change associated with the release of Al Gore's movie "An Inconvenient Truth" (Brulle et al. 2012). The 110th Congressional session showed a fourfold increase in lobbying expenditures. With both the Senate and House in Democratic Party control, there was also a much larger number of bills and hearings related to climate change. Climate lobbying expenditures doubled from their levels in the previous Congress with the 111th Congress. By this time, the Democratic Party controlled both houses, as well as the Executive Branch, and moved to fulfill its promise of passing climate legislation in this session. This session marks the peak of Congressional attention to major climate legislation. Accordingly, the lobbying expenditures reflected the distinct potential for climate legislation being enacted. Following this peak, the overall pace of Congressional activity related to climate change steadily decreased. The Republican Party captured the House of Representatives in 2010, and have held it ever since. This pattern dramatically decreased the likelihood of meaningful climate legislation being passed. At the same time, lobbying expenditures also decreased. Notably, in the 113th Congress, there were 234 bills related to climate change introduced. Yet, lobbying expenditures did not increase significantly. What legislation that was introduced was evenly divided between actions designed to advance and those intended to hinder climate action. Additionally, since President Obama would most likely veto any legislation that did not advance climate action, the split nature of government prevented any meaningful consideration of climate legislation, and thus the bills that were introduced were primarily symbolic. It would be expected that lobbying for or against symbolic legislation would not be a high-priority item for organizations.

While this analysis is primarily anecdotal, it identifies important relationships that should be further examined utilizing more robust data sets and longer time frames. It also lends support to the notion that lobbying expenditures are made primarily in response to highly salient legislation. When there is a low probability of action due to either divided party control of government, or the party opposed to climate action being in control, lobbying expenditures would tend to be relatively low. However, when there is one-party control over the government, and that party has campaigned on enacting climate legislation, lobbying expenditures may be expected to increase in response to a higher probability of climate legislation being enacted.

Left unaddressed in this paper is the impact of lobbying on success or failure of climate legislation. As this compilation of data shows, the expenditures on lobbying by sectors involved in the production and use of fossil fuels dwarf those of environmental organizations and the renewable energy sector. Yet despite this situation, climate legislation did successfully pass the House of Representatives in 2009. Determination of the impact of lobbying is well beyond the scope of this descriptive summary. There is a long literature on the effectiveness of lobbying on decision-making. In perhaps the most robust analysis of the effect of lobbying, Baumgartner et al. (2009) examined the factors that determined success and failure of lobbying efforts in 98 issue areas from 1999 to 2002. Baumgartner's analysis showed that there was a tremendous built-in bias to maintain the status quo and that the level of resources dedicated to lobbying efforts had few consistent effects. Additionally, because different sides on a policy dispute are usually able to mobilize relatively equal resources, and lobbyists on issues are usually composed of a heterogeneous mix of organizations, picking clear winners and losers based on their lobbying activities is empirically difficult. De Figueiredo and Richter (2014, p. 169) concluded that the critical condition under which lobbying can be considered effective is whether its intent is to preserve or change the status quo. Given an extreme bias in favor of the status quo, change in government policy is extremely difficult to achieve. Additionally, overall resource levels and establishment of relationships are also critical components in raising the probability of legislative success.

Lobbying is only one component of the political process, and congressional action is influenced by many factors, including political contributions, social movement and countermovement activities, think tank efforts, media coverage, and public relations activities. The literature on the impact of lobbying shows that a robust multi-variate empirical analysis is needed to determine the efficacy of lobbying apart from the other factors that influence legislative outcomes.

4.2 Conclusion

Climate lobbying is big business. Overall, this descriptive compilation shows that over the 16-year period from 2000 to 2016, more than $2 billion was expended on climate lobbying. This figure represented 3.9% of total lobbying expenditures. However, the amount of lobbying spending on climate change varied significantly over time, comprising more than 9% of lobbying expenditures in 2009, for example. The vast majority of climate lobbying expenditures came from sectors that would be highly impacted by climate legislation. Environmental organizations and the renewable energy sector lobbying expenditures were dwarfed by a ratio of 10:1 by the spending of the sectors engaged in the supply and use of fossil fuels. Lobbying expenditures appear to be most clearly related to the potential for enactment of climate legislation, peaking during the 111th Congress under Democratic control over both Congress and the Executive Branch. In addition, lobbying expenditures correspond to the number of bills introduced addressing climate change issues and the number of Congressional hearings on these topics. This finding is completely in line with the previous literature on lobbying and confirms that the levels of lobbying are driven by the salience of pending legislation.

The fact that the overwhelming amount of spending on lobbying was from corporations in the transportation, utility, and fossil fuel sectors has important implications for the fate of future climate legislation. The nature and outcome of climate legislation were largely determined by intra-sector competition. Different industry sectors are not monolithic, and thus a dichotomous approach to studying political conflicts and lobbying levels among sectors is neither empirically correct nor likely efficacious. Thus, any attempt to analyze climate legislative strategy must take into account the inter-industry and intra-sector divisions over climate policies (Downie 2017).

This analysis also illustrates the limitations of science advocacy efforts. Climate lobbying expenditures by environmental organizations constitute only 3% of total lobbying expenditures. This figure does not count volunteer lobbying activities, such as those conducted by nonprofit organizations. However, these are only one-time, short-term mobilizations. Professional lobbying organizations are a permanent presence on Capitol Hill. Thus, the vast expenditures and continuous presence of professional lobbyists limit the impact of volunteer climate advocates. Additionally, lobbying is an activity conducted away from the public eye. There is no open debate or refutation of viewpoints offered by professional lobbyists meeting in private with government officials. Hence, control over the nature and flow of information to government decision-makers can be significantly altered by the lobbying process, and creates a situation of systematically distorted communication. This process may limit the communication of accurate scientific information into the decision-making process. Accordingly, critics have assailed lobbying as "a danger to democracy because it creates elite networks of decision-makers that exclude the general populace" (Edwards 2016, p. 64).

To extend this research, more detailed analysis of lobbying at the corporate level is needed. Specific research that couples the potential impacts the legislation would have on a corporation, the positions it takes, and how much effort it expends would yield fruitful insights into the corporate motivations for lobbying. Additionally, there is a dearth of research on the impact of lobbying on climate legislation. A robust multi-variate analysis of the impact of lobbying while controlling for other relevant factors would be a valuable expansion of the literature on climate lobbying. This data compilation provides part of the data required to carry out this research. It is clear that the scale and extent of lobbying on climate legislation calls for further investigation of this important political area.

References

Baumgartner F, Leech B (1998) Basic interests: the importance of groups in politics and in political science. Princeton University Press, Princeton

Baumgartner F, Berry J, Hojnacki M, Leech B, Kimball D (2009) Lobbying and policy change: who wins, who loses, and why. University of Chicago Press, Chicago

Brulle RJ (2014) Institutionalizing delay: foundation funding and the creation of US climate change counter-movement organizations. Clim Chang 122:681–694

Brulle R, Dunlap R (2015) Sociology and climate change introduction: pp. 1–31 in Dunlap, Riley, Brulle, Robert J., (eds.) Climate change and society: sociological perspectives. Oxford Press: New York

Brulle RJ, Carmichael J, Jenkins JC (2012) Shifting public opinion on climate change: an empirical assessment of factors influencing concern over climate change in the US, 2002–2010. Clim Chang 114(2):169–188

Burstein P (2010) Public opinion, public policy, and democracy. In: Leicht K, Jenkins J (eds) Handbook of politics: state and society in global perspective. Springer, New York, pp 63–79

Cook KS, Whitmeyer JM (1992) Two approaches to social structure: exchange theory and network analysis. Annu Rev Sociol 18:109–127

De Figueiredo JM, Richter BK (2014) Advancing the empirical research on lobbying. Annual Review of Political Science. (17)163–185

Delmas M, Lim J, Nairn-Birch N (2016) Corporate environmental performance and lobbying. Academy of Management Discoveries 2(2):175–197

Downie C (2017) Business actors, political resistance, and strategies for policymakers. Energy Policy 108:583–592

Drutman L (2015) The business of America is lobbying. Oxford University Press, New York

Edwards L (2016) The role of public relations in deliberative systems. J Commun 66:60–81

Farrell J (2016) Corporate funding and ideological polarization about climate change. Proc Natl Acad Sci 113(1):92–97

Fuchs S (2001) Against essentialism: a theory of culture and society. Harvard University Press, Cambridge

Grossmann M (2014) Artists of the possible. Oxford University Press, New York

Grumbach JM (2015) Polluting industries as climate protagonists: cap and trade and the problem of business preferences. Business and Politics 17(4):633–659

Gulati R, Gargiulo M (1999) Where do interorganizational networks come from? Am J Sociol 104(5):1439–1493

Kim S, Urpelainen J, Yang J (2016) Electric utilities and American climate policy: lobbying by expected winners and losers. Journal of Public Policy 36(2):251–275

Knoke D (1990) Political networks: the structural perspective. Cambridge University Press, Cambridge

Knoke D, Yang S (2008) Social network analysis (Vol. 154). Sage

LaPira TM, Thomas HF (2014) Revolving door lobbyists and interest representation. Interest Groups & Advocacy. 3(1):4–29

Laumann EO, Knoke D (1987) The organizational state: social choice in national policy domains. Univ of Wisconsin Press, Madison

McGarity TO (2014) The disruptive politics of climate disruption. Nova Law Review 38(3):3

Milbrath L (1963) The Washington lobbyists. Rand McNally, Chicago

Podolny JM, Page KL (1998) Network forms of organization. Annu Rev Sociol 24:57–76

Shove E (2010) Beyond the ABC: climate change policy and theories of social change. Environ Plan A 42:1273–1285

Somerville I, Ramsey P (2012) Public relations and politics. In: Theaker A (ed) The public relations handbook, 4th edn. Routledge, New York, pp 38–59