

Understanding Growing Climate Policy Differences in the EU and the United States: Scientific knowledge meets governance systems

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Abstract:

The EU and the United States disagree deeply about the need for more stringent climate policies. Increased climate change concern in 2006-2008 created new opportunities for convergence, but ended in sharp policy differences. We explore two related explanations. First, scientific input was used to frame joint gains among stakeholders differently in the EU and US. Framing was different concerning the consequences of the problem, and particularly in the impact assessments of proposed policy. Second, different governance systems enabled distinctive responses to new opportunities in the EU and United States. Differences in how new policies were initiated and negotiated caused divergent climate policies. The paper tentatively concludes that the relationship and interaction between scientific input and governance systems resulted in distinctively different policy-making processes. This relationship reinforced a cooperative attitude to identify joint gains among EU decision-makers. In contrast, the framing of scientific knowledge reinforced a competitive attitude among US lawmakers, fueled by different stakeholder interests. Scientific knowledge was used and applied to reinforce differences in governance systems. The main lesson from this case is that the framing and application of scientific knowledge in the debate matters, but differences in governance systems are more instrumental for policy outcome.

1. Introduction

As the Kyoto Protocol's first commitment period ends, a wide gap remains between EU and US approaches to climate change. Policy differences have actually grown concerning ambitiousness, stringency, and scope. One could have expected less commitment to climate action on the EU's part because of the US failure to join the Kyoto Protocol. Enlargement in 2004 and 2007 added new states to the EU; many are highly energy-inefficient and heavily dependent on coal. Such fossil fuel dependency could have weakened EU resolve on climate. Moreover, interregional disparity in carbon intensity between the EU and the United States narrowed after enlargement.¹

Yet, in March 2007, the European Council adopted the so-called 20-20-20 targets: a 20% reduction of GHG emissions by 2020 compared to 1990 levels; a 20% increase in the share of renewable energies in overall EU energy consumption, including a 10% binding minimum target for transport fuels, and a 20% cut in primary energy consumption compared to projected levels through energy- efficiency improvements. These targets were ambitious, requiring 14% GHG reductions and an 11.5% increase in the renewable energy share compared to 2005.²

In December 2008, the 27 Heads of State and Government and the European Parliament (EP hereafter) adopted comprehensive legislation to realize the 20% targets by strengthening the EU Emissions Trading System (ETS), promoting renewable energy sources, adopting differentiated national targets for sectors not covered by the ETS, and new rules on carbon capture and storage (CCS). Additionally, new regulations on emission performance standards for new passenger cars and a new directive on fuel specification for petrol, diesel, and gas-oil were adopted. Simultaneously, the EU has facilitated new technologies by developing several European technology platforms, including CCS, wind, solar, and electricity grids. EU climate policy has essentially progressed significantly.

In contrast, the US Congress failed to pass climate legislation despite an alignment of strong policy-change drivers in 2006–2008: warnings in the 2006 Stern Review that failure to act on global warming would impose major costs on the global economy; public concern about climate change raised by Al Gore's award-winning documentary, "An Inconvenient Truth"; sharp rises in oil prices; and improved scientific understanding about climate change (e.g., the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007)).

Because of increased attention to the need for climate policy change, lawmakers introduced and debated several climate and energy bills in the 110th and 111th Congresses. The bills seemingly mirrored EU climate policy: Cap-and-trade, CCS, renewables, and energy-efficient transport were core to both US and EU initiatives. When Barack Obama took office in 2009, he immediately proposed strengthening US federal climate policy. A comprehensive and ambitious House climate bill passed in June 2009, but not enough senators supported it. Lacking legislative action, President Obama could merely apply his powers under the Clean Air Act to instruct the Environmental Protection Agency (EPA) to prepare and implement stricter emissions rules for mobile sources, and reporting for stationary emission sources. In short, US climate policy has progressed significantly concerning new initiatives since 2006. Unlike in the EU, however, the more ambitious initiatives failed in Congress.

¹ Wheeler 2010.

² Delbeke 2009.

What explains why these differences in climate policy outcomes have developed despite similarities in proposals and initiatives that can be found in both? We argue that they can at least partially be explained by major differences in agenda-setting privileges, potential for issue linkages, and legislative procedures that constrain coalition-building efforts among veto-players. Such differences should be understood in light of the EU as a supranational multi-level governance structure and the United States as a federal state. It will become clear throughout this paper that the EU departs from a classic federal state in important ways, including separation of powers and cooperative norms. Power dispersion among EU institutions (the Council, Commission, and Parliament) encourages cooperation and consensus seeking among agenda-setters and veto-players. Goals are similar in the United States, but different institutional relationships and processes often lead instead to stalemates and failure to reach consensus. In clarifying these differences, the article first introduces two complementary explanations that draw on theories of issue-linkages and coalition formation. In the third section, the three explanations are applied to explain the differences in internal climate policy development. The concluding section analyzes differences and summarizes main findings.

2. Conceptual point of departure

The framing and perception of scientific knowledge can interact negatively or positively with the capacity of governance systems to link issues that yield joint gains and craft winning coalitions. Two aspects of scientific knowledge and how it is perceived are particularly important. First, we would expect that the perceived seriousness of the consequences of the problem will affect the framing of subsequent policy development. Secondly, the framing of the relationship between different policy issues affected by the problem and thus needed for problem-solving matter. If the consequences of the problem are perceived as severe and the relationship between policy issues as synergetic, such as between climate and energy policies, the probabilities for designing a policy package based on effective issue-linkages and the crafting of winning coalitions will increase.

Concerning issue-linkages, previous literature argues, first, that adding new agenda items in a policy debate can create or constrain new possibilities for effective issue-linkage.³ This literature strand applies well to discussions about new policy design and content. Issues are added, combined, or linked when simultaneously discussed for joint settlement, and using new agenda items can help overcome distributional obstacles, change power relationships, and yield joint gains for the veto-players involved. Issues can also be subtracted and considered in an independent forum.⁴ Issue linkage essentially involves jointly negotiating two or more issues and generally occurs because at least one party believes that linkages improve chances for a (favorable) agreement.⁵

We explore two countervailing propositions related to the consequences of issue-linkages and argue that together they help explain differences in EU and US climate policies. The first argues that adding issues can yield joint gains that create or enhance probabilities for successfully negotiated

³ For example, Sebenius 1983; Hovi and Skodvin 2008; McKibben 2010.

⁴ Sebenius 1983, 287–288.

⁵ Hovi and Skodvin 2008.

outcomes.⁶ The joint gains assumption helps us explain why the EU has succeeded in adopting (relatively) ambitious climate policy. Agreement results when unrelated but differently valued issues are combined, distributional obstacles are overcome with side-payments, and synergies among issues are exploited by their combination.⁷

In contrast, adding issues can also reduce chances for successfully negotiated outcomes.⁸ Issue-linkages fail when individual issues have little or no commonality (i.e., no common ground) or when the basis of any agreement could destroy common ground. Adding issues makes policy-making more complex and cumbersome. It can also cause a redistribution of current benefits that is unattractive to veto-players. Increased complexity and unwanted re-distributional effects may help explain why the United States failed to adopt a new climate policy. Negotiations attempting to create compensatory schemes for potential losers did not succeed in US climate policy debates after 2006. As argued more fully below, different approaches to linking climate and energy policies to overcome distributional obstacles and to change power relationships led to very different outcomes on the two sides of the Atlantic.

A second body of literature studies coalition formation within political institutional settings and applies to legislative bargaining on specific proposals for policy change and how institutional rules and procedures affect coalition building.⁹ Few lawmakers engage as leaders or bill sponsors in building coalitions, given limitations on time and staff and given the numerous assigned policy issues. Consequently, a few dedicated lawmakers, principally members of relevant parliamentary or congressional committees, champion a few alternative policy proposals during debates.

Such coalition builders (e.g., US lawmakers and EU regulatory sponsors) can highlight their conceptions of problems and solutions, thereby making more likely the prioritization of such solutions. Yet, legislative rules, norms, and procedures shape consensus-building processes concerning how much provisions can be traded for support, and lawmakers can be persuaded to support coalitions if given concessions that they demand without substantially changing the coalition builder's gains. Alternatively, coalition builders may have to significantly compromise ideal positions to gain wider acceptance.¹⁰ We examine whether combining issues and policies included in the EU and US policy packages affected bargaining and final outcomes. Essentially, we assess formal leadership's importance in coalition building; the legislative process's rules, procedures, and norms; and the subsequent scope for establishing winning coalitions in negotiations.

⁶ Sebenius 1983, 292.

⁷ Sebenius 1983, 298.

⁸ Sebenius 1983, 300.

⁹ For example, Strom 1997; Wiseman 2004; Lee 2000; Mahoney 2007.

¹⁰ Kingdon 2005, 198–199.

3. Scientific knowledge meets governance systems

The European Union

Since 1996, the EU has officially acknowledged the 2°C objective. On the basis of the 2nd IPCC report the EU Council of Ministers stated in 1996 that it believes that global average temperatures should not exceed 2°C above pre-industrial level.¹¹ With new alarming IPCC reports and other studies, the EU Member States and institutions strengthened their perception and framing of the severity of the problem. In 2007, the European Commission stated that the 2°C target implied GHG emissions reductions in developed countries in the magnitude of 60-80% by 2050. This was based on the perception that: 'Strong scientific evidence shows that urgent action to tackle climate change is imperative'.¹² Various surveys of Europeans' attitudes towards climate change show that policy makers and the public are aligned. Europeans are highly concerned about climate change and willing to take action against it.¹³ Climate change is perceived as an issue of major concern. Three-quarters of Europeans take the problem very seriously. A majority answer that the 20+20+20 targets are about right or too modest.

Against this backdrop, three important changes occurred of which one was located at the interface between knowledge and governance. First, a common EU energy policy developed when a change in the position of the UK, rise in oil prices and energy security concerns eventually topped the political agenda.¹⁴ This was a necessary condition for integrating energy and climate policies at the EU level. Second, the 10 CEECs joined the union in 2004 and 2007. Generally, most EU-15 members favored more stringent climate policy, whereas the new CEECs were more concerned about energy security. These more asymmetrical energy-economic interests made designing ambitious climate policy more challenging, but they also focused attention on possibilities and needs for creating a broader policy climate package in which energy security would be more prominent. Finally, the emphasis shifted from the costs (which previously were stressed by most EU institutional actors except DG Environment and the European Parliament environment committee) to the benefits of climate policies. According to both the Stern Review and the EU's own assessments, the costs of failure to act would be enormous. The Commission stated that the benefits of action far outweigh the economic costs.¹⁵ A number of benefits by tackling climate change were emphasized, such as innovation, green jobs, reduced air pollution and so on. The new framing of the issue contributed to pave the way for effective issue-linkages and winning coalitions in favor of a stringent and integrated climate and energy policy.

¹¹ Commission, 2005. Winning the Battle Against Global Climate Change. COM(2005) 35 final. Brussels: 9.2. 2005

¹² Commission, 2007. Limiting Global Climate Change to 2 degrees Celsius: The way ahead for 2020 and beyond. COM(2007) 2 final. Brussels: 10.1. 2007:3.

¹³ Eurobarometer 2008 and 2011. Brussels: European parliament and European Commission.

¹⁴ The EU was particularly concerned by the Ukraine-Russia energy dispute. The dispute led Russia to cut off (1 January 2006) all gas supplies passing through Ukrainian territory. Russia is by far the EU's largest oil and gas supplier. Russian gas piped through the Ukraine and other regions feeds not only Central and East European countries (CEECs), but also Western Europe, including France, Germany, and Italy.

¹⁵ Commission, 2007. Limiting Global Climate Change to 2 degrees Celsius: The way ahead for 2020 and beyond. COM(2007) 2 final. Brussels: 10.1. 2007

The favorable external conditions for integrating climate and energy policies placed the issue on the Commission's agenda. The EU Commission has the exclusive right to propose new EU legislation. But these external conditions did not by themselves drive policy development. The link between constituent groups and the Commission is relatively weak in that the nonpartisan Commission, composed of Commissioners from each member state, is collectively responsible for decisions and is appointed to serve EU interests. This enables the Commission to think more long-term than most (member) states. Nevertheless, Commissioners do link the Commission to their national publics and serve as a crucial clearinghouse for member states' interests vis-à-vis the Commission.¹⁶

The Commission's compartmentalization and the interests pursued by different directorate generals (DGs) prevented close coordination between climate and energy policy. The initiative to strengthen EU climate policy by integrating energy and climate policies came from the Commission's environmental branch. The main motive of the environment branch for involving the energy branch was political: DG Environment (later DG Climate Action) would have a much better case for a more ambitious climate policy within the Commission and among the 27 member states if the two branches were to coordinate their climate and energy policies. One key mechanism for making this happen was a handful of individuals with close ties across the environment and energy branches (Interviews).

In January 2007, the Commission published two key communications on energy and climate policy strategies for 2020 and beyond.¹⁷ These communications proposing the 20-20-20 targets were published the same day by the energy and environmental branches, illustrating the close coordination between them. The communications had Commission President Barroso's backing, and they aimed at integrating climate policy targets and measures into energy security and competitiveness policies. Measures on areas such as renewable energy and energy efficiency lacked the coherency to realize such goals.¹⁸

In January 2008, the Commission formally proposed the climate and energy package to attain the 20-20-20 targets. The package's main structure aimed at reducing emissions in ETS sectors (electric power production and energy-intensive industries) by 21% below 2005 emission levels by annually decreasing the number of allowances, and a 10% reduction for sectors not covered by the ETS, which was based on different national targets (effort sharing decision, ESD). The renewable target would be achieved by a new Renewable Energy Sources (RES) directive, based on different national targets.

In addition to the measures being mutually supportive and cost-effective, burden- or effort-sharing was key in facilitating political feasibility.¹⁹ Effort-sharing was particularly important to bring aboard new member states. The new policies aimed at being fair, balanced, and proportionate, and were based on individual circumstances in member states and industries. As some member states are more able than others to finance necessary investments, the main criterion for calculating

¹⁶ Egenhofer et al. 2011.

¹⁷ Commission 2007a and b.

¹⁸ Commission 2007a, 6.

¹⁹ Commission 2008 b.

differentiated national targets in ESD and RES was GDP per capita. The package was composed of four legislative proposals to realize the targets:

- revising the EU ETS;
- effort sharing in non-ETS sectors (ESD)
- renewable energy sources (RES);
- rules for CCS.

The EU climate and energy package was based on thoroughly assessing how the ETS, ESD, and RES proposals would work together. The assessment included different scenarios based on different oil prices, CDM access, and sensitivity tests of different targets. Overall cost to European economies was estimated at just under 0.5% of GDP by 2020. In principle, no member state should make investments that diverged too far from this average. The consequences for member states of a purely cost-efficiency criterion were assessed as a reference option. Results showed significant differences in costs by 2020 between member states. These differences were leveled out, and issues linked, in three ways to make the package politically acceptable:

- by setting different national targets in the non-ETS sectors based on GDP/capita;
- by setting different national targets for the share of EU energy consumption to be achieved by renewable energy based on a combination of GDP and flat-rate increase in the share of renewable energy;
- by using auctioning revenues (from the revised ETS) to compensate lower-income member states.

Regarding energy-intensive industries exposed to significant international competition and at risk of carbon leakage, similar analysis was undertaken. Results show that access to CDM credits and free allowances through benchmarking would be effective strategies to limit potentially negative effects of the revised ETS.

Other policies simultaneously proposed by the EC were deliberately delinked from the impact assessment and the core package because they could increase burdens for specific member states or make negotiations more complex. For instance, regulation covering new car's emissions applied only to member states with car manufacturers; thus, it was not in the package. Similarly, a directive on fuel quality, including required reduction of the carbon footprint of road fuels from well-to-wheel, applied primarily to oil companies, and thus, was also not in the final package. Finally, the EC proposed no new binding measures to achieve the 20% energy-efficiency target. This could have particularly burdened the CEECs, which have the biggest energy-efficiency challenges (i.e., the highest energy-efficiency potential). The burden sharing agreement would have been even more complex if energy efficiency had been added to the climate and renewable targets. In essence, the proposed climate and energy package increased joint gains by linking energy and climate policies so

as to promote fairness and burden sharing. The package did not contain issues that could split member states' interests and reduce joint gains.

The package's main structure survived the 2008 negotiations. Member states unanimously adopted the package and the EP unanimously endorsed it, including reduction targets for ETS and non-ETS sectors and different national targets in ESD and RES directives. EU institutional actors and stakeholders seek to build consensus or large coalitions to avoid decisions based on simple majorities. Majorities are unstable because they shift with the issues. Constructive cooperation and consensus seeking tend to prevail over power struggles and competition among member states.²⁰ However, nothing guarantees that the Commission's legislative proposals will survive negotiations.²¹

The four legislative proposals were complex and the schedule was tight. The EU needed an ambitious package to show leadership by example before Copenhagen and the June 2009 EP elections. This election's outcome could reduce the general support of the EP for climate action. Deliberations commenced with informal negotiations among high-level representatives from the EC, the EP and the Council. The package's most important part was the proposal for revising EU ETS, including changing from free allowances to auctioning. Two main areas of disagreement existed in negotiations on reforming the ETS: 1) the new CEECs, led by Poland, demanded more economic 'solidarity' than originally included in the Commission's proposal; 2) energy-intensive industry at risk of carbon leakage demanded more free allowances.²² These demands were made with increasing intensity in fall 2008, fueled by the unfolding global economic crisis making EU governments concerned about the package's costs.

France assumed the half-year rotating EU Presidency from Slovenia in fall 2008; French leadership proved extremely important in forging compromise by year's end. One institutional tool the French used concerned introducing more demanding decision-making procedures, replacing qualified majority in the Council of Ministers with unanimity in the European Council. Because the package's various elements were designed to be mutually reinforcing, decision-makers were pressured to adopt all legislative proposals simultaneously, thus giving each member state plus the EP a veto position. Passing the policy proposal would require a broad package, thus making possible complex bargaining concerning the package's main structure.

Germany defended energy-intensive industries and demanded more allowances for free, but the EP opposed more free allowances. Germany got its way in exchange for accepting more stringent car emissions rules than it had originally proposed. For accepting more free allowances, the EP got 300 million allowances from the ETS new entrants' reserve to co-finance up to 12 CCS demonstration projects and other new renewable technologies, linking the new CCS legislation to the ETS. The CEECs demanded changes in the baseline and structure of the ESD proposal that were incompatible with the package's overall design. These demands did, however, eventually increase revenues from auctioning to a solidarity fund and increase concessions to the CEECs regarding some free allowances for the power sector, linking the ESD proposal to the ETS. The RES legislation on renewable energy was agreed in principle before the rest of the package, thus preventing direct linking of issues in final negotiations.

²⁰ Wallace and Wallace 2000; Egenhofer et al. 2011.

²¹ For example, the EU carbon/energy tax that failed in the 1990s.

²² Skjærseth and Wettstad 2010.

In summary, the EU case shows first that the framing of scientific knowledge changed — from a focus on the costs of action to the benefits of action on climate change. In the context of enlargement and changing energy challenges, it also shows how one major agenda-setter, weakly tied to specific constituency interests, could initiate an integrative climate and energy package based on fairness and burden sharing. Aided by strong French leadership, the integrative package proposal made negotiations among decision-makers cooperative and provided wide room for side-payment through issue-linkages, resulting in unanimous adoption of new climate and energy policies.

The United States

An alignment of strong policy-change drivers related to scientific knowledge significantly increased the likelihood for a more ambitious US climate policy in 2006–2008. The 2006 Stern Review warned that failure to act on global warming would impose major costs on the global economy; Al Gore’s award-winning documentary, “An Inconvenient Truth,” raised public concern in the United States about climate change; there was a sharp rise in oil prices; and scientific understanding about climate change improved with the release of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change in 2007. The receptiveness of this new knowledge in US politics was, however, marked by long-time cleavages where Democrats are more likely to believe in the scientific consensus in climate science and to express personal concern about global warming than are conservatives and Republicans. Furthermore, ideological and partisan polarization has increased on the issue of climate change over the past decade.²³ These basic cleavages in the U.S. public were significant, even as Americans expressed record-high levels of concern about climate change in 2006–2007.²⁴ Simultaneously, energy security worries heavily influenced the energy policy debate.

Responding to such constituency concerns, Democratic congressional majority leaders placed climate change amongst their top agenda items from 2007 when they took majority control of both chambers of Congress. The Democrats attempted to re-frame the climate change issue by explicitly linking energy security and climate change, and recommending the development of alternative, fossil-free energy as a joint solution for both problems. Most Republicans, responding to a voter base more skeptical to climate change theories, actively engaged in a counter-framing attempt to decouple energy security and climate change, and propose more domestic oil and gas drilling as the best solution to energy security problems. They claimed that climate change science was uncertain, demanded more research on the issue, and characterized big climate policy changes as premature and too costly.

All 535 members of Congress are potential formal agenda-setters in being able to introduce their *individual* climate bills, and many did so in 2007–2008 to signal their debate position. During these years, a record number of competing climate change and energy security bills were introduced, and most committees in both chambers debated global warming. However, Congress seriously deliberated only a few bills, because of time and staff limitations and numerous other policy issues competing for their time.

Typical of US lawmaking, interest groups closely consulted congressional representatives to express their position and to influence the debate agenda. In this policy phase, technology firms (e.g.,

²³ McCright and Dunlap 2011.

²⁴ McCright and Dunlap 2011; Weber and Stern 2011.

GE/DuPont), the wind and solar energy sectors, and others who would gain from more stringent climate policy supported rhetorical linkage between energy security and climate change, and pushed green-jobs creation by supporting subsidies for renewable energy development and a clean-energy transition. The US Climate Action Partnership, representing actors in this segment, was formed to lobby Congress for climate policy action. Conversely, the Chamber of Commerce, the American Petroleum Institute, the American Farm Bureau, and others who would lose economically from stricter climate policy emphasized the dangers of adding economic burdens to firms and sectors that: provided cheap electricity for most America homes; that represented key workplaces in most states; and that represented key economic sectors in the US economy. In response to these conflicting constituency pressures, politicians competed to dominate agenda-setting, and carefully responded to their constituents' preferences. Such agenda-setting by pivotal actors set the stage for congressional legislative bargaining.

What became increasingly clear during this policy initiation phase was that despite mounting public concern, deep cleavages remained between policy-makers representing states with fossil fuel intensive natural resource bases (coal and oil) and those with more potentials for low emitting energy resources (hydro, renewables). Regardless of party affiliation, climate policy proposals reflected their sponsor's attention to key constituency groups in their home state. For example, Democrats representing coal-producing West Virginia emphasized quite different aspects of climate policy than did Democrats from states with fewer fossil-energy resources (e.g., Massachusetts).

In January 2009, Congressmen Henry Waxman (D-CA) and Edward Markey (D-MA) introduced the standard bearing climate change bill for the Democrats. Reflecting President Obama's priorities, it included titles concerning

- a federal renewable electricity standard; CCS technology; performance standards for new coal-fuelled power plants; a low-carbon fuel standard; and smart grid advancement.
- building, lighting, and appliance energy-efficiency programs, and efficiency standards for the transport sector
- a cap-and-trade program with economy-wide coverage of emission sources over 25,000 tons/year, with GHG emissions reduction targets for all covered entities to 3% below 2005 levels in 2012, 18% in 2020, 42% in 2030, and 83% in 2050.²⁵

This proposal's content attempted to reconcile the many voices expressing different views in the previous Congress. Particularly important was a formula allocating emissions credits in the proposed cap-and-trade system developed by the utility sector's leading association (Edison Electric Institute). It bridged long-time disputes among power producers reliant on coal, natural gas, and nuclear concerning allocation of credits. The sector's agreement was crucial to gathering House votes for the bill because it helped overcome distributional obstacles among key interest groups in the coal industry, agriculture, the utility sector, and manufacturing—all reliant on cheap electricity. Consequently, the bill passed the House with a razor-thin margin (219-212) in June 2009.

After House passage, it moved to the Senate where senators Kerry (D-MA), Lieberman (I-CT), and Graham (R-SC) became lead sponsors. In addition to a renegotiation of the titles in the House-passed

²⁵ Pew Center on Global Climate Change 2009.

bill, the sponsors inserted new items that had been left out in the House, like subsidies for nuclear and clean coal. Nuclear and coal provisions, included to attract the votes of lawmakers close to those industries via their constituency, had the unintended consequence of limiting support for the bill from senators (especially liberal Democrats) with an environmentalist voter base deeply concerned about reducing carbon emissions and preventing nuclear energy development. Further complicating matters, the stricter Senate rules for budget deficits shaved allowances by 10% in the trading system's first 10 years, increasing to a 25% reduction by 2040.²⁶ Such allowance reductions required renegotiation of the utility sector formula. Power companies could lose up to \$50 billion in allowances compared to the House-passed bill. With more agenda items, and less benefits to go around, Senate negotiations became complicated.

New legislation proposing major policy change normally engenders a competing bill from the opposition, as indeed happened here. The Republican leadership supported a competing bill introduced by Senator Graham in January 2010, which promoted the benefits of a clean energy standard (CES) rather than cap-and-trade. A CES would significantly boost nuclear power and clean coal as part of a nationwide clean energy standard. The bill required the country to generate a certain percentage of "clean energy" over 15 years: 13% by 2012, 20% by 2020, and 25% by 2025. Power sources included in the program were new nuclear capacity built after the bill became law, and coal-fired plants that capture and permanently sequester 65% of GHGs they produce. Traditional renewables (wind and solar) qualified, as did certain types of biomass and hydropower. Additionally, retired fossil-fuel plants that had produced more than 2,500 pounds of carbon dioxide per megawatt-hour of generation would also qualify.²⁷ Other proposed bills gained less support.

Hence, competing Senate bills sought to accommodate the constituency interests of pivotal, fence sitting lawmakers. Consequently, complex provisions inserted into the debate did not manage to increase the joint gains for senators, primarily because senators' preference intensity was strong across all energy issues discussed—especially electricity prices—making issue linkage attempts unsuccessful.

As competing Senate climate bills were introduced, sponsors immediately started building coalitions, knowing that positions and preferences in the Senate on climate policy have been relatively stable over time. Home-state economic politics is largely instrumental in explaining why senators vote as they do.²⁸ Politicians representing coal, agricultural, and manufacturing states usually vote against carbon pricing. Most US fossil-energy resources are located in small (sparsely populated) states, which in the Senate have equal representation as large (densely populated) states. Consequently, small states are powerfully positioned when coalition builders attempt to change energy policy. Having large energy resources could secure larger federal benefits and compensatory schemes for smaller rather than larger states in a distributive battle in the Senate.²⁹ Winning such battles yields electoral benefits, especially in small states having economies dependent on energy industries, and where each federal dollar (because of sparse population) counts more than in large states.

²⁶ Darren Samuelsohn, "Reality sets in: Senate bill's allocation pie smaller than House's," *Environment and Energy Daily News Service*, 29 October 2009.

²⁷ Darren Samuelsohn and Katherine Ling, "Sen. Graham promotes nuclear power, 'clean coal' in draft renewables bill," *Environment and Energy Daily News Service*, 17 February 2010.

²⁸ Bang 2010; Skodvin 2010; Fisher 2006.

²⁹ Lee 2000.

Energy and climate debates have been characterized by distributive battles where proposed projects, programs, and grants would concentrate benefits in geographically specific constituencies (e.g., renewable industries) while spreading costs across all constituencies through generalized taxation. Geography is an important characteristic of distributive politics: Programs and projects are geographically directed and geographically framed. Geography is also the basis for political organization and representation.³⁰ A cap-and-trade scheme would target today's winners of distributive battles; naturally, politicians representing today's winning constituents would try to avoid policy change that worsens their constituents' situation.

Senate procedural rules imply that a broad, bipartisan compromise is instrumental for a policy proposal's success. The Senate's open rules, allowing extended debate (filibusters), lead to distribution of subsidies and incentives to larger-than-minimal coalitions. Hence, successful Senate coalitions must include large majorities.³¹ To muster large majorities, coalition builders must reach across the aisle. For instance, for each of the 2009 climate bill's provisions, Senators Kerry, Lieberman, and Graham had to negotiate with individual senators representing states with high stakes in key energy producing or consuming sectors. A provision protecting coal-fired utilities from devastating economic risks was included to attract Senator Levin's (D-MI) vote. Similarly, a provision protecting farmers from increased energy costs aimed to secure Senators Lincoln (D-AR) and Conrad's (D-ND) votes.³² Coalition building implies bargaining; coalition builders in the 111th Congress targeted those senators holding veto-player roles concerning their state's energy resources and economic dependence on fossil-fuel-generated electricity.

Importantly, strong presidential leadership in tandem with congressional coalition builders is often required for major policy shifts to occur in the US Congress. Lack of such coordinated leadership between President Obama and the Senate trio seems to have been instrumental in derailing the climate bill in the 111th Congress. Observers have claimed that the Obama administration did not work closely enough with Kerry, Lieberman, and Graham to convince pivotal Senate fence sitters of the climate law's benefits.³³ Scholars have pointed out that a president's engaged participation to negotiate a compromise can help attract votes even from the minority, making procedural tactics from the minority, like filibuster threats or demands for complex unanimous consent agreements easier to overcome.³⁴ President Obama did apparently not provide such leadership for the climate bill discussed in the 111th Congress.

Republican senators used various procedural tactics to delay the process. They demanded more hearings on various subjects concerning the bill. They demanded more EPA and DOE economic analysis to clarify the new policy programs' economic consequences. They also proposed alternative bills and amendments to the Democratic bill to force discussion on subjects nearer their agenda. Finally, at least one senator—Inhofe (R-OK)—promised to filibuster if the bill reached the floor. Hence, the Republican opposition applied widely varied procedural tactics to delay and stop Kerry,

³⁰ Weingast, Shepsle, and Johansen 1981: 644.

³¹ Lee 2000; see also Krehbiel 1998.

³² Darren Samuelsohn, "Senate trio pushes for feedback before spring break," *Environment and Energy Daily News Service*, 24 March 2010.

³³ R. Lizza, "As the World Burns," *The New Yorker*, 11 October 2010.

³⁴ See e.g., Sinclair 2007.

Lieberman, and Graham's initiatives to build a winning coalition. Ultimately, *the opposition* built a coalition sufficient to block climate policy change.

In summary, the US policy-making process allows several agenda-setters, thereby instigating competition among lawmakers to dominate the agenda's initiation phase. In the climate bill case, they responded closely to constituency interests when proposing climate policy programs, and consequently introduced many provisions as stakes in the forthcoming distributive battle. The climate bill's resulting complexity did not ultimately increase joint gains because lawmakers' preference intensity was strong across the board, especially concerning electricity production and related consumer prices. Senate negotiations on the bill became competitive, and the strategic use of legislative rules and procedures by opponents combined with weak leadership by proponents made establishing a winning coalition impossible while building a blocking coalition was in comparison easy.

4. Conclusions

The relationship and interaction between scientific input and governance systems resulted in distinctively different policymaking processes in the EU and the United States. Our analysis shows, first, that the information and scientific knowledge about the climate change problem was framed and used very differently. In the EU, there was in general a higher level of acceptance of the validity of the Stern Review and IPCC report across the board than in the United States. The framing of policy alternatives in the EU developed as a response to new information, from a focus on the costs of action to the benefits of action (and costs of inaction) on climate change. The challenges of enlargement and energy security concerns were applied in this context by the Commission – the dominant agenda-setter – to improve the scope for issue-linkage. In the United States, deep cleavages existed between the two political parties in terms of accepting new scientific information about the climate change problem, and whether policy initiatives that addressed both climate change and energy security concerns would be cost efficient. A competition between alternative framings of policy options arose among the many Democratic and Republican agenda-setters, with Democratic bill sponsors more inclined to accept IPCC's findings and interpreting them as a valid basis for a more ambitious climate policy. Republican leaders were more inclined to question the scientific findings of the IPCC and the Democratic congressional majority's cost assessments, and rather advocate a broad energy policy effort that would be less costly but also less efficient in terms of reducing GHG emissions.

Second, our analysis shows that differences in agenda-setting privileges were also decisive for the role of stakeholder interests in the two policymaking processes. Since the EU Commission was only weakly tied to specific constituency interests, it was able to initiate an integrative climate and energy package based on fairness and burden sharing. Aided by strong French leadership, the integrative package proposal made negotiations among decision-makers cooperative and provided wide room for side-payment through issue-linkages, resulting in unanimous adoption of new climate and energy policies. The relationship and interaction between scientific input and the character of the EU governance system reinforced a cooperative attitude to identify joint gains among EU decision-makers. In contrast, scientific knowledge reinforced a competitive attitude among US lawmakers, fueled by different stakeholder interests. Lawmakers responded closely to constituency interests

when proposing climate policy programs, and consequently introduced many provisions as stakes in the debate. As a result, the climate bill grew in complexity and ultimately could not increase joint gains because lawmakers' preference intensity was strong across the board, especially concerning electricity production and related consumer prices.

We conclude that the way scientific knowledge was used and applied in the EU and US respectively exposed important differences in these governance systems. The case of climate policy exemplifies how new scientific knowledge resulted in different policies in different governance systems. The main lesson from this case is that the framing and application of scientific knowledge matters, but differences in governance systems are more instrumental for policy outcome.

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