The Comparative Politics of Climate Change

Kathryn Harrison
University of British Columbia

Lisa McIntosh Sundstrom
University of British Columbia

May 2007

PRELIMINARY DRAFT PREPARED FOR PRESENTATION AT THE ANNUAL MEETING OF THE CANADIAN POLITICAL SCIENCE ASSOCIATION, JUNE 2007.

PLEASE DO NOT QUOTE OR CITE WITHOUT PERMISSION OF THE AUTHORS.

Introduction[1]

Climate change represents a "tragedy of the commons" on a global scale. Like Hardin's hypothetical community of farmers overgrazing the village commons,[2] the nations of the world, and individuals within them, over-exploit the planet's atmosphere because they gain all the material advantages from the activities that contribute to global warming, but suffer only a fraction of the environmental costs. In turn, nations and individuals typically are unwilling to reduce their greenhouse gas emissions unilaterally, because in doing so they would pay the full price of abatement but gain only a fraction of the benefits. Indeed, their sacrifice may be futile if other countries or individuals do not exhibit similar restraint.

Despite this formidable challenge, international efforts to address global warming have met with some, albeit limited, success. Under the Framework Convention on Climate Change (FCCC), which took effect in 1994, more than 180 nations committed to a long-term goal of stabilizing greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic interference with the climate system." Although the Convention itself contained only hortatory emissions targets, at the third conference of parties to the FCCC (COP-3), agreement was reached on the Kyoto Protocol, in which industrialized countries committed to reducing their collective emissions by 5% below 1990 levels by the period 2008 to 2012. Although the United States, which contributes roughly one quarter of global greenhouse gas emissions, withdrew from the treaty in 2001, it was ratified by enough other countries to take effect in 2005.

How can we understand the progress that has been made and why it has been so limited? To date, most political scientists who have studied climate change have done so from an international relations perspective,[3] with a focus on explaining international agreements. However, when international meetings conclude, actors invariably return home to their domestic

[1] We are grateful to the Weyerhaeuser Foundation for its financial support of the US Studies Program at UBC, which funded this project. We acknowledge Katie Boothe for superb research assistance. We are especially indebted to our collaborators on this project -- Yves Tiberghien, Miranda Schreurs, Laura Henry, and Kate Crowley – who have given us much insight, and are pleasure to work with to boot!

[2] Hardin 1968.

[3] Paterson 1996; Oberthur and Ott 1999; Grubb, Brack, and Vrolijk 1999; Newell 2005. Cass' 2006 study explores the impact of international norms on European and US climate policies but is informed by theories of international relations, rather than comparative politics. Exceptions include Lantis 2006 and Busby and Ochs 2005.

constituents. The decisions whether or not to ratify international agreements and to adopt national policies to mitigate climate change are in the end domestic political decisions, taken in the context of home-grown interests, national discourses, and domestic political institutions.

In studying these decisions, we thus reverse the lens and focus on domestic politics, though of course remaining mindful of international influences as a critical backdrop. This paper reports on a collaborative project that compares two countries that did not ratify, the United States and Australia, with four jurisdictions that did: Japan, Russia, Canada, and the European Union (EU), which has participated in international negotiations and, to a large degree, devised climate policies as a unit. We employ a theoretical framework that focuses on the impact of electoral incentives, policymakers' normative commitments, and political institutions, with attention to potential international impacts on domestic electoral politics and norms.

We find, first, that the costs of compliance with Kyoto targets vary significantly among the countries studied, and that this tends to play out in the domestic arena, with countries facing more demanding targets facing stronger political opposition to ratification. Thus, the US and Australia saw formidable opposition from both business and labor, which yielded bipartisan opposition to ratification, and ultimately resulted in non-ratification by both countries. At the other end of the spectrum, Russia is not expected to have to make any reductions to comply, and also negotiated a side deal concerning admission to the WTO in exchange for ratification. If anything, the business community in Russia was supportive, thus making ratification a politically easy decision. That material interest would tend to make most countries, and economic actors within them, reluctant to undertake mitigation is hardly surprising. The question remains, however, why the EU, Japan, and Canada ratified, despite anticipation of considerable costs.

A normative commitment sufficiently strong to outweigh economic self-interest can arise from two sources, voters at large or politicians themselves. Protecting the environment tends to be a valence or "motherhood" issue that elicits support in polls in virtually all countries. However, given voters' often limited attention to environmental issues and their simultaneous demand for economic growth and low energy prices, it is understandable that politicians would view polls showing support for the Kyoto Protocol with skepticism. Yet when the salience of the environment generally, or climate in particular, increases to the point where it is one of the most prominent issues on the political agenda, politicians' electoral incentives shift significantly. This seems to have been influential in EU member states that played an instrumental role in advancing EU-wide positions on climate[4] and also in Japan, where the *Kyoto* Protocol had symbolic significance by virtue of its origins in that country.[5] In Canada, however, it was not voters' values so much as the willingness of one person, Prime Minister Jean Chretien, to take a political risk, combined with his institutional capacity to do so, that yielded ratification.[6] However, in the absence of a strong foundation of public support, Chretien's successors did not follow through and Canada's emissions have continued to soar. Politicians' own ideational commitments thus may be more fragile than those of the electorate.

Finally, we find that institutions can dampen or facilitate expression of either ideas or material interests in important ways. Proportional electoral systems in key EU member states as well as the European Parliament had the effect of amplifying the voices of a minority of voters for whom climate change has long been a political priority. In contrast, political institutions that diffuse authority and create veto points make it easier for the status quo, and thus those opposed

[4] Schreurs and Tiberghien, this volume.
[5] Tiberghien and Schreurs, this volume.
[6] Harrison, this volume.

to ratification and mitigation policies, to prevail. In the US, the Clinton Administration simply did not have the institutional capacity to ratify the Kyoto Protocol in the face of Senate opposition. In Canada, federalism has been an important obstacle, as provincial government have fought to protect the interests of local industries.

The paper proceeds as follows. The next section introduces the theoretical framework, after which we present a brief summary of events in each of the 6 jurisdictions we studied. Thereafter, we revisit each element of the framework before concluding.

Overview of Theoretical Framework

Climate policies can be compared on four levels: positions taken in international negotiations; ratification or non-ratification of international treaties; adoption of domestic programs to abate climate change (whether or not in response to international treaties); and "street-level" implementation of those programs. The first, international negotiations concerning climate change, have been well studied by international relations scholars, while it is premature to assess the last, policy implementation.[7] Our primary focus thus will be the second and third outcomes, ratification of the Kyoto Protocol and adoption of domestic climate policies, which we treat as two distinct dependent variables. While the two may go hand in hand, with leaders both ratifying and adopting aggressive mitigation policies and laggards doing neither, it is also conceivable that some countries may ratify but fail to follow or adopt activist domestic policies without ratifying.

Operationalization of the first dependent variable, ratification, is straightforward: jurisdictions either ratified the Kyoto Protocol or they did not. The second dependent variable, domestic abatement policies, is less straightforward. In part this is because abatement programs in most countries remain very much a work in progress. However, the range and complexity of climate policies (to say nothing of unrelated policies that nonetheless have positive or negative impacts on greenhouse gas emissions) presents a significant challenge for researchers. As a first step, we compare the extent to which each jurisdiction has relied on an array of policy instruments, arranging below in order from least to most challenging politically.

- Adoption of a climate plan
- Voluntary Programs
- Public Expenditures on research, consumer or business subsidies
- Public Expenditures on international mechanisms (e.g., purchase of international credits or investment in JI/ CDM)
- Regulation of greenhouse gas emissions (with or without trading)
- Carbon Taxes[8]

We consider a policy instrument to be easier to adopt to the extent that it has lower costs to private actors and/or diffuses those costs broadly. Instruments such as regulation and taxation, which tend to involve significant and concentrated costs, are particularly challenging politically.

[7] In the international relations literature, "implementation" refers to adoption of domestic policies to implement treaties, while domestic public policy literature focuses on administration of those domestic policies. Consistent with our primary focus on domestic politics, we will tend to adopt the latter usage.

[8] While Pigouvian taxes can be a considered a form of regulation (rules backed by threats of sanctions), we consider them more coercive than either command and control regulation or cap and trade programs because polluters must pay the tax on all releases, even after achieving an optimal level of abatement.

Not entirely coincidentally, we also expect the latter approaches to be most effective, in that they provide the strongest incentives for individuals or firms to undertake behavioural change.

The cases we have selected for comparison are all industrialized countries, because only Annex 1 countries faced the prospect of binding emissions targets under the Kyoto Protocol. We have included the only two Annex 1 countries that chose not to ratify: the United States and Australia. The four other cases, the EU, Russia, Japan, and Canada, all of which ratified, are the next largest Annex 1 emitters after the United States, though that presumes treatment of the European Union as a single jurisdiction. We have done so in the analysis that follows because members of the EU participated in international negotiations as a unit and also have coordinated development of climate policies at the EU-level to fulfill their joint obligation under the Kyoto Protocol.

In seeking to explain the two outcomes of interest, our focus is on three broad domestic factors: electoral incentives, political institutions, and ideas. We define these variables *from the perspective of the policymaker*. As such, the "ideas" category explores the impact of policymakers' own ideas rather than those of the electorate. Similarly, we assume that it is in the policymaker's interest to be re-elected, and thus consider electoral incentives as an alternative explanation. However, although it is in a *politician's* self-interest to be re-elected, one should not equate the electoral interests category with self-interested behaviour by the electorate. If voters care enough about addressing climate change, despite personal costs, they may provide sufficient electoral incentives for politicians to act regardless of the politician's own values. Ideas thus can enter our theoretical framework in two ways, via the politicians' and via the electorate's values.

An important motive for a politician in any democracy is that of re-election. All else being equal, the greater the public demand, the more likely a country is to ratify and adopt climate mitigation measures. However, the valence nature of climate change (after all, no one is in *favour* of global warming!) means that when voters in all countries invariably say they support action to address global warming. A critical question from a politician's standpoint, however, is to what degree the electorate is actually paying attention to the issue, not least because voters typically pay closer attention to potentially incompatible desires like maintaining low taxes and energy prices. When voters are not attentive, one can expect politicians to more heavily weigh the voices of interest groups on either side of the issue. The relative influence of those groups will depend on their size, since their members are the voters most likely to take into account the government's actions on the issue in question come election-time, and their campaign contributions, but most importantly their claims to speak for the electorate at large. When the salience of environmental issues is low, we would expect politicians to be more swayed by members of the business community who claim to speak on behalf of voters' interest in jobs and the economy. In addition, we expect that the balance of opposition to support will be greater the greater the compliance costs in a given country.

With respect to politicians' ideas, we distinguish between causal knowledge (science) and principled values.[9] The more convinced a politician is that climate change is real and caused by human activity, the more likely they are to support costly measures to address the problem. However, even if a politician believes the science, the question is how willing she or he is to accept political risks in order to pursue norms of environmental protection. It is an open question for us to what extent political ideology will matter. As Green Parties have long argued, protection of the environment is "neither left nor right." However, parties on the left may be

[9] Goldstein and Keohane 1993.

more willing to pursue the kinds of regulatory or tax interventions that are likely to be most effective in arresting growth of greenhouse gas emissions.

Many scholars have noted the contingent nature of political institutions,[10] the effects of which often depend on their interaction with other variables. We focus below on three institutional characteristics. The first concerns the ways in which electoral systems express voters' interests. We anticipate that proportional electoral systems that more closely represent environmentally concerned voters' interests, often through the emergence of Green parties, will yield stronger electoral incentives at the same level of salience compared to a country with a more majoritarian electoral system.

A second institutional characteristic concerns the concentration of authority. However, while we flag this as a characteristic of interest, we anticipate less clearcut effects here. On one hand, concentration of authority can facilitate leadership if key policymakers are personally committed to action. However, by the same token concentration of authority can also make it easier for the same actors to decline to act if they do not believe it is the right things to do. Thus, we anticipate the impact of this institutional factor to be continent on politicians' ideas.

Institutions may also interact with electoral incentives. Diffused authority presents multiple veto points that can be employed more effectively by opponents than supporters of ratification or mitigation policies. However, when there are sufficiently strong electoral incentives for action, diffused authority has been known to generate a competitive dynamic between branches, even in the US.[11] Federalism is of particular interest in that it diffuses authority among levels of government. With the exception of Japan, the jurisdictions under study all involve federal or quasi-federal arrangements, though with significant differences in the division of powers relevant to climate policy. Diffusion of authority via federalism may be obstructive of national action if subnational governments have a veto with respect to key decisions or resources. On the other hand, in the face of national inaction, federalism allows for at least some subnational governments to act to the extent there is regional variation in electoral incentives, which may provide reassurance for others to do so as well.

The third and final institutional characteristic we consider is "lock-in effects." This follows from the diffusion of authority. In systems where multiple actors exercise vetos, it is likely to be more difficult to achieve agreement on a course of action. However, to the extent that agreement *can* be achieved, diverse actors may insist on more formal reporting and oversight to ensure that their hard-won (and difficult to revisit) compromise is respected. Consistent with this, the US Congress often writes very specific environmental statutes, backed with provisions authorizing "citizen suits," should the executive fail to faithfully execute the statute. In contrast, majoritarian parliamentary systems tend to write discretionary statutes since a future government could easily amend unwelcome mandates in any case. In federal or confederal systems, there may be similar pressures, particularly from leader states, to ensure oversight of potential laggard states' follow through on agreed-upon commitments. To the extent that such rules have "bite," they may make it more difficult to backslide on international or national commitments.

While our primary focus is the influence of domestic politics, we are also interested in the direction and degree of international influence on domestic electoral interests and ideas. With the exception of direct threats of violence or economic boycotts, neither of which is relevant in the context of climate policy, international influences on ratification and domestic policy will tend to play out through domestic ideas and electoral incentives. With respect to the former, political

[10] Weaver and Rockman 1993.
[11] Jones 1975.

leaders may be convinced by international norms and/or sensitive to reputational concerns. With respect to the latter, international forces may shift the balance of opposition and support in several ways. First ongoing negotiations (for instance with respect to side payments) have the potential to sour or sweeten a prior international agreement for a given country. As discussed below, this was relevant to both the US decision not to ratify and Russia, Japan, and Canada's subsequent decisions to ratify. Second, transnational political or economic ties may bolster some domestic actors' positions relative to others. While public support for ratification and mitigation policies may be strengthened by environmentalists' ties with peers in other countries, business opposition is likely to be enhanced to the extent that key sectors are vulnerable to international market forces.

To recap, with respect to electoral interests, we anticipate that countries will be more likely to ratify the greater public support for action and especially the more attentive voters are to the issue of climate change. In addition, we expect that opponents of ratification and of domestic mitigation measures will be more influential the greater the costs of compliance in a given country. With respect to ideas, we anticipate that politicians will be more inclined to act the more convinced they are of climate science and the "greener" their personal values, with a possibility that more interventionist left-wing parties may be more inclined to ratify and adopt activist climate policies. Finally, with respect to institutions, we anticipate that proportional electoral systems will increase the likelihood of ratification and of adoption of domestic mitigation measures. However, other institutional effects are likely to be contingent on politicians' normative commitments and electoral incentives.

The International Context

In focusing on domestic factors, it is certainly not our intention to ignore the international context. It goes without saying, of course, that ratification of the Kyoto Protocol would not be on the domestic political agenda if it were not for prior international negotiations. In this section, we set the stage by considering international developments that predate the question of ratification. In a separate section below, we will discuss ways in which ongoing international ties shaped domestic debates about ratification and adoption of mitigation measures.

The international context influences domestic politics in (at least) two ways. First, the often high-profile international negotiations have helped to put the issue of climate change on the political agenda in many countries and to increase its prominence in others. Second, under conditions of economic and environmental interdependence, a multilateral agreement both reduces individual countries' costs and ensures environmental benefits, thus facilitating domestic action. Countries that may be unwilling to act unilaterally, both because they do not want to harm the international competitiveness of local producers and because they anticipate that their unilateral actions would be of limited environmental benefit, may be more willing to take action with assurances that others will do the same. However, the costs of action depend on the particular terms of the treaty, and may differ among signatory countries, with important implications for domestic political debates.

Several features of the Kyoto Protocol are relevant to assessing and comparing national costs of compliance. First, in recognition of the fact that industrialized countries have much higher per capita emissions than the developing world and also have contributed the vast majority of greenhouse gases that have accumulated in the atmosphere to date, the Protocol specifies binding emissions reductions targets only for industrialized (Annex 1) countries. While the

normative basis for leadership by wealthy countries is indisputable, the inevitable implication is that mitigation measures undertaken by industrialized countries may hinder their competitiveness vis-à-vis developing countries. Second, the Kyoto Protocol includes differentiated targets even among Annex 1 countries, as indicated in Table 1. The EU accepted a collective target of -8%, with individual member states' targets within the EU "bubble" negotiated worked out through EU institutions.

INSERT TABLE 1 ABOUT HERE

Third, the Kyoto Protocol included a number of mechanisms that increased participating states' flexibility in meeting their targets, and thus offered the potential to reduce compliance costs. These included multi-year averaging, with compliance determined based on each country's emissions over a 5-year period from 2008 to 2012, and inclusion of a "basket" of 6 greenhouse gases, which allows countries to tradeoff greater reductions in some gases against lesser reductions or even increases in others. The Protocol also allows countries to take into account changes in land use, thereby offsetting emissions either by reducing their rate of land clearing or increasing forest cover. Finally, the Kyoto Protocol included three international flexibility mechanisms: emissions trading among Annex 1 countries, such that a country that exceeded its target could sell its extra credits to another country thus allowing the latter meet its target at lower cost; "joint implementation" by Annex 1 countries, such that benefits of a joint project to reduce emissions or increase carbon sinks could be shared, again allowing countries to take advantage of less expensive mitigation opportunities; and the "Clean Development Mechanism" through which Annex 1 countries could gain credits toward their target by investing in more cost-effective projects in developing countries. Although inclusion of carbon sinks and international mechanisms were central to the compromise reached at COP-3 in Kyoto, critical details concerning what kinds of projects or sinks would "count" and to what degree countries could rely on these flexibility mechanisms remained to be worked out at subsequent conferences of the parties.

The proximity of the targets for Japan, Canada, the US, and the EU in Table 1 is, of course, hardly fortuitous. Central to the discussions for each country was a desire to address the common pool problem, but in a way that did not entail accepting greater costs than other parties. Thus, Canada sought to stay close to the US position in order to claim credit with green voters back home, but was unwilling to exceed the US position lest domestic industries be placed at a competitive disadvantage within the North American free trade zone. Similarly, the EU had proposed a 15% cut going into the Kyoto meeting, but only was willing to go 1% beyond the US position in the final agreement. The US was preoccupied with its position relative to Japan and the EU, as reflected in the following statement by Stuart Eizenstat, head of the US delegation in Kyoto:

> For us, from a competitiveness standpoint, it was not only the absolute reduction, it was the relative reduction. … Our feeling was that if we could be in the ballpark with Japan and the EU, we couldn't be politically criticized for putting our industries at a competitive disadvantage relative to our major competitors. … [With Japan at -6 and the EU at -8] that seemed like a really good deal to us. We were actually making less of a reduction than the EU, about the same as Japan, so our industries would not be at a competitive disadvantage.[12]

Based on the formal Kyoto targets, however, it is hard to understand the pattern of ratification and non-ratification decisions evident in Table 1. For instance, the EU ratified the

[12] Personal interview, 2006.

Kyoto Protocol despite having the deepest reduction commitment, while Australia chose not to ratify despite a relatively lenient target. In practice, the formal target relative to 1990 emissions is at best a crude measure of the magnitude of effort required by various countries to achieve compliance. By the time of the Kyoto meeting, some countries, including Canada, the US, and Australia, were already well above their 1990 emissions while others, most notably Germany and Russia, were well below. Moreover, depending on anticipated population growth and which sectors of the economy were expected to grow, different countries also were on very different trajectories for future emissions. An alternative measure of the depth of commitment that takes into account both of these factors is the degree of reduction below the "business-as-usual" trajectory for 2010 (the midpoint of the Kyoto compliance period) that each country thought it was undertaking at the time of its ratification decision.[13]

Table 2 reorders the data in Table 1 based on the anticipated cut below the business-as-usual projection. Viewed in these terms, several countries' decisions make more sense. It was relatively easy for Russia to ratify because it had already met its target by 1997 as a result of economic collapse and most economic projections did not anticipate that Russian emissions would return to their 1990 levels by 2010.[14] Russia not only didn't need to do anything to comply, but actually stood to gain financially from the sale of any remaining business-as-usual or "hot air" credits to other countries. It is also less surprising that the US did *not* ratify the Kyoto Protocol when one considers that it faced the most demanding target relative to its business-as-usual trajectory. Similarly, although Australia negotiated what seemed like a lenient formal target, dramatic growth in the coal sector implied that Australia still would need to make significant reductions in its net emissions in order to comply. Critical from Australia's perspective was whether the international community would allow it to claim full credit for ongoing (business-as-usual) reductions in the rate of land clearing (i.e., regardless of the nature of the vegetation being cleared). This issue remained unresolved until late 2002, and thus accounts for the range of reductions depicted in Australia's case in Table 2.

INSERT TABLE 2 ABOUT HERE

An important party of the EU story lay in the emissions trajectories of Germany and the UK. The former experienced significant emissions reductions in the early 1990s as a result of closure of inefficient East German facilities following reunification. The UK, for its part, anticipated that replacement of coal by newly exploited reserves of offshore gas would yield significant emissions reductions by 2010. Neither of these transitions was painless, and in that sense it is noteworthy that both the UK and Germany freely conceded their windfall reductions to the EU bubble rather than extracting financial compensation for them as did Russia. Ringius' account of the negotiation of the EU burden sharing agreement indicates that this was largely because other member states held Germany and the UK to previously announced targets. It thus appears that domestic political pressures rather than politicians' normative commitments account for these countries' seeming generosity.[15] In any case, these reductions already had or were about to occur regardless of domestic climate policies. Indeed, building on its windfall reductions Germany's proposed reduction target accounts for 75% of the total EU reduction, and

[13] There is a separate question of what countries thought they were undertaking at the time of the Kyoto negotiations. In some cases, there is a significant different between projections in 1997 and 2001-2. Table 2 focuses on the latter both because it is most relevant to one of our dependent variables, the decision to ratify, and because countries also had better analyses by the time of ratification.

[14] Henry and Sundstrom, this volume.

[15] Ringius 1999. See also Cass 2006 on the history of national commitments prior to the Kyoto Protocol.

the UK and Germany together account for more than 100% of the EU's commitment, thus providing room for other EU states' emissions to grow, in some cases quite dramatically.[16]

The disparity in the depth of anticipated reductions below the reference case , particularly between the EU and US, prompts one to ask why the US would have agreed to what looks like a rather bad deal. The terms of the Kyoto Protocol reflected a grand compromise between the US (and its allies) and the EU, in which the US agreed to a deeper reduction than it had originally proposed while the EU agreed to various flexibility mechanisms proposed by the US. However, while the US conceded on a point of *material* interest, the EU relaxed its *normative* position, which viewed reliance on carbon sinks and international trading as tantamount to cheating. In so doing, the EU actually gained materially – both because it reduced its own reduction commitment to roughly match that of the US and because it too could benefit from international flexibility mechanisms. Thus, the nature of the central compromise reached in Kyoto, between US material interests and EU norms, had the effect of *increasing* the disparity in costs between these two jurisdictions.

As discussed in greater detail below, these disparities in turn were reflected in the relative balance of political support and opposition to ratification within different jurisdictions. However, while the magnitude of commitments can help to explain the ratification decisions of Russia, the US, and Australia, significant questions still remain. In particular, why would the EU, Japan, and Canada commit to undertake very real reductions, particularly after a major economic competitor, the US, had withdrawn from the treaty, in so doing increasing potential impacts on economic competitiveness for remaining parties. The sections that follow examine domestic politics, ideas, and institutions in order to understand why these countries were willing or able to depart from their apparent national interests.

Summary of Cases

In this section, we briefly summarize the events surrounding ratification and adoption of mitigation policies in the six jurisdictions included in the study. Table 3 provides a comparison of these jurisdictions' greenhouse gas emissions and trends in releases. Several observations are noteworthy. First, there are significant differences in various countries' contribution to global emissions. This was significant because it allowed opponents of ratification and climate mitigation policies in smaller countries to argue that painful domestic measures would have a minimal global impact. Moreover, the fact that the Kyoto Protocol stated that it would not come into force unless it was ratified by at least 55 states which comprised at least 55% of Annex 1 countries' 1990 emissions gave countries that contributed a larger share of global emissions greater bargaining power, especially after the withdrawal of the US. Without the US' 36% of 1990 Annex 1 emissions, the international community needed both Russia (17.4% of 1990 Annex 1 emissions) and Japan (8.5% of 1990 Annex 1 emissions) to ratify, which allowed those countries to wrest concessions from other parties, most notably the EU.

INSERT TABLE 3 ABOUT HERE

A second observation is that there is considerable variation in per capita emissions, even among wealthy industrialized countries. To a large extent this reflects geographic factors, including size, resource endowments, and historical development ("new world" cities built after the advent of streetcars and automobiles tend to be with more sprawling than older cities in

[16] A 21% reduction of Germany's 1990 emissions yields 257.5 MT, while a 12.5% reduction in UK baseline emissions yields 97 MT. Together these exceed the EU 15's commitment of 341.2 MT.

Europe).However, past policy decisions, particularly concerning energy prices, undoubtedly have also had an impact. Finally, there are also significant differences among national trends in greenhouse gas emissions from 1990 to 2004, from -17% in Germany to +49% in Spain. Again, while these differences in part reflect policy decisions, particularly in recent years, they also reflect population and economic growth or decline. While it is easy, and not entirely unjustified, to vilify countries with dramatic growth in emissions, it is also noteworthy that if one excludes the windfall cases, Germany and the UK, from the EU numbers, the remaining EU member states experienced 13% growth in emissions despite only 4% growth in population, a worse track record than the 16% to 26% growth in emissions compared to 17% population growth in Canada, the US, and Australia.

United States

The United States offers an example of both non-ratification and relatively limited efforts to adopt abatement policies, at least at the federal level.[17] In recent years, the United States has been the country that had contributed the largest share, at roughly one quarter, of global greenhouse gas emissions, though China is poised to overtake it as early as this year.[18] As indicated by Table 3, the US also has relatively high per capita emissions, reflecting, among other factors, its heavy reliance on coal for electricity generation and fuel-inefficient vehicle fleet. Although the emissions intensity of the US economy relative to GDP has declined substantially, the economy has been growing at a faster rate, thus yielding significant emissions increases.

The US has long been a reluctant participant in international negotiations. At its insistence, the Framework Convention on Climate Change only included a *non-binding* goal for industrialized countries to reduce emissions back to 1990 levels by the year 2000. Going into COP-3, the US responded to the EU's call for a 15% cut in emissions by 2010 by committing only to return its emissions to 1990 levels by 2010. The US ultimately did accept a target of -7% in Kyoto, but only in exchange for inclusion of the various flexibility mechanisms discussed above.

The terms of the Kyoto Protocol flew in the face of a previous unanimous resolution by the US Senate, which stated that the Senate would not ratify any treaty that did not include binding targets for developing countries. The leadership of the Senate thus declared the Kyoto Protocol "dead on arrival."[19] Moreover, in the years that followed, Congress attached riders to various bills that precluded a wide variety of administrative measures that might be perceived as implementing the Kyoto Protocol.[20] In response to Senate opposition, the Clinton Administration tried, without success, to induce individual developing countries to undertake "meaningful commitments." The US and its "umbrella group" partners, including Canada, Japan, Australia, and Russia, also pressed in subsequent conferences of the parties for maximum flexibility to meet their Kyoto targets through unlimited reliance on carbon sinks and international trading. However, no agreement on these issues was reached by the time George W. Bush was elected President in 2000. President Bush announced just two months after his inauguration that the US would not ratify the Kyoto Protocol.

Under both the Clinton and Bush Administrations, the US has relied on a mix of federal spending for research, subsidies for business, and voluntary programs. It is noteworthy that the US federal government has employed neither carbon taxes nor regulatory limits of any kind to

[17] Harrison, this volume.
[18] San Francisco Chronicle. "A Warming World." 5 March 2007.
[19] Wirth 2002.
[20] Claussen 2001; Stuerer 2003.

limit greenhouse gas emissions. Indeed, to date Congress has declined to tighten fuel economy standards for passenger vehicles last updated in the late 1980s. The Bush administration announced a package of policies in 2002 that aim to reduce US emissions *intensity* by 18% between 2002 and 2012. However, consistent with trends of the previous decade, emissions intensity were expected to decline 14% even without government intervention. Moreover, with the economy growing faster than intensity declines, even with the proposed slate of spending and voluntary programs, emissions were still expected to increase by 12% over the decade.[21]

The Administration's relatively weak efforts may not be the end of the US story, however. Since the Democratic Party won majorities in both houses of Congress in the 2006 midterm elections, the leadership in both the Senate and House have placed considerable emphasis on climate change and a flurry of bills is now under consideration by Congressional committees. Moreover, despite federal government inaction, many state governments, led most notably by California, have moved ahead with their own climate abatement programs.[22] Finally, litigation by state and local governments and environmentalists may yet force the Administration to regulate greenhouse gases under existing statutes.[23]

European Union

In both its emissions profile and its approach to the Kyoto treaty, the European Union stands at the opposite end of the spectrum from the US. Carbon emissions per capita are at the low end among industrialized countries, at 11 tonnes per capita in 2004. The reasons for such low per capita emissions vary by country within the EU (as do the emissions rates themselves), but generally European countries rely more on nuclear power and natural gas rather than coal and petroleum for energy, and the entire economy is less energy intensive. Since the region is densely populated, travel distances are shorter than in North America or Australia, homes and vehicles are generally smaller, and public transit is both convenient and heavily used. Existing taxes on energy use are also much higher than in "the new world", which encourages conservation.

Between 1990 and 2004, total greenhouse gas emissions in the original 15 EU countries, to which the -8% target applies, have decreased by 1%, led by reductions of 17% and 14% in Germany and the UK respectively. The complete group of 25 EU member states has decreased emissions by nearly 5%.[24] This difference is due to the inclusion of post-socialist states including Poland, Czech Republic, Slovakia, Slovenia, Hungary, and the Baltic states, which have experienced large decreases in emissions due to the collapse of Soviet industry in the early 1990s. As discussed above, turns of fortune allowed the UK and Germany to be leaders in pushing for aggressive climate change abatement policies at the EU level. They pushed for the EU to take on deep emissions reductions and were the strongest opponents of including flexible mechanisms in the Kyoto framework, both at the COP3 meeting in Kyoto that finalized the treaty in 1997 and at subsequent COP meetings.

As allowed under Article 4 of the Kyoto Protocol, the original 15 member states of the European Union negotiated a burden sharing agreement, under which they committed to different levels of reductions that combined to meet the overall EU reduction target of 8% below 1990 emissions levels. This so-called EU "bubble" means that, after multiple revisions of burdens, only eight countries are have pledged to reduce their emissions below 1990 levels (Austria, Belgium, Denmark, Germany, Italy, Luxembourg, the Netherlands, Sweden and the UK), while

[21] Kolbert 2006.
[22] Rabe 2004.
[23] MA v. EPA 2007.
[24] Commission of the European Communities 2006, p. 4.

the other member states have pledged to stabilize emissions or slow their growth. Portugal has the least onerous target, with an allowed 27% increase in emissions.

Ratification of the protocol by the EU took place in 2002. This was procedurally more complex than in the other cases discussed in this volume because each member state's parliament had to ratify the treaty in addition to EU-level bodies. The European Parliament and member state parliaments completed their ratification votes before the European Council agreed to ratification on April 25, 2002.

In addition to being a strongly supportive ratifying party to the protocol, the EU has followed through as a strong implementer of abatement policies. Most significantly, it has instituted its own emissions trading system for regulation of emissions within the EU. This price of carbon crashed temporarily in 2006 due to a glut of credits on the market created by member states' excessive generosity in the first round. . The Commission is playing a stronger role in disapproving of member states' proposed credit allocations in the second round, which is expected to resulted in real emissions reductions and, correspondingly, a higher price for carbon.

Japan

Like the EU, Japan has relatively low per capita carbon emissions, at just under 10 tonnes per capita, with emissions growing only slowly over time. Yet since Japan committed in Kyoto negotiations to a 6% cut in emissions below 1990 levels, it has considerable cutting to do in order to meet its reduction target. Low current emissions per capita is in some respects a problem for Japan in its Kyoto obligations, since any further gains in energy efficiency are likely to come at high cost.

Because of the anticipated high costs of emissions reductions, many Japanese business and industry groups (in the Japanese Federation of Economic Organizations, or Keidanren) were opposed to Kyoto ratification and supported in their opposition by the powerful Japanese Ministry of Economy, Trade, and Industry (METI). Their opposition only strengthened after the US backed out of Kyoto ratification. They feared that Japan's economic competitiveness with the United States would certainly suffer if Japanese industries were forced to pay a high premium for carbon emissions. In comparison to METI and the Keidanren, the Ministry of Environment, pro-Kyoto opposition party, and non-governmental organizations were all fairly weak. Thus, on the basis purely of the strongest actors' interests, one would expect Japan not to ratify Kyoto.

Yet institutions and public opinion intervened to make it possible for Japanese ratification to take place. First, changes to Japan's electoral rules in 1994 introduced a significant share of proportional representation seats in the Lower House, which have gradually shifted the incentives of Japanese backbench politicians to seek support from broad issue-based constituencies rather than narrow lobbies. This incentive change made many Japanese politicians form alliances with pro-Kyoto environmental NGOs and favor ratification. In addition, the Kyoto Protocol became a highly salient symbol for Japanese voters, representing a looming crisis in the global environment and holding great significance due to the treaty being named for the Japanese city where it was concluded.

Because of the strong debate over ratification, Japan delayed its decision, making it one of the last two Annex 1 countries to ratify (Russia being the last). This delay put Japan in a strong negotiating position with the other Annex 1 parties, since after the US withdrew, Japan and Russia became crucial to the treaty's survival. The Japanese government knew that it needed significant flexibility in the treaty's definition of emissions reductions in order to meet its demanding target, and it succeeded in obtaining concessions allowing reliance on emissions trading and carbon sinks to fulfill its Kyoto obligations.

Thus far, Japan's efforts to implement the Kyoto Protocol have been moderate. Policy measures have been mostly voluntary in nature rather than regulatory. Japan is also cooperating in the Asia Pacific Partnership on Clean Development and Climate, like Australia and the US, which is seen as an "alternative framework" to the Kyoto process and includes no mandatory targets.

Russia

The Russian Federation has carbon emissions levels per capita that are also at the lower end of the emissions spectrum, at 13.6 tonnes in 2004. Among Annex 1 countries, Russia faces one of the least onerous burdens (along with some of its post-Communist peers) due to the otherwise unfortunate fact of its massive economic collapse when the Soviet Union dismantled. Since Russia's economy collapsed in 1991, just one year after the benchmark Kyoto year of 1990, its emissions plummeted from a 1990 high of over 20 tonnes per capita without any reduction efforts whatsoever. Russia thus is largely free to develop without any emissions reduction efforts and will still stay within its target of 0% emissions growth from 1990 levels. Moreover, Russia currently has an enormously greenhouse-gas intensive economy, from the standpoint of emissions relative to GDP. It creates over 3 tonnes of greenhouse gas per US dollar of GDP, which is more than quadruple the amount of the next most inefficient Annex 1 economy, Australia. This suggests that Russia will be able to reduce its emissions at a relatively low economic cost since it has not introduced even basic energy conserving measures to its industries. Most analysts anticipate that it will have significant amounts of extra emissions credits to sell on international markets through 2012, but experts are in disagreement over whether Russia would be wiser to sell them or save them for a later period in case they are needed

The puzzle to explain, then, is not why Russia ratified, but why it delayed its decision until late 2004. The Russian business and industrial communities were split on whether ratification was wise, and with the strength of the oil, gas, and mineral extraction industries in Russia, debate among these industrial players explains some of the delay. Key advisors to Russian President Putin also opposed ratification, doubting the credibility of science linking anthropogenic emissions to climate change and doubting the ability for Russia's economy to be unrestricted by its emissions quota. Public opinion and nongovernmental organizations were mostly pro-Kyoto, but NGOs in Russia are weak and the public largely ill-informed and unengaged with the issue of global warming. In Russia's strongly centralized, "super-presidential" political system, ratification was essentially up to the president to decide alone. With little pressure from voters, the presidential administration spent some time weighing scientific and economic evidence in order to ensure that Russia's economy would not be harmed by ratification.

Yet there was another factor at play at the international bargaining level, much reported in the popular media, which was a strategic reason for the Russian government's delay. Although never confirmed officially by either side, there is significant circumstantial evidence that Russia was trying to win EU approval of Russia's terms for entry into the World Trade Organization as a condition before ratifying the Kyoto Protocol. Once Russia had received this guarantee, ratification quickly followed.

Since Russia does not have to take any measures in order to comply with Kyoto, and some of the reasons for ratification were unrelated to Kyoto at all, it is not surprising that implementation has been slow thus far. Many business groups and environmental economists in Russia are excited about the potential modernization and efficiency gains that could be made through Kyoto's flexible mechanisms, including Joint Implementation projects, but the

government has been slow to complete the necessary steps in order to participate in these mechanisms. JI projects would reduce Russia's emissions further and be paid for by other Annex 1 parties. Such reductions would then save even more carbon credits for future international trading.

Canada

Although Canada has a much smaller population, and thus contributes a relatively minor share of global emissions, in other respects Canada's position is very similar to that of the US. Blessed by an abundance of fossil fuels, Canada's economy has evolved in a greenhouse-gas intensive manner. Indeed, led by a booming oil sector, Canada's emissions have increased more than those of the US, by over 24%* from 1990 to 2004.

Under the North American Free Trade Agreement, the fate of Canada's economy is also closely tied to that of the US. In response, Canada aligned itself with US positions in international negotiations, including accepting a Kyoto target of -6%, just below US' 7%.[25] When US President George W. Bush announced in early 2001 that the US would not ratify the Kyoto Protocol, the business community argued vociferously that Canada's economic competitiveness would be harmed if local industries incurred mitigation costs that would not be imposed on their US competitors. Despite strong opposition from business, most provincial governments, and even members of his own Cabinet, Liberal Prime Minister Jean Chretien personally decided that Canada would ratify the Kyoto Protocol.[26] Chretien's ability to discipline members of his caucus and Cabinet was facilitated not only by the prerogatives of the Prime Minister in a majoritarian parliamentary system.

Although Canada ratified the Kyoto Protocol in December 2002, it has done almost nothing to contain its emissions growth either before then or since. Prime Minister Chretien's successor, Paul Martin, equivocated for a year before his government introduced a new implementation plan, which would have relied almost entirely on expenditures, both in the forms of subsidies to business for domestic reductions and to purchase international credits. However, the plan was introduced just months before the government was defeated by the opposition Conservative party, which had adamantly opposed ratification and both previous implementation plans. The Conservative minority under Prime Minister Stephen Harper soon announced that Canada simply would not comply with its Kyoto target.

Since that time, however, a surge in Canadian voters' attention to the environment in late 2006 left the government and opposition parties scrambling to make new climate change abatement commitments. Much like its predecessors, the Conservative government has relied heavily on expenditure programs that both win friends and spread the costs among inattentive taxpayers, though a critical difference lies in the current government's unwillingness to employ the international mechanisms in the Kyoto Protocol.

Australia

Like Canada, Australia has relatively low total emissions, but it has the most greenhouse gas-intensive economy among the Annex 1 states, at over 26 tonnes per capita in 2004. This is due to Australia's strong reliance on coal as an energy source. Greenhouse gas emissions grew by 26% from 1990 to 2004, but under Kyoto Protocol accounting methods, which allow reductions in the rate of land use clearing to offset emissions growth, Australia's *net* emissions are

[25] The rationale for Canada accepting a less demanding target in Kyoto was that the US would achieve its target in part by substituting (Canadian) natural gas for (US) coal, which would invariably result in an increase in Canada's emissions.

[26] Harrison, this volume.

calculated to have grown by only 2% during that period. Australia's ability to claim credit for ongoing reductions in the rate of land clearing was an element of the Kyoto Protocol that Australia fought for strongly during the treaty negotiations. Indeed, Clause 3.7 of the treaty, which permits governments to include land clearing in their 1990 baseline, has been dubbed the "Australia clause" since Australia was its only beneficiary . Australia gained the most from this clause because it has high levels of land clearing taking place relative to other Annex 1 countries, but this rate of clearing is declining over time.

Despite winning this concession from other parties in the treaty's negotiation, Australia still needed significant reductions in emissions to meet its Kyoto target of +8% over 1990 levels. In 2002, the year after the United States rejected the Kyoto Protocol, the Australian government announced that it also would not ratify the treaty. Australian emissions reduction policies, as in the US, have been limited in the wake of its rejection of the Kyoto Protocol, and largely limited to government spending programs, appeals to citizens for voluntary reductions, and some conversion to renewable energy sources. Like the US and Japan, Australia has joined the Asia-Pacific Partnership on Clean Development and Climate. The government has announced that it plans to meet its Kyoto Protocol emissions reduction target, despite pulling out of the treaty.

Electoral Interests

In the theory section we proposed two hypotheses concerning the influence of policymakers' electoral interests. All else being equal, we expect policymakers to be more willing to ratify and to adopt domestic mitigation measures the greater the pressure from domestic voters. In addition, we expect that politicians will face greater political opposition, and thus be less willing to ratify and adopt domestic measures, the greater the costs of compliance with the Kyoto Protocol for their own country.

It is a challenge to compare public opinion concerning climate change across countries since polling firms typically exist at a national level, thus limiting comparability of questions and methods across countries. Moreover, questions concerning the environment and global warming are only beginning to be asked with greater frequency. Tables 4 and 5 below report the results of a cross-national survey conducted by World Public Opinion in 2003 and 2005-6. The 2003 survey was done shortly after most countries' decisions with respect to ratification of the Kyoto Protocol. Although Australia was not included in either year nor was Japan in 2003, the results do indicate much higher levels of concern in Western Europe than in Russia, Canada, and the United States, which ranks last with less than 1/3 of respondents considering global warming to be "very serious." Public concern was higher in all countries surveyed in 2006 than 2003, but still consistently higher in Europe, surpassed only by Japan, compared to North America and Russia.

INSERT TABLES 4 AND 5 ABOUT HERE

The case studies conducted by our colleagues provide further supporting evidence from national public opinion polls. Also consistent with the Europe-US differences reported above, there were larger protests across Europe than in the US itself when the Bush administration announced in 2001 that the US would not ratify the Kyoto Protocol.[27] In the case of Japan, Tiberghien and Schreurs argue that the Kyoto Protocol took on symbolic significance with voters, not least because it bears the name of a Japanese City, thus rendering it virtually impossible for

[27] Schreurs and Tiberghien, this volume.

the government *not* to ratify.[28] In contrast, although American and Canadian voters generally indicated support for ratification when asked, surveys of their priorities revealed that voters simply were not paying much attention to environmental issues[29].

We previously noted that the targets in the Kyoto Protocol were more demanding for some countries than others relative to a "business as usual" scenario. However, costs are a function not only of the depth of cuts needed but also the marginal costs of making those reductions. Under a perfectly competitive international carbon market, marginal abatement costs would be identical in all countries. In turn, the cost to any given country would simply be proportional to the reduction needed below that country's BAU trajectory. In practice, however, it became apparent early on that a perfect international market was unattainable. First, despite persistent pressure from the umbrella group, the EU did not concede unlimited reliance on international mechanisms until 2002, only after the US and Australia had withdrawn from the Kyoto Protocol citing concerns about costs and competitiveness. The absence of binding targets for developing countries not only presented a potential threat to competitiveness for Annex 1 countries, but also limited the opportunities for those countries to realize least-cost abatement.[30] Finally, although international trading, a concept long advocated by academic economists, prevailed in elite negotiations at COP-3, it remains little understood by the public at large. Opposition emerged to the Protocol's international mechanisms in some countries, most notably Canada, where they were depicted by opponents of ratification and, later, compliance, as "sending taxpayers' money overseas and getting nothing in return."

To the extent that reliance on international trading was limited, whether by international rules or domestic politics, Annex 1 countries would need to make a greater fraction of reductions at home. Under that scenario, differences in marginal abatement costs in various countries become relevant. All else being equal, more energy efficient countries, such as Japan and wealthy countries in Western Europe, tend to have higher abatement costs than Canada, Australia, Russia, and the US, because the former have already harvested "low hanging fruit." An international exercise comparing economic analysis of the Kyoto Protocol using 13 different models was undertaken in 1998,[31] which projected that without trading marginal abatement costs varied from an average of approximately $400/tonne for Japan to just over $300 for the EU, to roughly $200/tonne for the US, Canada, Australia, and New Zealand.[32]

While the high marginal abatement costs in Japan and the EU would seem to offset the relatively less demanding targets those jurisdictions received in the Kyoto Protocol (Table 2), the impact of abatement costs also depends on the nature of each county's economy. Jurisdictions with carbon intensive economies tend to rely on low cost fossil fuels for comparative advantage, and thus face relatively greater impacts on competitiveness for a comparable increase in energy prices. The international modeling exercise also estimated GDP losses for different countries or regions under different trading scenarios. Averaging findings across all models yields the

[28] Tiberghien and Schreurs, this volume.
[29] Harrison, this volume.
[30] Although CDM represented a step in that direction, the US Administration's analysis of compliance costs assumed that as a result of extensive transaction costs CDM would only realize 20% of the trading opportunities that would have materialized had developing countries accepted binding targets. It is noteworthy that the US was not proposing that developing countries' emissions be capped at current levels, but rather than they be limited to a reasonable growth trajectory, thus creating opportunities for trading.
[31] Weyant and Hill 1999.
[32] Averaged based on figures provided in Figure 8 of Weyant and Hill, assuming no trading. Note that Canada, Australia, and New Zealand were modeled as a single region.

conclusion that, with Annex 1 trading only, per capita GDP losses would be roughly twice as high in the US, Canada, Australia and New Zealand (all at around $200 per person per year in 2010), than in the EU and Japan (both around $100/person).[33] In contrast, most models projected financial *gains* for Russia.

Although the business community may not have closely followed academic modeling exercises, the kinds of impacts predicted by formal models nonetheless were foremost in the minds of domestic producers who feared that ratification of the Kyoto Protocol would lead to higher taxes and/or energy prices and a corresponding loss of competitiveness to jurisdictions facing weaker or, in the case of developing countries, no reduction targets. Consistent with both the magnitude of reductions reported in Table 2 and the economic modeling discussed above, business opposition was strongest in Canada, Australia, and the United States, where the business community presented a strong and united front against ratification, predicting a loss of tens or even hundreds of thousand of jobs.[34] In contrast, although Japanese industry expressed concerns about ratification, it did not speak with one voice.[35] The business community was further divided in the European Union where, in stark contrast to the US, Canada, and Australia, key oil companies, including BP, Royal Dutch Shell, and Austrian OMV actually supported ratification.[36] At the limit, the most powerful voices of Russian industry, with the notable exclusion of the oil sector, lobbied *for* ratification.[37]

The evidence concerning electoral interests generally supports our hypotheses. First, countries where voters were more attentive to climate change generally were more likely to ratify. While that is not the case for Russia, which ratified despite relatively low levels of public concern, as noted above, ratification presented no costs and indeed offered potential economic gains for Russia. Public attention thus was not necessary. We also find that there was stronger and more influential opposition from the business community where the costs of compliance with the Kyoto Protocol would have been greatest. The Canadian case remains puzzling, however, in that Canada ratified the Protocol despite relatively high costs to business and relatively low public attention. We turn to this case in the next section.

Ideas

Two types of ideas shaped debates on ratification in the case countries: scientific knowledge and normative principles. While there was strong scientific consensus about the contribution of anthropogenic greenhouse gas emissions to climate change, some *political* debate about the science did arise in several countries.[38] Two of these (Australia and the US) did not ratify the Kyoto Protocol in the end, while one (Russia) was a late ratifier.

While the empirical facts of delayed ratification and non-ratification suggest that scientific disputes may have played some role in the outcomes, it is difficult to assess the extent to which politicians deliberately overemphasized scientific dispute as a reason to avoid emissions reduction programs that could require significant economic sacrifice. It is certainly the case that there was agreement among scientists in all of the countries studied. In the Russian case, the

[33] These estimates are based on averages drawn from data in Figure 9 in Weyant and Hill, 1999.
[34] Harrison and Crowley chapters, this volume.
[35] Tiberghien and Schreurs, this volume.
[36] Schreurs and Tiberghien, this volume.
[37] Henry and Sundstrom, this volume.
[38] Dessler and Parson 2006, 136.

overwhelming numerical consensus among scientists about climate change was counterbalanced by the fact that the country's most prominent climatologist doubted human influence on climate change. These debates appeared less manufactured and more sincere matters of government concern in Russia than in Australia, where skepticism about the science seemed to emerge only after the Howard government had decided that Kyoto was undesirable, and in the United States, where the skeptics were overwhelmingly funded by fossil fuel industrial interests.

Sometimes ideas intervened in the process not because of knowledge disputes, but due to the strength of particular decisionmakers' commitments to certain norms. The clearest case of this having a profound influence on a country's ratification decision was in Canada, where outgoing Prime Minister Jean Chretien, in an institutional position of strong decisionmaking authority, happened to become captivated by the seriousness of global warming as a problem, already embraced a norm of multilateral relationships to resolve foreign policy issues, and wished to leave a lasting political legacy. Here we see a powerful interaction of institutional arrangements with ideas, leading to ratification. Yet as will be discussed below, this strong influence of a single decisionmaker at the level of treaty ratification meant that Canada's commitment to Kyoto was fragile since successors could just as easily overturn it.

We previously suggested the possibility that politicians with left-wing ideologies may be more receptive to the kinds of economic interventions required to address climate change. Although left and right meant nothing in the Russian government's worldview, in other cases, ideology was a good predictor of governing parties' stances on Kyoto Protocol ratification. This applies to Democrats vs. Republicans at the US federal level, Liberals vs. Conservatives at the Canadian federal level, and the general strength of social democratic parties in Europe. However, there was also evidence of ideological divides on the left: for example, disagreements between the trade unionist and environmentalist camps in the Australian labor party have compromised the party's ability to take a clear stance on policy measures to reduce global warming.

It is surprising to us that left/ right differences have not played a larger role in determining which jurisdictions implement the strongest climate change abatement policies: right-leaning free-market governments did not consistently refuse to take significant policy measures. Indeed, since Kyoto ratification, particularly at sub-national levels in Canada and the United States, right-wing governments have adopted some of the most aggressive policies on emissions reductions among their peers. In the US this includes the Schwarzenegger and Pataki administrations in California and New York respectively; in Canada, the Campbell government in British Columbia. In these cases, it seems, a generally left-leaning, environmentally concerned electorate seems to have pushed conservative governments into adopting more radical policies. It would seem that voters' preferences trump politicians' ideologies.

Institutions

Institutions have interacted with electoral interests and ideas in fascinating ways to contribute to ratification and domestic policy outcomes. The most important institutional factors seem to be electoral systems, which can influence the extent to which environmental issues are salient for politicians, and concentration of authority, which determines the number of players who can veto ratification or implementation measures.

Electoral systems can either give expression to or dampen public concern. In general, since they reflect minority opinions more accurately, electoral systems based on proportional representation permit environmental concern among a minority of voters to have a greater impact

on politicians' decisions, while the environment may not be a salient issue for the majority of voters. There are often green parties devoted to the environment in proportional representation systems since parties attracting a small portion of the vote can still win representation in legislatures. Because of this, industrialized countries (where there are environmental movements) that have PR electoral systems do seem to adopt stronger environmental policies than those that have majoritarian electoral systems.In our set of cases, most of the EU member states and the European Parliament have PR systems, and this seems to have played a large role in the EU's consistent support for strong policies to combat global warming. In the Japanese case, the recent introduction of PR to elect a fraction of members of parliament has meant that politicians (particularly backbenchers) have had to become more attuned to issues of concern among the general public (especially urban voters), and this has meant incentives to build alliances with issue-based social movements and NGOs, including environmental groups.

In two others cases, however, PR systems did not have the same impact. In Australia, the Senate (upper house) is elected by a proportional representation system (single transferable vote) and as a result there is a green party. However, the Senate cannot introduce appropriation bills and the lower house is the confidence chamber, which means that in practice the Senate does not initiate most Australian legislation. In the case of Russia, although half of its legislative seats at the time of the ratification debate were elected by proportional representation (in 2007, for the first time they will all be elected by PR), the State Duma is a weak body compared to the president, especially in international treaty matters, and pro-presidential parties dominate the legislature. The Australian and Russian cases suggest that electoral systems can only have an impact to the extent that the legislature to which they apply has real influence.

In contrast to the EU and Japanese cases, majoritarian electoral systems as in Canada and the demand that concern about global warming is highly salient for a majority of voters before politicians will stake their political campaigns on the issue. First-past-the-post electoral systems demand that electoral candidates win more votes than all other candidates in order to win any representation at all in a particular district. As such, these systems reward appeals to the broad majority of voters, and it is rare that the environment is a highly salient issue among most voters (although it appears as we write this article in 2007 that such a rare moment is occurring in many Western countries).

Concentration of authority is another area in which the intersection of institutions and ideas can produce interesting patterns. Despite Russia and Canada's highly dissimilar political systems in most respects, the two systems are the most similar among our cases with regard to concentration of authority. In both cases, the head of government (Prime Minister Chretien in Canada and President Putin in Russia) was able to make a ratification decision effectively unilaterally. The fact that Jean Chretien was about to retire from political life and thus was much less sensitive to electoral implications of his decisions than is typically the case for Canadian prime minister enhanced his ability to detach his decision from electoral calculations and rendered the two leaders' circumstances unusually similar. When there are few actors who can veto a leader's decision, individual leaders' views can be influential in unique and sometimes unforeseeable ways that may fly in the face of apparent economic or electoral interests, or at least tip the decision towards or against ratification when all other factors are closely balanced.[39]

[39] Lantis 2006 makes a similar point, although he argues specifically that government leaders who take a treaty home for ratification from international negotiations are more likely to achieve a successful ratification outcome the more centralized power is in the *electoral* system (43).

This is illustrated by comparison of the ratification decision in Canada with the opposite outcome in the United States. The two countries faced similar anticipated economic costs of ratification, have similarly structured and highly interdependent economies, and experienced similarly strong opposition to ratification from certain regions and economic sectors. In the US, though, the political system with its array of checks and balances contains many potential veto points for opponents to reject bills. In the case of the Kyoto Protocol, business and labor opponents of the treaty were able to enter their grievances into the debate at multiple access points and thus were able to preclude ratification by the Senate.

While the two cases of concentrated authority included here both ended with a positive ratification decision, it is important to point out that in such cases, the opposite outcome can occur just as easily. Made at another time or by another leader, these decisions could have been different. This is abundantly clear from the Canadian case, in which Chretien's successor, Conservative leader Stephen Harper, has declared since the beginning of his term that he would not make efforts to comply with Kyoto targets despite Canada's prior ratification. In the case of Russia, had President Putin paid more heed to the models provided by climatologists and economic advisors critical of Kyoto, he could easily have decided not to ratify.

Diffusion of authority vertically through federalism or multilevel governance seems to have varying influence on ratification. In some cases, shared authority appears to create a competitive environment in which member jurisdictions compete with one another to demonstrate the strongest commitments to reduce greenhouse gases. This has been the case in the EU (which is not a federation of course, but has multiple levels of authority), Australia, and the US. In the case of the EU, Schreurs and Tiberghien argue that strong public opinion pressure led key member states to take on ambitious Kyoto targets. Each governing party in a member state wishes to demonstrate to voters that it is a leader on climate policy within the EU, while members of the European Parliament try to demonstrate similar leadership. The European Commission in turn has pushed strong climate policy as a mechanism for increasing European integration since it is a clear area of foreign policy in which member states must hand coordinating and agenda-setting authority over to the EU. Here we see a fascinating intersection between institutional and electoral incentives. EU institutions act as an echo chamber of sorts, amplifying and mutually reinforcing efforts to strengthen climate policies.

In Australia and the United States, where the national governments rejected Kyoto ratification, some state-level governments have been spurred subsequently by growing public concern to demonstrate their commitment to reduce greenhouse gas emissions. In Australia, two states supported Kyoto ratification (Queensland and Western Australia) and a number of states have taken on significant carbon reduction policies of their own (although not strong regulatory ones) following the national government's failure to ratify Kyoto. In the United States, leadership by green states, most notably California and a coalition of Northeastern states, has made it easier for other states to follow suit.

On the other hand, strong federalism in Canada has been obstructive to ratification and policy action. Economically important provinces (largely Alberta and Ontario) have been reluctant to participate in any greenhouse gas reduction targets due to their highly carbon-intensive economies.

The explanation for why some vertically decentralized systems display upward pressure on climate policy while others hamper action seems to lie partly with the interests of the largest players in such systems. In the EU, Germany and the UK unilaterally adopted aggressive positions on climate change, both because they faced pressure from voters at home but also

because they could respond to that demand at a relatively low cost given windfall reductions. . In the United States, California and New York do not have heavily carbon-intensive economies. In contrast, in Canada, two of the most influential provinces, Alberta and Ontario, are keen to protect carbon-intensive local industries: oil in the case of Alberta and auto-manufacturing in Ontario .

The institutional differences among countries have important implications for the likelihood of future compliance with past treaty commitments. In the EU, a long and intensive negotiation of a ratification and implementation program among member states led to a hard-won compromise that the European Commission will oversee. Although parties are dragging their feet, the EC is in a position to enforce previous commitments. Similarly, although the United States has neither ratified the Kyoto Protocol nor taken aggressive policy action, interested parties have launched a great deal of litigation based on existing environmental statutes. The most noteworthy example of this is the US Supreme Court's 2007 decision in Massachusetts v. EPA, which forces the administration to reconsider its decision not to regulate greenhouse gas emissions from motor vehicles.

In contrast, in a majoritarian parliamentary systems such as Canada's, it was relatively easy for the Conservative government to dismantle implementation plans previously made by Liberal governments, though the task was made easier by the Liberals reliance on back-end loaded spending commitments. In the Russian case, somewhat similarly, the president had incentives to ratify Kyoto for reasons that had little to do with climate policy itself and much to do with receiving side payments on other issues of international negotiation. Since ratification was a unilateral decision that did not need to be negotiated with other branches of government or subnational units, the approach to implementation was unsettled prior to ratification and has been extremely slow to proceed following ratification.

International Influences

International factors continued to interact with domestic interests and ideas even after the Kyoto Protocol treaty was negotiated among the state parties. There are three basic international factors that affected the balance of domestic interests for or against Kyoto ratification. The first was pressure from foreign actors in support of or against ratification. Such efforts by foreign actors were especially strong on the late ratifiers, Japan and then Russia, following the United States' announcement that it would not ratify, since those two states' ratification became essential to the treaty's survival once the United States backed out. The leaders of Japan and Russia faced enormous pressure from the leaders of countries that had ratified – especially the European countries – as well as pressure from the US presidential administration, urging them not to ratify. These pressure tactics likely had some effect on leaders' decisionmaking processes, but since such pressure came strongly from both the US and Europe, it was fairly balanced in both encouraging and discouraging ratification. In addition, a "boomerang effect" of sorts took place, in which foreign NGOs in ratifying states urged their own government leaders to pressure Japanese and Russian leaders, since domestic NGOs in those two states are relatively weak compared to NGOs in many Western states.[40] Transnational environmental NGO networks such as Greenpeace and World Wildlife Fund also worked with their partners in states that had not ratified in order to support local NGOs in their pressure campaigns to urge ratification. In an interesting twist, NGOs in the major non-ratifier – the US – worked especially hard following the

[40] Keck and Sikkink 1998.

US rejection of Kyoto to ensure that the treaty would survive nonetheless. Environmental Defense launched a special campaign focused on Russia's ratification, working closely with Russian environmental scientists and activists, as soon as the US had backed out. In Japan, the activities of NGO networks in favor of ratification likely influenced politicians and boosted public awareness and approval of ratification. In Russia, however, the vigorous activity of NGO networks to push for ratification is unlikely to have had much effect on the ultimate pro-ratification outcome, given the lack of contact between President Putin and the NGO activists (when the decision was his alone) and the unchangingly low level of public awareness of the Kyoto Protocol in Russia. Probably the greatest influence from all of this transnational activity came from the cooperation among Russian and Western scholars – climate scientists and environmental economists – who were able to present credible, exhaustive reports to the government, disputing the nightmare scenarios that the president's chief economic advisor, Andrei Illarionov, had been providing to Putin. Such reports helped to allay any fears that Kyoto ratification might hamper Russian economic growth.

A second factor, related to pressure from foreign leaders, was diplomatic bargaining over foreign policy issues unrelated to Kyoto, which could be used as carrots or sticks to encourage or discourage ratification. In the Russian case, this aspect was particularly important. The EU and Russia simultaneously were negotiating the conditions under which the EU would approve of Russia's bid to enter the World Trade Organization while Russia was considering Kyoto ratification. Although never confirmed officially by either side, EU approval of Russia's WTO bid came at roughly the same time as the Russian government decided finally to ratify, suggesting that WTO approval was granted as a side payment to Russia to induce its positive ratification decision.

The third international factor influencing domestic ratification debates was the promise but uncertain nature of international emissions trading markets. Such systems were only beginning to develop at the time when states were ratifying, with sketches of the principles and scope in which they would work. The participation of developing countries in the system and the amount of carbon trading that the EU would agree to allow were both unanswered questions early on and factored into the US pulling out of the Kyoto process. Once the US backed out, the potential price of carbon credits decreased, which was good for most Annex 1 parties that would be purchasers of credits, but a discouraging factor for Russia, which would be selling them. These uncertainties about the international trading market delayed many governments' decisions.

The existence of international markets for goods other than carbon also fed into governments' concerns about international economic competitiveness . Governments of states that had accepted tougher targets for emissions cuts below BAU were concerned that their industries would simply not be able to compete with competitor industries in countries that either had less onerous targets or no target commitments at all (developing countries). This was the US and Australian governments' chief reason for withdrawing from the treaty. Then once the US had withdrawn, the governments of other countries – particularly Canada and Japan – became even more concerned that they would not be able to compete with their chief trading partner, the US.

In addition to international influences upon the balance of domestic material interests, international norms also appeared to play into leaders' decisions to ratify. Yet in cases where international normative concerns did seem to play a role, it is often difficult to discern whether this played a decisive role relative to material interests, as well as whether leaders were concerned with fulfilling an international norm or a domestic one. The Russian president in particular, according to many Russian observers, was concerned that Russia should appear to be a

team player with the civilized world and a good international citizen in helping to resolve collective problems. Yet it is not clear whether such an impulse was purely normative (and thus not calculated for gain) or aimed at improving Russia's reputation as a bargaining partner for future diplomatic gains. In truth, as authors such as Jeffrey Checkel have pointed out, actors rarely behave out of pure normative impulses or brute strategic calculations; there is usually some combination of logics of appropriateness and consequences involved in actors' decisions.[41] In Russia's case, when there was so much material benefit to be gained potentially from Kyoto ratification, it is unlikely that a great deal of weight can be placed on normative impulses in explaining the decision. In the case of Canada, there is significant indication from observers that a desire to promote the norm of multilateralism factored into Jean Chretien's decision to ratify Kyoto, and here the normative argument is less fettered because Canada accepted tremendous material costs in ratifying, rather than incurring benefits. Yet it is not clear whether the international multilateralism norm was Jean Chretien's chief motivation; he was also concerned about the environment, which could as easily be considered a domestic as an international norm. Overall, international factors were mixed in the direction of their influence on ratification decisions. The simple presence of an international agreement to cut emissions resolved the basic collective action problem typically involved in global environmental issues. The Kyoto Protocol's existence spurred governments to act and facilitated emissions reduction policies because there was some reassurance that other countries would also act. A norm of multilateralism seemed to push the "middle powers" of Canada and Japan somewhat towards ratification. Transnational networks mostly in favor of Kyoto nudged governments further in some of the later ratifiers, but their influence was not powerful. On the opposite side, the presence of competitive, closely interwoven international trade markets was a serious factor making ratification a difficult decision for many countries.

Comparison of Outcomes: Ratification vs. Domestic Mitigation Policies

Thus far we have discussed our two dependent variables, ratification and adoption of domestic mitigation policies, simultaneously. In this section we consider whether the two in fact go hand in hand. Any analysis of domestic climate policies is necessarily preliminary, since even the "greenest" jurisdiction considered in this volume, the EU, is still in the process of devising policies to ensure compliance with its Kyoto Protocol target by the commitment period, 2008-2012. However, we can offer some preliminary comparisons using the typology of policy instruments introduced above. The degree to which different jurisdictions have employed instruments ranging from politically less challenging planning and voluntary measures through to contested regulations and taxes is summarized in Table 6.

INSERT TABLE 6 ABOUT HERE

Perhaps not surprisingly, the two jurisdictions that have not ratified the Kyoto Protocol, the United States and Australia, have not made very aggressive efforts to date to control or offset greenhouse gas emissions. The US expects that its emissions (excluding land use changes) will continue to increase, to 33% above the 1990 baseline by 2012.[42] In contrast, the Howard government in Australia has committed to meeting Australia's Kyoto target, even though Australia has not ratified the Kyoto Protocol, but in her chapter Kate Crowley argues that that commitment is largely symbolic, resting heavily as it does on business-as-usual reductions in

[41] Checkel 2001.
[42] US Draft Climate Action Report 2007.

land use clearing and "no regrets" energy efficiency measures (i.e., those that pay for themselves). Both the US and Australian federal governments have emphasized expenditures, especially on research and development, but thus far both have declined to provoke either the business community or individual consumers by regulating or taxing emissions.

While the relatively weak domestic programs of these two jurisdictions are consistent with their status as non-ratifiers, more striking is the degree of variation in domestic programs among the countries that ratified. Russia represents a special case because that country received a generous target in the Kyoto Protocol and thus does not have to undertake mitigation measures in order to comply. However, the fact that it has not done so would seem to reinforce the argument that Russia's ratification was motivated by material interests rather than international or domestic norms. Among Canada, Japan, and the EU, one might have expected differences in the aggressiveness of domestic policies reflecting more or less demanding targets in the Kyoto Protocol. However, the variation observed is quite inconsistent with that. With the US no longer a party to the treaty, Canada arguably faces the most demanding reduction target, yet of these three jurisdictions, it is the one that has done the *least* to contain its emissions.

Despite three aborted plans, Canada, like the US and Australia, has relied to date exclusively on voluntary programs and subsidies to business (for instance for bio-fuels) and consumers (for home energy efficiency improvements.) Although regulations have been promised by a succession of three governments, they have yet to materialize. The current federal government has simply conceded that Canada will not comply and is promising only to end Canada's emissions *growth* by 2010, by which time its emissions are expected to be 50% or more above its Kyoto target. In contrast, the EU has established a European-wide cap and trade program. Several EU countries are also relying on the Kyoto international mechanisms. Japan lies between these two poles, with extensive reliance on international mechanisms and spending, but to date only voluntary agreements with industry concerning greenhouse gas emissions and a voluntary challenge to citizens to reduce their energy use.

Canada, Japan, and the EU converged with respect to ratification, yet have diverged with respect to domestic abatement policies. The theoretical propositions presented above concerning the impact of electoral incentives, ideas, and institutions did not distinguish between the two outcomes of ratification and domestic policies. How one can account for this difference? One possibility is that some countries, most obviously Canada, symbolically ratified but simply never intended to comply. In the Canada chapter, Harrison argues that while there is reason to doubt whether all Cabinet members who supported Canada's ratification believed that Canada would fully comply with its Kyoto target, they did ratify with good intentions of delivering significant emissions reductions via a host of programs that in the end never materialized. We thus focus on three other explanations.

The first is is that settings of key variables can change between the time of ratification and the later date when concrete policy options are debated. This is most pertinent in the case of Canada, where a change in government in 2006 resulted in a significant shift in climate policy. Although previous Liberal governments were reluctant to regulate, they had planned extensive reliance on the Kyoto Protocol's international mechanisms in order to meet Canada's emissions reduction target. In contrast, the Conservative opposition opposed ratification and decried the Kyoto Protocol's international mechanisms as a waste of taxpayers' money. When the Conservatives won a minority in the 2006 election, for reasons unrelated to their positions on

climate change,[43] they simply announced that Canada "could not" comply and stopped even trying.

A second explanation for variation in domestic policies of ratifying countries lies in differences between the enterprises of ratification and adoption of domestic abatement policies. In most jurisdictions, the decision to ratify received a great deal of attention, in the legislature, in the media, and from the public. However, the black and white question of ratification then gave way to technical questions, cost-benefit analyses, and complicated emissions projection scenarios. Good intentions confront persistent interest group opposition when the hard work of devising and implementing policies to deliver emissions reductions proceeds out of the limelight. Moreover, while voters tend to be strongly supportive of the *idea* of compliance with international environmental treaties, they can simultaneously be strongly resistant to the reality of higher taxes or energy prices. The political incentives thus can be very different between ratification and implementation of that international commitment. While this is true in all jurisdictions, as evidenced by considerable foot-dragging even in the EU, the implications tend to be greatest where the costs of compliance are highest, thus provoking stronger interest group and voter backlash.

An important implication of this is that ideational commitments are easier to make concerning ratification, but harder to sustain at the implementation stage. This was evident in both the Canadian and Japanese cases. Prime Minister Chretien's normative commitment was sufficient to carry the question of ratification, but was not enough to bind his successors as they confronted continuing institutional and interest group obstacles. Similarly, Tiberghien and Schreurs argue that the symbolism of the *Kyoto* Protocol rendered it almost impossible for Japanese politicians not to ratify, but that symbolism has not been enough to ensure adoption of meaningful abatement policies.

Third, we find that institutions can have different impacts at different stages in the process from international negotiation to domestic implementation. In Canada's case, provincial governments who opposed the Kyoto Protocol were not in a position to block ratification, but given their ownership of key natural resources they are in a position to obstruct implementation of that international commitment. The lock-in effects discussed above also tend to come into play in implementing treaty commitments. As a result of the complex negotiations of EU burden sharing and ongoing negotiation concerning abatement strategies, the European Commission has been granted authority to approve or disapprove member states' abatement plans, including their allocation of carbon credits for the emissions trading system. As such, the EC is in a position to play an "enforcer" role when member states attempt to backslide. The US Courts may yet play a similar role. Even in the absence of new climate policies, US environmentalists and state governments have gone to court to try to force the administration to undertake measures, although the outcome of most of those cases remains to be seen.

Conclusions

Our exploration of the impact of domestic factors using the theoretical lens of comparative politics yields several insights. First, even in responding to moral imperatives to conserve the planet's resources and protect future generations, costs still matter a great deal. The mere fact of an international treaty is a necessary step toward equalizing costs to different countries given conditions of both economic and environmental interdependence. However, the

[43] The central issue in the election was a scandal concerning the Liberals use of sponsorship funds in Quebec.

Kyoto Protocol equalized costs crudely at best. The commitment by industrialized countries to demonstrate leadership in the first round, while morally laudable, raised the specter that they would lose competitiveness to developing countries, an argument voiced loud and clear by domestic producers.[44] The US and Australia both declined to ratify the treaty in part on these grounds. Second, Annex 1 parties to the treaty took on commitments of varying depth. Countries that had committed to deeper reductions in turn faced greater domestic opposition from the business community, which threatened higher prices, loss of jobs, and impacts on economic growth. While it is tempting to paint the US as an international outlaw for its withdrawal from the Kyoto Protocol, a criticism that is somewhat accurate, it is also the case that the US accepted relatively higher costs than other jurisdictions in Kyoto. While those costs would have been greatly reduced by unlimited international trading, including between industrialized and developing countries, at the time of the US' withdrawal it had become clear that such a scenario was infeasible. Comparison of costs relative to business-as-usual can explain both why Russia would ratify the Kyoto Protocol and why the US and Australia did not. This suggests that in the next round of international negotiations, it will be critical to find ways both to equalize costs among Annex 1 countries and to find ways to get a commitment from developing countries to limit growth of (though not necessarily to reduce) emissions.

The magnitude of compliance costs and resulting domestic political opposition cannot, however, explain why Japan, Canada, and the EU would ratify the Kyoto Protocol. The case of Canada demonstrates that under the right institutional conditions, leaders' normative commitments can carry the day, despite considerable political opposition. However, the fact that Canada did not follow through after ratification by adopting domestic policies to reduce its emissions also reveals that policymakers' ideational commitments can be fragile in the face of persistent political and institutional obstacles.

In the cases of Japan and the EU, it was *voters'*, rather than policymakers', normative commitments that ensured a positive outcome. The fact that the treaty had been negotiated in a Japanese city, and that Japan's ratification was essential to its survival, resonated with Japanese voters and prompted their representatives to ratify despite business opposition. Greater public concern, especially in key member states such as Germany, the UK, the Netherlands, and Denmark, was also influential in the EU. Consistent with Vogel's earlier comparison of US, UK, and Japanese environmental policy,[45] the EU and Japanese cases demonstrate that when voters feel strongly enough, politicians can and do rise to the challenge.

However, the magnitude of that challenge also depends on political institutions in several ways. First, proportional electoral systems give greater expression to environmentally-motivated voters' concerns than first-past-the-post systems, thus amplifying electoral incentives for policymakers, especially though Green parties. Schreurs and Tiberghien argue that Green Party representatives in key EU member states and in the European Parliament played a key role in promoting EU leadership on climate change. Moreover, it is likely that the existence of Green Parties in turn alerts other, less-Green voters to their latent environmental concerns.

Second, diffusion of authority can either facilitate or obstruct action on climate change, depending on interaction with other factors. Schreurs and Tiberghien report that a competitive dynamic emerged among EU member states. Similarly, federalism has been a positive force in

[44] Migration of industry from industrialized to developing countries would also tend to undermine the benefits of reductions by industrialized countries. However, the question of "leakage" is a separate issue politically from the magnitude of costs.
[45] Vogel 1993.

the US as well, where leadership by large "green" States has provided the necessary reassurance for other states to follow suit, with the result that action by subnational governments has to some degree offset inaction by the federal government. However, in both cases it was fortuitous that the largest and most influential players were relatively "green." In contrast, federalism has to date been a negative force in Canadian climate policy, where provincial governments control key natural resources and closely guard local industries that rely on them. The separation of powers in the US presidential system also played a critical role in the US' non-ratification.

Third, there is evidence of the importance of institutional lock-in effects in the EU. Although pressure from voters prompted ratification in both Japan and the EU, the EU has made significantly greater progress in adopting mitigation policies, in large part because the formal nature of EU compromises concerning burden sharing and various policy directives are enforced by the European Commission. In contrast, details of emission standards for particular industries apparently did not have the same symbolic significance as did ratification of the Kyoto Protocol for Japanese voters.

It is difficult to derive useful lessons from these various institutional effects, since in the time frame during which actions are urgently needed to address global warming, institutional reform is unlikely to be an option. Climate policy thus will remain more of an uphill battle for some jurisdictions than others. However, there are seeds of hope even there. The case studies considered here suggest that, while institutions may facilitate or deter action, there is no substitute for voters caring enough to demand action by their elected representatives. The environment has enjoyed a surge in salience among voters in both Canada and Australia in the last year, and there is evidence of movement in US public opinion as well. In the end, it is voters' normative commitments and sustained attention to the problem of climate change that will matter; arguably it is the only thing that can.

Table 1
Comparison of Kyoto Protocol Targets and Ratification Decisions

	Kyoto Protocol Target Net Greenhouse Gas Emissions in 20008-2012 relative to 1990 base year	Ratification
Australia	+8%	No
Russia	0%	Yes
Japan	-6%	Yes
Canada	-6%	Yes
USA	-7%	No
EU15	-8%	Yes

Table 2
Comparison of Kyoto Targets Relative to Business-as-Usual Trajectory

	Kyoto Target	Anticipated Red'n rel to "business as usual" emissions in 2010	Ratification
Russia	0%	>0%	Yes
EU15	-8%	~-3% to -9%[46]	Yes
Japan	-6%	~-12%[47]	Yes
Canada	-6%	-29%[48]	Yes
Australia	+8%	-14% to-29%[49]	No
USA	-7%	-31%[50]	No

[46] EEA 2002a, b.
[47] Schreurs and Tiberghien, this volume.
[48] Canada 2002.
[49] The figures for Australia are, unfortunately, drawn from (AGO 2006), rather than from data available at the time of Australia's 2002 ratification decision. The reference case emissions projection for 2010 is 53% above 1990 (thus entailing a 29% reduction), while the *net* emission projection is 25% above (thus entailing a 14% reduction)
[50] US Climate Action Report (2002).

Table 3
Comparison of Greenhouse Gas Emissions, Emissions Intensities and Trends in Releases

Country	Share of Global Emissions (without LULUCF), 2004[51]	Share Annex 1 Emissions (without LULUCF) 1990	2004 GHG Emissions (without LULUCF) t/person[52]	2004 Net GHG Emissions (with LULUCF) t/person	Emissions Intensity rel to GDP (without LULUCF) t/US$GDP[53]	Emissions Growth (without LULUCF) 1990 to 2004[54]	Economic Growth (GDP), 1990 to 2004[55]	Population Growth, 1990 to 2004[56]	Kyoto Target
Australia	2.3%	2.2%	26.4	26.4	.80	+25.7%	+62%	+17%	+8%
Canada	3.4%	3.0%	23.3	25.8	.78	+26.6%	+47%	+17%	-6%
Japan	6.0%	6.5%	10.6	9.9	.30	+6.5%	+18%	+3%	-6%
Russia	9.5%	16.4%	15.0	13.6	3.65	-33.1%	-15%	-3%	+0%
United States	31.3%	31.1%	24.1	21.5	.61	+15.8%	+52%	+17%	-7%
EU 15	18.7%	21.7%	11.1	10.3	.34	-1.0%	+33%	+4.5%	-8%
Austria	0.4%	0.4%	11.2	9.1	.31	+15.7%	+36%	+6%	+13%
Belgium	0.7%	0.7%	14.3	14.2	.41	+1.4%	+31%	+4%	-7.5%
Denmark	0.3%	0.4%	12.9	12.4	.28	-1.2%	+34%	+5%	-21%
Finland	0.4%	0.4%	15.6	12.1	.44	+14.5%	+32%	+5%	+0%
France	2.5%	2.9%	9.3	8.5	.27	-0.8%	+31%	+6%	+0%
Germany	4.5%	6.2%	12.3	11.9	.37	-17.4%	+27%	+4%	-21%
Greece	0.6%	0.6%	12.9	12.4	.66	+26.6%	+51%	+5%	+25%
Ireland	0.3%	0.3%	17.2	17.2	.37	+23.1%	+145%	+13%	+13%
Italy	2.6%	2.6%	10.0	8.2	.34	+11.8%	+21%	+2%	-6.5%
Luxembourg	0.1%	0.1%	27.6	27.1	.38	+0.8%	+85%	+21%	-28%
Netherlands	1.0%	1.1%	13.4	13.5	.36	+2.4%	+37%	+9%	-6%
Portugal	0.4%	0.3%	8.0	7.8	.47	+40.7%	+37%	+6%	+27%
Spain	1.9%	1.5%	10.6	9.9	.41	+49.0%	+47%	+2%	+15%
Sweden	0.3%	0.4	7.8	5.9	.20	-3.4%	+34%	+4%	+4%
UK	2.9%	3.9%	11.0	11.0	.31	-14.3%	+40%	+4%	-12.5%

[51] Share of global and Annex 1 emissions calculated from UN FCC Annex 1 (http://unfccc.int/ghg_emissions_data/predefined_queries/items/3841.php) and non-Annex 1 totals (http://unfccc.int/ghg_emissions_data/predefined_queries/items/3828.php). Note that these figures are calculated using UN FCC's last available data from non-Annex 1 countries.
[52] Calculated with emissions data as reported to UN FCCC (http://unfccc.int/ghg_emissions_data/items/38954.php); population data from US Census Bureau (http://www.census.gov/ipc/www/idbrank.html).
[53] Calculated with 2004 GDP data (billions US$) from UN Human Development Report 2006 (http://hdr.undp.org/hdr2006/statistics/build_your_table/default.cfm).
[54] UN FCC GHG emissions profiles (http://unfccc.int/ghg_emissions_data/items/38954.php).
[55] Percent change in GDP, 1990-2004, measured in constant 1990 prices in millions US $. Calculated with data from UN Statistics Division, http://unstats.un.org/unsd/snaama/selectionbasicFast.asp.
[56] Percent change from 1990 to 2004, calculated with data from US Census Bureau (http://www.census.gov/ipc/www/idbrank.html).

Table 4

World Public Opinion Survey, 2003

Approximately 1000 respondents in each country were asked the following question: "How serious a problem do you consider climate change or global warming due to the Greenhouse Effect to be? Is it a very serious problem, somewhat serious problem, not very serious problem or not a serious problem at all?"

	Very Serious	Somewhat Serious	Not Very Serious	Not at All Serious
Italy	63	30	5	1
Germany	54	33	10	2
UK	50	35	9	3
France	46	43	8	1
Russia	43	34	15	1
Canada	40	41	11	5
USA	31	40	13	11

Table 5

World Public Opinion Survey, 2005-6

	Very Serious	Somewhat Serious	Not Very Serious	Not at All Serious
Japan	75	23	2	-
Germany	73	20	5	1
France	70	24	3	1
UK	70	21	6	2
Italy	68	26	4	1
Russia	59	29	7	1
Canada	57	33	6	3
USA	49	27	12	9

Table 6

Comparison of Policy Instruments Employed by Different Jurisdictions

	USA[57]	Australia	Russia	Canada	Japan	EU
Plan to meet Kyoto target	No	Yes	Yes	No	Yes	Yes
Voluntary Programs	Yes	Yes	No	Yes	Yes	Yes
Spending on Domestic Programs	Yes	Yes	No	Yes	Yes	Yes
Spending on International Mechanisms	No[58]	No	No	No	Yes	Yes
Regulation	No	No	No	No	No	Yes
Taxes	No	No	No	No	No	Yes

[57] Federal level only
[58] As non-ratifiers, the USA and Austrlia are not eligible for JI, CDM, and international trading.

References

Australian Greenhouse Office. 2006. Tracking to the Kyoto Target 2006. Canberra: Commonwealth of Australia.

Busby, Josh and Alexander Ochs. 2005. From Mars and Venus Down to Earth: Understanding the Transatlantic Climate Divide. In *Beyond Kyoto: Meeting the Long-Term Challenge of Climate Change*, edited by David Michels. Washington, DC: Center for Transatlantic Relations, Johns Hopkins University (SAIS).

Canada. 2002. Climate Change Plan for Canada. Ottawa: Government of Canada.

Cass, Loren R. 2006. *The Failures of American and European Climate Policy: International Norms, Domestic Politics, and Unachievable Commitments*. NY: SUNY Press.

Checkel, Jeffrey T. Why Comply? Social Learning and European Identity Change. *International Organization* 55, no. 3 (Summer): 553-88.

Claussen, E. 2001. Global Environmental Governance: Issues for the New Administration. *Environment* 43: 29-34.

Commission of the European Communities. 2006. *Fourth National Communication from the European Community Under the UN Framework Convention on Climate Change*. http://unfccc.int/resource/docs/natc/eunce4.pdf.

Dessler, Andrew E. and Edward A. Parson. 2006. *The Science and Politics of Global Climate Change*. New York: Cambridge University Press.

European Environmental Agency. 2002a. Greenhouse Gas Emission Trends and Projections in Europe. Copenhagen: EEA.

European Environment Agency, 2002b. Analysis and Comparison of National and EU-Wide Projections of Greenhouse Gas Emissions. Copenhagen: EEA.

Goldstein, Judith and Robert Keohane, eds. 1993. *Ideas and Foreign Policy: Beliefs, Institutions and Political Change.* Ithaca: Cornell University Press.

Grubb, Michael, Duncan Brack, and Chistiaan Vrolijk. 1999. *Kyoto Protocol: A Guide and Assessment*. Earthscan/James and James.

Jones, Charles O. 1975. *Clean Air: The Policies and Politics of Pollution Control*. Pittsburgh: University of Pittsburgh Press.

Keck, Margaret and Kathryn Sikkink. 1998. *Activists beyond Borders: Advocacy Networks in International Politics.* Ithaca, NY: Cornell University Press.

Kolbert, Elizabeth. 2006. *Field Notes from a Catastrophe.* New York: Bloomsbury.

Lantis, Jeffrey S. 2006. The Life and Death of International Treaties: Double-Edged Diplomacy and the Politics of Ratification in Comparative Perspective. *International Politics* 43: 24-52.

Massachusetts et al. v. Environmental Protection Agency, 2007. Supreme Court of the United States, No. 05-1120.

Newell, Peter. 2005. *Climate for Change: Non-State Actors and the Global Politics of the Greenhouse*. Cambridge: Cambridge University Press.

Paterson, Matthew. 1996. *Global Warming and Global Politics*. London: Routledge.

Oberthür, Sebastian and Herman E. Ott. 2006. *The Kyoto Protocol: International Climate Policy for the 21st Century*. New York: Springer.

Rabe, Barry. 2004. *Statehouse and Greenhouse: The Emerging Politics of American Climate Change Policy*. Washington, DC: Brookings.

Ringius, Lasse. 1999. Differentiation, Leaders, and Fairness: Negotiating Climate Commitments in the European Community. *International Negotiation* 4: 133-166.

Steurer, Reinhard. 2003. The US's retreat from the Kyoto Protocol: an account of a policy change and it's implications for future climate policy. *European Environment* 13(6): 344-360.

United States of America. 2002. U.S. Climate Action Report 2002. Washington, DC: US Department of State.

United States of America. 2007. U.S. Climate Action Report 2006 (April 2007 draft). Washington DC: US Department of State.

Vogel, David. 1993. Representing Diffuse Interests in Environmental Policymaking. In *Do Institutions Matter? Government Capabilities in the United States and Beyond*, edited by R. Kent Weaver and Bert A. Rockman. Washington, DC: Brookings.

Weaver, R. Kent and Bert A. Rockman, eds. 1993. *Do Institutions Matter? Government Capabilities in the United States and Beyond*. Washington, DC: Brookings.

Weyant, John P. and Jennifer Hill. 1999. Introduction and Overview. *The Energy Journal* Special Issue: The Costs of the Kyoto Protocol: a Multi-Model Evaluation.

Wirth, Timothy. 2002. Hot air over Kyoto: the United States and the politics of global warming. *Harvard International Review* 23(4): 72-77.