

Energy security and climate change concerns: Triggers for energy policy change in the United States?

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ABSTRACT

Why is it so difficult to change the energy policy status quo away from dependence on fossil fuels when the need to become less dependent on imported oil seems to be generally accepted by US politicians? In recent energy debates in the House and Senate, references to climate change and energy security were frequently used as a rationale for the need for energy policy change. But policymakers were not in agreement about what policy programs would be the best alternative or what goals the programs were to achieve in terms of addressing energy security or climate change, or both at the same time. The paper explores whether putting energy security and climate change on the decision making agenda simultaneously helped craft a political compromise in the 110th Congress—the Energy Independence and Security Act of 2007, and points out how the political institutions of the US structured interaction and affected policy outcome, and ultimately the chance of changing the energy policy status quo.

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1. Introduction

Energy security ranks as a top agenda issue in US politics. Since the oil-shocks in 1973 and 1978, energy security has been a prioritized issue among American politicians. As the largest energy producer, consumer,¹ and net importer in the world, as well as being home to the largest coal reserves in the world,² the US is very dependent on fossil fuel energy for its short-term economic growth (EIA 2007a,b). However, as the dependence on imported oil and gas has become larger the energy security concerns have increased due to rising prices, declining world reserves, and increasingly also fear of dependence on imports from the Middle East where instability and anti-Americanism is growing. Still, the changes in domestic policy directed at improving energy security and achieving energy independence over the past decades have been no more than incremental.

This paper discusses why it is so difficult to change the energy policy status quo even though the need to become less dependent on imported oil seems to be generally accepted by US politicians. More specifically, the analysis explores whether simultaneous

attention to the energy security and climate change issues helped craft a compromise in the 110th Congress that would put the country on a more sustainable, environmentally friendly energy policy path, and points out how the political institutions of the US structured interaction and affected policy outcome. I argue that one key element is the decisive role the design and structure of the political institutions have for policy change. The core of the American political system is to enact policy through legislative compromise between the Senate and House, via conference committee, and then win the acceptance of the president. In order to explain the persistence of the status quo and the scope of energy policy compromise, I discuss the importance of ideological and issue-specific distance between decision makers' positions. In the end, it is only when politicians are convinced to vote in favor of one policy alternative rather than another that change comes about.

A second key element for explaining why the status quo is so difficult to change is agenda setting. In most policy debates, the choice is quickly reduced to one or two realistic alternatives. This paper analyzes the policy alternatives that were on the agenda in recent energy policy debates in the US, and discusses whether placing the energy security and climate change issues on the decision making agenda at the same time increased the chance of finding a policy compromise in the 110th Congress. Policy makers seek to realize own preferences at the same time as they garner the available potential to increase the relative gains of all actors involved in the decision making process, and constitute policy alternatives that better can realize multiple preferences. At the same time policy makers are also influenced by their wish to get re-elected, and in that sense they are dependent on their

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¹ In 2005 the US consumed ca. 25% of the world's total primary energy (EIA, 2007a).

² 26% of the total estimated recoverable coal reserves in the world are in the US. For comparison, in second and third place, China's estimated reserves are less than half of that of the US and Australia's are about one-third of that of the US (EIA, 2007b).

constituencies and the sponsoring lobby. Striking the balance to find a compromise along several dimensions of a policy issue can potentially satisfy more actors.

In energy debates in the 110th Congress, references to climate change and energy security were used as a rationale for the need for energy policy change. This did not, however, mean that policymakers were in agreement about what policy programs would be the best option or what goals they were to achieve in terms of addressing energy security or climate change, or both at the same time. In the 111th Congress, the pressure will be even stronger to change energy policy in order to increase energy security. President Obama has an ambitious energy agenda that he wants to implement, and while the financial crisis and economic downturn developing through 2008 added to the concerns facing the country it also posed as a possibility to develop low carbon energy policy solutions and “green collar jobs” that could help turn the economy around.

The outline of the paper is as follows. Section 2 points out why energy security is an issue that requires political attention in the US, and discusses reasons why the status quo is difficult to change in a more environmentally friendly direction. Section 3 shows why energy security concerns have increased over the past few years. Section 4 discusses efforts to place climate change and energy security on the same agenda in energy policy debates in the 110th US Congress, in order to create a policy compromise that would take greenhouse gas (GHG) emissions into account. Section 5 analyzes the role of political institutions and voting rules, and uses the empirical example of the House and Senate votes on recent energy legislation to underscore their importance for finding a political compromise. Section 6 offers some concluding remarks and future challenges. The primary data sources applied in the study are energy statistics, government documents, statements by politicians, as well as personal observation³ and records of congressional hearings. Secondary sources are used to control for the findings, and comprise a number of analyses of US climate policy and the federal policymaking process.

2. Energy security and persistence of the status quo

Energy security has for long been the subject of continuous worry among US politicians. Periodically recurring negative economic effects on consumers and the national economy resulting from low energy independence has kept the issue on the policy agenda.⁴ Economic and security considerations are highly important in US energy policy decision making (National Energy Policy Development Group 2001, chapter 1), and policy-makers agree on the goal of increasing energy independence. They do not, however, agree on the means by which to achieve this goal. Only after a decade of deliberations did politicians manage to pass the Energy Policy Act in 2005, and the Energy Independence and Security Act of 2007 only passed after compromises had watered it down.⁵

The US economy is dependent on easy and plentiful access to cheap oil, coal, and natural gas. The Energy Policy Act of 2005 reconfirmed a continuous reliance on fossil fuels, with the aim that energy efficiency and long-term transition to renewable energy sources would secure continued economic growth (US

Senate, 2005). Currently, oil and natural gas account for about 63% of the energy consumed (EIA, 2007c). The US obtains less than half (40%) of its oil from domestic fields (EIA, 2008a), while the rest is imported from foreign sources, for a large part the Middle East (EIA, 2008b).⁶ This makes the US vulnerable to events and conflicts in the countries it imports from, and ties its foreign policy in terms of forcing interest in specific parts of the world because of energy consumption patterns (Energy Security Leadership Council, 2006).⁷ In consequence, the energy security problem is a real national security problem.

Despite the negative effects of import dependence, it is difficult to expand domestic production. Two-thirds of all the oil discovered in the US remains in the ground, because the domestic oil resource base is relatively depleted and sites suitable for further exploration are located in environmentally vulnerable areas that the political majority has declared off limits for decades, such as parts of Alaska and the eastern coastline. In addition, calculations show that it would be economically costly to start exploration of these remaining oilfields (EIA, 2008a⁸; Cleveland and Kaufman, 2003, pp. 487–488).

US coal reserves are the world's largest, and it is a net exporter of coal, even though more than half of its electricity is produced by coal-fired power plants (EIA, 2007c). As much as 86% of the energy consumed in the US comes from fossil fuels, slightly more than a fourth of which from coal (EIA, 2007c).⁹ The domestic production share is about 84% of natural gas, and only 40% of crude oil (EIA, 2008a). The US has a domestic surplus of coal (EIA, 2008a), and coal production is spread across a large number of states (see Fig. 1).

This point is particularly significant given the differences in carbon dioxide emissions from consumption. CO₂ emissions depend on the source of energy and its carbon intensity. The amount of carbon in fuels varies significantly by fuel type. For example, coal contains the highest amount of carbon per unit of energy. Petroleum has roughly 75% of the carbon per unit of energy compared to coal, and natural gas only about 55% (US EPA, 2004). The US contributes approximately 21% of total GHG emissions, and is the world's second largest emitter. About 82% of US GHG emissions come from fossil fuel combustion (EIA, 2006a).

Climate change has become a factor in energy policy decision making over the past decade since energy use and production are key components for addressing the climate change issue. The balance of evidence in climate science points to the relationship between fossil fuel use causing increasing emissions and rising temperatures as the main cause of climate changes expected to occur over the next century. In its latest assessment report, the UN's Intergovernmental Panel on Climate Change (IPCC) finds that it is more than 90% certain that human made emissions cause the global warming that we are now experiencing (IPCC, 2007). In a 2007 national poll, nearly nine in 10 Americans said global warming will be a serious problem if nothing is done to curb it, but nearly two-thirds thought that a “great deal” or a “good amount” can be done to reduce global warming's effects. According to the poll, seven in 10 Americans want more federal action on global warming, and about half of those surveyed think the government should do “much more” than it is doing now. But the survey also shows there is little public agreement about the

⁶ Statistics from EIA show that 75,000 barrels of a total of 404,000 were imported from the Persian Gulf region in August of 2008, while 198,000 barrels were imported from OPEC countries. (EIA, 2008b).

⁷ See also Section 3 for a broader discussion of why oil import dependence from the politically unstable regions poses a potential national security problem.

⁸ Section on Oil and Natural Gas Projections.

⁹ Of the energy consumed in the United States, 39% comes from petroleum, 22% from coal, and 23% from natural gas (EIA, 2007c).

³ Attendance at the Senate Public Gallery and hearings in several House and Senate Committees in 2007.

⁴ For example, gasoline prices were high during the summer and fall of 2008 and caused protests among consumers, but when prices dropped concerns also decreased.

⁵ See Sections 4 and 5 for a thorough discussion of the Energy Independence and Security Act of 2007 debate in the US Congress.

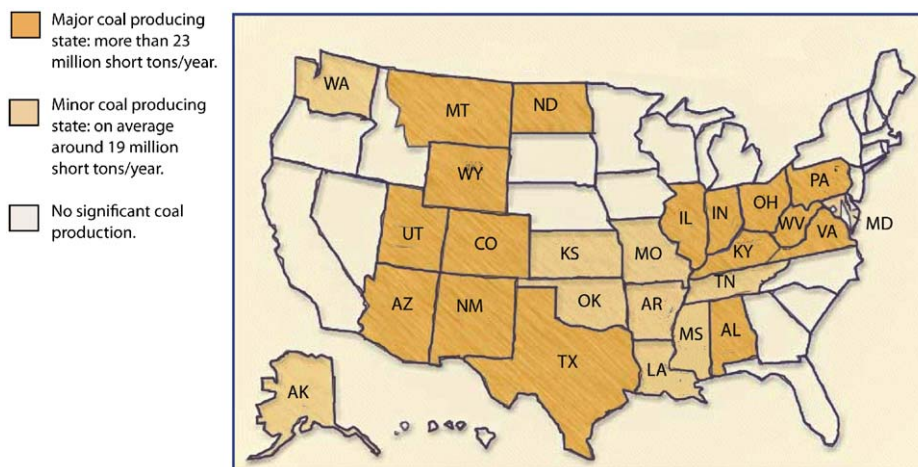


Fig. 1. Coal production in the US by state (2000). Source: Energy Information Administration (2008d).

policies the US should adopt to address it (The Washington Post, 2007). Starting in 2006, changes occurred both in governing institutions and in the climate policy discourse signaling that increased concern about adverse climate change among the public is reflected in the policymaking process. However, resistance to mandatory emission cuts in the US has been robust over the past decade because of fears that it will incur economic loss for both individual consumers and the national economy (Victor, 2001, p. 4; Victor, 2004, pp. 1–4; Jacobson, 2002, pp. 422–423). In the long term climate change might become a huge influence on economic growth (Stern, 2006),¹⁰ but in the short term it is putting a price on carbon emissions that cause economic concerns.

An energy transition in the US away from fossil fuel based energy production would be very expensive, both economically¹¹ and politically (Fisher, 2004; Victor, 2004). For example, a shift away from coal as the main source of electricity would not only affect the owners of the coal-fired power plants, but also directly affect mine workers (Fisher, 2004, pp. 117–118),¹² the distribution logistics of both the coal industry and railway companies,¹³ and consumers of electricity. Furthermore, both businesses and private households depend on access to cheap and plentiful energy. Because of this dependence on fossil fuels, opposition and resistance to major energy policy changes away from fossil fuels have been substantial. Strong and coordinated lobbying efforts at the federal level by economically significant business and industry actors have had substantial influence on the policymaking process in the US, for instance in the case of putting the focus on economic consequences of climate change abatement policies or renewable energy sources for the citizens' personal economy (Lisowski 2002, pp. 106–107; DeSombre 2005, pp. 193–196). The enormous economic importance of the energy industries has given them the power to influence policymaking, both in fossil fuel rich regions and nationally, and helped preserve the status quo in energy policy.

3. Increased energy security concerns

Over the past few years energy security concerns have increased. Energy security concerns in the US are mainly related to the fact that strategically important energy sources like oil and gas are imported from economically and politically unstable regions, like Iraq, Venezuela, and Nigeria. Growing US dependence on imports from the Middle East and other unstable regions is therefore a problem, and can lead to serious economic and security risks. The *economic* risk of being dependent on petroleum imports is high, and can increase further in the future since the price is volatile and reacts to even small changes in the market. For example, average world oil prices increased every year since 2003. Prices in 2007 were nearly double the 2003 prices in real terms. Prices rose sharply in 2008, reaching \$147 per barrel in July, when they were well above even the historical record price set in the early 1980s. Several factors caused oil prices to increase since 2003, including strong demand growth in non-OECD Asia and the Middle East, no growth in production between 2005 and 2007 from the members of the Organization of the Petroleum Exporting Countries (OPEC), rising costs for oil exploration and development, across-the-board increases in commodity prices, and a weaker US dollar (EIA, 2008c).

Since the margins for supply in the market are very tight, events like a natural disaster or political unrest can leave the world in short supply of oil. There is barely any excess capacity in the international oil industry today, which makes it hard for the market to meet new demand. At the same time, US dependence on imports from the Middle East is projected to increase in the future. In 2006 the US imported 64% of its needs, or 11.8 million barrels a day—almost half of which came from the Middle East (API, 2007). The US is projected to become even more dependent on oil imports from the Middle East over the next decade simply because that is where the largest reserves are located (Salameh, 2003, pp. 1090–1091).

As with oil, production of natural gas is no longer sufficient to meet domestic demand. To fill the gap, vast amounts of natural gas will have to be imported. Large natural gas reserves are found far from the big markets for the fuel, in Qatar, Iran, Russia, Angola, Yemen, and Algeria. The price for natural gas has doubled in the US during the last five years, exposing a vulnerable reliance and the possibility of even higher prices if supplies are not increased. Gas-buying utilities are warning that when becoming more reliant on natural gas from abroad, the US would be running the same risk it ran when it came to depend on oil from unstable sources in

¹⁰ The Stern Review assessed the potential impacts of global warming on the world economy against the cost of cutting emissions. It found that taking preventative measures now to address increasing emissions of greenhouse gases will cost dramatically less than waiting (Stern, 2006).

¹¹ The costs would be linked to job loss in the coal and oil industries, and investments in the development of new types of energy production and infrastructure (Fisher, 2004; Victor, 2004).

¹² Coal extraction, in particular, is very labor intensive and it therefore employs a significant part of the labor force (Fisher, 2004, pp. 117–118).

¹³ A vast quantity of coal is shipped to electricity plants on railways, see Vietor (1980) for discussion.

the Middle East (The New York Times, 2005). Imports are forecast to account for up to 30% of natural gas consumption in the US by 2015, up from only 16% today. Liquefied natural gas (LNG) imports soared in 2006 and are set to increase through 2030 (EIA, 2008a).

In this volatile situation, trends show that the US is facing increased competition on the demand side for petroleum. India's oil imports climbed by 11% in 2004 from the year before, and China's by 33%, straining the capacity of production operations, pipelines, refineries, and shipping lines and helping to keep the oil prices high. The Energy Information Administration expects India and China to use 11.3 million barrels a day by 2010, which will be more than one-fifth of the global demand. Hence, the dominant role in world oil consumption is shifting to the Asia-Pacific region (EIA, 2004).

To mitigate its dependence on the Middle East, the US could seek diversification of oil import sources, from West Africa, Europe, Russia, or Latin America. However, oil supply from non-OPEC (Organization of the Petroleum Exporting Countries) producers is expected to decline relative to OPEC supply. Middle Eastern oil producers have approximately 65% of the world's proven reserves, and currently have slightly over one-third of world production. It is expected that they will assume a clear-cut leadership of the supply side of the oil market also in the future (Salameh, 2003, p. 1090). Hence, increased competition over Middle Eastern oil between the United States, India, and China in the future will affect global oil supplies, the price of oil and energy security. The concentration of global oil supplies in the Middle East, coupled with declining supplies from outside the region, will push the price of oil upwards. High oil prices are projected to become a feature of the global oil market during coming decades (IMF, 2005).

In addition to the economic liability of energy import dependence, the *national security* risk involved in being dependent on imports from the Middle East is high considering the unstable political situation and growing hostility in key countries there. Securing a stable energy supply is considered a top priority in US foreign policy, both by the general public and by policymakers (Page, 2006, pp. 43–44). Most Americans prefer securing US interests by peaceful means, through multilateralism and international cooperation (Page, 2006, pp. 43–44). However, since the Middle East holds the largest oil reserves and key countries there increasingly have become hostile to the US, oil dependence involves handing over leverage to potential enemies (Energy Security Leadership Council, 2006). In some situations in the past, like in the Gulf War in 1991, military intervention was perceived as a legitimate option to secure stable energy supply. In that sense, US dependence on oil might become a liability for national security, and politicians would be pressured by strong interests to secure the continued supply of conventional energy using all necessary means. Hence, even in the absence of an outright supply crisis, oil dependence constrains US foreign policy by strengthening the nation's adversaries and placing enormous burdens on the military. While difficult to quantify with precision, these constraints and burdens unquestionably render the pursuit of US national interests far more difficult and costly. A group of highly ranked military servicemen stated that “America must address this critical weakness. Continued government inaction presents inexcusable risks” (Energy Security Leadership Council, 2006).

4. The importance of finding a compromise

Growing energy security concerns means that there will continue to be a particular focus on energy independence in US politics, and that policymakers are involved in keeping the issue

on the policy agenda. Securing access to energy and avoiding high consumer prices are issues that engage all politicians. Since both energy policy and climate change are top priorities at the same time, the opportunity for policy change away from fossil fuel dependence may be particularly ripe.

The political institutions in the US are designed to check and balance each other in the policymaking process. In order to pass legislation, the House of Representatives, the Senate, and the president must be in agreement. Each of them has, in effect, the power to veto a proposal from the other two institutions. Finding a compromise that all three governmental branches can accept therefore becomes all important. The process of finding a compromise is defined by the distance between the political positions of the actors involved (Tsebelis, 2002). If they are close, a compromise is easier to achieve. The political party with the majority has the power to set the decision making agenda in the House and the Senate. The leadership of the majority party decides if and when a bill gets to a floor debate. The timing of introducing a bill is important because it allows more control over the process of deliberations between politicians to find enough votes to pass a bill (Baumgartner and Jones, 1993; Kingdon, 2005). The rules for voting are also decisive for the chances of finding a policy compromise. In the US system, the House requires a simple majority to pass a bill, while the Senate requires a qualified, 3/5 majority to overcome the threat of filibuster from the opposition.¹⁴

In US energy politics, finding a majority to change the status quo more than in incremental ways has been difficult. I argue here that the political institutions of the US set restrictions that makes it hard to find enough votes to change the status quo. The possibility of placing climate change and energy security on the decision making agenda at the same time has the potential to overcome some of the hurdles, and below is an empirical analysis of how the effort to find political compromise on an energy policy that would increase energy security and address climate change concerns simultaneously developed in the 110th Congress.

4.1. Energy security and climate change on the agenda: the role of the agenda setter

Issues can be introduced as agenda items in an ongoing debate in order to overcome distributional obstacles, change established power relationships, and yield joint gains for the parties involved. This can potentially change the understanding of the policy problem at hand, and help craft a compromise that can win majority (Baumgartner and Jones, 1993, pp. 25–30). The privilege of the agenda setter in this context is to present a policy alternative that is positioned as close as possible to his own ideal position, but still acceptable for a majority of the policymakers (Tsebelis, 2002). In the US energy policy case, increased energy security concerns and more concern about adverse effects of climate change may have led to an opportunity for agenda setters in the US Congress to emphasize the importance of the global warming issue to attract more support for new, less fossil based energy policy. Shifts in power relationships between the politicians and lobbying interest groups involved in the debate as a result of the 2006 election may have resulted in altered political room for maneuvering in terms of proposing new policy design, especially since the agenda setting power changed.

¹⁴ There are no time limits on floor speeches in the US Senate, so senators can filibuster in order to prevent the adoption of a bill. To interrupt a filibustering senator, there must be a vote of cloture and that requires a minimum of 60 votes (Tsebelis, 2002, p. 54).

In the following I investigate whether attention to climate change helped redefine the energy security problem and push environmentally friendly energy policy change higher on the agenda. The assumption is that the potential for such radical energy policy change varies depending on a combination of the level of concern about energy security and climate change, and whether both types of concerns are allowed onto the formal energy policy agenda (Cobb and Ross, 1997).

4.2. New political majority

The Democrats won the 2006 midterm elections, overtaking the majority in both the House and the Senate. With the majority followed the leadership of all committees. Committee leadership generally means a lot in the US governing system for the ability to form and pursue a policy agenda. The Democratic leadership of the Environment and Public Works Committee and the Energy and Natural Resources Committee in the Senate, and the Energy and Commerce Committee in the House in particular led to a much intensified focus on energy and climate change issues in the form of hearings and discussions about the design of new legislative initiatives to increase energy security and regulate GHG emissions. The Congressional leadership in the 110th Congress made efforts to address climate change and energy security on a joint agenda in order to overcome resistance to policy change. Speaker Nancy Pelosi formed a “Select Committee on Energy Independence and Global Warming” in the House, with the intention of focusing attention to the issues throughout the 110th Congress, and to coordinate lawmaking in the committees with jurisdiction (Pelosi, 2007). Within the first six months after taking over the majority, a range of hearings on both climate change and energy security were held and several bills were introduced, many of which with bipartisan sponsorship (US Senate, 2007a).

Putting a price on carbon by introducing a cap and trade system for GHG emissions, along with energy efficiency, alternative fuels, and carbon sequestration were the main topics in climate and energy legislation in both the House and the Senate. For instance, a bipartisan Senate bill (S.1419: The Renewable Fuels, Consumer Protection and Energy Efficiency Act of 2007) provided legislation aimed at improving efficiency, promoting renewable fuels diversity and investing in research on carbon sequestration (US Senate, 2007b). A substantial argument in the committee debate was that the bill would address both energy independence and global warming. Chairman of the Energy and Natural Resources Committee, Jeff Bingaman, said:

This legislation is a big step forward in... areas key to America's energy future. It will help dramatically reduce our dependence on fossil fuels by requiring the more efficient use of energy and by putting a much greater emphasis on the use of renewable, homegrown fuels. It also increases our investment in research on the capture of carbon, so we can cut back on the greenhouse gas emissions that contribute to global warming (US Senate, 2007c).

Similarly, the House Committee on Energy and Commerce focused its hearings on energy efficiency, carbon sequestration, alternative fuels, and the consequences of a cap on GHG emissions (US House of Representatives, 2007a).

The arguments used by some politicians in climate change hearings specifically underlined that climate change policies would also increase energy security for the US. For example, at a hearing in the Senate Committee on Environment and Public Works, Chairwoman Barbara Boxer said:

There is much to gain in our efforts to reduce greenhouse gas emissions. For example, increasing our energy efficiency will

save us money, make us more energy independent, clean up our air, and reduce carbon pollution (US Senate, 2007d).

While combined focus on energy independence and climate change was applied to promote energy and climate policy change in US discourse, this new issue framing also met fierce resistance in the halls of Washington DC. The established energy policy majority preferred to focus exclusively on energy security issues and disregard the effects for climate change, trying to keep it off the agenda. The oil-, coal-, utility-, and auto industries are strong interest groups that continue to support the use of fossil fuels, and they have the advantage of infrastructure that is readily available to provide energy products to consumers. As a consequence, politicians are faced with traditional, well-known alternatives when they consider climate and energy policies for the future. In many respects it is safer and more realistic for them to choose conventional energy forms. For example, in the Energy Policy Act of 2005, a great portion of the bill was devoted to developing fossil fuels domestically to increase US energy security by decreasing oil and natural gas imports. The Energy Policy Act opened up for stronger efforts to extract oil and gas more effectively from existing domestic wells and on parts of the outer continental shelf, and for developing extraction of oil from oil shale and tar sands in Colorado, Utah, and Wyoming (US Senate, 2006). Some of the language to even further develop domestic fossil fuels, like opening for oil drilling in Alaska, was taken out of the Energy Policy Act in the last minute, but this debate resurfaced as energy security concerns and gas prices increased in 2008. Domestic development of fossil fuels is welcomed by the providers of conventional energy, since they contribute to continuing the current system of energy supply and the political power of these interest groups.

4.3. New policy initiatives

One current debate in particular highlights the effects resistance to take consequences for GHG emissions into account can have when new policies to address energy security are proposed. In his State of the Union address in January 2007, President Bush introduced new policy on alternative fuels to reduce energy dependence on imported oil. The goal was to reduce consumption of gasoline by 20% over the next 10 years by setting a mandatory fuels standard to require 35 billion gallons of renewable and other alternative fuels in 2017 (The White House, 2007). There are several alternative fuels available that can potentially replace regular gasoline, the most readily available being electricity, ethanol and coal-to-liquids fuel (CTL). Ethanol from corn is in a mature state of development, where the technology is available to both produce the fuel and adapt cars to run on it. But the infrastructure to distribute the ethanol fuel is lacking. Ethanol from cellulosic material, like woodchip, is in a less mature state of technological development than corn-based ethanol. Electric cars are already available on the market, but they lack the capacity of regular cars in terms of mileage before refueling. Although electricity in the US is for a large part reliant on coal as the source of generation, electric cars would be a much more energy efficient use of electricity than in households. CTL is produced with a mature technology, where coal is liquefied and can be used in the car fleet that is on the roads today. CTL can also be distributed via the same distribution net that are used for gasoline, giving it the advantage of available infrastructure. However, CTL is depending on carbon sequestration to perform at about the same carbon emission level as regular gasoline, and this technology is not yet available.

Alternative fuels bills were introduced both in the House and the Senate in 2007, and the debate pinpoints the fact that it makes a huge difference which kind of alternative fuels are given incentives to develop. While corn-based ethanol is 20–30% less GHG intensive than regular gasoline, and cellulosic-based ethanol can be as much as 80% less carbon intensive, CTL with carbon sequestration will result in about the same level of emissions as regular gasoline. Without carbon sequestration, however, CTL fuels will be 118% more carbon intensive than regular gasoline (US House of Representatives, 2007b). In House and Senate hearings and subsequent introduction of bills, CTL was still given political incentives to develop because it will make an instant contribution to reduced reliance on imported oil for transportation purposes. For example, Representatives Rick Boucher (D-VA), Chairman of the Energy and Air Quality Subcommittee, and Representative John Shimkus (R-IL)—both from states with a large coal industry—introduced federal legislation in May 2007 to promote the use of CTL. Boucher referred to energy security as the main reason to give incentives for CTL, stating that:

I am pleased to join with Representative Shimkus in this effort to resolve the financial uncertainty and promote the use of domestic energy resources instead of imported petroleum to power cars and trucks in the United States. By using one of our nation's most abundant natural resource—coal—to produce transportation fuels, we can address fuel cost concerns, make our nation less reliant on imports from politically unstable regions of the world and simultaneously benefit our domestic coal industry (US House of Representatives, 2007c).

Hence, emission-intensive alternatives were introduced onto the formal policy agenda by the established energy policy majority supportive of continued use of fossil fuels.

These examples of debates in Congress show that in a situation with increased public concerns about both energy security and climate change, energy policy is a field that potentially can include a bipartisan agenda where compromise can be found. It provides a new framing of the climate change issue that can attract support from a new set of actors involved in the decision making process, including both politicians and interest groups. However, if energy security policy is considered without taking carbon emissions into account the result will not necessarily be a more environmentally sustainable policy. By allowing emission intensive policy alternatives onto the agenda, the established energy policy majority can avoid problem redefinition, and continue to promote their preferred policy solutions. For instance, if gasoline is replaced with CTL fuel from coal plants without installed sequestration technology, that would result in less dependence on imported oil but increased GHG emissions.

Still, energy security concerns could potentially lead to focus on policy solutions that would have a second-order effect for mitigating climate change. Efforts to get cost-effective renewable energy technologies to the market, or to develop carbon sequestration technologies, or build nuclear power plants that can replace fossil fuels like coal, will lead to fewer GHG emissions. But reduced emissions will not necessarily be the most important rationale behind the policy change. Rather, the rationale will be to heighten energy security and avoid high energy costs, and if that also affects emissions and climate policy then it can be used as a political benefit. Having a second-order rationale can in some cases make a vote in favor of new policy solutions easier to endure or survive for politicians. In other words, the effects for reducing GHG emissions can be used by politicians to underscore the importance of policy change, to secure support from the part of the public concerned about global warming, and from environmental NGOs and other interest groups that support emission

cuts. If that part of the public is not very large, such rationalizing will be less important and the choice of policy solution can be affected.

The potential for finding a policy compromise to change energy policy radically in a less fossil fuels based direction is, therefore, limited because high energy security concerns will not be enough by itself to redefine the perceived need for a major energy policy change away from fossil fuels. Without the inclusion on the policy agenda of concerns about climate change, proponents of new, environmentally sustainable policy solutions may not be able to attract enough support to overturn the political majority opposed to change, and therefore policy changes will not necessarily come about as direct renewal of federal climate policy but rather as incremental energy policy change that would at best not increase GHG emissions.

4.4. New actors

Putting climate change concerns onto the energy independence agenda will require climate policy change promoters to garner support from resourceful actors to strengthen their coalition. One example of such new alliances is that farmers now see economic opportunity in ethanol production, and put pressure on their Senators and Congressmen to support ethanol over CTL as a preferred alternative fuel. Similarly, more and more large firms see it as an advantage to have a mandatory cap on GHG emissions to even the playing field internationally, and because they want to ensure that any plan for fixing climate change will also be a boost for the US economy. The United States Climate Action Partnership (USCAP) works in favor of a cap-and-trade approach because it “guarantees the emissions cuts we need, while it unleashes cash and creativity from the private sector. This plan is a jobs winner as well as an environmental winner” (US CAP, 2007). The USCAP doubled its membership in May 2007, and now represents 22 major firms that have total revenues of \$1.7 trillion, and a collective workforce of more than 2 million and operations in all 50 states (US CAP, 2007).

Furthermore, military servicemen in increasing numbers make the link between energy security, climate change, and national security. For instance, in a recent report from a collaborative project between researchers and military servicemen, admirals, and generals concluded that “Climate change, national security, and energy dependence are a related set of global challenges. The national security consequences of climate change should be fully integrated into national security and national defense strategies” (CNA Corporation, 2007). By mustering support from these significant interest groups, the promoters of an environmentally sustainable energy policy get a stronger voice in the policymaking process.

New policy initiatives can reach the agenda that could yield joint gains for the new actors involved in the climate and energy policy debate. While economically powerful oil and coal interest groups have had a particularly strong voice in designing today's energy policy because of their vital role in securing energy to fuel the economy, in future policymaking this role may shift to different interest groups. It is not likely that policymakers would put the same amount of confidence in arguments and advice from the oil industry as they previously have if continued reliance on imported oil becomes an economic or national security liability. Finding alternatives to petroleum might then become urgent, and might potentially trigger changes in energy policy and be linked to climate policy decisions, and vice versa. More specifically, this could for instance mean intensified efforts to replace gasoline-driven cars with vehicles using environmentally friendly fuels, or

intensified efforts to phase renewable energy into the market to replace oil and natural gas.

5. The role of political institutions

The Energy Independence and Security Act of 2007 is an energy policy law that consists mainly of provisions designed to increase energy efficiency and the availability of renewable energy. The four key features of the law are: (1) A new Corporate Average Fuel Economy (CAFE) standard for cars. The law sets a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. (2) A Renewable Fuels Standard (RFS). The law sets a modified standard that starts at 9.0 billion gallons in 2008 and rises to 36 billion gallons by 2022. This is similar to what President Bush had called for in his State of the Union address in 2007. (3) A set of Energy Efficiency Equipment Standards. The adopted bill includes a variety of new standards for lighting and for residential and commercial appliance equipment. The equipment includes residential refrigerators, freezers, refrigerator-freezers, metal halide lamps, and commercial walk-in coolers and freezers. (4) Repeal of oil and gas tax incentives. The enacted law includes repeal of two tax subsidies in order to offset the estimated cost to implement the CAFE standard (Sissine, 2007).

The enacted law gained a vote of 86–8 in the Senate, which clearly shows that it constituted a broad compromise. The two most controversial provisions that were debated, but eventually not included in the enacted law were a Renewable Electricity Standard (RES) that would increase incentives for more electricity production from renewables at the federal level, and repeal of tax subsidies for oil and gas that would rather be used as new incentives for energy efficiency and renewable energy (Sissine, 2007). In a Senate vote preceeding the enactment, where these two provisions were included, the bill was defeated 59–40 because it failed to overcome a Republican filibuster. 60 votes were needed.

The House approved the bill 235–181 one week earlier, with the two contentious provisions included. Because of the requirement of a simple majority the obstacles for a more far-reaching change of the policy status quo are easier to overcome in the House. Once the House had approved the bill, the resistance in the Senate to the RES and tax repeals became stronger and more organized by the opposition, which included most Republicans and some Democrats from oil producing states. Furthermore, the White House got involved, and issued a statement where the president promised to veto any energy bill that contained these two provisions. After the compromise was found in the Senate the week after, and the provisions had been withdrawn, the House approved the new version of the bill and the president signed it into law.

The above example shows that voting rules of the political institutions are a key factor for enacting major policy change. In the case of energy policy, the positions of the senators were too far apart on the issues of giving extra incentives to renewable energy development over traditional forms of energy through an RES, and on repealing tax incentives for the oil and gas industries. Even with the potential joint gains in terms of mitigating climate change, it was not possible to change the status quo on these agenda items. This indicates that the support among senators for traditional energy interest coalitions was still strong, and that the voting rules in the Senate requiring a qualified majority of 60 votes posed an effective veto against policy change. The distance between the positions was simply too large to find a compromise. Once these controversial elements of the bill were taken out of the

text, a compromise could be found and an overwhelming majority vote enacted the revised law.

If politicians capitalize on public opinion on the agenda issues, they have the opportunity to reap votes. In that sense, it matters for them to evaluate what kind of policy instrument the public is likely to support. Americans are generally hostile towards taxes that are meant to manipulate their behavior. On the other hand, measures such as shifts in subsidies from fossil fuels to renewables, government initiatives to support more environmentally friendly cars or appliances, or a special tax on vehicles consuming excessive amounts of fuel have considerable support among Americans (Leiserowitz, 2006, pp. 55–56). Policymakers must therefore consider what kind of compromise they should support.

It is likely that future energy policy change in the US will include continued support for clean coal technology and nuclear power. For example, in the Energy Policy Act of 2005 the expressed preference of policymakers was to intensify use of natural gas, clean coal, and nuclear power, because doing so would increase energy independence and security. They also implemented incentives for a long-term transition to other energy sources—nuclear in particular. Nuclear power is perceived by many policymakers as the most promising technology presently ready to curb GHG emissions (The White House, 2006a, pp. 9–12). Arguments put forward, besides the advantages of zero GHG emissions, are that the industry is mature, with a half-century of experience and improved engineering behind it. Furthermore, problematic early reactors like the ones at Three Mile Island and Chernobyl can in the future be supplanted by new, smaller-scale, meltdown-proof reactors. Nuclear power plants are expensive to build, but are very high yield, with low-cost fuel. Finally, they offer an avenue to a “hydrogen economy,” combining high energy and high heat in one place for optimal hydrogen generation (Brand, 2005, p. 3). Nuclear engineers are working to develop a new class of reactors, which could be ready in about 20 years and whose main product would be heat (EIA, 2006b).

The Bush Administration proposed reducing fossil fuel dependence by increasing the use of nuclear power (The White House 2006a, pp. 10–12). The Energy Policy Act of 2005 provided loan incentives, production tax credits, and federal risk insurance for builders of new nuclear plants. Furthermore, the Bush Administration initiated “The Nuclear Power 2010 Initiative”, a partnership between the government and industry to facilitate new nuclear plant orders. Finally, President Bush proposed legislation that would help complete a nuclear waste repository at Yucca Mountain (The White House, 2006a, p. 12). The goal of these policy initiatives were that by the end of this decade, America would be able to start constructing nuclear plants again.

However, environmental non-governmental organizations like Greenpeace USA, the Sierra Club, the WWF, and the US Public Interest Group argue that any more time and money spent on nuclear energy would unjustifiably divert resources from more environmentally friendly solutions, such as energy conservation and renewable energy.¹⁵ Environmentalists contend that even though the nuclear technology has improved, it still has problems with potential accidents and radioactive waste storage. Aside from the environmental issues, it is also still far from clear when the fundamental economics of energy generation would favor the construction of nuclear plants in the US. Officials of utility companies and companies that design and build reactors reports that without substantial government help, the costs of winning regulatory approval and building nuclear plants would be dauntingly high for investors (DOE, 2002).

¹⁵ See for instance WWF's policy at their website: http://www.sierraclub.org/globalwarming/bush_plan/

Clean coal is the second big option for the US. With abundant coal reserves available in secure, domestic locations, policymakers from both sides of the aisle emphasize that the country has no option but to use coal for energy production. The Bush Administration implemented several programs to develop CO₂ sequestration and gas-to-liquids technology (The White House, 2006b), but as of today these technologies are not available in large scale. In Congress, politicians are convinced that continued use of coal is the energy future for the US, and increasing emphasis is put on the possibility to develop clean coal energy. The main option for the near future is to further develop the integrated gasification combined cycle (IGCC) projects. Rather than burn coal directly, the IGCC process breaks it down into its chemical constituents and collects each byproduct—carbon dioxide, sulfur dioxide, nitrogen oxide, trace metals and particulates—for filtering or treatment before combustion. In its broadest application, IGCC technology could be a stepping stone toward industrial-scale carbon sequestration—the process of capturing CO₂ and storing it in underground geologic formations (DOE, 2008). In the longer term, carbon capture and storage is conceived of as the future for continued use of coal.

Much of the energy policy debate in the US preceding the Energy Policy Act focused on nuclear power and clean coal as solutions to a secure energy future. In a situation where energy security deteriorates as a result of dependence on oil imports, and where concerns about global warming intensifies, it seems likely that clean coal and nuclear as new energy sources will be solutions that policymakers can agree on and that problem redefinition and agenda attention to climate change as a policy problem can trigger. Both policy options could help the US reduce its CO₂ emissions significantly, and be part of a mandatory climate policy regime. In this new situation, agenda attention to both issues could help policymakers that previously opposed mandatory climate policy to argue in favor of it and seek a policy compromise that include it by emphasizing the energy security rationale. Major changes in the US energy supply system in the short run would face great resistance from the established political majority in the energy policy field, as manifested in the votes over the Energy Independence and Security Act of 2007. This majority is supported by traditionally strong stakeholder groups. Policy change would come at some cost for the country but could be politically feasible if energy security and climate policy changes are on the same policy agenda. This zone of political feasibility occurs when continued reliance on imported oil would be even more expensive than to introduce new energy sources, and because a new kind of public pressure would emerge, creating leverage for politicians to incur changes in power relationships within the energy sector.

6. Conclusions

This paper has discussed why it is difficult to change the energy policy status quo in the United States even when the need to become less dependent on imported oil seems to be generally accepted by politicians. I pointed out that the political majority has an effective veto against radical policy change due to the design and structure of the US political institutions. When the Republican party had the majority in both the House and the Senate they enacted the Energy Policy Act of 2005, which improved conditions for further domestic exploration of oil and gas, and gave only minor subsidies for renewable energy development. Under the new political majority of the Democrats after the midterm elections in 2006 the energy security and climate change issues was placed on a joint decision making agenda by Democratic leaders, and that did change the character

of the debate in both chambers, but did not gather enough votes to upset the status quo radically. The requirement for a qualified majority in the Senate ensured that bill provisions in the Energy Independence and Security Act of 2007 that would have implemented a bigger swing away from dependence on fossil fuels for energy production and extra subsidies for renewable energy forms were taken out in the final vote. In other words, in order to find a political compromise, the status quo in US energy policy could be changed only incrementally even under a Democratically controlled Congress.

In the analysis I pointed out that agenda attention to climate change and energy security simultaneously has the potential to redefine the energy security problem. On the one hand, energy security has high salience and immediate economic effects, making the issue urgent for policymakers. Urgency and pressure make it likely that the established energy policy majority can support a new type of policy change, for instance by giving more clout to interests representing less carbon intensive energy sources like nuclear or clean coal. But I also found that a change in energy policy to improve energy security would not necessarily lead to lower GHG emissions. If concerns for climate change are not taken into account energy policy change could at best be rationalized as having effects for both energy security and climate change. In turn, that could open for policy solutions that would reduce GHG emissions. It could, however, also lead to policy changes that ignore the effects for GHG emissions.

On the other hand, I found that this joint agenda attention has the potential to reframe the policy problem and give policymakers leverage and cause to alter established power relationships in the energy sector, since a new set of cost and benefit allocations then will be beneficial for a new set of powerful actors. The opportunity for problem redefinition was present in 2006–2007, and in combination with institutional changes caused by the Midterm elections, powerful policy entrepreneurs managed to exploit the opportunity to put climate change policy near the top of the agenda for the 110th Congress. This increased the possibility for a major change in energy policy away from reliance on fossil fuels. In the end, however, the design and structure of the political institutions and their voting rules prevented radical change away from the status quo.

In the 111th Congress, the pressure for energy policy change in order to increase energy security will be even stronger. President Obama has promised to change the course towards a low carbon society, and has proposed an ambitious energy policy agenda. The financial crisis and economic downturn developing through 2008 could make it a hard sell in the Congress, but could potentially also turn out to be a possibility to argue for the development of low carbon energy policy solutions and “green collar jobs”.

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