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## Introduction and Overview

Human-caused climate change has been an issue of public and elite concern for over twenty-five years. It is a growing and increasingly visible problem, with little remaining uncertainty about the links between greenhouse gas emissions and global warming, and with increasing understanding that climate change is likely to severely threaten the living conditions of all societies. Addressing the problem requires government policy to reduce net emissions, but so far progress has been meager compared with the scope of the challenge. Uncertainties about the costs of climate change and the costs of various solutions, as well as collective action problems, have hampered progress. A solution requires countries to adopt politically or economically costly policies that may be ineffective if others do not adopt similar measures.

Since the climate change problem concerns a global commons, the atmosphere, much attention has focused on efforts to create binding international agreements. The 1992 United Nations Framework Convention on Climate Change led, five years later, to the Kyoto Protocol, which went into force in 2005 and required its participants to cut their collective emissions by a modest 5% over 1990–2010. But the United States did not implement its commitments under the Protocol, and the agreement included no commitments for large developing countries such as China, India, and Brazil. Efforts to extend the Kyoto Protocol through 2020 have made only slow progress; by the end of 2015, the Doha Amendment concerning a second, 2013-20 commitment period had been ratified by only 3 of the 32 countries that have commitments under it.<sup>1</sup> While the December 2015 international agreement in Paris was a major breakthrough, it rests on voluntary commitments by the 195 countries that participated in it. This means that the development of domestic climate policies, especially by large emitting countries, will be crucial for any global solution to the problem.

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The good news is that many countries have not been waiting for forceful international action during the last twenty-five years. Even in the absence of strong, binding international agreements, many industrialized countries have pursued emissions reductions through formal reduction targets that are backed by substantial national climate policies.<sup>2</sup> Fifteen countries have adopted carbon or other broad energy taxes, 31 participate in the European Union's Emissions Trading System, several others have national targets for renewable energy, which many of them have implemented with vigorous national policies.<sup>3</sup> Collective action problems do not make climate policies impossible, in part because such policies bring with them perceived co-benefits for air pollution reduction, energy security, economic development, and job creation. *Climate policy*, that is, government policy to mitigate climate change by reducing greenhouse gas emissions, is intertwined with these other policy areas.

National climate policies vary in stringency and effectiveness, with relatively effective policies found in countries such as Germany, Sweden, Denmark, and the United Kingdom. By 2012, those countries, Belgium, and the European Union as a whole each had reduced their emissions by more than 15% compared with 1990.<sup>4\*</sup> Altogether, nine western countries and the European Union as a whole met their Kyoto Protocol commitments to reduce emissions, although their achievements were aided by the 2009 global recession. On the whole, there is a fairly strong relationship between the strength of national climate policies and reductions in greenhouse gas emissions.<sup>5\*</sup> Effective domestic policies also are necessary for progress on international climate agreements, because they motivate governments to take international leadership, give them credibility in negotiations, and demonstrate that mitigation policies are consistent with economic prosperity.

At the same time, many industrialized democratic countries, including Australia, Canada, and Norway, did little to try to meet their Kyoto targets and have seen their emissions rise since 1990. The most prominent of these climate policy laggards has been the United States, which is still the world's second largest emitter of greenhouse gases, after China.<sup>6\*</sup> The U.S. federal government's response has been seen as notably weak and ineffective, especially before 2009, whether viewed in its own terms or compared with other countries.<sup>7</sup> In 2001, the U.S. government rejected its Kyoto target of a 7% reduction over 1990–2010, and it has not adopted any target by law.<sup>8\*</sup> Its explicit national climate policies have been largely limited to voluntary measures. There is no federal energy tax, carbon tax, emissions trading system, renewable portfolio standard, or legally binding climate action plan. Partly as a result, U.S. greenhouse gas emissions increased 9.5% from 1990 to 2010.<sup>9\*</sup>

The weakness of U.S. federal policy is often attributed to structural barriers, including the separation of powers, a pluralist interest group system, a lack of green parties, and strong fossil fuel industries. While these barriers have limited federal climate policy, observers have exaggerated its weakness. In reality,

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several long-standing federal policies have been relatively effective at reducing or preventing increases in greenhouse gas emissions, including fuel economy regulations, standards and voluntary programs to promote energy efficiency, and the regulation of replacements for ozone-depleting substances. Recently, in 2009 and 2011, the federal government adopted relatively ambitious policies to reduce greenhouse gas emissions from motor vehicles, and it issued draft rules for reducing emissions from existing power plants in 2014; rules on emissions from landfills, aircraft, and the oil and natural gas industry are also in the works. Partly as a result of federal policies, total greenhouse gas emissions peaked in 2007 and declined 10% over the next six years. As I will argue in Chapter 9, U.S. federal climate policy making since the 1970s presents a rich mixture of failures and successes, the study of which can help us to understand how relatively strong policies can be adopted despite the structural constraints found in the United States.

### WHY STUDY STATE-LEVEL CLIMATE POLICIES?

But there are very good reasons to focus on the state level, too. The most obvious is that California in the late 2000s adopted comprehensive climate policies in order to achieve legally binding reductions in greenhouse gas emissions, which go far beyond federal policy and are comparable to those of West European countries.<sup>10</sup> Yet the phenomenon of state-level climate policy goes well beyond California and extends much further back in time than its 2006 Global Warming Solutions Act. Within the U.S. federal system, states have much legal authority, administrative capacity, and autonomy from the federal government in energy and environmental policy, both historically and at present.<sup>11</sup>

In the absence of strong federal action, many state governments have adopted climate policies since the 1990s. Major state climate policies include emissions targets and climate action plans, support for energy efficiency improvements and renewable energy development, standards for energy efficiency in appliances and buildings and for vehicle emissions, and emissions trading.<sup>12</sup> Studies show these policies to be effective in reducing greenhouse gas emissions, as discussed in Chapter 2. Since the 1990s, about half of the U.S. states have adopted significant climate policies in these areas.<sup>13</sup> About a dozen states, mostly clustered in the Northeast and on the West Coast, have adopted what I call "relatively strong climate policies." That is, they have pursued a broad range of policies and have relatively ambitious goals, stringent standards, and high funding levels. Generally, they also started earlier than other states and hence have had more time for implementation.<sup>14</sup>

Subnational climate policy is likely to remain important regardless of federal developments. For example, U.S. state governments are likely to play large roles in implementing the federal rules on existing power plant emissions that are being developed by the Environmental Protection Agency (EPA). In addition,

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more than 140 U.S. municipalities had climate action plans completed or in process in 2009, and more than 1,000 mayors had signed the U.S. Conference of Mayors Climate Protection Agreement, promising to cut their cities' emissions by 7% over 1990–2010.<sup>15\*</sup> States with strong climate policies have counterparts in other industrialized democratic countries, as regional governments have adopted binding climate policies in Canada (Quebec and British Columbia), Australia (New South Wales), and the United Kingdom (Scotland).<sup>16\*</sup> Collaborations among large regional groupings of U.S. states also emerged in the 2000s and usually included Canadian provinces as well, in the New England Governors' and Eastern Canadian Premiers' Climate Change Action Plan (founded in 2001), the Regional Greenhouse Gas Initiative (RGGI) among Northeastern states (2005), and the Western Climate Initiative led by California (2007).<sup>17</sup>

Especially within federal systems such as the United States, subnational governments are part of a system of multi-level governance in climate policy, which includes international, national, state or regional, and local actors.<sup>18</sup> The system is not organized in a top-down fashion, but rather, each of these policy-making levels has a degree of autonomy from the others, they all potentially influence each other, and hence each can make a significant contribution to the development of climate policy. Multi-level governance sometimes involves mutual reinforcement between levels of government, when different levels take turns driving more stringent environmental policy. For example, California and the U.S. federal government made air pollution standards stricter in this way, and the European Union and some of its member states have had similar effects on climate policy in Europe.<sup>19</sup>

Within the U.S., state governments can serve as valuable testing grounds for demonstrating the technical and economic feasibility of climate policies, proving their political acceptability, and building political commitment for larger-scale action. Strong environmental policies may diffuse from leading states to others and to the federal government, in what David Vogel calls the "California effect." This concept was developed to explain the perhaps surprising diffusion of stricter environmental standards among economically competing nations engaged in liberalizing trade. But it is also quite apt for explaining the spread of climate policies within the United States, given the leading role that California has played in this area. In the California effect, the diffusion of regulatory standards occurs at least partly at the impetus of businesses that benefit from them. This is because those businesses have already adapted to higher standards in the leading states (which tend to be powerful and wealthy ones), and they seek a competitive advantage and want to avoid the costs of meeting multiple standards in different states.<sup>20</sup>

Furthermore, legal support for the California effect has been written into federal air pollution laws concerning automobile emissions standards since the late 1960s. These permit California to adopt standards stricter than federal standards, allow other states to copy them, and hence provide for upward

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pressure on industry practices and on federal standards. A similar process occurs with federal appliance and equipment standards, where the law allows states to raise certain standards in advance of the federal government.

California and other leading states already have spurred stronger climate policy at the federal level – for example, standards for appliances, motor vehicle emissions, and power plant emissions – and they probably will continue to do so. While subnational climate policies cannot be sufficient to address the global dimensions of the climate change problem, state-level action in the U.S. is crucial as a potential driver of federal climate policies and hence, at least indirectly, of international ones.

Multi-level governance is complex. One way to sharpen our understanding of it is to focus on the policy initiatives of leading countries, such as Germany, and of large, influential subnational governments, such as California. We need to understand why these initiatives emerge and develop, as well as how they affect other jurisdictions. Much of the literature on environmental policy leaders considers how policies diffuse from one jurisdiction to another, including horizontal diffusion across units and vertical diffusion from international regimes, the European Union, and the U.S. federal government.<sup>21</sup> While diffusion is an important process, it is important only because some jurisdictions, such as California and New York State, adopt unusually strong policies in the first place.

In some ways, the high-water mark for climate policy in the United States seemed to pass in the late 2000s, when federal legislation was defeated, two out of three regional accords among state governments collapsed, and party polarization on climate change, among many other issues, intensified. Many states that joined regional cap-and-trade agreements in the West and Midwest in the late 2000s had abandoned them by 2011, and officials in New Jersey, which was the first state to adopt an emissions target, lost interest in its earlier commitments and left the RGGI.<sup>22</sup> The vast majority of Republican governors and congressional representatives now deny the reality of human-caused climate change.

However, the current situation is actually mixed, not completely unfavorable for climate policy making, and the different components of the mixture can be usefully analyzed. The federal government has adopted some strong policies since 2009, including regulations on vehicle fuel efficiency, emerging rules on power plant emissions, and an international commitment to reduce emissions by 17% from 2005 to 2020. That goal now seems attainable, and indeed, the target recently was extended to a 26% to 28% reduction by 2025. Moreover, some states are still forging ahead. California has been implementing its 2006 legislative targets on schedule, including an emissions trading system that now covers 85% of the state's emissions, and Governor Jerry Brown has made climate policy a priority of his administration. Under Governor Andrew Cuomo, New York adopted power plant standards in 2011 and got the agreement of the other RGGI states to lower that system's emissions cap in 2014.

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At the same time, there are limits to what even the leading states can do without the support of the federal government.<sup>23</sup> In some areas, stringent standards in some states may lead to a shifting of greenhouse gas emissions to more lenient states ("leakage"), as might have been the case with the Pavley vehicle emissions rules had the federal government not adopted its own version of them.<sup>24</sup> Furthermore, if there is federal inaction or hostility to climate policy, and if other states do not follow the leading states, even states such as California will be limited in how aggressively they can pursue emissions reductions – if these have short-term economic costs that place them at competitive disadvantages with other states. On the other hand, if the federal government adopts policies such as greenhouse gas emissions trading or a renewable portfolio standard, potential conflicts with state policies, including the issue of federal preemption, would need to be addressed.<sup>25</sup>

# WHY CALIFORNIA, NEW YORK, AND THE FEDERAL GOVERNMENT?

Among the states with relatively strong climate policies, I selected California and New York for three reasons. First, compared with other U.S. states and indeed with many other industrialized countries, California and New York have advanced climate policies, and they clearly are among the top five or ten states in comparative measures such as those published by the Center for Climate and Energy Solutions (CCES). Their key policy instruments include explicit climate policies adopted since the 2000s, which intentionally aim to reduce greenhouse gas emissions, as well as energy efficiency and renewable energy policies that were adopted beginning in the 1970s. I term the latter implicit climate policies, since they have had the effect of reducing or curbing greenhouse gas emissions without this being part of the initial intention or justification for them. Because of their importance for reducing emissions, I include implicit climate policies prominently in this book. I also include early air pollution policies in California because they laid the legal and administrative groundwork for the later adoption of explicit climate policies in that state and, indirectly, elsewhere in the country.

California is pre-eminent among the states engaged in climate policy and hence is a crucial case for understanding why U.S. states sometimes adopt relatively strong climate policies. The range, ambitiousness, longevity, and continuity of its climate policies are comparable to many West European countries.<sup>26</sup> Crucially, it is the only state with legally binding greenhouse gas emissions targets that cover most of its economy.<sup>27</sup> Major climate policies adopted in California include greenhouse gas emissions standards for cars and trucks (2002), an ambitious renewable portfolio standard (2002, 2011), the Global Warming Solutions Act (2006), and a low-carbon fuel standard (2007). The state has set a target of reducing its emissions 15% from 2006 to

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TABLE I.I Key Data on the Three Cases, 2010

	U.S. national	California	New York
Population (millions)	309.3	37.3	19.4
Economy			
Gross economic product (GDP or GSP in billions) Manufacturing share of total	\$14,860 12%	\$1,950 11%	\$1,200 6%
Agriculture share of total Economic product per capita	1% \$48,045	2% \$52,322	0.2% \$61,755
Government			
Government spending (billions)	\$3,456	\$210	\$138
As share of economic activity	23%	11%	12%
Energy			
Total production (million BTUs per capita)	241	68	43
Renewable energy production, share of total primary energy production	11%	28%	43%
Renewable energy production, share of total primary energy consumption	8%	9%	10%
In million BTUs per capita	317	210	186
Energy imports (share of consumption)	24%	68%	77%
Emissions			
Greenhouse gas emissions, total (million metric tons CO <sub>2</sub> eq)	6,875	450	215
In tons per capita	22.2	12.0	11.1

*Sources*: U.S. Census, U.S. Bureau of Economic Analysis, U.S. Energy Information Agency, U.S. EPA, CARB, and NYSERDA; greenhouse gas emissions are excluding land use changes.

2020, despite expectations of rapid population growth; the planned reduction is 29% when compared with a business-as-usual scenario.<sup>28</sup> Legislation requires the California Air Resources Board (CARB) to achieve the target, which it is doing through a variety of regulatory programs and a cap-and-trade program.

Second, California and New York are also important cases in their own rights, as shown in Table 1.1. They are large states, with economies and greenhouse gas emissions that are significant in relation to the United States and other countries. They also have diverse economies and energy supplies, and hence are more comparable to other states and to the U.S. as a whole than are small states such as Vermont or Oregon. If California were an independent country, its GDP of \$2 trillion in 2010 would have made it the 9th largest economy in the world, roughly the size of Italy or India.<sup>29</sup> Its population of

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37 million would place it 35th, about the size of Poland or Canada.<sup>30</sup> Its greenhouse gas emissions would make it the world's 19th largest emitter, similar to France or South Africa.<sup>31</sup> New York State is also a significant case on these dimensions. Worldwide, it would rank 13th in GDP, 6oth in population, and 36th in emissions if it were an independent country.

Third, both these states have been leaders in climate policy. They have adopted policies in advance of, and have influenced, other states and the federal government. California also has entered into cooperative relationships on climate and energy policy with other countries, including agreements with the United Kingdom and Mexico, informal cooperation with the European Union, and participation in United Nations climate conferences.<sup>32</sup> Both states have influenced federal appliance standards, and New York influenced a federal emissions trading system for sulfur dioxide, which was an important precursor for greenhouse gas emissions trading in the United States and the European Union.<sup>33</sup> New York was a leading force in RGGI, California was in the Western Climate Initiative, and California's path-breaking regulation of greenhouse gas emissions from motor vehicles was endorsed by 17 other states and ultimately a version of it was implemented nationally by the federal government. Since the 1970s, federal air pollution laws have given California a special role in influencing the emissions standards of other states and the federal government, because California has the legal right to apply for waivers from federal air pollution standards and other states are permitted to adopt the California rules.<sup>34</sup> Finally, both states continue to aggressively implement the commitments they made during the 2000s, even though some other states have not.

Besides analyzing California and New York State, the book also includes a case study of federal climate policy making, for two reasons. The latter's failures, especially from 1993 to 2005, provide a contrast to the adoption of strong policies in California and New York; this increases the amount of variance to be explained and hence the analytical leverage of the research design. The factors that explain the strength of climate policy making, and vice versa. Also, federal and state climate policy making are closely related to each other. Federal inaction often has created scope for state policy making, which in turn has influenced the adoption of federal policies, while at other times, such as the 1970s, federal initiatives have spurred state action.

#### QUESTIONS AND THEORIES

This book asks why relatively strong climate policies have been adopted at some times and in some places in the United States, and not at other times and in other places. In developing answers, I aim to contribute to scholarly literatures and political discussions about the political possibilities for effective climate policies in the U.S. at both state and federal levels. Hence, I will use two contrasting theoretical frameworks, based on structures and processes.

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These comprise the most common explanations in academic research on climate and other environmental policy, and they also bear directly on a practical question: Under what conditions do climate policy advocates, such as environmental organizations and elected officials, have the opportunity to take effective action?

Scholarly work on climate policy contains a debate, often an implicit one, between those who argue for political institutions and socioeconomic structures as causes and those who focus on political processes. In the first view, if a state or nation has strong policies, this is due to built-in advantages that other states or nations simply do not enjoy. Hence, the structural theory argues basically that the United States has weak climate policies because of a set of structural barriers – including the separation of powers, strong fossil fuel industries with ready access to government through a pluralist interest group system, electoral rules that prevent the rise of a strong ecological party, and a political culture hostile to government regulation.<sup>35</sup> These factors are unlikely to change in the foreseeable future, and the implication is that the United States will not adopt strong climate policies unless its institutions or basic economic structures change.

In the second view, strong policies result from short-term political interactions, processes, and events. These processes can be subsumed under Kingwindows of opportunity theory,<sup>36</sup> which argues that major don's environmental policies can be adopted if policy entrepreneurs take advantage of opportunities that arise when *policy windows* open. Such windows appear when there is a convergence between events in the "problem stream" (e.g., natural disasters, reactions to previous policies) and events in the "political stream" (e.g., election results, interest group mobilization). Problem events are those that raise the perceived importance of climate change issues, helping them to gain access to the crowded policy-making agenda, while the relevant *political* events are those that marshal political commitment and political resources to a cause. Since climate policies provide co-benefits for air pollution reduction, economic development, and energy security, changes in any of these problem areas can help to create opportunities for climate policy making. Once a window has opened, the adoption of policies also depends on whether an advocacy coalition mobilizes more vigorously and astutely than the opposing coalition.<sup>37</sup> From the standpoint of process theories, it seems that favorable processes could happen anywhere, or at least in many places other than the leading states and countries, and that they could be influenced by individual political actors or coalitions of them.

Thus, the debate that the book addresses is not merely an academic one. What is at issue is whether a laggard country like the United States can overcome the barriers to climate policy presented by its institutional and socioeconomic settings, and how it might do so, through action by the states, the federal government, or both.

I will use these theories to address several questions about climate policies in the U.S. Why have some states adopted stronger policies than others, even

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though they all share the political-institutional barriers to policy innovation that have helped to limit federal climate policy? In particular, why have California and, to a lesser degree New York, adopted strong climate policies? Did the successes of these two states depend on built-in advantages in socioeconomic structures and political institutions, or do their causes suggest that other states or even the federal government could adopt strong policies under favorable circumstances? Indeed, why has the federal government already adopted some effective climate policies, despite the institutional and other structural barriers? More generally, how much "room to maneuver"<sup>38</sup> do climate policy advocates have, given the structural constraints?

My aim in contrasting the structural and political-process theories is to assess the contributions that each makes, rather than to uphold one and reject the other. This leads me to examine how structures and processes combine to produce policies, and also to use a non-deterministic theory of path dependence to bridge the structural and process theories and to help explain the cases. In path dependence, past crises and conflicts create new structural conditions, such as administrative capacity or a sizeable clean energy sector, which then affect policy making in later decades. Thus, the book's intended theoretical contributions are threefold: to go beyond structural determinism; to place process theories in a context that includes structural factors; and to relate the two approaches through a theory of critical junctures and path dependence.

To test and develop theory, this book combines a cross-sectional statistical analysis of all fifty states with comparative, longitudinal case studies of California, New York, and the federal government. I used the two kinds of evidence to conduct largely independent tests of the structural and process theories; the last section of Chapter 3 provides some details. The case studies take a long-term historical approach, going back to the 1940s (California), 1960s (New York State), or 1970s (federal government). In my efforts to make the theoretical claims falsifiable, the case studies include longitudinal data on public and political agendas, as well as detailed process tracing of policy-making processes.

The case studies are embedded in a comparative research design that is a blend of universalizing comparisons, in which a variety of successful cases are investigated in order to try to identify their common causes, and variation-seeking comparison, in which instances of failure are used as contrasts to the successes.<sup>39</sup> The three case studies are differentiated into 22 subcases, episodes in which bursts of climate policy making occurred or were possible. Although most of the subcases represent the adoption of significant climate policies, 7 of them involve the blockage of attempted reforms or the reversal of previously adopted policies.

To carry out this research design, I used a mixture of sources and methods, including a variety of cross-sectional data for the statistical analysis, and newspapers and government documents to measure agendas longitudinally. For the qualitative, historical case studies, I drew on a wide range of narrative sources, including newspaper articles, reports by nonprofit organizations and