ENVIRONMENTAL POLICY SUPPORT IN THE AMERICAN STATES

By

Rebecca Bromley-Trujillo

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ABSTRACT

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This project addresses a number of questions pertaining to state environmental policy activity. Do states pursue a variety of environmental problems in tandem? Are climate change policies merely an extension of environmental policy activity more generally? What factors explain shifts in environmental policy activity within and across the American states? In order to answer these questions I begin by constructing a scale of environmental policy activity. This scale is made up of environmental program enactments over time and includes policies pertaining to hazardous waste, sustainable development, climate change and energy. The resulting additive scale is converted to a change variable (or first difference) that is utilized as a dependent variable in a time-series, cross-sectional analysis (TSCS). Findings indicate that a variety of environmental programs can be combined into a reliable additive scale and that climate change is an extension of environmental policy more generally. In addition, I find that the ideal conditions for environmental action include a liberal citizenry, Democratic control of the state legislature, a strong environmental interest group population and a wealthy state that has the capacity and resources to act.

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Introduction

In 2002, California enacted major legislation that requires new vehicles to meet a 30 percent emissions reduction by 2016. This statute has the capacity to drastically reduce greenhouse gas emissions in the state of California. Florida enacted legislation in 2008 that requires urban planning organizations to consider ways to reduce traffic and use land more efficiently to reduce greenhouse gas emissions. Georgia passed a brownfield redevelopment program in 1996 (amended in 1998 and 2002) that relieves some liability for those who purchase these contaminated properties. This type of program encourages the redevelopment of brownfields, which has the potential to increase cleanup of sites.

These state policy adoptions are only a token glance at the vast number of environmental laws the American states have enacted in recent years. The impact states have on environmental quality and public health is quite significant and implores further exploration of state environmental policy activity (Woods et al 2008). Understanding the variation in state environmental policy action is the primary goal of this research.

There is a relative abundance of literature concerning state policy adoption, including the more specific area of environmental policy. The literature does not fully address general state environmental activity with previous work typically examining single issues or policies. Of those that do look at environmental action generally, most utilize state environmental spending data (e.g. Bacot and Dawes 1997), which differs from the environmental programs examined here. In addition, many of these studies look at one cross-section of time rather than looking at state action as a dynamic process. Also, research that considers comprehensive environmental policy activity is somewhat dated with examinations of policy enacted before 1990 (e.g. Hays et al

1996). This project fills the gaps in the literature by examining general environmental commitment among the states using data over an extended, and recent, time period.

There are several questions pertaining to state environmental policy that this project will address including the following: Do states pursue a variety of environmental problems in tandem? Are climate change policies merely an extension of environmental policy activity more generally? Can a variety of environmental policies that touch on different environmental problems be combined into a reliable scale of environmental policy activity? What factors explain shifts in environmental policy activity within and across the American states?

In order to answer these questions I begin by constructing a scale of environmental policy activity. This scale can provide an explanation for how the environmental policy field is structured and answers questions pertaining to the linkage between various sub-areas of environmental policy. Next, a variation of this scale is utilized as a dependent variable to examine the determinants of state environmental activism. A time-series, cross-sectional analysis is performed using a random walk with drift model with clustered standard errors.

Project Overview

This project first explores the rationale behind environmental policy activity in the states and the reasons for studying state environmental policy. In addition, an understanding of the context under which states are acting on environmental policy is discussed with a look at national government activity juxtaposed with state efforts on the same issues and a comparison of how European countries are dealing with similar environmental problems. Policymaking at the state level is not independent of what is occurring at the national level of government. What the federal government does, or does not do, can impact whether states will act at all. This work provides descriptive information to indicate that states were more likely to be active on various

environmental issues when the federal government was struggling to get environmental programs passed. Next, I examine the literature relevant to state policy adoption, innovation, intergovernmental relations and environmental policy in particular. Each of these topics informs the work done here.

An original data set is created in the form of state environmental program enactments over a 14-year time period, 1994-2007. These environmental programs pertain to climate change, energy, sustainable development and hazardous waste issues. A scaling analysis is performed on these data to understand the structure of environmental programs. This analysis examines state climate change policy in a comparative fashion to other state environmental policies. This effort sheds light on whether states that tend to enact policy in one environmental area will also pass policy to mitigate climate change. Findings indicate that a variety of environmental programs can be combined into a reliable activity scale and that climate change is an extension of environmental policy more generally.

The resulting additive scale is converted to a change variable (or first difference) that is utilized as a dependent variable in a time-series, cross-sectional analysis (TSCS). This provides the opportunity to understand why states are pursuing a great variety of environmental programs at particular moments in time.

I argue that numerous factors including those related to politics, the economy, and pollution levels are important contributors to a state pursuing environmental action. States vary considerably across these different internal factors and the findings from this work indicate that each of these categories plays a role in state environmental activity. Ideal conditions for action include a liberal citizenry, Democratic control of the state legislature, a strong environmental interest group population and a wealthy state that has the capacity and resources to act. This

research provides an updated picture of what action states are taking when it comes to the environment and why.

Implications

Findings from this work have a number of implications for environmental policy research. First, states are clearly picking up the slack on issues that the federal government has either been unwilling or unable to address. While the federal government has remained highly active on environmental issues, there are some for which policy success has been difficult to achieve. State capacity to address problems that are large in scope has increased over time and when proponents of environmental programs find it difficult to come to a consensus at the federal level they are able to shift to the states for policy change.

Climate change is a relatively new policy problem and this research provides evidence that it can be considered an extension of environmental policy generally. The issues that the environmental policy field encompasses are ever expanding and states are approaching global environmental issues in a very similar fashion to other, more local, environmental problems despite significant differences in the issues themselves.

Understanding the conditions that are favorable to environmental activism adds depth to the literature on state environmental policy by expanding on studies over individual environmental issues and complementing the few studies that examine general environmental commitment in the 1990's. State policy action has increased over the last two decades and it is important to continue work that compares the different approaches individual states have to the environment and other policy areas. Despite changes in the level of activism among states when it comes to the environment, findings from the general environmental policy literature hold up in a number of areas. State governments appear to be very responsive to both the general public and environmental interest groups on the issues examined here.

General environmental activism is important for environmental quality. If a state is only pursuing one or few environmental issues, then the natural environment suffers. This research makes it clear that states are actively engaged in policy activity across a number of environmental issues. This also signifies that states have the capacity to handle a great deal of environmental issues simultaneously.

These results also have implications for other state policy areas. There has been significant devolution of policy responsibilities to state governments across issue areas and states have passed a number of innovative policies (Conlan 1998). Whether or not a state chooses to pursue policy aggressively, given their newfound ability to do so, is likely affected by a set of key variables no matter the policy area. While there are some characteristics that are specific to environmental policy (such as emissions levels), others are likely to translate to state welfare or health policy. Environmental policy is not alone in the need for a healthy state economy to produce governmental programs. It is likely that greater state wealth would lead to more policy enactments across policy areas. In addition, ideology and state legislative composition are factors that would not only apply to the environment, though there may be a stronger impact on welfare policy given the very politically divisive nature of this policy area.

Each of these policy areas has seen variation in federal policy activity that likely caused shifts in state action. The relationship between federal and state governments across these policy areas is likely to vary depending on the level of federal activity and whether there is an overarching federal law in place that provides guidelines to the states. This project demonstrates this story for environmental policy and is likely to hold for other policies as well.

For instance, major federal welfare reform changed the way that states pursued welfare policy (Soss et al 2001). While states can (and do) still experiment since the passage of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) they are somewhat more limited in the programs they can enact. For state environmental policy, it is possible that were the federal government to pass a national carbon cap and trade program they would become less active on their own with regard to climate change initiatives.

With regard to healthcare, there are certain areas where the states have maintained very high activity given the flexibility provided to them by the federal government and the lack of a definitive federal policy in some cases. States were able to experiment using waivers through federal Medicaid and CHIP programs. In addition, a number of states have experimented through the creation of statewide healthcare programs (Hackey and Rochefort 2001). This story is very similar to how states have pursued environmental policy. States can experiment using waivers through the Clean Air and Clean Water Acts in addition to passing their own statewide environmental programs.

Chapter 1: Why Study the States? State Environmental Policy Action in a Federal System

The analysis conducted here covers a variety of environmental issues where the states are highly active. In short, this is where the action is for the environmental issues examined in this study. There is an abundance of environmental program activity in the states with a high degree of variation across states in terms of the level of environmental action. This provides an excellent opportunity to understand why states vary so extensively.

Scholars have often noted the idea that states can act as "laboratories of democracy." States have the potential to produce innovative policy that is later used on a grander scale at the federal level. In addition, this topic of study is highly relevant to the public policy literature surrounding intergovernmental relations and venue shopping. A federal system allows policy entrepreneurs and interest groups to select a level of government that is most conducive to their goals. National and sub-national governments also interact in numerous policy arenas (e.g. education policy, see Conlan 1981; 1998).

Questions still arise over whether state environmental policy is merely symbolic and thus whether it warrants a thorough examination. To be sure, some policies do appear to be entirely symbolic, perhaps to appease a constituency or set of interest groups. Upon a more detailed examination there are a number of recent state environmental laws that are concrete and are likely to have an impact on environmental quality. Many of the environmental programs examined here include specific targets and timetables for improvement with details on how to reach those goals.

In addition to concerns over whether policy action is merely symbolic is whether any effort by the states can actually make a difference, whether that be through reducing the contributors to climate change or cleaning up hazardous waste sites, among others. When

considering climate change, it is noted by scholars that some states in the U.S. actually emit more greenhouse gases than do various countries. For example, Texas and California are ranked very high (in the top 10) on a list of emitters that include both countries and states (Rabe 2004). If these two states alone make concerted efforts to reduce greenhouse gas emissions this could arguably have an impact on climate change. Looking at hazardous waste cleanup, states have been able to encourage the development of brownfields and cleanup these contaminated sites, which has greatly supplemented federal programs addressing the same issue (Hula and Bromley-Trujillo 2010).

There are a number of possibilities as to why states are adopting these various types of environmental policy. Previous research has employed a variety of tactics to get at what determines state environmental program activity. Scholars have argued that state environmental conditions are the primary explanation in addition to economic factors, political variables, and institutions. Most of these studies are narrow in focus and include a relatively small number of explanatory variables. In addition, these studies typically examine only one time point or very few, which can miss the big picture.

The American states are extremely diverse with regard to institutional structures, environmental problems, political and economic characteristics, and geography (Morehouse and Jewell 2004). This makes the states an excellent venue for studying environmental policy activity comparatively. While this project is primarily interested in activity in the states it is important to consider the context under which these states are acting.

Federal Activity, or Lack Thereof

Environmental policymaking in a federal system includes a vast array of intergovernmental arrangements. Each level of government has taken charge in a number of

areas while also working together, or in a command and control type of relationship in others. The federal government is highly active when it comes to the environment generally. With the passage of the Clean Air Act (1970) and the Clean Water Act (1972) the federal government established its willingness to take on broad-based environmental issues (Vig and Kraft 2006). As will be discussed here, the federal government has been intermittently active with regard to hazardous waste, passing major legislation in the 1980's with updates in the late 1990's. Despite this high level of federal activity there are a number of issues, including those examined in this work, that been left primarily to the states. Research on environmental policymaking often mentions the possibility that activity at the federal level has had an impact on state policymaking, though little research has been conducted to examine this kind of impact.

Federal activity (or relative inactivity on certain issues) provides important background to understanding why states are active at all when it comes to environmental policy. First, lets consider activity by Congress and the President on issues where states have been very active. The following graph represents the number of hearings associated with mercury, brownfields, climate change, energy conservation, and renewable energy from 1994-2006.





Source: *Policy Agendas Project*. For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this dissertation.

The issues examined here all have relatively few hearings associated with them. Hearings on renewable energy tend to concentrate on biofuel incentives, development of new fuel cell and solar technologies and ethanol development. Energy conservation hearings consider fuel economy issues, hybrid vehicle technology, better energy conservation in public buildings and housing, and reducing energy consumption. For climate change, the hearings typically pertain to the credibility and status of scientific evidence, though a few focus on federal policy options and reviews of the impact of climate change on the United States. These hearings did not result in any policy action by the federal government; however, they may have provided some information to states on the subject. Issues pertaining to brownfields and mercury also came up with discussions about how to encourage additional development of brownfields and what the environmental impact of mercury pollution has been (*Policy Agendas Project*).

Another way of examining federal attention to these issues is through mentions in the State of the Union. Climate change was mentioned in President Clinton's State of the Union addresses from 1997-2000. President Clinton often stressed the importance of dealing with climate change and the strong scientific evidence regarding the issue. For instance, Clinton states, "Now, the greatest environmental challenge of the new century is global warming. If we fail to reduce the emission of greenhouse gases, deadly heat waves and droughts will become more frequent, coastal areas will flood, and economies will be disrupted." This call to action still did not result in policy passage by Congress. When President Bush took office in 2001 he did not mention climate change a single time through his State of the Union addresses.

In terms of energy issues more generally, Presidents have stressed the need to use advanced technology to reduce automobile emissions and promote the use of bio-fuels, though concrete action has still not occurred at the federal level. President Bush stated that "...my budget provides strong funding for leading-edge technology—from hydrogen-fueled cars, to clean coal, to renewable sources such as ethanol." So, while these issues were not ignored, neither Congress nor the President was actually doing very little.

When considering climate change policy the federal government has been unable to pass any significant legislation. While President Clinton and Vice President Al Gore were both interested in pursuing climate change policy, they failed to get major legislation passed and could not convince the rest of the country that action must be taken. President Clinton attempted to pass a tax on energy consumption in 1993 and also supported mandatory greenhouse gas emission reduction targets, though Congress ultimately rejected both plans. President Clinton was able to push through the U.S. Climate Change Action Program; however, it was based on voluntary actions alone and was symbolic in nature. In 1997 the Kyoto Protocol was under

discussion. President Clinton and Vice President Gore announced support for legally binding emissions reductions and began negotiations in Kyoto. Congress was not behind the signing of any agreement that did not include tough action by developing countries. In fact, the U.S. Senate passed a resolution stating that the United States should not enter into an international agreement unless all participants had to make similar sacrifices. It also stated that if the U.S. pursued any type of climate policy then they must give an economic justification (Shogren and Toman 2000). Though the U.S. signed the Kyoto Protocol in 1998 they were never able to ratify the treaty. Bush announced in 2001 that the Kyoto protocol would not be submitted for ratification, signaling a major end to federal action on climate change. After this time point preliminary examinations indicate that states became significantly more active on climate change policy.

In 2002 the Bush administration announced a voluntary climate change plan and the following year the Climate Stewardship Act was introduced in the Senate. The Lieberman-McCain Climate Stewardship Act of 2003 failed by a vote margin of 43 to 55 in the Senate. The bill included emissions trading among a number of industries and would cap aggregate emissions at 2000 levels by 2010. The bill also included penalties for non-compliance, encouragement for student research on climate change and created a national greenhouse gas database. Despite the compromising nature of this bill it still could not gain enough bipartisan support to become law. The Act ultimately failed and this failure made it abundantly clear that the federal government was incapable of coming up with a policy solution to climate change that could get through Congress. President Bush was actually supportive of state efforts and often reported the work of states as evidence for the strong effort the United States was engaging in to reduce greenhouse gases (Revkin and Lee 2003).

When the United States decided against ratifying the Kyoto Protocol the federal government did not necessarily cede its power to the states on this issue; however, I argue that it became more likely for states to pursue climate change policy.

Climate change is not the only environmental policy area where federal inactivity has likely lead to state action. In the case of hazardous waste policy it appears that states feel what the federal government has done is simply not stringent or comprehensive enough despite some federal success in passing legislation. For example, the federal government passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980. CERCLA collected taxes towards a fund for cleaning contaminated sites that were either abandoned or not controlled. In addition, it held responsible parties liable for damages to these sites and detailed the steps for dealing with these abandoned locations. CERCLA distinguishes between sites that need immediate response and those that need action over time. In 1986 the Superfund Amendments and Reauthorization Act (SARA) amended CERCLA. This Act encouraged the use of new and innovative technologies for cleanup. In addition, it gave a great deal more power and involvement to the states in the Superfund program. The Act also provided for increased citizen participation and additional enforcement authorities (Hula and Bromley-Trujillo 2010).

From the mid to late 90's Congress made numerous attempts to overhaul superfund legislation, but failed to do so for an extended period of time. Partisan bickering over how far new legislation should go was a major cause of delay. In early 2002 President Bush signed into law the Small Business Liability Relief and Brownfield Revitalization Act, which provided ways that small businesses could avoid liability for brownfield cleanup and aimed to enhance state programs. Additional funding was also provided for brownfield cleanup. Despite the action by

the federal government states began to adopt and administer their own brownfield programs in the early 1990's with some innovative plans to help spur redevelopment of these contaminated properties. Many of these state programs have altered who is considered liable for cleanup and some have set up tiered cleanup requirements depending on the property type (Hula and Bromley-Trujillo 2010). When considering the timeline of events it appears that during the gap between policy actions at the federal level states came in with their own policy solutions.

Superfund and brownfield programs are one example of this trend and sustainable development is yet another. Sustainable development is associated with endeavors to meet current needs while making efforts to ensure future generations will have adequate resources. Policies associated with sustainable development aim to create efficient means of transportation, reduce sprawl, and promote city planning that reduces vehicle miles traveled (Pew Center on Global Climate Change).

Congress and the federal government have considered sustainable development issues, though not in great depth. President Clinton extended the President's Council on Sustainable Development in 1997 and 1999, though scant action came out of this. Just recently, legislation that would encourage "community living" was introduced by Senator Dodd and titled "The Livable Communities Act." This legislation is, in part, a response to the BP oil spill in the Gulf of Mexico, which occurred in the summer of 2010. Improved transit options and "community living" can help reduce the need for oil consumption. If this legislation were to pass it is possible that this will have an impact on whether states continue to pursue smart growth policies. While state and local governments are often considered the most knowledgeable about what steps should be taken in their communities a national standard would go a long way through encouraging broad action. The federal government has again opened the door for states to take

the lead in pursuing sustainable development programs. Several states have passed smart growth policies that make efforts to create more sustainable transportation and land use plans (Pew Center on Global Climate Change).

The federal government has also made some efforts with regard to curbing mercury pollution. While laws concerning mercury at the federal level are infrequent one exception is the Mercury-Containing and Rechargeable Battery Management Act, passed in 1996, that phases out mercury use in batteries. During President Bush' time in office he proposed a cap and trade system for mercury. This idea never came to fruition, in part, because there was a considerable amount of opposition from interest groups. Many argued that a cap and trade system was not suitable for mercury because it would create mercury "hot spots" near the power plants that used the substance (Paterson 2004). The states have taken matters into their own hands by passing laws that prohibit mercury usage in thermometers and other household products.

In addition to mercury, there has been effort to create more stringent fuel efficiency standards at the national level; though, standards were only changed in 1975 and 2007 (Doris et al 2009). Given the federal government's struggle with passing this type of legislation several states have acted in very recent years with California taking the lead.

The federal government has also recently made efforts to "green" their agencies. Executive Order (EO) 13423, signed by President Bush in 2007, sets a number of goals for federal agencies to utilize renewable energy, become more energy efficient, recycle, and conserve water. President Obama expanded these goals in 2009 with EO 13514. Included in Obama's executive order is a reduction in greenhouse gas emissions in addition to other more stringent goals. While this demonstrates effort by the federal government, these orders are still not comprehensive plans for all government buildings, making it unlikely that this activity will

slow state efforts to promote green building standards. Both of these efforts were also relatively late in the game, with many states promoting green building efforts in the early 2000's.

The description of what is occurring at the federal level is important because it provides a picture of what is occurring just outside state level activity. Presumably, states would have no reason to pursue these policies had the federal government been able to do more. In addition, if the federal government had not been considering these issues at all, the states may have been more likely to ignore them as well. This descriptive discussion leads to the preliminary conclusion that states often act just after the federal government has either considered an issue, attempted to pass legislation, or after legislation was passed that was not comprehensive or stringent enough. In the case of climate change, the federal government has had no success in passing legislation that directly tackles this issue.

Despite common arguments that environmental problems should be dealt with by the federal government, states are taking the lead on many environmental issues and have been for over a decade. Given the costs identified by the federal government in pursuing these policies, why would state governments be interested in tackling this policy area? There is evidence that suggests states do indeed learn from the federal government's attempts at policy making and, as such, states would be aware of the high costs involved. In addition, the states are in an even greater position of uncertainty as to whether their efforts will pay off.

Devolution from the federal government to states has meant that states are becoming increasingly important in various policy areas (Potoski and Woods 2002; Hedge and Scicchitano 1994; Hedge 1998; Van Horn 1996; Peterson et al. 1986). Devolution has become commonplace in areas of healthcare (Hackey and Rochefort 2001; Hedge and Scicchitano 1994), welfare (Soss et al. 2008) and environmental policy (Vig and Kraft 2003). While devolution contributes to

policy activity in the states, the simple lack of federal policy passage surrounding these issues is an important driving force in environmental policy activity. The federal government has not been able to pass meaningful legislation addressing climate change in the last two decades, nor has it been able to come up with improved liability standards for brownfield cleanup or broad-based net metering and urban planning measures.

This kind of pattern is also noted with other types of environmental issues that were dealt with before the time period of this study. President Reagan took a similar stance towards acid rain issues that President George W. Bush took towards climate change. Reagan argued against acid rain policy before the science was more conclusive. This resulted in states adopting a number of programs to address acid rain in the mid to late 1980's. These policies aimed to reduce sulfur dioxide emissions through both individual state policies and regional initiatives. As the northeast states have done for climate change, they also created a regional policy to deal with acid rain, the Northeast States for Coordinated Air Use Management, while the west established the Western States Air Resources Council (Regens 1989).

While states were able to make great strides in this policy area there were limitations in the ability of states to fully tackle acid rain. Acid rain can be the result of activity outside the state, similar to climate change. As such, if only a few states pursue policy action then it is unlikely to truly solve the problem. In addition, if a state chooses not to adopt acid rain prevention policy then this could result in detrimental environmental effects for a neighboring state that actually has adopted legislation.

The federal government did eventually make efforts to handle acid rain when President George H.W. Bush came into office. By then the science was deemed more certain and the

President offered much needed support. It is possible that a similar ending will occur for climate change policy though this remains to be seen.

By examining environmental policy activity over time we can gain an understanding of when states became more involved in the various sub-policies in relation to when the federal government was not as involved. Vig and Kraft (2000) argue that federal policy action to prevent global warming was stalled after the signing and non-ratification of the Kyoto Protocol. Had the United States federal government ratified the Kyoto Protocol the states may not have felt the need for aggressive action.

Evidence suggests that state policy on climate change did surge in the years after the nonratification of the Kyoto Protocol. In fact, it was soon after this lack of action by the federal government that the state of California became a leader in the pursuit of climate change policy. Several factors contributed to states like California engaging in climate change policy and the study here will provide further insight into those factors. With regard to brownfield laws it also appears that states were looking for more. Had the federal government been able to pass additional brownfield and/or superfund legislation in the 1990's states may not have felt the need to act. The same holds true for mercury pollution, and sustainable development.

One aspect of a federal system is that when groups do not receive aggressive attention to an issue at the national level they can take their arguments to states and cities. The use of venue shopping in regards to environmental policy appears to be prevalent and is another major theme this research will address. This does not suggest that all states became active when the federal government was not. Some states passed laws that were highly critical of the Kyoto protocol, while others went even further by passing laws against any state action to curb greenhouse gases. This variation among states alone is worth examining.

Environmental Policymaking in the United States and the European Union

Now that we have considered what the United States has achieved or attempted to achieve with regard to climate change and brownfield development it is important to consider how that activity compares to a somewhat similar intergovernmental structure. The U.S. has a unique system of federalism, however this does not leave out the possibility for comparison to other countries and, more specifically, the European Union (EU). Similar to the US federal government, the EU is able to pass policies that require compliance by member nations; however, the EU is more constrained in terms of what policies they can pass. Programs must address "community" issues, or issues that concern all member nations. Another key difference between the two is representation. The EU is made up of several sovereign nations who popularly elect their leaders within each nation. This sets up a system of representation that is continent-wide (Light 2002). Despite these differences, the relationships between the EU and individual member nations and between the US and state governments are quite comparable. The EU and its member nations have a remarkably similar relationship when compared to the US federal government and the states. The EU issues both regulations and directives to member states. Directives provide goals to achieve through member states passing their own legislation, while regulations set by the EU become law as soon as their effective date is reached. There is a process of sanctions if member nations do not comply with either directives or regulations (Light 2002). This process closely mirrors the common command and control type of relationship between the federal government and American states.

Climate Change and Brownfield Efforts by the EU and US

The European Union is able to pass supranational policies related to the environment that can deal with issues that cross international boundaries and is able to fund these programs

through taxes collected from member nations. The EU has been able to tackle problems like acid rain, air pollution and climate change through their ability to enact legislation that all member nations must comply with. I will consider the policy action differences and similarities between the US and the EU on climate change and brownfield remediation.

As previously discussed, the US federal government has done very little when it comes to passing climate change programs. Comparatively, the EU has been very active and has maintained a leadership position on climate change for some time. For climate change policy the EU has been able to use this relationship in a very effective manner to persuade (or coerce as the case may be) states to act. The United States, on the other hand, has not been able to come to a consensus at the federal level, leaving much action to the states.

The European Union has acted as a leader in climate change issues and has sustained that leadership over a long period of time. The countries that make up the EU have acted collectively and individually to pass very aggressive policies to mitigate climate change. Examples of these programs include emission reduction targets, tax reform to promote reduced energy consumption, and incentives to utilize renewable energy sources. This type of effort is quite distinct from that of the United States. Interestingly, the EU has created a cap and trade program that is modeled after a program used in the United States to reduce sulfur dioxide emissions. The European Union Emissions Trading Scheme (EU ETS) is the biggest market of greenhouse gases created to date. Despite initial problems with the implementation of the program. Analyses of the program indicate that it has had success in setting a price for carbon emissions, which are no longer free to industry. In addition, there is evidence that carbon emissions abatement has

occurred since the start of the program (Convery et al 2008). This begs the question of why the EU has been so much more aggressive in dealing with climate change than the US.

The EU has maintained its strong leadership though the institutional structure would normally make what the EU has accomplished very difficult. Despite the need for all members to consent to a tax (such as a carbon tax), they have been successful. Schreurs and Tiberghien (2007) note the accomplishments of the EU and its members and argue that the EU has maintained strong climate policy because of strong leadership among the member states, public support and a commitment to the cause. The leadership has been able to frame climate change as a moral issue, which is widely supported by the European public.

There have been several individual member nations in the EU who have taken the lead in climate policy action, which is similar to select states taking the lead in the US. Leadership is not uniform across countries that make up the EU and states across the US. Despite a high level of general approval for climate change programs across the EU there is still variation in how much countries are willing or able to do.

Germany has organized several climate conferences and has taken a large chunk of the burden sharing for emissions reductions. There have also been a number of coalitions among member nations in the EU to encourage others to ratify Kyoto and other agreements. This is comparable to state regional plans in the US. Many of the states who have become part of a regional climate initiative in the US are attempting to lead by example, hoping to persuade other states to joint regional initiatives of their own or to encourage the federal government to create a broader plan from the top.

While overall the EU has maintained a very strong climate change policy report card, there are some states that have been less interested in participating. France, in particular, has

maintained a strong link between businesses and politicians that has weakened their stance on climate issues. More recently, however, public opinion in France has become more supportive of action and a small shift in action has taken place.

Another major difference between the US and the EU is the kind of public support climate change programs have received. There is almost no skepticism surrounding the science of climate change by the public or politicians in the EU. Quite the opposite has occurred in the United States, where a very effective movement to reduce confidence in scientific findings of climate scientists has taken hold (McCright and Dunlap 2003). European's often balk at how many American political figures believe that climate change is not caused by human action, but this is a fairly common stance in the US. Consider several of the gubernatorial candidates who ran for public office in 2010. Republican candidates Paul LePage, Charlie Baker, and Carl Paladino have all argued that climate change science is essentially a scam perpetrated on the American people (Gurwitt 2010). This belief is not only occurring among the politically elite either, with many Americans maintaining this belief or one similar. The risk perception among Americans is not very severe. On average, Americans tend to view climate change as an issue that will affect people in far away places and see it as a moderate risk. There are considerable numbers of people on opposite sides of the spectrum with alarmists seeing climate change as a severe risk and who maintain the belief that it will effect most Americans directly, and skeptics who argue that there is very little risk (Leiserowitz 2005).

At present there is still a vast difference between how the EU and the US have dealt with climate change and it is unclear how large the differences will be in the future. State activity may eventually shift towards the federal government in the US and shrink those differences, but as it

stands the EU has been able to pass more programs that encompass all member nations and have been more successful at achieving policy passage within individual member nations as well.

The US and Europe have taken different approaches when it comes to brownfield remediation as well, though the differences are not as stark as the approaches to climate change. In this case the US has acted as a model for European countries, because the US began to handle this issue much sooner. The EU and its member nations do not have a common definition of brownfields. The term was actually coined by the EPA and is concisely defined in the US. European countries refer to brownfields as derelict or contaminated land, rarely using the term brownfield (Vanheusden 2007).

In the US, federal policy (including previously discussed CERCLA and SARA) acts as a guiding tool, providing resources for cleanup. Still, the overarching standards do not provide very much help in the way of encouraging developers to develop on brownfields (as opposed to greenfields, or undeveloped land). European countries have used more regional approaches to brownfield development with a few countries within the EU developing national standards.

While the EU is capable of developing a supranational policy regarding brownfields, there are some limitations that have prevented such a broad-based effort. Brownfields are somewhat unique from other issues the EU handles because they are often considered local or regional problems. Because the problem is seen as more localized this makes it less likely for a supranational policy to be passed. Despite this, funds are readily available in the EU to handle attempts at innovation with regard to brownfields. The US has primarily funded brownfield redevelopment through tax incentives, while the EU provides more direct government funding. Much of the action within European countries with regard to these contaminated properties has

occurred with soil or groundwater contamination more specifically rather than brownfields more generally, though these problems overlap significantly (Guglielmi 2005).

The EU acts under a "polluter-pays principle" when it comes to pollution cost liability. Under this principle those who are responsible for pollution are liable for costs related to that pollution. This differs from the national standard in the US for brownfield and superfund cleanup. In the US ownership is the key to liability and future owners of a contaminated site are also liable, even if they did not cause the contamination. This provides some advantage for European countries because it makes it easier to persuade developers to take on brownfield properties because they are less concerned with the costs associated with cleanup and future liability. Some states in the US have passed programs that more closely resemble the EU's liability system.

The EU maintains that brownfield redevelopment is part of a larger effort to promote sustainable development. This framing of the problem has also been seen in the American states, with some including brownfield redevelopment in sustainable urban development plans. The EU has made efforts to pass legislation that would mandate various levels of government work together in creating an "environmental management plan" that handles brownfield cleanup in addition to other urban environmental issues. Its failure was likely due to the belief that these kinds of issues are better handled at lower levels of government. Despite this failure the EU provides a great deal of financial resources to member nations for brownfield redevelopment. Legislation passed in 2001 provides funding for responsible urban planning management if at least four member nations are working together (Guglielmi 2005).

The EU also provides funding for the Regeneration of European Sites in Cities and Urban Environments (RESCUE), which conducts case studies and determines best practices for

redeveloping derelict land (Thornton et al 2007). A similar organization, the Contaminated Land Rehabilitation Network for Environmental Technologies (CLARINET) also receives funding from the European Commission. This organization brings academics, political figures, and landowners together to research the best ways to handle brownfield redevelopment (Guglielmi 2005).

While both the EU and the US federal government are able to provide resources to member nations and states, a lot of the work is done at lower levels of government. Approaches among member nations in the EU differ when it comes to brownfields just as states differ in the US. Within the EU countries like Britain have a more centralized approach where the federal government provides extensive legal guidelines for lower levels of government. On the other hand Germany leaves much responsibility to local governments. In this sense, the US and Germany are very similar. They are also similar in their level of industrial decay. Their general focus when it comes to brownfields is different, however, with Germany being more interested in handling brownfields as a part of creating sustainable communities (Guglielmi 2005). In Belgium, the Flemish government has dealt with brownfields through their efforts to deal with soil contamination and remediation. Within their soil legislation they do specifically discuss brownfields and provide criteria for identifying a site. Once a site is identified there are requirements for cleanup that follow. Subsidies are provided from the Flemish Town Fund to help clean up contaminated properties (Vanheusden 2007). American states have similar variation with some developing a consistent source of funding for redeveloping brownfields and altering liability structures to encourage the development of brownfields. Others have created brownfield voluntary cleanup programs, while a few have yet to tackle the issue at all (Hula and Bromley-Trujillo 2010).

With this environmental issue there is an opportunity for the US and the EU to learn from each other. The US has been able to develop a national standard that covers all states, though this standard is not without its flaws. States have stepped in to improve upon federal legislation. While the EU has not created a supranational standard at this point, they are able to provide resources to member nations and have done so quite freely. Both the EU and the US have engaged in local and regional planning to address this issue and it is expected that this type of effort will continue. The goals are very much the same- to create an integrated approach to handle brownfield cleanup and development.

Conclusions

This chapter has provided a rationale for studying environmental policy in the American states. States are very active when it comes to handling climate, energy and hazardous waste issues and are diverse in their actions. There is a great opportunity to study this variation. In addition, we can see that states tend to become active when the federal government is struggling to get their own programs passed. States may be able to learn from national efforts to pursue environmental policy, just as the national government may eventually learn from the states.

A comparison of how the US and the EU have tackled climate change and brownfield remediation provides a clearer picture of how states fit in to the broader effort to mitigate climate change and clean up brownfield sites. While it is possible that in the future the US federal government will take the lead on climate change, as opposed to the states, it is still likely that states will continue to fill holes in federal activity, as do EU member nations. It is likely that the US and the EU can learn from each other on the best approaches to handling brownfield redevelopment and climate change.

Chapter 2: A Review of the Literature

A number of literatures are relevant to the study of state environmental policy. Research pertaining to general state policymaking paved the way for more specific studies on the environment. Research on innovation and adoption sheds light on important factors that lead to policy change. In addition, studies that focus on environmental policy in particular have provided relevant explanations for how this policy area may be different from others and what factors affect environmental policy activity. In addition, a significant part of the argument made in this study includes the relationship between federal and state governments. As such, work on intergovernmental relations is also highly relevant.

State Policy Activity

Theories that come out of the state policy literature have focused on a variety of determinants including internal factors and diffusion. Early state politics work concentrated on whether economic or political indicators were more influential in state policymaking (Dawson and Robinson 1963; Dye 1966; Lewis-Beck and Rice 1983), with findings often leaning towards the economy as the driving force. New advances in methodology point to the marginal impact politics has on state welfare and tax policy (Plotnick and Winters 1985; Cnudde and McCrone 1969; Berry and Berry 1992). In addition, new composite measures were developed to capture state public opinion, spending priorities and ideology (e.g. Wright, Erikson, McIver 1985; Jacoby and Schneider 2001; and Berry et al 2007), which have demonstrated significance in a wide range of state politics studies. Using these measures numerous scholars have found politics to matter across several policy areas.

More recent work notes the importance of federalism and other external factors like vertical diffusion. Preliminary analysis of state environmental policy indicates that states begin

to innovate when it is clear the federal government is not going to do so. There is also evidence that states do not simply act alone, but work with the federal government on policy innovation. The federal government has actually encouraged states to innovate when it comes to climate change policy through efforts by the Environmental Protection Agency (EPA). The United States EPA provides tools and help to states interested in enacting new climate change policy. For example, the EPA provides policy guidelines to states on how to create a climate change action plan through a series of reports. This is just one indication that the federal government has (or at least attempts to have) influence on the states.

Explanatory models for state policy adoption often center around three areas: internal models, regional diffusion, and national interaction (Berry 1994). Berry argues that the models need not be mutually exclusive and can work in concert. Seminal works by Walker (1969), Gray (1973) and Canon and Baum (1981) find support for both internal determinants and diffusion explanations. This literature suggests that states with good fiscal health, professional capacity, and a willingness or interest in enacting new policy are the most likely to innovate (see Walker 1969, Canon and Baum 1981, Berry and Berry 1990). Walker (1969) finds that a number of characteristics are at play when states decide to innovate including education, per capita income and urbanization. Gray (1973) argues that Walker's work is too general and that states vary in their reasons for innovation depending on the issue area and time period of analysis.

The literature also points to the importance of policy entrepreneurs. It is argued that policy entrepreneurs are primarily responsible for policy innovation because they offer resources and develop ideas or solutions (Kingdon 1984; Polsby 1984; Walker 1981), interact with other policy actors to make things happen (Cobb and Elder 1984); and engage the public (Kingdon 1984).

Another major part of the policy innovation literature includes diffusion models. Diffusion of policy occurs when programs that are passed in one venue are emulated and implemented in other governments (state, national or local). Berry and Berry (1990) find that state lottery adoptions follow a diffusion pattern. In addition, tax innovation is partially explained by whether neighboring states also have the policies in place. Walker (1969) notes that if diffusion is going to occur there must be interactions between policy makers. In agreement with this argument, Mintrom and Vergari (1998) find that stronger policy networks lead to a greater likelihood that school choice policies will diffuse to other states.

It is argued here that diffusion is a smaller part of the picture on why states pursue environmental policy generally. States may be more likely to innovate with regard to a single program if neighboring states or leading states on environmental issues innovate first, though general environmental activism is less likely to show this kind of diffusion. Some work on the diffusion of renewable portfolio standards has been conducted by Matisoff (2008). The author finds that diffusion effects are a smaller aspect of climate change innovation than are internal determinants like environmental conditions, resources and public interest.

Environmental Policy

State environmental policy literature utilizes many of the variables found to be important in more general state policy research, with some additions. As previously discussed, evidence suggests that general state policy is affected by state fiscal health, political factors like ideology or partisanship, and diffusion. These variables are used in almost every state environmental policy study in addition to environmental specific measures such as pollution levels and environmental interest group population sizes. Work regarding state environmental policy examines a range of environmental issues from hazardous waste to air pollution policy. Much of the early state environmental literature had a primary focus on how states implemented federal mandates (Williams and Matheny 1984; Wood 1992). In addition, it is common for this literature to focus on very narrow areas of environmental policy. Studies have examined mining oversight (Hedge and Scicchitano 1994), air and water pollution ((Potoski and Woods 2002; Ringquist 1993a, 1994), hazardous waste (Williams and Matheny 1984; Ringquist 1994), and overall state environmental effort (Bacot and Dawes 1996; Bacot and Dawes 1997; Hays et al. 1996).

The literature on environmental policy tends to follow one of five arguments regarding internal determinants of policy adoption: state fiscal capacity, partisanship and politics, interest group populations, environmental conditions, and institutional capacity. In addition studies have included, or at least mentioned in passing, an important external factor, the federal government. This is examined both in terms of the relationship between governments and how the absence of federal effort promotes state environmental innovation.

State Fiscal Capacity

Early research on state policy mounted evidence that economic factors were the single driving force behind state policy activity (see Dye 1966, Winters 1976). More recent research has indicated the significance of economics, though findings suggest that there are other variables to consider. Ringquist (1994) finds that state policy action is mitigated by state revenue and per capita income and this conclusion has been a consistent finding among several environmental policy studies (e.g. Lester et al 1980, Lowry 1992; Hedge and Scicchitano 1994). Wealthy states are more likely to enact environmental programs than poor states, in part because they have the resources to do so.
Political Indicators

Evidence suggesting that politics plays a significant role in environmental policy is relatively abundant. Hays et al (1996) examine the determinants of environmental policy commitment among the states utilizing the Green Index as their dependent variable. The Green Index is one of very few comprehensive environmental activity indicators for the states. The authors find that a series of political factors including legislative composition, professionalism, interest groups and public opinion play an important role in state environmental activity.

Ideology of both citizens and elites has also been demonstrated by some to impact whether states will adopt environmental policy (Hedge and Scicchitano, 1994), though this finding is not born out by Ringquist (1994) who finds that it is only weakly related to water policy and not at all related to hazardous waste policy. Hays et al. consider environmental policy generally through the use of two indexes that tap into policy commitment across a number of environmental programs. The authors' find that neither elite ideology or citizen ideology (or what they refer to as "opinion liberalism") have significant effects on state environmental commitment (Hays et al. 1996). Similarly, Bacot and Dawes (1997) find no relationship between citizen ideology and environmental effort. Their measure of environmental policy is also general, though the authors use expenditures and interest group rankings rather than policies (Bacot and Dawes 1997).

Interest Groups

A number of studies have noted the effect of interest groups on environmental policy. These interest groups range from environmental groups to industry. Ringquist (1994) examines the determinants of state pollution control including water pollution and hazardous waste. The author finds that the higher saliency of water pollution control lends itself to be affected by

interest groups more than hazardous waste policy. Ringquist finds that mining interests matter for water policy, causing a less stringent policy effort, though he finds no negative effects for manufacturing industries. This finding is consistent with work by Lowry (1992). The argument for this result is that the manufacturing industry prefers a level playing field where the government pays for a portion of the regulatory costs. This ensures that smaller companies will shy away from entering the market because of the relatively high costs of regulation. Given this, a larger manufacturing interest can result in a greater likelihood that a state will adopt certain environmental policies.

Several studies have found the environmental interest group population to be important. When looking at state environmental spending Newmark and Witko (2007) find that the "strength of the environmental movement," or more simply the relative size of the environmental interest group population is the most important determinant in most environmental program areas.

Environmental Quality

Several scholars have noted that environmental quality is an important determinant of policy action. For instance the number of hazardous waste sites in a state has been demonstrated to lead to a more comprehensive hazardous waste program (Lester et al 1980). Lowry (1992) also finds that pollution levels are an important indicator of environmental policy adoption through his examination of state water and air policy. This argument is also evidenced by the idea that states with more densely populated areas will be more committed to protecting the environment because of the high pollution levels associated with density (Hedge and Scicchitano). Still, other scholars find that pollution levels have no impact on state action when

looking at state environmental spending (Newmark and Witko 2007) or an index of environmental commitment (Hays et al 1996).

While the studies examined thus far have looked primarily at legislative activity, similar results are found when considering the actions of administrative agencies. Sapat (2004) is particularly interested in environmental policy innovation within administrative agencies. Sapat argues that agencies play an important role in creating new policy through bureaucratic discretion. Several factors are presumed to impact whether agencies innovate including: capacity, state wealth, severity of the problem, political variables, and interest groups. These expectations are very similar to what is argued to determine legislative adoption and expenditures as well. Sapat's findings are consistent with expectations, though interest groups do not appear to be significant in this area. This is not entirely surprising as interest groups may tend to have a more direct impact on the legislature, with their impact filtering down to agencies indirectly.

While this literature provides important insight into the determinants of state environmental policy there has been little done with regard to general environmental policy activity at the state level and climate change policy in the states. In addition, studies involving policy effort tend to examine one cross-section of time making it difficult to understand environmental policymaking as a dynamic process. The study of state environmental policy is also in need of an update. The studies that have examined this question in a broad sense are somewhat dated and broad-based dependent variables are difficult to come by.

In addition, there are a number of inconsistencies in state policy research findings. While Ringquist (1994) finds that interest groups play an important role in determining water policy action he finds no such evidence for this type of role in regards to hazardous waste policy. While

this indicates a level of inconsistency it is important to note the diverse nature of environmental policy. It could be that more salient issues tend to garner more interest group action, though Newmark and Witco (2007) find that in every policy area they study interest groups play a role.

There are also conflicting studies in regards to the impact of ideology and public opinion on environmental policy. Hedge and Scicchitano (1994) and Hayes et al. (1996) find that liberalism is a significant contributor while Newmark and Witko (2007) do not. Bacot and Dawes (1997) do not find a role for public opinion along with Ringquist (1994). The confusion that comes out of the relatively inconsistent studies may partly be the result of different measurements or unspecified models. There is significant variation in the predictors of environmental policy with some leaving out a measure of interest groups and others excluding political variables like legislative partisanship. In addition, there are varying choices of measurement for ideology with some authors using a measure developed by Wright, Erikson, and McIver (1985) that utilizes public opinion data, while others use measures developed by Norrander (2001) or Berry et al. (1998). It could also simply point to the important differences across particular environmental issues. The study conducted here examines a variety of environmental policies and will provide additional insight into the puzzles left unanswered by current environmental politics research.

Climate Change in Particular

There is also a small, but growing literature on state climate change policy. The studies that most directly consider this environmental issue include work by Rabe (2004) and Matisoff (2008). Rabe utilizes a series of detailed case studies among the states to determine what factors influence state climate change policy. Rabe's analysis includes focusing events, interest group activity, and the work of policy entrepreneurs as potential determinants. Rabe also mentions the

failure of the federal government to pass any sort of meaningful climate change legislation, though he does not test for how this may impact state action. Matisoff (2008) conducts an empirical study of internal determinants and also conducts an event history analysis to identify possible diffusion effects. This work provides a very necessary statistical test of determinants on climate change policy innovation, but still leaves room for additional work. Matisoff's crosssectional model incorporates variables that address pollution levels, wind and solar capacity, major industries in a state, and ideology. Interest groups and other political variables appear to be left out of this study. The study also does not entirely address the dynamic nature of policy innovation.

Intergovernmental Relations and Federalism

Another area of study relevant to this project is that of intergovernmental relations and federalism. The history of environmental federalism is characterized by a great deal of variation over time. This is also true of the federalism dynamic more generally in the United States (Weissert et al 2009). At times the federal government holds states back by relying on a command and control type of regulation. In some cases states would be more innovative if they were given greater flexibility. On the other hand, the command of the federal government can at times lead to a more consistent, broad-based, and potentially more stringent environmental protection effort.

In the 1970's and 80's command and control regulation was common practice where the federal government set standards, which the states were to carry out, often without much federal dollars. These arrangements vary in terms of state flexibility and how much each respective government does, though during this time period the federal government typically had more

power. It was also generally true that the federal government offered stronger environmental protection than the states would have individually (Kraft and Scheberle 1998).

Mandates put upon the states and set by the federal government addressing environmental problems have typically involved very little preventative action. At times regulations may entail costs on business that may exceed benefits. Regulatory policy also tends to be narrow in scope, which often leads to a spotty environmental protection effort that addresses some concerns and leaves others untouched.

Both the EPA and states have been working to improve federal state relations whilst improving what they do by themselves. The EPA renewed focus on community based program activity in the late 1990's that could better suit local problems. Kraft and Scheberle (1998) argue that the success of environmental programs passed in the 1970's may not continue if intergovernmental relations are not restructured or improved.

As time has passed the assumption that states cannot provide adequate environmental protection on its own has changed greatly. The states are now addressing several types of environmental policy on their own due to lack of federal effort, or in response to a federal program (Rabe 2007, 425). Several states have pursued these policies because there is an expected payoff in a healthier citizenry (Woods et al 2008).

The federal system allows for a variety of ways that government can pursue policy action, whether through a conjoint system between various levels of government, or through distinct efforts by the respective levels. In the case of climate change the states have taken on the issue entirely separately from the federal government. In the end this type of arrangement may be less effective than if the federal government had addressed the issue or partnered with the states to do so. Welborn (1988) finds that cooperative arrangements between national and state

governments can improve environmental quality and that these types of relationships, though often criticized, result in a realistic way of dealing with environmental concerns. Despite this, the states appear to be alone on climate change, though a stronger effort is being made at present through the Obama administration. For their part, the EPA does provide some policy learning tools to the states and encourages them to engage in climate change policy innovation.

The question still remains, once the states have adopted environmental policy, does that lead to policy learning and action by the federal government? The federal government often seeks to claim credit through entering into policy areas where the states have already engaged in policymaking (Weissert et al 2009). Politicians have reelection goals and moving into a new policy area can help them achieve those goals (Volden 2005). In fact, Paul Peterson's (1995) legislative theory argues that the federal system is the result of political needs.

Ultimately policies passed by the states may diffuse vertically to the federal government. The hope is that states truly act as laboratories of democracy and that the lessons learned from the states can be passed on to the federal government.

The literature on vertical diffusion has mixed findings as to whether the federal government is utilizing information and strategies from the state level. Some scholars have found that the federal government is not really learning from the states (Mossberger 1999; Thomson and Burke 2007). Even examinations of a broad set of laws indicate that not much state to federal policy diffusion is occurring (Boeckelman 1992).

In terms of climate change policy in particular, Rabe (2007) finds that the federal government is doing very little to consider state climate change policy plans. Rabe notes that from 1989-2006 only two Congressional hearings mentioned state climate change plans.

Weissert and Scheller (2008) examine the vertical diffusion (from state to federal government) of health policy. The authors find that the federal government is not engaging in very much policy learning, despite the readily available information from the states that have extensive experience in health laws. They find one exception with the SCHIP program; however, the other five case studies the authors employ find more disheartening results. So while we see policy learning occurring in horizontal diffusion studies (e.g. Kile 2005; Mintrom and Vergari 1998), it seems to be less common through vertical diffusion.

Most diffusion studies are focused on horizontal or regional diffusion and tend to mention vertical diffusion only in passing. While scholars acknowledge its existence vertical diffusion has not been widely studied (Daley and Garand 2005). Even less has been examined in terms of whether federal policy failure or inaction can lead to state innovation. There is some evidence that national level political activity (or inactivity) can have an impact on state level policymaking and vice versa. Allen and his colleagues (2004) have noted that federal vetoes can lead to increased policy activity among the states. In addition, if there is a general lack of policy passage at the federal level you may see states pass their own policies. For example, during the gap between passages of a new minimum wage several states passed their own increase in the minimum wage.

Renewed consideration by scholars has surfaced regarding the possibility that federal inaction can result in innovation among the states. McCann, Shipan and Volden (2010) note that under certain conditions states take cues from federal government action and inaction that induces them to innovate.

While the federal government has not passed any significant climate change legislation there have certainly been hearings and attempts by members of Congress to pass laws to this end.

One major attempt by Congress with the Climate Stewardship Act ultimately failed in 2003 by a relatively close vote margin of 43 to 55.

Hearings and other work by members of Congress can impact the salience level of policy issues and may entice states to take on these issues (McCann et al 2010; Nicholson-Crotty 2009). McCann et al. (2010) argue that federal activity that does not end with the passage of laws can impact states in a couple of ways: an increase in salience and through the provision of information. Increased saliency of a policy problem can promote the activity of interest groups and the general public, which further encourages states to innovate. In addition, states may engage in policy learning from action or inaction by the federal government. States may look to federal activity to learn about possible solutions to a policy problem and what kinds of costs are involved in policy action.

Increased state activity may also provide the federal government with an out. The more policy passed by the states the less the national government feels the need to address the policy problem. Shipan and Volden (2006) find this to be true as well.

Chapter 3: The Structure of State Environmental Policy

Environmental policy among the American states incorporates a variety of different subpolicies and tactics, though the average observer understands the term as a catchall that can be considered as a whole, rather than the sum of its parts. Climate change policy in particular has become a hot bed of activity among the states and it is unclear whether these policies stand out among other environmental programs. Do states that enact policies related to climate change also consistently pass policy in regards to sustainable development, or other environmental issues?

While it is plausible that various sub-areas are strongly linked there is little empirical evidence to date. Though research has been conducted on a variety of environmental sub-policies, questions remain as to whether various environmental policies are similar enough as to be combined into a reliable scale. At present evidence from the environmental policy literature is all over the place. One can find empirical evidence for any conclusion you might want to draw about the linkage of these programs.

There is reason to suspect that states may treat the large range of environmental policies differently than policy specific to climate change given the latter is global in nature. It is also conceivable that if a state is generally liberal or favorable to strong environmental protection policies they may pass stringent policy in all environmental sub-areas. The states may have a high degree of environmental activism that leads them to be particularly driven when it comes to environmental policy. If there is a consistent link between these various policies then it is likely that they will fit into one scale. If this were an accurate portrayal of the policy domain a state that passes stringent standards on the use of renewable energy sources would also be inclined to pass policy that strongly encourages sustainable development.

One might question why it matters if a state passes a set of potentially related environmental policy versus one or few. Schneider and Ingram (1997) argue that a less coherent policy area leads to disjointed policy. When it comes to making changes in environmental quality it is important to tackle a variety of policy changes in order to produce results. Hays et al (1996) also argue that environmental protection is a concern that needs to be addressed through a series of environmental programs across a broad range of issues to be effective. For instance, scientists argue that in order to curb climate change a number of policies should be passed including encouragement to use renewable energy sources, a clearly delineated plan of action (such as a climate action plan), and efforts to reduce auto emissions, among others. Passing only one policy that relates to climate change may not be enough to solve the problem. This is especially true if only states are active in addressing climate change, as opposed to the federal government. Given this concern lawmakers may need to make concerted efforts to pass a package of policies and consider how those policies may work together. This argument holds for environmental policy more generally as well. If a state has clean air, but has numerous hazardous waste sites this still results in an overall poor environmental quality. If a state manages to pass one program related to more efficient electricity usage, but does not make efforts to encourage the use of renewable energy sources then they are only addressing one part of the problem.

Climate Change Connection to other Environmental Problems

Climate change as a policy problem contains characteristics that could make it distinct from other environmental policies, though there are possibilities for why it may not be distinct as well. Climate change is often considered distinct because it is a global problem, requiring a significant amount of action from numerous countries to properly address. This international characteristic of the problem could make it unique when considered alongside more domestic

issues in the United States. In addition, states that pursue climate change policy can still feel the negative effects of climate change if other states and countries choose not to address the problem. States acting alone have presumably little to gain by pursuing aggressive environmental policies aimed at preventing climate change because of their limited capacity to impact such a global problem. If a state chooses to implement programs to reduce carbon emissions, while their neighboring state does not, they are incurring the costs of a problem that could be shared.

The possibility that climate change action might be similar to other environmental problems is, in major part, due to framing. If global issues like climate change can be framed so that it is clear the problem has local consequences this might provide a link to a variety of policy actions. Despite the fact that climate change extends far beyond the borders of the United States, politicians and scientists have linked these policies to other environmental problems within states. By framing climate policy as something that can also provide improvements in air quality and public health, individuals and interest groups have connected a broad set of environmental issues. Interest groups, politicians, the media, policy entrepreneurs and scientists all play an important role in framing environmental policy (Kingdon, 1993). This framing can further link various sub-areas of environmental policy.

With regard to climate change, it is common for policies to be framed as both beneficial to the global problem as well as beneficial to an individual state (or country). Significant effort is made by political figures to demonstrate to the public that passage of climate change policy will have direct consequences for their constituency. California Governor, Arnold Schwarzenegger has often noted the direct effect of climate change for California including a rise in sea level, forest fires, air pollution and damage to the economy (Chrisman, 2006). It is also common to link climate policy with air pollution and energy issues. Schwarzenegger entered

office with the need to address both a severe air pollution problem and an energy problem. Climate change policies often tap into both of those issues. The Commission on Sustainable Development has argued that air pollution, climate change, and energy problems are "crosscutting issues" that can be addressed as one (Sustainable Development, 2007). If policy is tackled in each of these areas there are likely to be co-benefits. The linking of these issues increases the likelihood that the policy domain coheres and that states will pass a set of related environmental policies rather than just one.

Scholarly research regarding the politics of climate change is limited to work by Barry Rabe (2004) and Daniel Matisoff (2008). The research conducted by both authors on climate change typically includes legislation that is very specific to climate change in addition to more general energy legislation. While combining these areas of environmental policy is theoretically justified it has not been empirically tested. For example, it is still unclear whether climate action plans and net metering or appliance standard policies represent the same concept. While net metering in effect leads to increased use of renewable energy the program itself did not necessarily come about as a response or solution to climate change.

Theory

Important to the consideration of state environmental policy activity is whether states act as specialists and focus in on particular policy areas when it comes to innovation. Gray (1973) theorizes that "innovativeness" is not a characteristic that defines a state across policy areas. In addition, it is not typically accurate to say that a state will be innovative within a particular issue area either. In her well known study on state policy innovation Gray examines a set of questions about innovation, one of which is interested in whether states are innovative over time, at a specific time point, or for certain issues. Gray finds that, "'Innovativeness' is not a pervasive

factor; rather, it is issue and time specific at best." Of the three issues examined in her work including welfare, education and civil rights, Gray finds that only civil rights issues are highly intercorrelated in terms of state adoption. This finding is in part because the policy area of civil rights is highly politicized. The other issues areas examined in Gray's work do not indicate that certain states are prone to innovativeness or that specific characteristics lead to consistent innovation.

Several scholars have disagreed with Gray (1973) and found some characteristics that generally lead to innovativeness. For instance Walker (1969) finds that state wealth, urban population, and legislative professionalism all contribute to innovation.

Consistent with Gray's finding for civil rights, it is expected that environmental issues will demonstrate a level of "innovativeness" among the states. Many environmental issues are politicized and, as previously discussed; more ideologically liberal states tend towards adopting these policies.

Also relevant to this discussion are the characteristics that lead to state innovation. Scholars have noted the importance of state wealth for innovation (e.g. Walker 1969, Gray 1973). If the determinants of policy adoption were purely driven by state capacity factors, like economics or professionalization, then a state with strong capacity would be likely to adopt across all issue areas and within an issue domain, simply because they are capable. Of course, research has demonstrated that other variables related to politics and diffusion can also play a role (Berry and Berry 1990).

When considering environmental policy innovation over time one would expect policy activity levels, or innovativeness, to shift along with political factors. For instance, a strong environmental interest group population may increase the likelihood of environmental activity,

while a large mining or other industrial interest presence may decrease state action. In addition, who holds elected office in the state legislature or the governorship are likely to affect which policies are considered and passed.

To address questions related to how states create policy and whether a set of environmental programs are pursued in tandem, a scale is created based on which policies states have adopted among a subset. This scale provides a number of uses including the ability to determine whether environmental policy can be examined as a whole, or whether policy action varies depending on the particular type of environmental policy in question.

Climate change policy may stand out among other environmental policies given its global nature and the variance of the potential impact climate change may have on each state. It is also an issue of high salience, which often impacts the way policy is created. On the other hand, states that are inclined to pass strong environmental policy in general may be just as likely to pass climate policy based on ideology.

Liberal states are expected to be somewhat more likely to pass environmental policy in general given anti-regulatory beliefs while conservative states are more likely to pass policy only if they have a very strong incentive to do so. In support of this argument, Dunlap et al (2001) find that over the past 30 years Republicans have consistently become less likely to vote proenvironment while Democrats have become more likely to do so.

For environmental policy there are issues that are highly related, such as energy and climate change. On the other hand there is also an extremely diverse set of environmental issues out there that are very narrow in focus. Exemplifying this are the characteristics of the environmental interest group population. For instance, while broad groups like the Sierra Club exist there is also a multitude of organizations that focus on narrow areas like sustainable

development, brownfield cleanup, water pollution, endangered species protection and so on. The broad so-called "glue" is the protection and cleanup of the environment; however, smaller and more intricate goals exists that could make the policy area less coherent as groups compete for scarce resources.

When considering the interest group population regarding the environment it seems that the policy area may cohere well. The number and size of environmental groups increased substantially from 1960-1970 and continued to grow during the Reagan years. Many national environmental groups, like the Sierra Club, National Wildlife Federation, and the National Audubon Society, consider a broad array of environmental policy issues. This implies that environmental problems have connecting elements that could make it likely for a state to adopt a series of policies rather than just one. On the other hand, a number of environmental groups that focus on one or very few issues exist, and this is even more common when examining state and local organizations.

Scholars have also noted that environmental groups began to split into factions in the 1980's (e.g. Vig and Kraft 2006). Mitchell (1989) argues that environmental groups became increasingly divided, varying in terms of whom they represent. Bosso and Guber (2006) also argue that this division has continued into the 21st century. While environmental groups number in the thousands this does not necessarily mean they do not work together and share a common purpose. Milne et al (1996) examine the alliances formed between environmental groups. Of the 197 groups surveyed almost 60% were allied with other environmental organizations and the government. Duffy (2003) argues that environmental groups are increasingly forming coalitions with other environmental organizations. Duffy's research finds that from a sample of

environmental groups two-thirds of the organizations studied form coalitions with similar types of groups.

Of course it is logical for similar environmental organizations to work together. For example, several groups associated with water pollution in central Texas are brought together in a coalition called the Greater Edwards Aquifer Alliance. Groups focused on water pollution may still be competing with other environmental interest groups concerned with other sub areas. Extant research on the environmental interest group population leads to the expectation that despite some issue niches, there is a lot of interconnectivity.

I argue that the policies examined in this paper will fit into an integrated scale given that the policy domain meets a number of criteria important to innovation and coherence: It is a substantive policy domain, has a significant interest group base that can link issues, and has the connecting goal of preserving the natural environment. Environmental issues are also often politically divisive which can lead to a state pursuing multiple programs to address related issues, or none, depending on its political leanings. In addition, while climate change is a global problem, policymakers have been able to frame the problem in such a way as to link it to other environmental concerns. States have enacted a wide range of policies related to renewable energy broadly and climate change specifically. While these policies vary in terms of the costs involved for the state there does not appear to be any clear pattern where a state passes the easier or more symbolic policies first. For instance, a Renewable Portfolio Standard (RPS) is often more concrete and typically more difficult than creating a non-binding climate action plan. Despite this, RPS's began to appear earlier than climate action plans and are more frequent (Rabe 2004).

The Study of State Environmental Policy

There are many questions of interest regarding the linking of environmental sub-areas. Are all environmental policies created equal when it comes to state policy adoption? Will a state that is likely to pass stringent climate change policies also be likely to pass strong brownfield programs?

To consider these environmental policy structure and policy passage questions this chapter focuses on the creation of an environmental activity scale. There are a number of reasons why it is important to study state environmental policy in this manner. Environmental program adoption in the American states is fairly common, with states tackling many different sub-areas including climate change, brownfields, water pollution and others (Rabe 2004, Ringquist 1994). At present it is still unclear as to why states are pursuing adoption of a number of different policies and there is very little empirical evidence to suggest that a state will pass a variety of policies rather than just one.

There are several factors that need to be considered when hypothesizing about how the environmental policy area will be structured at the state level. Some sub-areas of environmental policy are more related than others. The literature on state environmental policy provides a background and understanding of the intricacies associated with this policy area. Consideration has been given to the distinct nature of various sub-areas of environmental policy and work has been done to look at issues ranging from hazardous waste to air pollution policy. The environmental policy literature often focuses on particular issues like mining oversight (Hedge and Scicchitano 1994) or hazardous waste (Williams and Matheny 1984) though there is also work that examines environmental policy more broadly (Bacot and Dawes 1996; 1997, Hays et al 1996). Findings by Ringquist (1993) suggest that various sub-areas of environmental policy

have different determinants of policy passage and thus should not be examined together, but as distinct sub-policies. While there are substantive differences between various environmental problems it is still possible that there is enough of a linkage between these policies that lead to state adoption of multiple environmental programs.

Data

Data were collected on 18 environmental programs that cover a range of environmental issues during the time period 1994-2009: Mercury laws, greenhouse gas targets, advanced coal technology, smart growth policy, green pricing programs, green power purchasing, appliance efficiency standards, biofuel incentives, the creation of a climate change advisory board, vehicle emission standards, brownfield voluntary action programs, climate action plans, regional climate initiatives, renewable portfolio standards, commercial building standards, green building standards for public buildings, net metering and public benefit funds. The policies selected address energy issues, climate change, brownfields, sustainable development and air pollution. The table below provides a concise description of each of these programs.

Table 1: The Programs in Drief	Table 1:	The Program	ns in Brief
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Policy	Description
Advanced Coal Technology	Laws that provide funding or tax credits towards the advancement of clean coal technology.
Appliance Efficiency Standards	Standards that require or incentive improvement in the efficiency of appliances (that go beyond federal requirements).
Biofuel Incentives	Tax exemptions and/or grants to promote the use of biofuels.
Climate Action Plan	Typically set out goals or steps for a state to take in reducing their contribution to climate change.
Climate Advisory Board	Establishment of a board or commission to investigate climate change solutions.
GHG Emission Reduction Targets	Emission reduction goals that states intend to achieve by a given date.
Green Commercial Building Standards	New construction of private buildings follow LEED standards and that older buildings attempt to increase their energy and water efficiency.
Green Power Purchasing	States purchase of "green" power for state facilities. This green power typically comes from solar panels or wind farms.
Green Pricing Program	Requirement that utility companies offer customers the ability to have their electricity provided by renewable energy resources.
Green Public Building Standards	New construction of public buildings follow LEED standards and that older buildings attempt to increase their energy and water efficiency.
Mercury Laws	Controls on how mercury is disposed of and what products it can be used in.
Net Metering	Provides incentives for consumers to generate energy through renewable sources.
Public Benefit Funds (PBF)	Dedicated dollars for energy efficiency and renewable energy projects.
Regional Climate Initiative	Set out carbon emission reduction targets or cap in trade programs in conjunction with other states along with other goals to reduce impact on climate change.
Renewable Portfolio Standard (RPS)	Takes the general form of a requirement that utility companies generate a certain percentage of their energy from renewable sources by a specified date.
Vehicle Emission Standards	Require new vehicles to reduce emissions by a given percentage by a target year.
Vehicle Miles Traveled (VMT) and Smart Growth	Provide incentives and plans to reduce the number of miles traveled by vehicles per capita and encouragement of regional development planning, improved mass transit.
Voluntary Brownfield Cleanup Program	These programs typically offer incentives for brownfield cleanup to developers and/or grants from the government for redevelopment.

The policies consist of executive orders, rule making by administrative agencies and the passage of legislation, though a majority of the policies were created through legislation. While the various avenues of policy adoption may differ substantively it is often the case that the same set of characteristics determine adoption within each of these institutions. Administrative decisions often depend on political and economic variables, which is comparable to legislative adoptions (Sapat 2004).

The policies were chosen for a number of reasons: First, a large majority of states enacted these programs in the last two decades. In addition, policies were selected in an effort to include a variety of environmental measures that tap into different sub-areas of environmental policy. Several of the policies selected were deemed important in the pursuit of reducing human causes of climate change by the Pew research organization. Availability of data that provided accurate dates of policy enactment was also a consideration.¹

Detailed Policy Descriptions

Advanced coal technology has been pursued by 15 states in recent years. States have passed laws that provide funding or tax credits towards the advancement of clean coal technology. In addition, laws may have requirements or goals for energy companies to begin utilizing more advanced coal technology in their energy production. Specifically, states are looking to have their energy companies utilize integrated gasification combined cycle (IGCC) technology. North Dakota requires that 20% of the funds aimed toward state coal development be allocated for clean coal projects.

¹ The majority of the policies consider energy and climate change, in part, because of data availability. Resources that indicate the year of policy enactment can be found in existing sources including the Database of State Incentives for Renewable Energy (DSIRE).

The federal government has passed a number of appliance efficiency standards towards products ranging from water heaters to dishwashers that require state compliance. A few states had efficiency standards on the books that were preempted by the federal standards. Others have adopted new standards since the new federal laws were enacted that go even further in their efficiency levels. California has been the most proactive passing numerous standards that go well beyond federal regulations (dsireusa.org).

States have also offered tax exemptions and grants to promote the use of biofuels. 38 states have these incentives and most have done so in the last five years. Florida's standard requires that automobile gasoline contain 10 percent ethanol. Iowa requires that a quarter of automobile fuel come from renewable sources by 2020 (*Statewide Action Maps*).

Climate Action Plans typically set out goals or steps for a state to take in reducing their contribution to climate change. They vary in detail with some states having specified targets that are mandated by law while others discuss voluntary actions. 35 states have these plans to date. States have also entered into regional initiatives to combat climate change. These initiatives typically set out carbon emission reduction targets and set out other goals to reduce state impact on climate change. The regional agreement among the northeastern states includes a cap and trade program and an auction of pollution credits to generate funds for renewable energy projects (*Statewide Action Maps*).

In recent years numerous states have established boards or commissions to investigate climate change solutions. Typically these boards are comprised of representatives from industry, environmental groups and academics. The goals of these boards vary, though are often tasked with providing information on how the state may be affected by climate change and what the state can do to adapt to climate change. In addition, board members should develop plans of

action for reducing greenhouse gas emissions and identify the sources of these emissions in the state. Many of these boards have come up with a large variety of policy options for the states. This is arguably the easiest policy for a state to pass and implement among the 18; however, most states have yet to create a commission.

Nearly half of the states (24) have emission reduction targets or goals that they intend to achieve by a given date. Most states have set these targets through executive order and have done so in recent years. States vary in whether their goals have been set into law and whether there are enforceable penalties. California is currently the only state to mandate a reduction in greenhouse gas emissions. Arizona's goal is to reduce greenhouse gas emissions to 2000 levels by 2020. The state intends to reduce levels to 50 percent below 2000 levels by 2040 (*Statewide Action Maps*).

Some states also have green pricing programs which offer customers the option of receiving their electricity from renewable or high efficiency energy sources by paying a bit extra. Minnesota's green pricing program allows customers to choose renewable energy as their electricity source, either through direct means or through the purchase of renewable energy credits (dsireusa.org).

Several states have passed green building standards for public buildings as well as commercial buildings, though the former is more common. 20 states require that new construction of public buildings follow LEED standards and that older buildings attempt to increase their energy and water efficiency. The U.S. Green Building Council established the certification program, LEED, which provides a set of criteria for 3 levels of green building. Buildings with the most aggressive efforts to include energy and water efficiency and sustainable building products can receive a platinum LEED certification (Nitkin 2007). Illinois requires new

construction of public buildings to be LEED certified. In addition, if a building is being renovated and the budget is at least 40% of the buildings replacement costs the renovation must follow LEED standards as well. The level of LEED standards varies depending on the size of the new building, with larger buildings needing higher standards than smaller structures. Most states do not require commercial structures to follow any sort of green building standard; however, there are a few exceptions. Hawaii enacted legislation in 2008 that will require new single-family homes to have solar water-heating systems installed. This bill was put in effect in January 2010 (*Statewide Action Maps*).

States can also opt to purchase green power for their state facilities. This green power typically comes from solar panels and wind farms. Nine states have done so to date. Many of these states pursued these policies through executive order with governors directing agencies to increase their purchasing of green power over time. Several states also utilize savings from energy efficiency towards the purchase of green power.

Another policy area that has received state attention is the use of mercury in commercial items. The environmental impact of mercury that ends up in landfills has lead many states to place controls on how mercury is disposed of and what products it is used in. Many states have restricted the use of mercury in fever thermometers and some have gone further by controlling its use in appliances and automobiles. Maine prohibits the sale of mercury thermometers and does not allow its use in measuring devices, thermostats and switches (*State Legislation and Regulation*).

Net metering programs provide an incentive for consumers to generate energy through the use of solar or wind technology. Net metering determines how much electricity is produced and consumed by the individual. When the production of energy is higher than consumption the

electricity is sold to the grid and the owner receives the current value of that energy in dollars (dsireusa.org). There are cases where state legislation is modeled after another state's program. For instance Louisiana's net metering program follows the standards set by Arkansas's law, passed in 2001. Both require utility companies to offer customers with hydropower, solar, wind, biomass, or geothermal electricity systems net metering.

Public benefit funds are dedicated dollars for energy efficiency and renewable energy projects. 19 States have such funds with Rhode Island being the first to adopt one in 1996. Energy companies typically generate the funds through a surcharge to consumers. Delaware's public benefit fund is accumulated from the customer's of the states investor-owned utility company, Delmarva Power and Light. The money goes into the Green Energy Fund and is utilized for several "Green" programs (dsireusa.org). The programs involve environmental education and renewable energy technology grants for businesses and university studies.

A Renewable Portfolio Standard (RPS) takes the general form of a requirement that utility companies generate a certain percentage of their energy from renewable sources by a specified date. RPS's vary extensively from state to state with some offering a very minimal requirement and others with a more stringent requirement. For instance, when comparing the Texas RPS to that of Hawaii the differences are stark. Hawaii requires their utility companies to generate 40% of their electricity from renewable sources by 2030 as opposed to only 10,000 MW (about 5%) by 2025 for Texas utility companies (Rabe 2004).

California was the first to enact vehicle emission standards. These standards generally require new vehicles to reduce emissions by a given percentage by a target year. California's standard requires that new vehicles reduce emissions 30 percent by 2016. This standard applies to nitrous oxide, methane, hydrofluorocarbons, and carbon dioxide. Some states enacted this

standard between 2002 and 2005 though several more did so between 2007 and 2009 (*Statewide Action Maps*).

Another policy area that states have pursued is smart growth. Some states have passed standards for vehicle miles traveled (VMT), which provide incentives and plans to reduce the number of miles traveled by vehicles per capita (*Statewide Action Maps*). These include incentives to carpool and better transit options in addition to sustainable development. Better city planning and zoning laws and preservation of green space characterize smart growth policies. In addition several states have focused on coordinating planning among metropolitan areas and creating transportation plans that work well between these areas. Public transportation and housing plans are also incorporated into smart growth policies. Connecticut's strategy includes the redevelopment of areas that already have an infrastructure in addition to the coordination among regions in the state in regards to transportation. Nevada also has a very intricate smart growth policy that coordinates planning regarding transportation, air pollution and land use among several jurisdictions including Reno, Las Vegas and Lake Tahoe. While this legislation is passed at the state level cities and other localities play a very important role in the implementation of these policies.

Several states have pursued voluntary cleanup programs to encourage the redevelopment of brownfields. These programs typically offer incentives for cleanup to developers and/or grants from the government for redevelopment. Michigan requires the submission of a baseline assessment to the Department of Environmental Quality, which will exempt new owners from previous contamination of the property. This encourages redevelopment of brownfields by creating a market for such properties (Hula and Bromley-Trujillo, 2010).

As one can see by the policy descriptions, the majority of these policies consider energy related issues and policy specific to climate change. This does provide some limitation in the ability to determine how interrelated environmental policies are; however, this data can still tell us something about whether a state is consistent in passing policies among this subset.

The following graph demonstrates the chronology of these policy enactments. As we can see, the policies enacted earliest are typically net metering and voluntary brownfield cleanup programs, though net metering programs continue to be adopted across the time period while the last voluntary cleanup program was enacted in 2002. For some policies there is a clear spike in activity as is the case with regional climate plans, spiking in 2007, climate advisory boards in 2007, appliance standards in 2007 and mercury laws, jumping up in 2002. The remaining programs follow a steady pattern of adoption that spans a number of years.





Data Collection

These data were collected from numerous sources. Information on several of the climate change policies was obtained from the Pew research organization (*Statewide Action Maps*). State energy policy information is obtained from the Database of State Incentives for Renewable Energy (DSIRE). The information regarding voluntary brownfield cleanup programs was gathered from a report conducted by the Environmental Law Institute (Pendergrass, 2001) and was brought up to date through state by state examinations and updates from the EPA.

Information on Renewable Portfolio Standards was found in Rabe's, *Statehouse and Greenhouse* (2004) with updated information through individual state websites. While the Pew data are comprehensive in terms of current climate change policy they do not detail passage of laws that were not passed in recent years. Supplementary data were obtained from a variety of sources including the EPA and individual state websites that pinpoint when policies were passed in the various areas of environmental policy.

Policy Variation Across States

There is a great deal of variation across states with regard to the number of policies passed. The figure below demonstrates this variation. Mississippi is on the low end, having only enacted one out of the 18 policies, a voluntary brownfield cleanup program. On the high end, with 16 policies adopted, is Connecticut, which is closely followed by Oregon, California and Washington, each with 15 policies passed each. An overall examination of these descriptive data indicates that it is more typical for ideologically liberal states to pass a large number of policies than conservative states.



Figure 3: Environmental Program Passage by State

Total Number of Policies Passed by 2009

In fact, every state that has four or fewer policies passed (17 states) was a state won by Senator McCain in the 2008 presidential election. In addition, nearly every state with 11 or more policies passed (16 states) was won by President Obama². States in the middle range tend to be ideologically moderate states that are traditionally considered to be battleground states in close presidential elections³.

There are many occasions when states along this continuum have passed the same number of policies. An important thing to note is that in most cases states are not passing the same programs. To illustrate, Michigan, New Hampshire and Hawaii have all enacted 8 programs out of the 18 examined here, but only New Hampshire has a VMT program of the three. Hawaii has enacted both public and commercial green building standards while neither New Hampshire nor Michigan has done so.

Similarly, three states closer to the bottom of the activity scale- Georgia, Texas and Kentucky- have some overlap, though they still vary in which programs they have adopted. Kentucky is the only state of the three to have a climate action plan, while only Texas has passed a renewable portfolio standard. The wide variety among these states points to the likelihood that these programs could be incorporated into one scale.

There is also considerable variation in how many states have passed each policy. The figure below provides descriptive data on how many states have passed each policy.

 $^{^{2}}$ The exception here is Arizona

⁵ Nearly every battleground state is in the middle range of policies passed including Missouri, North Carolina, Florida, Pennsylvania, Indiana, Nevada, Ohio and Michigan



Figure 4: Number of States that Have Enacted Each Program as of 2009

Number of Programs Passed

Most of the programs under consideration fall within a range of 10 to 35 states having adopting the policy. Brownfield voluntary programs have been passed by nearly all states, as have net metering programs, while relatively few states have passed commercial building standards.

The data collected on the 18 policies are broken down by state and year for the time period 1994-2009. Data are coded such that once a state passes a given policy it receives a 1 for every year after that policy is adopted and a 0 if it has yet to adopt the policy. A description of each policy is also documented.

Methodology

A scaling analysis is conducted on the policy data that includes 800 observations (50 states by 16 years). There are a number of potential ways to scale these data. The 18 programs could be defined in a cumulative fashion, with the expectation that states enact the easiest among the programs first before moving on to more difficult programs. The data do not appear to follow this kind of pattern with many states adopting seemingly more costly programs, in terms of implementation and budget costs, before adopting easier programs. For example, several states have adopted a renewable portfolio standard which often requires a significant cost, while some of these same states have yet to create a climate advisory board, which is highly symbolic and relatively easy for states to accomplish.

To test this expectation, a Mokken scale procedure is run on the data and the fit of the cumulative pattern is tested. The procedure is run separately for each year given the data has an inherent cumulative structure with states keeping policies once they have been enacted over time. The H coefficient, or Loevinger's H, ranges from -0.013 in 1994 to 0.397 in 2009. For a vast majority of the time period the H coefficient indicates no scalable pattern and in the final year the increase in the coefficient is attributed to the nature of cross-time data. Results indicate that these environmental policy adoptions do not fit a cumulative pattern.

The expectation for these environmental programs is that once a state begins to adopt among these programs they will continue to do so in an additive fashion. As a state jumps into

the pool of adoption one can expect the state to continue. As such, an additive scale (or Likert Scale) is created and a calculation of Cronbach's alpha is done to determine whether the programs in question could be combined into a reliable scale of environmental policy. This type of scale is often used in the social sciences, particularly in the examination of attitudes. Here, the scale is comprised of environmental programs, a technique that has been used by other scholars (e.g. Schneider, Jacoby and Coggburn 1997). An additive scale assumes that each of the items in the scale has a monotonic relationship with the item that the scale is measuring (McIver and Carmines 1981). This scaling procedure indicates whether the set of items in the scale represent the same basic concept. This technique, while very simple, can provide evidence as to whether each of these programs fits in, or is connected to the others. In other words, are these environmental programs separate measures of an underlying environmental innovativeness? If the set of programs combined in one scale demonstrates reliability then the resulting scale could be utilized as a dependent variable in future analyses of state environmental activity.

Findings

The additive scale utilizing all 18 programs yields a strong alpha of .8801. This is well above the typical social science cutoff for this type of scale at .7 and demonstrates that the policies appear to fit together. Details from the reliability test are in the following table.

	itom tost	itam mast	average	
Item	correlation	correlation	covariance	alpha
PBF	0.619	0.537	0.035	0.873
Public bldg.	0.624	0.554	0.036	0.871
Commercial bldg.	0.389	0.351	0.039	0.879
Net metering	0.622	0.527	0.034	0.874
RPS	0.730	0.665	0.034	0.867
Regional initiative	0.738	0.685	0.034	0.866
Climate plan	0.695	0.623	0.034	0.869
Brownfield				
program	0.397	0.304	0.038	0.881
Vehicle emissions	0.697	0.653	0.036	0.869
Advisory board	0.569	0.505	0.037	0.873
Biofuel incentives	0.401	0.346	0.039	0.878
Appliance				
standards	0.639	0.593	0.037	0.872
Green power	0.485	0.427	0.038	0.876
Green pricing	0.448	0.386	0.038	0.877
VMT/smart growth	0.582	0.496	0.035	0.874
Advanced coal	0.321	0.245	0.039	0.882
GHG targets	0.744	0.698	0.035	0.867
Mercury laws	0.616	0.552	0.036	0.872
Test scale			0.036	0.880

Table 2: Full Set of Environmental Programs

The variables that fit the least well given their very slightly higher alpha if the item were to be removed and lower item- test correlation, are advanced coal technology and voluntary brownfield programs. In other words, were these items to be removed from the scale the overall alpha would slightly increase, though this difference is very small. A potential reason that advanced coal technology does not fit in with the other policies quite as well is that states likely to seek this kind of technology are those that have a large coal industry and these same states may not be likely to pass other progressive environmental programs. Brownfield policy also has less in common with the other policies given it can be more of a localized problem. In addition, there is less variation among states within this policy, with most states having enacted a voluntary brownfield program.

The Fit of Climate Change Policy

In order to investigate whether policy specific to climate change should be considered separate from the other policies examined an alpha is calculated for just those programs that are directly related to climate change⁴. These policies have been consistently viewed in scholarly work as climate change programs (Rabe 2004; Matisoff 2008).

Table 3: Climate Change Programs

			average	
	item-test	item-rest	interitem	
Item	correlation	correlation	covariance	alpha
Climate plan	0.767	0.613	0.061	0.818
Regional initiative	0.799	0.689	0.062	0.799
RPS	0.759	0.605	0.062	0.820
Advisory board	0.653	0.521	0.074	0.831
Vehicle emissions	0.722	0.624	0.072	0.817
GHG targets	0.810	0.720	0.064	0.796
Test scale			0.066	0.839

⁴ Six programs including RPS, climate action plan, regional climate agreement, creation of a climate advisory board, vehicle emission standards, and greenhouse gas emission targets.
	item-test	item-rest	average interitem	
Item	correlation	correlation	covariance	alpha
Public bldg.	0.649	0.511	0.020	0.696
Commercial bldg.	0.394	0.320	0.025	0.729
Net metering	0.674	0.488	0.019	0.703
Brownfield program	0.475	0.300	0.023	0.730
Biofuel incentives	0.409	0.302	0.025	0.727
Appliance standards	0.590	0.488	0.022	0.706
Green power	0.487	0.372	0.024	0.719
Green pricing	0.462	0.342	0.024	0.722
VMT/smart growth	0.589	0.412	0.021	0.714
Advanced coal	0.366	0.220	0.025	0.737
Mercury laws	0.663	0.542	0.020	0.693
Test scale			0.025	0.736

Table 4: Environmental Programs with Climate Change Removed

The results yield an alpha of .839. In addition, the alpha for the set of programs without climate change variables included is .736. While both are still strong alphas they are not as strong as the full set of environmental policies. This provides evidence that climate change programs can be considered alongside other environmental programs.

The results provide evidence that this subset of environmental policies is relatively coherent and that climate change policy does not necessarily have to be considered separately from the others. While the inclusion of additional environmental policy variables may identify other, more narrow policies, that would not fit in with those examined here, these results still clear up some questions about whether states are pursuing programs related to specific environmental problems in tandem.

Discussion

Research that pools the 18 policies indicates support for the notion that climate change, energy policy and sustainable development are issues that represent an underlying concept. In other words, one could view state climate change programs as an extension of other environmental policies rather than a separate set. These findings are consistent with expectations and the implications of this are positive for those that view this interrelation as a way of ensuring that a strong set of policies are passed to get at particular environmental objectives. If states that pass climate action plans are also consistently passing policy that encourages sustainable development this could provide a more significant environmental impact than if a state were only passing one type of policy.

The results also provide some evidence for the theory of coherence espoused by May and his colleagues (May et al 2005; May et al 2006). The set of policies examined here meet several criteria for coherence mentioned by May et al (2005) including that they are substantive, share common goals and have a strong interest group population that connects them. The results of this analysis indicate that these policies do cohere, given that when a state enacts legislation in regard to one policy in the domain they are more likely to do so for another.

It is clearly evidenced here that climate change policy is strongly tied to other types of environmental policy, in particular policies related to energy usage. This is a reasonable finding given the ability of political figures and interest groups to frame these policies in such a way that encourages states to adopt a number of policies, rather than just one. This analysis indicates that a state can have a general level of environmental policy activity. There is no rank order to which programs are most likely to be adopted next. The scale indicates that states with higher activity levels are more likely to pursue additional policies, though which program they would pursue subsequently is unknown. The findings suggest that combining these types of policies into one scale is acceptable and encouraged when attempting to use the data as a dependent variable. We can see how the additive scale looks over time in the graph below.



Figure 5: Environmental Activity Scale Over Time, Across States

There is a great deal of variation across states in terms of where they are on the environmental activity scale over time. Of particular interest is how variable the states are when it comes to both level of activity and how quickly they enact programs. Some states consistently pass programs annually or biannually over time. For instance, following this pattern are New Jersey and Illinois. These two states are adding programs at a steady pace over the time-period examined here. In the case of states like California, Connecticut and Massachusetts, there is a steeper slope over time with every year including at least one or two new programs. Others are passing policy at a very slow pace, and still others essentially appear as a flat line. These states may have enacted only one program, or in the case of Alaska, two programs at the very end of the time period. Chapter four will utilize a variation of this scale in the pursuit of the determinants of environmental policy activity in the states.

Chapter 4: States Take the Lead: The Determinants of State Environmental Policy Activity

This chapter examines environmental policy activity at the state level with an interest in understanding the variation in environmental effort among and within states. Current research primarily examines reasons behind individual state environmental policy adoptions, with little regard for general environmental activity. This analysis focuses on why states are generally environmental active or inactive, rather than examining the determinants of individual adoptions.

The environmental policy literature is also lacking in the use of comprehensive dependent variables that run over time. This study utilizes pooled cross-sectional, time-series data from 1994-2007. Statutes, administrative action, and executive orders are examined over time to provide a clear picture of environmental policy activity in the states. Internal determinants including political and economic variables are regressed on an environmental policy activity scale for the states. The central question addressed in this study is why states are more or less environmentally active in a given time period.

I argue that certain political, economic and environmental characteristics lead to increases or reductions in environmental activism. While some states appear to have a general proclivity towards environmental policy action this generic level of support or opposition to environmental policy is not captured in studies of individual adoptions. I argue that states will pursue environmental policy if they have the fiscal and professional capacity to do so, have public and interest group support, have a Democratic partisan balance, and if they stand to benefit by reducing relatively high pollution levels. In addition, states will become active in a policy area when other levels of government are less active. When the federal government does not adopt viable policy solutions, the states can and do tend to step in. The design allows for an understanding of the dynamic process that occurs around environmental policy.

Design and Analysis

An analysis of pooled time-series, cross-sectional data consisting of 18 environmental programs will be conducted over the period of 1994-2007, for the fifty states. The time period is selected in part because it begins just before it was clear that the federal government was not going to ratify the Kyoto protocol. It also encompasses very active (or inactive depending on the state) years for the states on climate change policy and environmental policy more generally. Much variation occurred during the years that will be examined and data availability allows for a fairly current assessment of policy⁵.

The dependent variable is constructed by taking the first difference from the additive scale developed in chapter three. As such the variable is the number of programs in a given year a state has enacted of the 18 included in this study (discussed in detail in chapter 3). This variable is presented graphically below.

⁵ While program activity data is collected through 2009, relevant predictor variables for the model only extend to 2007.



Figure 6: Change in Environmental Program Action

The data utilized in this analysis consists of pooled time-series cross-section (TSCS) data. This means that the data are characterized by repeated yearly observations (14 years) by the fixed unit of 49 states⁶.

There have been a number of state policy studies utilizing time-series cross-section data (e.g. Fiorina 1994; Fording 1997; Smith 1997; Su et al 1993), though very few have examined

⁶ Nebraska is dropped from the model because of its unique institutional structure-a unicameral legislature and non-partisan elections.

state environmental policy in this manner. One exception is work by Daley and Garand (2005), who examines state hazardous waste policy.

In order to test the determinants of environmental policy action a random walk with drift model is utilized with standard errors clustered by state. This model is ideal for non-stationary time series data with a variance that approaches infinity as time does. Given the characteristics of the data used here it is best to examine the change (or first difference) in environmental activity from one year to the next, rather than try to examine the level each year. By using the first difference this removes the consistent upward trend in the data and removes autocorrelation in the residuals⁷. Where a state's environmental activity is today is a function of where it was yesterday plus that states drift and error.

Independent Variables

Previous literature discussed provides important theoretical and empirical evidence for inclusion of economic, political and more general state level characteristics as determinants of environmental policy activity. Findings from relevant studies of state policy and environmental policy more specifically indicate that a variety of factors are at play in determining policy action, rather than a single driving force.

State politics literature has consistently found that state economic conditions play an important role for environmental policy activity (see Walker 1969; Richard and Robinson 1963; Ringquist 1994). Given this, state wealth, as measured by per capita personal income, will be utilized. It is argued that a wealthier state will be more likely to support environmental policy given its increased capacity to deal with the potential costs involved. Wealth is particularly important because states have a number of policy areas that demand a great deal of their budgets.

['] Breusch-Godfrey test demonstrates no correlation in the residuals over time.

A state with a greater amount of resources will be more inclined to pursue potentially costly environmental policy.

Several political independent variables will be examined including ideology, interest group strength, and measures for party of the governor and the majority in the state legislature. Ideology is found in numerous studies to be an important contributor to both state policy generally and environmental policy action in particular (e.g. Berry and Berry 1990; 1992; Ringquist 1994, Hays et al. 1996). It is expected that liberal states will be more likely to support environmental policy legislation. Studies on environmental policy in the states have been inconsistent as to whether state liberalism has an impact on policy outcomes and this research will help settle these inconsistencies. The issue of climate change is often divided on ideological lines, increasing the likelihood that political ideology will matter in this case. Research on the United States Congress demonstrates that conservative voting records are consistently less supportive of environmental policy than their liberal counterparts (Kamieniecki 1995). Research has also demonstrated differences within the public on climate change by ideology (Dunlap et al 2001). It is thus expected that as a state's liberalism among the public increases the likelihood of that state pursuing environmental policy will also increase. A citizen ideology measure developed by Berry, Ringquist, Fording, and Hanson (1998) will be utilized in this study. The Berry et al measure varies over time across the 50 states and estimates ideology on a conservative to liberal scale, ranging from 0 to 100. These characteristics make the measure ideal for this study.

Governors and members of the state legislature have played important roles in a number of environmental issues. Given this, it is important to incorporate both in the model. A dummy variable for the party of the governor is included along with a dummy variable for which party

controls the state legislature. It is expected that Democratic elected officials will be more supportive of environmental activism.

Also of interest is whether a state's policy spending priorities in general will impact the strength of a state's environmental policy activity. A measure developed by Jacoby and Schneider (2009) will be utilized to represent this interest. The measure gets at how states vary in terms of whether they tend to prioritize their spending on collective goods or provide particularized benefits. States on the low end or left side of the continuum prioritize particularized benefits that are targeted to certain groups, usually a needy population. Examples include public transportation, health care, welfare and employment security. States on the high end of the continuum tend to prioritize policies that benefit all of society. These policies include things like police, housing and parks and recreation (Jacoby and Schneider 2001; 2009). This measure is specifically looking at spending while the study here is examining program activity. The expectation for this variable is uncertain. While environmental programs are often collective goods, that benefit an entire state, it is also true that these policies tend to be favored by liberal populations, as are many programs that represent particularized benefits.

As previously argued the strength of environmental groups should also play a role in such a salient issue, though their impact may be counteracted by a strong industrial presence. Environmental interest group strength will be measured through Sierra Club membership per capita. While the Sierra Club is not the only environmental interest group it provides an adequate representation of the broader interest group population associated with the environment. It is a very active organization with a large membership, that addresses all of the environmental issues included in this study. It is expected that the larger the environmental interest group community the more likely a state will have a robust environmental policy record.

On the other side of the environmental interest is often the industrial interest group population; however, industry is not always consistently in opposition to environmental programs. Given this potential nuance industries will not be lumped together in this analysis with separate variables addressing mining and manufacturing. The measure for each of these industries is the proportion of a state's gross state product (GSP) that comes from mining and from manufacturing. While these measures are imperfect they are the best cross-state measure available and have been utilized by other scholars (e.g. Daley and Garand 2005). A state that has a large mining industry, and presumably a large mining interest group population, would be less likely to adopt stringent environmental policy. This expectation is consistent with findings by Ringquist (1994).

A large manufacturing presence has actually been demonstrated to increase the likelihood of environmental policy adoption in some environmental studies (e.g. Lowry 1992). Hays et al (1996) also note the varying findings regarding industrial influence. The case suggesting that manufacturing industries might favor these policies is somewhat complex. The argument suggests that some businesses prefer that government oversee regulation and thus incur a portion of the regulatory costs. This levels the playing field so that smaller companies may be hesitant to enter the market for fear of paying the remaining high regulatory costs (Hays et al 1996). So, in some circumstances the manufacturing industry actually may prefer environmental laws be passed.

Moving on to broader state-level conditions, it is expected that pollution severity may play a role in state policy. As the level of CO_2 emissions increases a state may be more likely to pursue climate change policy, though the literature regarding the effect of environmental variables on environmental policy activity is very mixed. States with severe air pollution have

more to gain from curbing greenhouse gases than other states, though in some cases states with high emissions may have an interest in protecting their industries. Given these two different possibilities it is expected that emissions will have an impact, though direction is uncertain.

Finally, region is included in the model to account for the tendency of particular regions to be more active than others when it comes to environmental policy. This variable has been utilized in state politics literature as a proxy for political culture (e.g. Erikson, Wright, McIver 1993), a term originally coined by Daniel Elazar (1966). Scholars have expanded on Elazar's original typology, creating new measures of political culture (e.g. Lieske 1993; Hero and Tolbert 1998). Certain states may have a shared value system that makes them more likely (or less likely) to be environmental active and thus region is included to account for this possibility. Previous environmental policy work has included a dummy variable for the south (e.g. Bacot and Dawes 1997), though I will include other regions as well given the potential for additional regional differences. This variable is broken down into four regions: northeast, midwest, south and west. Current research suggests that the northeastern and western regions of the United States tend to be aggressive in the pursuit of environmental legislation while the south often lags behind.

Findings

Table 5 presents the results of the regression analysis. The model accounts for 18.8 % of the variance in environmental policy activity. The variables can be broken down by the various internal factors they address including economics, politics, interest groups, environmental, and geographic considerations.

Independent Variable	Coefficient	Standard Error	P-Value
Time	0.042*	0.010	0.000
Per Capita Income	0.028*	0.008	0.001
Citizen Ideology	0.005	0.003	0.069
Independent Governor	0.157*	0.055	0.006
Democratic Governor	-0.020	0.053	0.713
Democratic Legislature	0.218*	0.068	0.002
Policy Priorities	-0.221	0.633	0.728
CO ₂ Emissions	0.334*	0.169	0.051
Sierra Club Membership	0.054*	0.023	0.026
Mining Percent of GSP	-0.009	0.011	0.422
Manufacturing Percent of GSP	1.430*	0.674	0.039
West	0.149	0.104	0.158
South	-0.258*	0.120	0.037
Midwest	-0.142	0.099	0.156
Intercept	-1.142		
N 636			
R-Squared .188			

Table 5: Full Model Random Walk with Drift, Clustered Standard Errors

* Statistically significant from 0 at the α = .05 level, two-tailed test

When examining the economic indicator in the model the results are as expected. A one unit increase in per capita income increases the expected value of the environmental policy index the following year by .028, with a 95 percent confidence interval of .012, .043. As a state becomes wealthier, it becomes more environmentally active. This finding is consistent with the notion that wealthier states have a higher capacity to innovate. The competition for scarce funding is less severe and resources are more readily available for use on these types of programs. The graph below demonstrates the impact of this variable on the change in environmental policy activism

the following year.⁸



Figure 7: Expected Change in Policy Activism as Per Capita Income Increases

Results also indicate that politics matters. The presence of a Democratically controlled legislature increases the expected value of the environmental policy index by .218 the year after the change. On average, a state with a Democratic legislature is more likely to be environmentally active. The party of the governor only has a significant effect when comparing independent governors to Republican governors, with the expected value of the index going up by .157 the year after an independent governor is in place. There is no significant difference between Democratic and Republican governors. This finding comes with initial surprise though there have been a number of governors on both sides of the political spectrum to champion environmental programs during the time period examined here. For instance, a number of Republican governors in progressive states, including Governor Schwarzenegger of California

⁸ This effect is under a Democratic Legislature, Democratic Governor, and a slightly higher than average per capita income with the remaining variables held at their means and a 90% confidence interval.

and Governor Romney of Massachusetts, were just as likely (if not more likely in some cases) to champion environmental programs. The measure for citizen ideology is also significant. Given the directional hypothesis that liberal citizen ideology will increase environmental activity, a one-tailed test is performed. The results indicate that ideological liberalism leads to greater environmental activism and the effect of this variable is demonstrated below.⁹



Figure 8: Expected Change in Policy Activism as Citizen Ideology Moves From Conservative to Liberal

The state policy priorities coefficient is negative indicating that as a state focuses more on collective goods they are less environmentally active, though this variable fails to reach statistical significance. This may be in part because some of the programs included in the scale do not receive state funding (such as a climate action plan or public benefit fund). In addition, environmental programs can be difficult to place given that they are considered both collective

⁹ This effect is in the western region under a Democratic Legislature, Democratic Governor, and a slightly higher than average per capita income with the remaining variables held at their means and a 90% confidence interval.

goods and often liberal

State industrial interests are demonstrated to have an impact on the change in environmental policy activity, though there is variation among industries in terms of directional impact. More specifically, if a state has a larger mining industry presence they are lower on the environmental activity scale, though this variable is not significant. On the other hand, manufacturing industry presence actually increases the likelihood of programs being enacted with the coefficient being positive and significant at 1.43 (see graph below).¹⁰





As previously discussed, manufacturing industries can be supportive of environmental regulation and this finding is not entirely surprising. It is possible that a larger manufacturing industry sector makes concerns over hazardous waste and other pollutants that come from these industries

¹⁰ This effect is in the western region under a Democratic Legislature, Democratic Governor, and a slightly higher than average per capita income with the remaining variables held at their means and a 90% confidence interval.

more salient to the public, leading to increased environmental effort among political actors.

Environmental interest group pressure also exudes an effect on environmental activity with per capita membership in the Sierra Club producing a significant change in environmental activism. A one-unit change in membership leads to an expected increase of .053 in the environmental activism index after the change occurs (see graph below).

Figure 10: Expected Change in Policy Activism as Per Capita Sierra Club Membership Increases



This provides support for the notion that elected officials take into consideration the arguments of environmental interest groups.

Environmental variables also demonstrate influence on policy activity. CO_2 emissions are positive and significant, indicating that as a states' carbon emissions increase they are more apt to be environmentally active after a change occurs. This finding indicates that states are pursuing programs that can alleviate environmental concerns. This is counter to the argument that states with high emissions will protect the industries that create them. Region is found to have an effect on environmental policy action as well. When comparing other regions to the northeast only the south is significantly different. The south is less likely to be environmentally active from year to year and shifting from the northeast to the south yields an expected .258 reduction in the activism index for the following year. The west is also much more likely to be environmentally active than the south with a shift resulting in an expected .407 reduction in environmental activism.

To make the effect of these predictors even more clear it is important to look at the differences in the long-term environmental effort trends, depending on the level (or category) of each independent variable.¹¹ The graph below demonstrates the difference in the level of environmental activism (or the number of programs enacted) over time between states with Republican and Democratic legislatures. The other independent variables are held at their means and the difference occurs at the beginning of the time-series.

¹¹ The predicted trends have a 90 percent confidence interval. The error increases over time as the prediction becomes more uncertain.

Figure 11: Expected Difference in the Number of Policy Enactments Between a Republican Legislature and a Democratic Legislature



As we see in the graph, as time progresses the difference between a state with a Republican legislature and a Democratic state is quite pronounced. At the end of the time period a state with a Democratic legislature is expected to have enacted three additional programs. States that fit this pattern over a large time period include Connecticut, which maintained a Democratic legislature during the entire time period studied here and Utah, which has had a Republican legislature through the length of the time period.

Another variable of interest is per capita income. Holding the continuous variables at their means in a state with a Democratic legislature and Democratic Governor we see the difference in the trend between a state with a per capita income in the 1st quartile and a state with a per capita income in the 3rd quartile.





Fitting this comparison among the states are Massachusetts, with a consistently high per capita income, and Indiana with a relatively low per capita income over time. Both political and economic indicators demonstrate substantive differences in the expected trend of environmental activism. Lets consider environmental interest groups and industry next.

Next I will look at the difference in the long term trend for states with Sierra Club memberships in the 1st quartile and the 3rd quartile, in addition to the states with their manufacturing percent of GSP in the 1st and 3rd quartile (holding other variables at their means and modes). This yields the trends presented in Figures 13 and 14.

Figure 13: Expected Difference in the Number of Policy Enactments when Comparing Low and High Sierra Club Membership



The expected difference in environmental effort trends for a high environmental interest group population is two additional policy enactments by the end of the time period. There are a number of states that maintain large environmental interest group populations across a large span of time. For example, California, Connecticut, Colorado, Hawaii and New Mexico all stay consistently in the upper ranges. On the lower end are states like Alabama, Arkansas, West Virginia and Oklahoma.

For manufacturing it is expected that an additional 2.5 policies will be passed over time for states with a relatively high manufacturing presence. States fitting this comparison are Michigan, Indiana, North Carolina at the high end and Wyoming, Nevada, and Florida at the low end.

Figure 14: Expected Difference in the Number of Policy Enactments when Comparing Low and High Manufacturing Proportion of GSP



The trends just identified show us how differences in state level predictors can lead to large differences in policy activity as time progresses. The variance in year one is relatively small, but looking long term these differences are quite meaningful, resulting in policy activity that looks very different depending on the level of these independent variables.

Conclusions

In this chapter I develop a model of state environmental activity and test a number of internal determinants on this activity. Previous research has tended towards examining individual program adoptions and single cross-sections of time. Work that has examined more general environmental effort is fairly dated and takes a different modeling approach than what is done here. There are a number of interesting and important ideas to take away from the results. It is clear from these findings that a number of factors play a role in environmental policy activism, which cannot be narrowed down to just one category. From these results the most ideal conditions for policy action include a liberal legislature in a state whose pollution concerns, environmental interest group population and geographic position make it more necessary to address environmental issues. In addition, wealthy states are better able to devote portions of their budget to environmental problems.

The nuanced position of industrial interests is also worthy of note. While popular accounts typically pit environmental interests against industrial ones, this notion does not always ring true. While the variables used in this model may not be perfect indicators for the industrial interest group population, they arguably get at what the presence of these industries does to effect environmental policy activity. At present there are many inconsistent findings associated with manufacturing. Results here provide some evidence that manufacturing industries may want these policies to level the playing field in a time when the public is supportive of clean industry, or that their presence brings environmental concerns to the forefront of people's minds.

Scholarly literature has consistently found that a mining industry presence leads to less stringent policy action and enforcement of environmental policies. While the size of the mining industry produces a negative coefficient, meaning less environmental activity, it is not statistically significant. This implies that this industry is not as persuasive to political leaders as are the general public and environmental groups.

These findings also indicate that change is incremental. A change in interest group populations or who governs initially produces a very small change in policy enactments. Over time this change becomes more pronounced, though is still relatively slow. It is several factors working together that produce more significant change in environmental policy activism.

While this study helps explain the most ideal conditions for state environmental action, questions remain as to whether the policies examined have positive outcomes for environmental quality. This analysis also does not directly consider the possible diffusion of individual programs across states and future research would do well to examine this issue. The findings in this study paint an interesting picture of why states are addressing environmental issues. It appears that state governments are fairly responsive to the demands of their citizenry and interest group populations, leading them to tackle environmental problems when the need is there.

Chapter 5: Conclusion

"It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country" – Justice Louis Brandeis

This project has brought new evidence to bear on how environmental policy is structured among states and why there is variation in environmental activity over time and across states. The quote by Justice Brandeis above notes the importance of the states in serving as a place where policy can be tested and lessons can be learned. Through this research we have seen that the states have tackled numerous environmental programs with policy passage and implementation lessons than can be used by other states or the federal government.

There are a number of important things to take away from the findings in this project: States do differ when it comes to environmental policy activity. Some are consistently passing new programs every year in a wide array of environmental issue areas; others, are just getting started and tend to move at a slower pace and pass a relatively small number. From the scaling analysis done here it appears that states are not simply targeting particular environmental issues, but rather they are pursuing programs across the environmental spectrum. States can be characterized by a degree of activism with regard to the environment. Hazardous waste, energy and other environmental programs are often pursued in concert. From a normative perspective, this kind of environmental activity is valuable in that overall environmental degradation is reduced. For highly active states, it appears that a multifaceted approach is common and leads to a better environmental quality across the board.

The reasons behind such variation among states are also multifaceted. State economic,

political, environmental and geographic indicators all play a role. Environmental supporters in government and among the public have been able to find venues for success within states that have Democratic legislatures, strong environmental interest groups, wealthy populations and an environmental need.

This project takes a unique approach to the study of environmental policy by looking at an array of environmental issues, rather than a single program. While there is much to be valued from research looking at one or two programs it is important to understand what leads to strong environmental activity generally, and this study provides insight into that activity.

Evidence from this project makes it clear that several states are very active in the environmental policy arena. What is less clear is how effective these programs have been (or will be) at solving the environmental problems they seek to address. There is still speculation among environmental activists, the public and political spheres that these programs are largely symbolic and have had little concrete impact on environmental quality. There is also a question as to how these programs are faring through the implementation stage. Also, of importance is whether these state programs are making their way to the federal government and whether states are the appropriate avenue for environmental policymaking. In addition, with a new political landscape and a struggling economy, how might this change environmental policy activity going forward? Finally, are the findings for state environmental policy applicable to other policy areas?

Symbolic Environmental Policy

When considering environmental policy activity in the states it is important to acknowledge that some or many of these policies may be symbolic. Edelman argues that politics is characterized by a great deal of symbolism and little of what is done is concrete. In addition, political action can ultimately shape the anxieties and desires of the public as opposed to the

other way around. Edelman (1971) refers to this process as ritualization where symbolic politics can reassure the public.

Politicians can also use symbols to spur the public into action by promoting anxieties. It has been argued that climate change policy, both at the state level and at the international level has been symbolic. Bohringer and Vogt (2001) argue that the Kyoto protocol, signed by several countries with an important exception in the United states, appears to follow "business as usual" and is highly symbolic. On the other hand the authors do suggest that the policy was a major step in the right direction. Are the policies of the American states just as symbolic?

It is possible that some of the state climate change policies are symbolic; however, this does not preclude those policies from having some substantive effects. Brysk (1995) argues that symbolic politics can actually create important effects. Oftentimes policy makers can use symbolism to mobilize and produce collective action. Symbols can link groups, governments and individuals together in a coherent path. The resulting policies can in- turn produce more concrete action in the future.

One concern with symbolism is that it has a tipping point where it is no longer effective and can been seen as purely manipulative. It is extremely difficult to identify whether policy activity by government is purely symbolic (Edelman 1971). Often times government may actually think a policy is relatively limited in scope, but the implementation of that policy ends up having a broad impact and a highly substantive impact as well. This is arguably the case for the Endangered Species Act, which has been used in a variety of ways to protect the environment that go beyond the original intent of the law (Peterson 1999).

The same could be true for climate programs that appear to have little substantive impact. Climate action plans adopted by states may vary in terms of their symbolism depending on

whether the elements of these plans are fully implemented. For some states energy efficiency goals are mentioned in these plans with little explanation as to how these goals will be achieved. On the other side of the spectrum several states have included more direct plans of action for reducing emissions and increasing energy efficiency strategies. Another climate policy that has been viewed as highly symbolic includes the creation of an advisory board on climate change. While creating a board or commission to analyze policy solutions to a problem may be highly symbolic for some states, others may take the findings of these boards seriously and put suggestions into action. Leadership plays a particularly important role in this regard.

Effectiveness of Environmental Programs

It is often the case that once legislation is passed groups lack resources to make sure that the implementation of these laws goes beyond rhetoric and symbolism (Edelman 1964, 1971, 1973). Given this possibility, the implementation of these laws might not amount to much change. Let us consider how some of the programs examined in this project are fairing. As noted throughout this project, several states have passed laws requiring that new government buildings meet LEED standards, while a few have gone further and required new private construction to do so as well. In states where public buildings are required to follow LEED standards the hope is that leading by example will help persuade private developers to do the same. One example of how this effort may have encouraged a business to use green development is in the case of Echelon, a new casino being built in Las Vegas, which is following LEED standards (Nitkin 2007).

A research report created for the Massachusetts Executive Office of Environmental Affairs indicates that a number of states have had great success with their green building programs. After passage of an executive order requiring state buildings to meet silver LEED

standards, California put in place several key elements to their green building program. Staff have been dedicated to the project and a "Green Action Building Plan" was created to lay out the necessary steps to implement the executive order. Indicators suggest that the new green buildings that have been constructed since the creation of the program have reduced energy usage by 20% on average. Renovations of several existing buildings have also taken place and old construction buildings are now meeting LEED standards.

Minnesota has also had great success in their program with new construction having a significantly lower level of emissions (CO_2 , NO_x and SO_x). Leaders of the project have been able to frame the success in an economic way and this has lead to an increase in green building within the private sector. The authors note that a combination of mandates and voluntary mechanisms appears to be the most successful at producing green building development. In addition, providing education to agency officials is particularly important (Industrial Economics Inc.).

While state efforts appear to be having a significant impact, the federal government is also considering action. In February of 2011 President Obama presented the Better Buildings Initiative, which would include tax incentives for businesses to upgrade their properties or to build new properties with the aim for energy efficiency. The plan would also provide grant money for localities in which businesses can compete for building upgrade funding. The President has already provided competitive grant funding for existing building upgrades through ARRA and signed an executive order that directs federal agencies to "achieve zero net energy by 2030" (White House 2011). The President is also pushing for the passage of the Home Start Act, which would provide rebate funds to those retrofitting their houses to become more energy efficient (HOME STAR Program).

With regard to appliance standards among states several studies have found that more efficient appliance standards have led to reductions in energy consumption (Meyers et al 2003, 2008; ACEE 2009). Meyers, McMahon and Atkinson (2008) note that appliance standards in the residential sector will reduce energy consumption and CO₂ emissions by 8% by 2030.

In a recent report on net metering practices in the states the authors find that there has been improvement in these programs over time. States are graded on their net metering programs according to a set of criteria. Since 2007 there has been a positive shift in the number of states receiving A and B grades respectively, with only 13 states receiving those grades in 2007 and 37 in 2010. It appears that once states implement these programs they continue to update and improve them to cover a greater population and more types of energy production. Evidence also suggests that these programs have been successful in creating markets for solar and wind power (Rose 2010).

In some cases states have remained relatively stagnant and failed to achieve better net metering standards. For example, the state of TX attempted to establish a net metering program in 2007, but the program has been ineffective given the language used in the legislation. At present the program is voluntary and does not cover a substantial population (Rose 2010).

When considering climate programs a number of states are seeing some success with their programs. In the Northeast states have managed to create a successful carbon cap-and-trade program. At the very least the auctions have generated revenue for states to use for environmental programs and research (though some have chosen a different avenue for the funds). In addition, the federal government has utilized many elements of the program in its own proposal for carbon cap-and trade.

Renewable Portfolio Standards have been heralded by some and attacked by others as

merely symbolic. State RPS's vary extensively, ranging from a requirement of 2 percent of retail energy sales must come from renewable sources to 30 percent. States also vary in terms of what types of energy sources can be used, though overtime many states have expanded their programs to additional renewable energy types.

There is great difficulty in disentangling the possible variables that have contributed to increased use of renewable energy, though research suggests that state RPS's have contributed greatly to renewable energy capacity (Wiser et al 2007). Scholars have found a significant relationship between wind power and state RPS programs as well (Menz and Vachon 2006).

States have had wide-ranging results when it comes to changes in renewable energy usage and costs. This points to the importance of how state programs are written. Michaels (2008) argues that a number of states, including California, are not in compliance with their RPS. Langniss and Wiser (2003) find that success for RPS programs rests on a number of program aspects including support from both the legislative and regulatory ends, investment in various types of renewable energy facilities, enforcement mechanisms and a degree of flexibility. The authors take a detailed examination of Texas' successful RPS, which appears to have created a very strong wind power market in the state despite its very low megawatt requirement.

Poor Economic Times

Several states have been very active in the pursuit of environmental policy objectives. With the economy struggling severely it is possible that the programs already passed may suffer or be dismantled. In addition, the economy may slow down the pace of state environmental activity. The findings in this project suggest that wealthier states are more likely to pursue a strong environmental agenda. As states across the board are struggling at some level this may put concerns over the environment at a halt; however, this possibility is not a foregone conclusion. If

states are able to frame environmental innovation in a positive economic light then the pace of environmental program passage may stay the same or speed up.

There is also the potential for those that oppose strong environmental effort to use the poor economy as an argument against these programs. Clint Woods of the American Legislative Exchange Council makes the argument that new governors are likely to oppose climate legislation because of the poor economic times and the potential for these programs to hurt state economies further. Several political figures in key positions in both state and national office have actually pledged not to vote for any legislation related to climate change that would lead to an increase in the size of government (Gurwitt, 2010).

The poor economic times have had some negative impacts on the implementation of the environmental programs examined here. For instance, the cap-and-trade program created through the RGGI states has been implemented differently than expected by some states involved. Through RGGI, auctions are held to sell emissions allowances to electric utilities that need them. The proceeds were originally intended to go towards environmental programs and concerns, but several states have used the money to help fill state budget gaps (Peters 2010).

On the other hand, there are environmental programs that are not very likely to be harmed by the poor economy. For instance, Public Benefit Fund's (PBF's), are protected by the way their funding is received. The money for PBF's often comes from a surcharge to consumer electric bills, rather than from state budgets. This helps maintain the stability of the program.

State vs. Federal Government Action

As indicated throughout this work, states have taken the lead on climate change. In addition, they have been able to enact brownfield legislation and mercury laws, among many other environmental programs that go above and beyond federal standards and activity. The

question still remains: Which level of government should take primary responsibility for environmental problems?

For issues like climate change, it may not be enough for some states to address the problem. If all states were highly active around this issue it might not be important for the federal government to step in; however, not all states are very active on this issue at present and it is unlikely that they all will be in the near future. In addition, states can only go so far. The federal government is better able to work internationally and with a global problem like climate change, international agreements are likely necessary. When it comes to climate change, many environmental interest group leaders argue for a federal standard. For example, the Natural Resources Defense Council advocates a federal policy that would cover states that are not acting at all. At present efforts across states resemble a patchwork.

When considering a national renewable portfolio standard (RPS), some argue that similar pitfalls that are occurring among the states will befall the federal government. Michaels (2008) argues that an RPS is actually more likely to be successful at the state level, though he mentions that many states are still not in compliance with their current RPS standards (California among others). He states that, "An RPS whose provisions recognize resources and institutions unique to a state may be superior to one that disregards them for the sake of uniformity." According to Michaels a national RPS could potentially be more costly. In addition he argues that only 1/3 of the population is living in a state without an RPS and the costs of implementing the program outweigh the benefits of advancing the program to cover those individuals (Michaels 2008). Wiser et al. (2007) discuss a number of policy proposals that have come up in Congress. The proposals vary extensively and Wiser argues that the federal government can learn from the successes (and failures) of various state plans. Though the authors do not necessarily argue for

the necessity of a national plan they provide viable policy ideas that could translate to a federal plan.

It has also been argued that energy policy more generally should be handled at the national level. Scientists at the US Department of Energy Laboratory argue that there is leadership at every level of government when it comes to energy efficiency; however, there needs to be a stronger national strategy. The United States cannot reach its capacity to be efficient through patchwork policymaking in the states and localities.

The authors present a compelling argument for how each level of government can contribute to energy efficiency. They maintain that the federal government is most able to address large-scale problems such as energy. In addition, while state governments have jurisdiction over certain energy arenas like building codes and are able to tailor programs to fit the needs of the state, their impact is geographically limited.

When it comes to smart growth policy states and localities have taken the lead. Some argue that this is as it should be because the federal government is not the most knowledgeable about these specific communities. On the other hand, there are avenues where the federal government could go a long way in promoting more sustainable communities. For instance, the national government could invest in public transportation and fund improvements within existing cities and neighborhoods (rather than new communities). This is an area where presidents often stay away. For instance, in the 2004 presidential election the idea of sustainable community development was largely ignored by both candidates, though Senator Kerry had some policy prescriptions in his platform. The issue came up occasionally during the 2008 election with, then candidate, Barack Obama arguing for more community development funding.

One indicator suggests that the public would prefer the federal government to provide

funding for community development projects. Polling data from "Smart Growth America and the National Association of Realtors" indicates that 86% of those surveyed want existing communities to be provided national government funding (Peirce 2004).

A vast majority of states have passed net metering programs and implemented laws to promote alternative energy sources. While there is evidence that these programs have been successful at promoting efficient energy production, not all state programs are created equal and not all states have them. A report from the Network for New Energy Choice (NNEC) suggests that the best way to increase the use of net metering is for the federal government to pass a law providing uniform standards across states (Rose, 2010). The federal government has considered net metering plans, but has yet to pass a program through both chambers of Congress. Once again, it appears that experts in the field think this kind of program would be better off at the federal level.

It is important to consider that while a federal policy in many of these environmental areas is seen as better for the environment, state efforts may have (or have already had) significant and positive effects. In the absence of federal programs, state efforts may be absolutely necessary. Whether or not states *should* be taking the lead in these areas is important, but does not preclude states from being somewhat effective within their own geographic area (or region with some programs). In addition, it is often very difficult for the federal government to develop a consensus and winning coalition for these programs. When moving to a smaller venue groups and individuals interested in pursuing these programs may have a better chance of success. It is possible to pass strong environmental standards in a community that is very favorable and interested in these kinds of issues and many states are generally innovative across environmental issues.

There is also the possibility that the federal government will utilize programs and lessons learned from the states in creating their own environmental policies. While the literature on vertical diffusion is still very mixed on whether the federal government often engages in this kind of learning it is still a possibility (Mossberger 1999; Thomson and Burke 2007; Boeckelman 1992; Weissert and Scheller 2008; Daley and Garand 2005). The federal government has made efforts to pass a cap-and-trade program largely modeled after the program in place in the northeastern states. States have the opportunity to test out programs at a smaller scale and provide evidence of the effectiveness of these programs. National leaders can take success stories from the states to make their case for a larger scale effort. Of course, the national government has struggled greatly in passing a carbon cap-and-trade program and given the new political landscape it is unlikely to do so very soon.

A New Political Landscape

Recently, American voters created a new political landscape for environmental issues and climate change in particular by electing a number of Republicans into office across state legislatures and in state gubernatorial offices. In several states climate change programs were discussed in campaigns with many Republicans (and some Democrats) opposing new programs, or proposing to alter existing ones. In New Mexico, the environmental board is beginning the process of creating a cap-and-trade system among states in the Western Climate Initiative, but it remains to be seen how supportive new governors will be among the WCI states. Both candidates in New Mexico opposed the plan for different reasons (Gurwitt 2010).

Many of the findings from this project are likely to hold as states continue to pursue environmental policy. Of course, shifts in political leadership may lead some states to change their level of environmental activity. The recent elections have brought in new governors and
changed partisan balances in state legislatures. The so-called Tea Party movement may have an important effect on how active states are environmentally. Tea Party candidates are argued to be more conservative than many previous Republican leaders and may be apt to halt any environmental progress or slow down the implementation of these programs. According to recent public opinion polls conducted by the New York Times and CBS, Tea party supporters also tend to hold a very skeptical view of climate change, though their position on other environmental issues is less known. The survey indicates that a very small portion of Tea Party supporters believes that global warming is having any impact right now. Also, while only one percent of the public at large believes that global warming does not exist, eight percent of Tea Party supporters do not. Several organizations that are Tea Party adherents are spreading the message that climate change is either not real, or not caused by humans. They also note the potential economic harm of climate programs (Broder, 2010). New Republican leaders who are not of the Tea Party are also generally against climate change programs with a vast majority of the freshmen class of representatives being "global warming deniers."

At the federal level the new political landscape has meant a fairly hefty reduction in funds for the EPA, with many cuts having the greatest impact on funds provided to the states. Cuts also target climate change related programs, though not as much as was desired by Republican leaders. Several states anticipated some funding from the EPA to implement new climate regulations, which they will not be receiving under the new budget (Nelson 2011).

Despite changes in the politicians who hold office, it is unlikely that legislation already passed will be in much jeopardy. States that are currently part of the cap and trade program within RGGI are actually receiving financial benefits from this program and this makes it difficult to cancel such a program. Legislatures would have to choose to reverse previous

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decisions, an action that requires a large consensus and great difficulty, though for some programs, a reduction in funding would be one way of detractors to halt their implementation.

Moving Forward

Going forward it is likely that additional states will pass legislation in the environmental areas included in this study, though it is unclear whether we will see the same trend in the future. While some projects are currently stalled, others are just getting off the ground in state legislatures. In the case of the Western Climate Initiative creating a cap-and-trade program, states are moving in varied directions. Arizona, Montana, Oregon, Washington and Utah have yet to find support from both governors and their respective state legislatures for such a program (Gurwitt 2010). Despite this stall, it is possible that with the failure of the federal government to get a cap-and-trade program passed a renewed effort might be made by these states. On the other hand, the more conservative political landscape makes this possibility unlikely in the near future.

The findings from this project suggest that highly active states are likely to continue on this path. This work provides evidence that states approach environmental policy in different ways at different times, based on necessity, the partisan balance of their legislatures, the ideology of their citizenry, and interest group pressure. Future research should examine these programs through then implementation stage to extend our understanding of state environmental activity. BIBLIOGRAPHY

BIBLIOGRAPHY

- About the Greater Edwards Aquifer Alliance 2007. [cited Nov. 20 2010]. Available from <u>http://www.aquiferalliance.org/p_About_GEAA.cfm</u>.
- [ACEEE] American Council for an Energy-Efficient Economy. 2009. "Appliance and Equipment Efficiency Standards: One of America's Most Effective Energy-Saving Policies." Retrieved April 29, 2011, from <u>http://old.aceee.org/energy/applstnd.pdf</u>
- "Air-Quality Improvements Offset Climate Policy Costs." 2010. State News Service.
- Allen, Mahalley D., Carrie Pettus, and Donald P. Haider-Markel. 2004. Making the National Local: Specifying the Conditions for National Government Influence on State Policymaking. *State Politics and Policy Quarterly* 4(3): 318–44.
- Bacot, H.A., and R.A. Dawes. 1996. "Responses to Federal Devolution: Measuring State Environmental Efforts." *State and Local Government Review* 28 (2):124-35.
- Bacot, H.A., and R.A. Dawes. 1997. "State expenditures and Policy Outcomes in Environmental Program Management." *Policy Studies Journal* 25 (3):355-70.
- Berry, Frances Stokes (1994). Sizing up State Policy Innovation Research. *Policy Studies Journal*, 22(3), 442-456.
- Berry, Frances Stokes, and William D. Berry. 1990. "State Lottery Adoptions as Policy Innovations: An Event History Analysis." *American Political Science Review* 84 (2):395-415.
- Berry, Frances Stokes, and William D. Berry. 1992. "Tax Innovation in the States: Capitalizing on Political Opportunity." *American Journal of Political Science* 36 (August): 715-42
- Berry, William D., Evan J. Ringquist, Richard C. Fording, and Russell L. Hanson. 2007. "The Measurement and Stability of State Citizen Ideology." *State Politics and Policy Quarterly* 7:111-32.
- Boeckelman, Keith. 1992. The Influence of States on Federal Policy Adoptions. *Policy Studies Journal* 20 (3): 365–75.
- Bohringer, Christopher, and Carsten Vogt. 2003. "Economic and Environmental Impacts of the Kyoto Protocol." *Canadian Journal of Economics* 36 (2):475-94.
- Bosso, C.J., and D.L. Guber. 2006. "Maintaining presence: Environmental advocacy and the permanent campaign." In *Environmental Policy: New Directions for the twentyfirst century*, ed. N. I. Vig and M. E. Kraft. Washington, D.C.: CQ Press.

- Broder, John M. 2010. "Climate Change Doubt is Tea Party Article of Faith." *New York Times*, October 20.
- Brysk, Alison. 1995. "'Hearts and Minds': Bringing Symbolic Politics Back In." *Polity* 27 (4):559-85.
- Bulanowski, Gerard A. 1981. "The Impact of Science and Technology on the Decisionmaking Process in State Legislatures: The issue of solid and hazardous waste" Denver, CO: National Conference of State Legislatures.
- Canon. Bradley C. and Lawrence Baum. 1981 "Patterns of Adoption of Tort Law Innovations: An Application of Diffusion Theory to Judicial Doctrines." *American Political Science Review* 75 (4): 975-987.
- Chrisman, Mike. 2006. "Climate change 'a ticking time bomb' for state." *Eureka Times Standard*.
- Circo, Carl J. 2007-2008. "Using Mandates and Incentives to Promote Sustainable Construction and Green Building Projects in the Private Sector: A Call for More State Land Use Policy Initiatives." *Penn St. Law Review* 112.
- Cnudde, Charles, and Donald J. McCrone. 1969. "Party Competition and Welfare Policies in the American States." *American Political Science Review* 58: 858-66
- Cobb, R. and C. Elder 1983. *Participation in American Politics: The Dynamics of Agenda-Building*. Baltimore: Johns Hopkins University Press.
- Conlan, Timothy.1998. *From New Federalism to Devolution*. Washington, DC: The Brookings Institution.
- Convery, Frank, Denny Ellerman, and Christian De Perthuis. 2008. "The European Carbon Market in Action: Lessons from the First Trading Period." MIT Joint Program on the Science and Policy of Global Change.
- Daley, Dorothy M., and James C. Garand. 2005. "Horizontal Diffusion, Vertical Diffusion, and Internal Pressure in State Environmental Policymaking, 1989-1998." *American Politics Research* 33 (5):615-44.
- Dawson, Richard E., and James A. Robinson.1963."Inter-party Competition, Economic Variables and Welfare Policies in the American States" *Journal of Politics* 25: 265-89.
- Doris, Elizabeth, Jaquelin Cochran, and Martin Vorum. 2009. "Energy Efficiency Policy in the United States: Overview of Trends at Different Levels of Government." National Renewable Energy Laboratory.
- Dunlap, Riley E., Chenyang Xiao, and Aaron McCright. 2001. "Politics and

Environment in America: Partisan and Ideological Cleavages in Public Support for Environmentalism." *Environmental Politics* 10 (4):23-48.

- Duffy, Robert J. 2003. The Green Agenda in American Politics: New Strategies for the Twenty-First Century. Lawrence: University Press of Kansas.
- Dye, T. 1966. *Politics, Economics, and the Public: Policy Outcomes in the American States.* Chicago: Rand McNally
- Edelman, Murray. 1964. The Symbolic Uses of Politics. Urbana: University of Illinois Press.
- Edelman, Murray.1971. *Politics as Symbolic Action: Mass Arousal and Quiescence*. Chicago: Markham Publishing Co.
- Edelman, Murray. 1973. *The State as a Provider of Symbolic Outputs*. Madison, WI: University of Wisconsin Press.
- Elazar, Daniel. 1966. *American Federalism: A View from the States*. New York, NY: Crowell.
- Erikson, Robert S.; Gerald C. Wright; John P. McIver. (1993) *Statehouse Democracy*. Cambridge, UK: Cambridge University Press.
- Ewing, Phillip. 2007. "Homegrown Power Could Ease Energy Crunch." In *Stateline*.
- Fiorina M. 1994. Divided Government in the American states: A byproduct of legislative professionalism. *American Political Science Review* 88:304–16
- Fording, Richard 1997. The Conditional Effect of Violence as a Political Tactic: Mass insurgency, welfare generosity, and electoral context in the American states. *American Journal of Political Science* 41:1–29.
- Fox, Charles. 1996. "Reinventing Government as Postmodern Symbolic Politics." *Public Administration Review* 56 (3):256-62.
- Gray, Virginia. 1973. "Innovation in the States: A diffusion study." *American Political Science Review* 67:1174-85.
- Guglielmi, Andrew. 2005. "Recreating the Western City in a Post-Industrialized World: European Brownfield Policy and an American Comparison." *Buffalo Law Review* 53: 1273
- Gurwitt, Rob. 2010. "Cap-and-Trade Plans Meet up with Greenhouse Gas Skeptics." In *Stateline*.

- Gustafsson, Gunnel. 1983. "Symbolic and Pseudo Policies as Responses to Diffusion of Power." *Policy Sciences* 15 (3):269-87.
- Hackey, Robert B. and David A. Rochefort. 2001. *The New Politics of State Health Policy*. Kansas City: University Press of Kansas.
- Hays, S.P., M Esler, and C.E. Hays. 1996. "Environmental Commitment Among the States: Integrating Alternative Approaches to State Environmental Policy." *Publius* 26 (2):41-58.
- Hedge, D.M., and M.J. Scicchitano. 1994. "Regulating in Space and Time: The Case of Regulatory Federalism." *Journal of Politics* 56 (1):134-53.
- Hart, John. 1995. "President Clinton and the Politics of Symbolism: Cutting the White House Staff." *Political Science Quarterly* 110 (3):385-403.
- Hays, S.P., M Esler, and C.E. Hays. 1996. "Environmental Commitment Among the States: Integrating Alternative Approaches to State Environmental Policy." *Publius* 26 (2):41-58.
- Hogan, Robert E. 2005. "Gubernatorial Coattail Effects in State Legislative Elections." *Political Research Quarterly* 58 (December):587-97.
- *The HOME STAR Program* 2011. EfficiencyFirst: America's Home Performance Workforce [cited April 30 2011]. Available from <u>http://www.efficiencyfirst.org/home-star/</u>.
- Hula, Richard C. and Rebecca E. Bromley-Trujillo. 2010. "Cleaning up the Mess: Redevelopment of Urban Brownfields." *Economic Development Quarterly*. Advance Access published on May 14, 2010, doi:10.1177/0891242410365711
- Interstate Renewable Energy Council (2010). *Database of state incentives for renewable energy*. Retrieved January 15, 2010, from <u>http://www.dsireusa.org</u>.

Jacoby, William G. and Saundra K. Schneider. 2001. "Variability in State Policy Priorities: An Empirical Analysis." *Journal of Politics* 63 (2): 544-568.

- Jacoby, William G. and Saundra K. Schneider. 2009. "A New Measure of Policy Spending Priorities in The American States." *Political Analysis* 17 (1): 1-24
- Kamieniecki, S. 2006. Corporate America and Environmental Policy: How Often Does Business Get its way? Stanford: Stanford University Press.
- Kelderman, Eric. 2007. "Greenhouse-gas Limits Gain Stream in States." In Stateline.
- Kile ,Bradley .2005. "Networks, Interest Groups and the Diffusion of State Policy." PhD dissertation., Florida State University

- Kingdon, John W 1984. Agendas, Alternatives, and Public Policies. Boston: Little, Brown.
- Langniss, Ole, and Ryan Wiser. 2003. "The Renewables Portfolio Standard in Texas: An Early Assessment." *Energy Policy* 31.
- Leiserowitz, Anthony. 2005. "American Risk Perceptions: Is Climate Change Dangerous?" *Risk Analysis* 25 (6).
- Lester, James P. 1986. "New Federalism and Environmental Policy." *Publius* 16 (1):149-65.
- Lester, James P., James L. Franke, Ann O'M. Bowman, and Kenneth W. Kramer. 1983. Hazardous Wastes, Politics, and Public policy: A comparative state analysis. *Western Political Quarterly* 36:257-81.
- Lewis-Beck, Michael and Tom W. Rice. 1983. "Localism in Presidential Elections: The Home State Advantage." *American Journal of Political Science* 27: 548-56
- Lieske, Joel. 1993. Regional Subcultures of the United States." *Journal of Politics* 55: 888-913.
- Lowry, W.R. 1992. *The Dimensions of Federalism: State Governments and Pollution Control Policies*. Durham: Duke University Press.
- Matisoff, Daniel C. 2008. "The Adoption of State Climate Change Policies and Renewable Portfolio Standards: Regional Diffusion or Internal Determinants?" *Review of Policy Research* 25 (6):527-46.
- May, Peter J., Bryan D. Jones, Betsi E. Beem, Emily A. Neff-Sharum, and Melissa K. Poague. 2005. "Policy Coherence and Component-Driven Policymaking: Arctic Policy in Canada and the United States." *Policy Studies Journal* 33 (1):37-63.
- May, Peter J., Joshua Sapotichne, and Samuel Workman. 2006. "Policy Coherence and Policy Domains." *Policy Studies Journal* 34 (3):381-403.
- McCann, Pamela Clouser, Charles R. Shipan, and Craig Volden. 2010. "Intergovernmental Policy Diffusion: National Influence on State Policy Adoptions." *Annual Meeting of the Midwest Political Science Association* Chicago.
- McCright, Aaron, and Riley Dunlap. 2003. "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy." *Social Problems* 50 (3).

McIver, John, and Edward Carmines. 1981. Unidimensional Scaling: Sage University

- Menz, Fredric, and Stephan Vachon. 2006. "The Effectiveness of Different Policy Regimes for Promoting Wind Power: Experiences from the States." *Energy Policy* 34.
- Meyers, Stephen, James McMahon, J McNeil, and X Liu. 2003. "Impacts of US Federal Energy Efficiency Standards for Residential and Commercial Appliances." *Energy* 28:755-67.
- Meyers, Stephen, McMahon James, and Barbara Atkinson. 2008. "Realized and Projected Impacts of U.S. Energy Efficiency Standards for Residential and Commercial Appliances." Berkeley: Environmental Energy Technologies Division.
- Michaels, Robert. 2008. "National Renewable Portfolio Standard: Smart Policy or Misguided Gesture." *Energy Law Journal* 29.
- Miller, M.B. (1995). Coefficient alpha: A basic introduction from the perspectives of classical test theory and structural equation modeling. *Structural Equation Modeling*, Vol. 2, No. 3: 255-273.
- Mintrom, M., & Vergari, S. (1998). Policy networks and innovation diffusion: The case of state education reforms. *Journal of Politics*, 60(1), 126-148.
- Morehouse, Sarah M., and Malcolm E. Jewell. 2004. "States as Laboratories: A Reprise." *Annual Review of Political Science* 7:177-203.
- Mossberger , Karen . 1999 . State-Federal Diffusion and Policy Learning: From Enterprise Zones to Empowerment Zones . *Publius: The Journal of Federalism* 29 (3): 31–50.
- Nelson, Gabriel. 2011. "EPA Budget Deal Slams State, Regional Programs." *New York Times,* April 13.
- Newmark, Adam, and Christopher Witko. 2007. "Pollution, Politics, and Preferences for Environmental Spending in the States." *Review of Policy Research* 24 (4):291-308.
- Nice, David, and Patricia Fredericksen. 1995. *The Politics of Intergovernmental Relations*, 2nd ed. Chicago: Nelson-Hall.
- Nicholson-Crotty, Sean. 2009. The Politics of Diffusion: Public Policy in the American States. *Journal of Politics* 71(1): 192-205.
- Nitkin, Karen. 2007. "States' Green-Building Laws 'Lead by Example'." In Stateline.
- Norrander, Barbara. 2001. "Measuring State Public Opinion with the Senate National Election Study." State Politics and Policy Quarterly 1:1 13-27. Peterson, Paul E. 1995. *The Price* of Federalism. Washington DC: Brookings.

Peirce, Neal. 2004. "How our Communities Grow: A Presidential Issue?" In Stateline.

- Peters, Joey. 2010. "The RGGI Raid: How Cap-and-Trade Revenues Went to Fix State Budgets." In *Stateline*.
- Peterson, Kavan. 2004. "States Ahead of EPA in Cutting Mercury Pollution." *Stateline*, February 4. http://www.stateline.org/live/ViewPage.action?siteNodeId=136&languageId=1&contentI d=15552 (April 29, 2011).
- Peterson, Shannon. 1999. "Congress and Charismatic Megafauna: A Legislative History of the Endangered Species Act." *Environmental Law* 29.
- Peterson, Paul E., Barry G. Rabe, and Kenneth K. Wong. 1986. *When Federalism Works*. Washington, DC: Brookings Institution.
- Plotnick, Robert D., and Richard F. Winters. 1985. "A Politico-economic Theory of Income Redistribution." *American Political Science Review* 79: 458-73
- Potoski, Matthew, and Neal D. Woods. 2002. "Dimensions of State Environmental Policies: Air Pollution Regulation in the United States." *Policy Studies Journal* 30 (2):208-26.
- Rabe, Barry G. 2004. *Statehouse and Greenhouse: The emerging politics of American climate policy*. Washington, DC: Brookings Institution Press.
- Rabe , Barry . 2007. "Can Congress Govern the Climate?" Research Brief no. 1, John Brademas Center for the Study of Congress, Wagner Graduate School of Public Service, New York University . http://www.brookings.edu/~/media/ Files/rc/papers/2007/0423climatechange_rabe.pdf [accessed July 1, 2010]
- Regens, James L. 1989. "Acid Rain Policymaking and Environmental Federalism: Recent Developments, Future Prospects." *Publius: The Journal of Federalism* 19 (3):75-91.
- Revkin, Andrew C., and Jennifer Lee. 2003. "White House Attacked for Letting States Lead on Climate " *New York Times*.
- Ringquist, Evan. 1993a. Environmental Protection at the State Level: Politics and Progress in Controlling Pollution. Armonk: M.E. Sharpe.
- Ringquist, Evan. 1993b. "Testing Theories of State Policy-Making: The Case of Air Quality." *American Politics Quarterly* 21:320-42.
- Ringquist, Evan. 1994. "Policy Influence and Policy Responsiveness in State Pollution Control." *Policy Studies Journal* 22 (1):25-43.
- Rogers, James R. 2005. "The Impact of Divided Government on Legislative Production." *Public Choice* 123: 217-233.

- Rose, James. 2010. Freeing the Grid: Best Practices in State Net Metering Policies and Interconnection Procedures. New York: Network for New Energy Choices.
- Sapat, Alka. 2004. "Devolution and Innovation: The Adoption of State Environmental Policy Innovations by Administrative Agencies." *Public Administration Review* 64 (2):141.
- Schreurs, Miranda, and Yves Tiberghien. 2007. "Multi-Level Reinforcement: Explaining European Union Leadership in Climate Change Mitigation." *Global Environmental Politics* 7 (4).
- Schneider, Saundra K., William G. Jacoby, and Jerrell Coggburn. 1997. "The Structure of Bureaucratic Decisions in the American States." *Public Administration Review* 57 (3): 240-249.
- Shipan, Charles R., and Craig Volden. 2006. Bottom-Up Federalism: The Diffusion of Antismoking Policies from U.S. Cities to States. *American Journal of Political Science* 50(4): 825-843.
- Soss, Joe, Richard C. Fording, and Sanford F. Schram. 2008. "The Color of Devolution: Race, Federalism, and the Politics of Social Control." *American Journal of Political Science* 52 (3):536-53.
- Soss, Joe, Sanford F. Schram, Thomas Vartanian, and Erin O'Brien. 2001. "Setting the Terms of Relief: Explaining State Policy Choices in the Devolution Revolution." *American Journal of Political Science* 45 (2):378-95.
- Squire, Peverill. 2007. Measuring State Legislative Professionalism: The Squire Index Revisited. *State Politics and Policy Quarterly* 7: 211-227.
- Smith K. 1997. Explaining Variation in State level Homicide Rates: Does crime policy pay? *J. Polit.* 59:350–67.
- *State Action Maps* 2008. Pew Center on Global Climate Change 2008 [cited 2010]. Available from http://www.pewclimate.org/what_s_being_done/in_the_states/state_action_maps.cfm.
- *State Legislation and Regulations.* 2010. Retrieved January 20, 2010, from <u>http://www.epa.gov/osw/hazard/tsd/mercury/laws.htm</u>.
- Stimson, James. 1985. "Regression in Space and Time: A Statistical Essay." *American Journal of Political Science* 29:914- 47.

Su, Tsai-Tsu, Mark S. Kamlet, and David C. Mowery. 1993. Modeling U.S. Budgetary and Fiscal Policy Outcomes: A Disaggregated, Systemwide Perspective. *American Journal of Political Science* 37(1): 213-235

- "Sustainable Development Preparatory Meeting Begins Consideration of Policy Options for Energy, Industrial Development, Air Pollution, Climate Change." 2007. State News Service.
- Thompson, Frank J., and Courtney Burke. 2007. Executive Federalism and Medicaid Demonstration Waivers: Implications for Policy and Democratic Process. *Journal of Health Politics, Policy and Law* 32 (6): 971-1004.
- Thornton, Gareth, Martin Franz, David Edwards, Gernot Pahlen, and Paul Nathanail. 2007. "The Challenge of Sustainability: Incentives for Brownfield Regeneration in Europe." *Environmental Science and Policy* 10: 116-134.
- Vanheusden, Bernard. 2007. "Brownfield Redevelopment in the European Union." Boston College Environmental Affairs Law Review 34: 559-576
- Van Horn, Carl E. 1996. "The Quiet Revolution." In *The State of the States*, ed. C. E. Van Horn. Washington D.C.: Congressional Quarterly.
- Vig, Norman J., and Michael E. Kraft. 2000. 4th ed. *Environmental Policy*. Washington, DC: CQ Press.
- Vig, NJ, and ME Kraft. 2003. Environmental Policy: New Directions for the Twenty-First Century. Washington D.C. CQ Press.
- Vig, N.I., and M.E. Kraft. 2006. Environmental Policy: New Directions for the Twenty-First Century. Washington, D.C.: CQ Press.
- *VMT- Related Policies and Incentives.* Pew Center on Global Climate Change 2011 [cited 2011]. Available from http://www.pewclimate.org/what_s_being_done/in_the_states/vehicle_miles_traveled
- Volden, Craig . 2005. Intergovernmental Political Competition in American Federalism. *American Journal of Political Science* 49 (2): 327-42.
- Walker, Jack L. 1969. "The Diffusion of Innovations among the American States." *American Political Science Review* 63:880-99.
- Weissert, Carol S., and Daniel Scheller. 2008. "Learning from the States? Federalism and National Health Policy." *Public Administration Review* (Special Issue):S162-S74.
- Welborn, David. 1988. "Conjoint Federalism and Environmental Regulation in the United States." *Publius: The Journal of Federalism* 18 (1):27-43.
- The White House. 2011. "President Obama's Plan to Win the Future by Making American Businesses More Energy Efficient through the 'Better Buildings Initiative'"

- Williams, B.A., and A.R. Matheny. 1984. "Testing Theories of Social Regulation: Hazardous Waste Regulation in the American States." *Journal of Politics* 46 (2):428-5.
- Winters, Richard. 1976. "Partisan Control and Policy Change," *American Journal of Political Science* 20: 597-636.
- Wood, Dan B. 1992. "Modeling Clean Air Implementation as a System: The Clean Air Case." *American Journal of Political Science* 36:40-67.
- Woods, Neal D., David M. Konisky, and Ann O'M. Bowman. 2008. "You Get What You Pay For: Environmental Policy and Public Health." *Publius: The Journal of Federalism* 39 (1):95-115.
- Wright, Gerald C, Jr., Robert S. Erikson, and John P. Mclver. 1985. "Measuring State Partisanship and Ideology with Survey Data." *Journal of Politics* 47:469-89.