



MACROJOURNALS

# The Journal of **Macro**Trends in Energy and Sustainability

## The Politics and Future of Carbon Cap-and-Trade: Lessons from the European Union, Australia, and the United States

**Alice H. Chang**

Claremont McKenna College, USA

### Abstract

*Economists and policy analysts recognize a well-designed cap-and-trade scheme as the premier approach to effectively reduce carbon emissions. However, politics is bound to play a major role in the policymaking process, more so with carbon dioxide emissions than other pollutants like sulfur dioxide. This paper examines the political climate in which major trading schemes in the European Union, Australia, and the United States were proposed in order to explore how politics affects the programs' environmental integrity and ultimate policy outcome. Based on an analysis of each program, many pieces need to align within the political landscape for any cap-and-trade system to pass the policymaking body, let alone an ambitious one.*

Keywords: Carbon Cap-and-Trade the European Union, Australia, the United States

### 1. Introduction

“Climate change is the greatest challenge of our time... it threatens our planet, our only home,” announced Thomas F. Stocker, the co-chairman of the Intergovernmental Panel on Climate Change (IPCC).<sup>1</sup> In September 2013, IPCC, a United Nations-sponsored committee of scientists, reported that they are 95 percent certain that climate change is largely caused by

---

<sup>1</sup> Justin Gillis, “U.N. Climate Panel Endorses Ceiling on Global Emissions,” *New York Times*, September 27, 2013, accessed October 21, 2013, <http://www.nytimes.com/2013/09/28/science/global-climate-change-report.html?pagewanted=1>.

anthropogenic activities.<sup>2</sup> These human activities include burning fossil fuels, raising livestock, storing waste in landfills, and a host of other activities, all of which result in carbon dioxide (CO<sub>2</sub>) emissions or other greenhouse gas (GHG) emissions that block heat from exiting the Earth's atmosphere.<sup>3</sup> As climate change occurs, rising sea levels rise threaten coastal communities, extreme weather disrupts crop cycles, and increased chances of heat waves and air pollution creates major public health issues.

In the early 20<sup>th</sup> century, British economist Cecil Pigou first recognized that prices may not include effects that are external to the buyer and seller and emphasized the importance of internalizing those externalities.<sup>4</sup> Pressing questions in the climate policy arena revolve around how best to reduce carbon and other GHG emissions, principally by placing a price on emissions to internalize their external effects. Environmental economists and policymakers have generally agreed that cap-and-trade can reduce CO<sub>2</sub> emissions at a relatively low compliance costs while keeping its environmental integrity, making it the best climate policy to reduce carbon emissions compared to a carbon tax or command-and-control legislation. While a well-designed cap-and-trade mechanism may be the best theoretical solution to decrease carbon emissions, politics and divisive interests, intrinsic to the policymaking process, often get in the way of implementing the original policy proposal. Despite the political challenges facing cap-and-trade policy, policymakers must recognize the urgency of taking national action for the sake of environmental and business interests. By analyzing different emissions trading programs—implemented or proposed—in the European Union (EU), Australia, and the United States, policymakers can better understand how the political landscape, shaped by the political system, public opinion, interest groups, and political leadership, can lead to certain design and implementation challenges. In fact, many pieces in the game of political Tetris must fit together before the policymaking body can enact a sustainable cap-and-trade policy.

## 2. The Basics of Cap-and-Trade

Carbon cap-and-trade programs place a cap, or maximum limit, on CO<sub>2</sub> emissions from a target group of sources and lowers the cap over time. The cap may apply to the entire economy or to a selection of fossil fuel intensive sectors. The government agency administering the program distributes emissions allowances—usually worth a ton of CO<sub>2</sub> emissions each—through an auction, free allocations, or a combination of the two. Programs can also cover other GHGs in the cap. In this 'CO<sub>2</sub> plus' model, allowances are measured in "carbon dioxide equivalent" (CO<sub>2</sub>e).<sup>5</sup> The available allowances during each compliance period constitute the cap, which ensures that covered entities reach the target quantity of emission reductions. The governing

---

<sup>2</sup> Intergovernmental Panel on Climate Change, "Climate Change 2013: The Physical Science Basis Summary for Policy Makers," *Contributions of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, September 27, 2013.

<sup>3</sup> Environmental Protection Agency, "Climate Change Science Overview," *Environmental Protection Agency*, accessed October 21, 2013, <http://www.epa.gov/climatechange/science/overview.html#human-causes>.

<sup>4</sup> Richard Conniff, "The Political History of Cap and Trade," *Smithsonian Magazine*, August 2009.

<sup>5</sup> Some GHGs are often more potent in causing the greenhouse effect than CO<sub>2</sub>, such as methane and nitrous oxide. The United Nations Framework Convention on Climate Change outlined six pollutants total in the Kyoto Protocol.

agency usually retains some allowances to provide a buffer for smooth market prices and protect new entrants. For each compliance period, participating sources must surrender an allowance for each unit of CO<sub>2</sub>—or CO<sub>2</sub>e depending on the scheme—emitted during that period of time. Free allowances help ease the burden for particularly emissions-intensive industries, while auctioning allowances raises revenue that can be used to offset the social costs of the cap-and-trade program for companies and consumers or to fund other climate programs.

Covered entities must acquire sufficient allowances to emit CO<sub>2</sub> or reduce emissions in each compliance period. Participants can trade allowances to reach abatement goals. Those who can reduce emissions more cost-effectively can sell their excess allowances to participants unable to reduce emissions as cheaply. This market mechanism incentivizes participants to invest in cost-efficient emission reduction technologies. If the technology costs more than allowances, participants would opt to purchase more allowances. Allowance prices are likely to increase over time and continue to incentivize investments, since the caps decline and companies create emission reductions through more expensive methods.

Most cap-and-trade schemes allow for the banking and borrowing of allowances. Participants can deposit extra allowances for later use (banking) or hedge allowances at a specific price to mitigate volatile allowance prices in later periods (borrowing). Governments can design the scheme to avoid allowance price spikes and moderate the severity of the cap by setting price ceilings for allowances or selling some allowances at fixed prices. Participants can also earn additional credits—offsets that help satisfy required abatement goals—through different carbon reduction techniques, such as carbon capture and sequestration. If participants do not obtain sufficient allowances to cover their emissions, they are subject to fines, calculated as a flat fee or a rate per ton of CO<sub>2</sub>e. Different cap-and-trade programs around the world can link to one another by permitting allowance creation and trading among the schemes. International linkage decreases the chances of leakage, which occurs when increased emissions outside the cap-and-trade program offset reductions that take place within the program.

### **3. Literature Review**

#### *3.1 Cap-and-Trade: The Best Way to Reduce Carbon Emissions*

In “A U.S. Cap-and-Trade System to Address Global Climate Change,” Robert Stavins evaluates potential methods to reduce CO<sub>2</sub> emissions and concludes that a cap-and-trade mechanism can decrease CO<sub>2</sub> emissions more effectively than a carbon tax or setting industry standards. Stavins, a Harvard academic and renowned expert on environmental economics, argues that cap-and-trade can best achieve environmental goals at low compliance costs.<sup>6</sup> A carbon tax imposes a specific price on carbon emissions for certain sources, which allows companies to easily predict the marginal cost of compliance and eliminates fears of carbon price volatility.

---

<sup>6</sup> Robert Stavins, “A U.S. Cap-and-Trade System to Address Global Climate Change,” *The Hamilton Project*, The Brookings Institution, October 2007.

While a carbon tax provides more certainty for compliance costs, the policy's environmental goals can be easily compromised compared to cap-and-trade policy. The actual quantity of emissions reduced by a tax is unknown until the tax has been implemented for some time. Once legislated, tax levels are difficult to amend. This uncertainty and inflexibility can undermine the tax's environmental integrity—the ability to fulfill environmental goals of reducing emissions and mitigating climate change.<sup>7</sup> In contrast, a cap-and-trade program ensures a set reduction of carbon emissions by creating a cap and distributing allowances based on the cap. When negotiating a carbon tax, interest groups would lobby for exemptions, which are extremely difficult to repeal.<sup>8</sup> Under a tax regime filled with loopholes, exempt companies would not be as incentivized to reduce their carbon emissions, which can also compromise the policy's environmental integrity. While interest groups would similarly lobby policymakers on cap-and-trade provisions, the system provides intrinsic solutions for reducing the burden on carbon-intensive industries with free allowances, which could be phased out gradually while increasing allowance prices continue to incentivize investments in emissions reduction technology.<sup>9</sup>

Not only would a carbon tax struggle to meet its environmental goal, a carbon tax will encounter “stiff resistance... in the current political climate” in comparison to a cap-and-trade system, which hints toward the importance of the political landscape in environmental policymaking.<sup>10</sup> Stavins caveats his assertion and notes that “no policy proposal [including a carbon tax] should be ruled out,” since political leadership and public opinion may change.<sup>11</sup> Ultimately, the deciding factor between cap-and-trade and a carbon tax should be based on two factors: “which is more politically feasible and which is more likely to be well-designed.”<sup>12</sup> According to Stavins, cap-and-trade enables policymakers to appease interest groups via free allowances and still maintain its environmental, making it the policy solution that is “optimal in Washington.”<sup>13</sup>

Command-and-control mandates can also reduce carbon emissions, though this policy mechanism has far higher compliance costs which can deter investments in emissions reduction technology. In the U.S., the Environmental Protection Agency (EPA) has the authority under §202(a)(1) of the Clean Air Act (CAA) to regulate harmful air pollutants, including CO<sub>2</sub>, by setting ambient air standards.<sup>14</sup> Congress does not need to amend or enact any law, avoiding months or years of Congressional debate and interest group lobbying.<sup>15</sup> However, standard-setting is

---

<sup>7</sup> Stavins, “A U.S. Cap-and-Trade,” 50.

<sup>8</sup> Stavins, “A U.S. Cap-and-Trade,” 52.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> Robert Stavins, “Cap-and-Trade or a Carbon Tax,” *The Environmental Forum*, January/February 2008, Environmental Law Institute, 16.

<sup>13</sup> Ibid.

<sup>14</sup> In *Massachusetts v. EPA* (2007), the U.S. Supreme Court ruled in favor of the EPA, stating that the agency has the authority to regulate all air pollutants, including carbon dioxide, under §202(a)(1) of the Clean Air Act, 42 U.S.C. §7521(a)(1).

<sup>15</sup> The 2007 ruling has received a lot of push back from interest groups, such as the coal industry. For instance, the U.S. Supreme Court will hear a case regarding EPA's authority to regulate GHGs from stationary sources, which

limited by administrative capacity and resources, since it requires the executive agency to set different standards for different emission sources.<sup>16</sup> Establishing controversial standards inevitably involves protracted litigation, as shown in past Supreme Court cases, such as *Massachusetts v. EPA* (2007) and *Utility Air Regulatory Group v. EPA* (2013).

Furthermore, setting industry standards can stifle innovation and the development of new technologies that may otherwise result in greater emission reductions at a lower cost.<sup>17</sup> Stringent command-and-control regulation often only applies to new capital stock, which discourages companies from retiring old plants and investing in new capital that must fulfill more stringent regulations.<sup>18</sup> Outdated equipment usually emits more heavily and can offset the reductions occurring elsewhere, further threatening the policy's environmental integrity.<sup>19</sup> In comparison, cap-and-trade ensures that emissions are reduced to a specific amount, encourages innovation, and does so cost-effectively through the trading mechanism. Under a cap-and-trade program, market forces incentivize investments in clean technology and give industries more flexibility on how and when they should cut their emissions. Thus, when choosing between the three policy solutions, many economists favor cap-and-trade, since it can uphold its environmental goals, has the lowest compliance costs, and is more politically feasible.

### 3.2 *Successes in the Past Depends on Context and Program Design*

Not only does cap-and-trade seem to be the best policy in theory, cap-and-trade programs brought many environmental successes in the past and have become a popular response to reduce certain emissions, though these outcomes largely depend on the program's design and political context. For instance, the Clean Air Act Amendments of 1990 authorized a cap-and-trade program to reduce sulfur dioxide (SO<sub>2</sub>) and nitrous oxide (NO<sub>x</sub>) emissions to decrease acid rain that proved highly successful.<sup>20</sup> The SO<sub>2</sub> cap-and-trade program met statutory reduction goals and cut SO<sub>2</sub> emissions by 5.5 million tons between 1990 and 2005, while generating \$1 billion in annual cost-savings.<sup>21</sup> The program generated about \$122 billion a year in benefits from cleaner lakes, healthier forests, and avoided health problems.<sup>22</sup> A 2003 Office of Management and Budget study found that the Acid Rain Program "accounted for the largest quantified human health benefits of any major federal regulatory program implemented" between 1993 and 2003, with benefits exceeding costs by more than a forty-to-one ratio.<sup>23</sup> To

---

includes coal-fired power plants. See Adam Liptak, "Supreme Court to Hear Challenge to E.P.A. Rules on Gas Emissions," *New York Times*, October 15, 2013, accessed October 20, 2015, [http://www.nytimes.com/2013/10/16/us/politics/supreme-court-to-hear-challenge-to-epa-emissions-rules.html?\\_r=0](http://www.nytimes.com/2013/10/16/us/politics/supreme-court-to-hear-challenge-to-epa-emissions-rules.html?_r=0).

<sup>16</sup> Stavins, "A U.S. Cap-and-Trade," 48.

<sup>17</sup> Robert Stavins, "Experience with Market-Based Environmental Policy Instruments," *Resources for the Future*, Discussion Paper 01-58, November 2001.

<sup>18</sup> Stavins, "A U.S. Cap-and-Trade," 48.

<sup>19</sup> Stavins, "A U.S. Cap-and-Trade," 49.

<sup>20</sup> Stavins, "A U.S. Cap-and-Trade," 10.

<sup>21</sup> *Ibid.*

<sup>22</sup> Conniff, "The Political History."

<sup>23</sup> Environmental Protection Agency, "Cap-and-Trade: Acid Rain Program Results," accessed October 15, 2013, <http://www.epa.gov/capandtrade/documents/ctresults.pdf>.

this day, the SO<sub>2</sub> cap-and-trade program is considered one of the most successful regulatory programs ever.

Granted, SO<sub>2</sub> is very different from CO<sub>2</sub>, which is usually considered a more ubiquitous and politically difficult pollutant to regulate. SO<sub>2</sub> is a regional pollutant and was generally accepted as a prominent contributor to acid rain, causing clear, visible damage in people's daily lives. Furthermore, the Railroad Revitalization and Regulatory Reform Act of 1976 and the Staggers Rail Act of 1980 deregulated the railroad industry and decreased the price of transporting low-sulfur content coal to the power plants.<sup>24</sup> These pieces of legislation created positive externalities and helped the Acid Rain Program achieve its environmental goals without necessarily spurring investments in emissions abatement technology. In other words, the SO<sub>2</sub> cap-and-trade's success was unique to its circumstances.

Due to previous successes such as the U.S. SO<sub>2</sub> cap-and-trade program, more policymakers view cap-and-trade as a feasible and preferred solution to mitigate climate change. In "The Contours of 'Cap-and-Trade': The Evolution of Emissions Trading Systems for Greenhouse Gases," Michele Betsill of Colorado State University and Matthew Hoffmann of the University of Toronto examine an array of cap-and-trade programs in operation between 1996 and 2011. Between the signing of the Kyoto Protocol in 1997 and 2011, policymakers around the world have used or seriously discussed using the mechanism in 32 different instances, indicating the legitimacy of the cap-and-trade mechanism as a way to reduce CO<sub>2</sub> emissions.<sup>25</sup>

Despite past successes and the perceived legitimacy of cap-and-trade policy among policymakers, Stavins notes that not all past cap-and-trade programs have been as effective and emphasizes the critical influence of policy design on the program's "ability to achieve its environmental goals [and] its costs."<sup>26</sup> In 1994, California launched a cap-and-trade program in the Los Angeles Basin called the Regional Clean Air Incentives Market (RECLAIM) to reduce regional SO<sub>2</sub> and NO<sub>x</sub> emissions. Though the program reduced NO<sub>x</sub> emissions by 60 percent and SO<sub>2</sub> emissions by 50 percent, too many allowances were distributed in the early years and businesses were not incentivized to reduce emissions at the expected rate. In 2000, an unexpected shortage of allowances due to the deregulation of California's electricity market and a surge of energy production resulted in a price spike, where allowances cost \$45,609 per ton of NO<sub>x</sub>—twenty times their historic price.<sup>27</sup> RECLAIM exemplifies the importance of program design to its overall success. Stavins' work clearly argues why a program must be robustly designed and can be the most cost-effective and environmentally impactful solution to reducing GHG emissions.

---

<sup>24</sup> Richard Schmalensee and Robert N. Stavins, "The SO<sub>2</sub> Allowance Trading System: The Ironic History of a Grand Policy Experiment," *MIT Center for Energy and Environmental Policy Research*, August 2012, 6.

<sup>25</sup> Michele Betsill and Matthew Hoffmann, "The Contours of 'Cap and Trade': The Evolution of Emissions Trading Systems for Greenhouse Gases," *Review of Policy Research*, Vol. 29, No. 1 (2011), 97.

<sup>26</sup> Robert Stavins, "Addressing Climate Change with a Comprehensive U.S. Cap-and-Trade System," *Oxford Review of Economic Policy*, Vol. 24, No. 2 (2008), 299.

<sup>27</sup> Environmental Protection Agency, "An Evaluation of the South Coast Air Quality Management District's Regional Clean Air Incentives Market—Lessons in Environmental Markets and Innovation," November, 2002, 24.

### 3.3 *Politics in Design*

While Stavins maintains the merits of a well-designed cap-and-trade program and points out that politics plays a role in policy decisions, he does not delve further into how politics and policy are intertwined throughout the cap-and-trade design and implementation process, which can change the original policy proposal and affect the program's environmental goals. No matter what program design economists propose to policymakers, the bill that comes out of the legislative body is bound to be different. In "The Politics of Cap-and-Trade," Timothy Heinmiller, a professor of political science at Brock University in Canada, analyzes the intrinsically political nature of the cap-and-trade mechanism and explains why politics sways or alters the implementation of policies grounded in economic theory. In the cap-setting and allowance allocation processes, different political forces fight for provisions to benefit their own interests, often resulting in a program—assuming discussions even come to a consensus—that looks drastically different from the original policy proposal offered by experts and economists.

Heinmiller points out that "cap-and-trade policies are most needed and most likely to be introduced in situations of resource scarcity and overexploitation where vested interests are already well established and cannot be ignored."<sup>28</sup> Creating a carbon market is especially sensitive to politics, because all human activity releases CO<sub>2</sub>. For instance, placing a price on carbon would inevitably affect electricity costs, increase the cost of living, and raise business production costs in the short-run, especially when fossil fuel comprises a majority of the world's current energy mix.<sup>29</sup> Caps must be set to balance environmental integrity and economic livelihood, interests that Heinmiller call the "green" and "brown" opposition.<sup>30</sup> "Green" interests hope to protect clean air and a safe climate, while "brown" interests lobby policymakers for less regulation to sustain existing business and labor practices. As a result, Heinmiller believes that the cap level will likely be different from the original cap proposed by climate scientists.

The process of allowance allocations is also politicized, since cap-and-trade, by nature, is a zero sum game, and stakeholder behavior does not always fall in line with economic theory. The Coase Theorem states that "any initial allocation of rights will eventually result in an economically efficient distribution of [allowances]," if the allowances to pollute are specified and fully tradable.<sup>31</sup> Entities will trade allowances until they have the most efficient amount to meet the cap. However, covered firms view allowance allocation as a zero-sum game; when

<sup>28</sup> Timothy Heinmiller, "The Politics of 'Cap-and-Trade' Policies," *Natural Resources Journal*, Spring 2007, 449.

<sup>29</sup> In 2011, coal made up 42 percent of the world's electricity generation, natural gas contributed to 21 percent of electricity generation, and nuclear generated about 12 percent. In the U.S., coal makes up 44 percent of the nation's electricity generation fuel mix. Natural gas makes up 22 percent and nuclear makes up 19 percent. The latter two sources emit far less GHGs, but the base load of electricity still comes from coal. See "Breakdown of Electricity Generation by Energy Source," *The Shift Project Data Portal*, <http://www.tsp-data-portal.org/Breakdown-of-Electricity-Generation-by-Energy-Source#tspQvChart>.

<sup>30</sup> Heinmiller, "The Politics of 'Cap-and-Trade,'" 452.

<sup>31</sup> *Ibid.*

more players—or polluters—enter the game, each player gets a smaller slice of the pie.<sup>32</sup> Thus, shareholders have vested interests in acquiring the most allowances, which they can either sell or use as pollution permits. The amount of allowances the participant acquires may indicate winners and losers in the economy under a cap-and-trade program, so the stakes of not having enough allowances are very high. Unlike the opposing forces of “green” and “brown” interests, there “are typically multiple, highly fragmented” interests in the allowance allocation process.<sup>33</sup> The second layer of political interests adds more complexity to implementing a successful cap-and-trade system, as the multitude of interests vie for more allowances. If the government allocates too many allowances, low allowance prices can undermine the program’s environmental integrity—a danger some economists do not foresee if they ignore the political implications throughout the cap-and-trade policy design.

Applying Heinmiller’s theory, Betsill and Hoffman recognize that political negotiations throughout the design and implementation process often lead to a less ambitious cap-and-trade program. “Ambitious proposals often have been scaled back when [governments] implement trading... There is often a gap between the optimal policy design suggested by economists and political feasibility.”<sup>34</sup> For instance, when a scheme is nonoperational and still in the design phase, policymakers often prefer the “CO<sub>2</sub> plus” model, considered a more effective model since it provides more opportunities for emission reductions. Once the program is authorized by the policymaking body, it will more likely only cover CO<sub>2</sub> since less coverage is more politically expedient and cater to regulation-wary “brown” interests.<sup>35</sup> In another instance, most program proposals include auctioning allowances, yet most operational programs before 2003 started with free allocations, which help to minimize production costs for covered entities.<sup>36</sup> Betsill and Hoffman’s analysis apply Heinmiller’s theory and demonstrate how political tensions throughout the design of a cap-and-trade program result in policies that alter what economists envisioned. Economic models are a good starting point, but these conflicting interests must be considered to designing a system that operates effectively and is politically feasible.

While most policymakers and economists agree that cap-and-trade is the best option for mitigating climate change, they must recognize that the legislated policy may look drastically different from the original proposal due to the weight of interest groups throughout a democracy’s policymaking process. The three case studies will apply the assertions of Stavins and Heinmiller in order to make sense of why certain policy outcomes occurred in each particular political landscape.

### *3.4 Challenges Ahead for Cap-and-Trade & Why Policymakers Should Pay Attention*

Due to the complex layers of politics involved, cap-and-trade climate policy still faces many challenges, which will be analyzed in the context of European Union Emissions Trading Scheme,

---

<sup>32</sup> Heinmiller, “The Politics of ‘Cap-and-Trade,’” 447.

<sup>33</sup> Heinmiller, “The Politics of ‘Cap-and-Trade,’” 457.

<sup>34</sup> Betsill, “The Contours of ‘Cap and Trade,’” 94.

<sup>35</sup> Betsill, “The Contours of ‘Cap and Trade,’” 95.

<sup>36</sup> Betsill, “The Contours of ‘Cap and Trade,’” 96.



the Australian Trading Scheme, and the United States cap-and-trade proposal. Policymakers and interest groups must understand these political challenges in future climate policy negotiations for the sake of the environment and business interests. If cap-and-trade remains the premiere policy solution, nations will eventually need to link schemes together to reduce leakage. Betsill and Hoffman's survey of cap-and-trade show that regional and subnational programs have been on the rise in the recent years, which will make it increasingly difficult for corporations to comply with a patchwork of environmental policy and more challenging for policymakers to link programs.

The rise of regional programs can be attributed to weak multilateral trading programs set up by the Kyoto Protocol. Once stakeholders realized that these trading systems lacked legitimacy due to poor design and the failure of key nations, including the U.S., to ratify Kyoto, subnational bodies started to set up their own programs to meet Kyoto commitments and local policy objectives.<sup>37</sup> At the Copenhagen Summit in 2009, the parties largely agreed to not pursue a multilateral trading system and to rely on linking regional schemes in the future.<sup>38</sup> Even though larger programs offer more abatement flexibility and reduce leakages, different nations and regions began to create their own cap-and-trade program, including the Western Climate Initiative (WCI) in California and Canada and the Regional Greenhouse Gas Initiative (RGGI) in Northeastern states of the U.S. Since new regional cap-and-trade programs can operate under many different governments and different rules, their rise presents a global business challenge: businesses must comply with a patchwork of climate policy. Such inconsistency hinders the efficiency of national and multinational corporations.

Assuming cap-and-trade will be the premier mechanism that states will use to reduce GHG emissions, governments must overcome the impending policy hurdle of collaborating and linking cap-and-trade systems from the bottom-up to minimize leakage and maximize cost-effectiveness.<sup>39</sup> Stakeholders will likely reassert their interests in future linkage negotiations, exacerbating the already complex balance between original policy objectives and appeasing stakeholders.<sup>40</sup> Betsill and Hoffman's projection emphasizes the importance of understanding the politics that surround the negotiation process and the urgency to create comprehensive, national programs to provide certainty and predictability for businesses. Businesses and governments around the world should have a vested interest in designing and implementing effective national programs now and avoid having to link together a complex patchwork of regional programs in the future. However, before legislating cap-and-trade programs, stakeholders must be cognizant of the most important indicators of policy success. This paper argues that while industry groups can drastically alter the original policy proposal, as Heinmiller suggests, the most important indicator of policy outcomes and the highest barrier to entry depends on the current political environment.

---

<sup>37</sup> Betsill, "The Contours of 'Cap and Trade,'" 94.

<sup>38</sup> Betsill, "The Contours of 'Cap and Trade,'" 100.

<sup>39</sup> Betsill, "The Contours of 'Cap and Trade,'" 94.

<sup>40</sup> Betsill, "The Contours of 'Cap and Trade,'" 101.

#### 4. Introduction to Case Studies

Though many environmental economists share Stavins' view that cap-and-trade is the best policy mechanism to reduce carbon emissions from a political, economic, and environmental perspective, the most influential element within the policymaking process may be anything but the validity of the policy proposal. Besides politics throughout the negotiation process, Heinmiller does not point out that certain political conditions, such as supportive public opinion and political leadership, must exist for the policymaking body to even begin negotiations and create a sustainable cap-and-trade program. Whether or not a successful cap-and-trade bill can be introduced, passed, and implemented to successfully reduce carbon emissions depends on the political system in place, the state of the economy, public opinion, and political leadership. Many pieces must align in the dynamic game of political Tetris before Heinmiller's theory of politicking ensues throughout specific provision negotiations.

In the case of the European Union Emissions Trading Scheme (EU ETS), public support set up a political landscape open to a cap-and-trade program, though the decentralized political system lends itself to relatively a less ambitious EU-wide cap. In Australia, changes in leadership, powerful business interests, and varying public opinion has enabled the new center-right majority party to potentially repeal the current 'tax-then-cap' carbon pricing program, even before the trading mechanism is installed. In the United States, the lack of public support, combined with strong interest groups, rendered any carbon pricing policy 'dead on arrival.' While the EU ETS case clearly demonstrates how Heinmiller's theory of politics in cap-and-trade design comes to fruition, the last two cases emphasize how the politics involved external to the negotiation table can affect policy outcomes. Each case exhibits the influence of the political context, either through the presence of powerful interest groups or the effect of divided public opinion. This analysis can better inform future climate policy proposals, which will be particularly important since governments and interest groups prefer consistent, predictable programs over a patchwork of regional cap-and-trade schemes.

#### 5. Examining the European Union Emissions Trading Scheme

The EU ETS is the largest, most developed cap-and-trade program in the world. The program covers 11,500 sources, which accounts for over 2 billion metric tons of CO<sub>2</sub>, 14 percent of the world's GHG emissions,<sup>41</sup> and 45 percent of GHG emissions from 27 member states.<sup>42</sup> In comparison, the U.S. Acid Rain Program only covered 3,000 sources and 16 million tons of SO<sub>2</sub>.<sup>43</sup> The EU ETS is groundbreaking in both scale and environmental intent, prized by the EU as the

<sup>41</sup> A. Denny Ellerman and Barbara K. Buchner, "The European Union Emissions Trading Scheme: Origins, Allocation, and Early Results," *Oxford University Press, Review of Environmental Economics and Policy*, vol. 1, issue 1, 2007, 68.

<sup>42</sup> Kayleigh Lewis, "EU Emissions Trading Scheme Faces 'Existential Crisis,'" *The Parliament.com*, January 28, 2013, accessed October 29, 2013, <http://www.theparliament.com/latest-news/article/newsarticle/eu-emissions-trading-scheme-faces-existential-crisis/#.Unal8fmsiSo>.

<sup>43</sup> Ellerman, "The EU ETS: Origins," 68.

“flagship of its climate policies.”<sup>44</sup> Some scholars even believe that the EU ETS “is by far the most significant accomplishment in climate policy to date.”<sup>45</sup>

Given the size of the scheme and the leadership exhibited by the EU, analyzing the factors that contributed to certain policy outcomes will help enlighten future cap-and-trade programs. The EU ETS provides an insightful case for how politics has influenced each step of the policymaking process, from its birth to present day implementation. Firstly, public acceptance of the need for climate policy and a cap-and-trade program in EU member states created a stable environment for policy negotiations to occur. However, the political context of a supranational organization allowed “brown” interests to effectively lobby for a less stringent cap. Politics between “green” and “brown” interests continue to play a part throughout the implementation process as the European Parliament tries to ‘backload’ allowances. Despite low allowance prices, the EU ETS has upheld its environmental integrity thus far by meeting Kyoto targets and sets a nuanced example for other nations.

### 5.1 A Political Climate Accepting of Cap-and-Trade

The EU is known for being a global leader in climate action and is expected by the public and foreigners to act on climate change, which created an environment conducive to initiating cap-and-trade negotiations.<sup>46</sup> Since the Climate Change Convention in 1991, the EU has been on the forefront of developing and promoting ambitious climate change policy.<sup>47</sup> For example, the EU was instrumental in developing the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, which led to the adoption of the Kyoto Protocol in 1997.<sup>48</sup> The EU consistently proposed and accepted the most stringent emission reduction targets throughout the Kyoto Protocol negotiations.<sup>49</sup> In 1997, some of the convening countries in Japan adopted and ratified the Kyoto Protocol, which set internationally-binding commitments for developed and developing nations to decrease carbon emissions with “common but differentiated responsibilities.”<sup>50</sup> The EU-15, countries that were EU members before 2004, committed to reducing emissions to 8 percent below 1990 levels by 2012 and 20 percent by 2020.<sup>51</sup> Furthermore, 72.5 percent of member states worried about future changes in climate, and it was seen as the EU’s obligation to reflect those sentiments in policymaking.<sup>52</sup> The European

<sup>44</sup> Benoit Leguet, Noriko Fujiwara, and Anton Georgiev, “The EU Emissions Trading Scheme as a Driver for Future Carbon Markets,” *Centre for European Policy Studies*, 2012, 1.

<sup>45</sup> Ellerman, “The EU ETS: Origins,” 83.

<sup>46</sup> Ellerman, “The EU ETS: Origins,” 67.

<sup>47</sup> Sebastian Oberthur and Claire R. Kelly, “EU Leadership in International Climate Policy: Achievements and Challenges,” *The International Spectator: Italian Journal of International Affairs*, August 20, 2008, 36.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

<sup>50</sup> “Kyoto Protocol,” *United Nations Framework Convention on Climate Change*, accessed November 16, 2013, [http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php).

<sup>51</sup> “What is the EU doing about climate change?” *European Commission*, October 31, 2013, accessed November 16, 2013, <http://ec.europa.eu/clima/policies/brief/eu/>.

<sup>52</sup> Irene Lorezoni and Nick Pidgeon, “Public Views on Climate Change: European and USA Perspectives,” *University of East Anglia, Climate Change* (2006) 77, 77.

Commission (EC), the governing body of the EU, strived to provide directional leadership and show other nations its commitment to reducing carbon emissions. The desire to lead by example combined with public support for climate policy set up a friendly environment for introducing a cap-and-trade program to meet Kyoto targets.

Once the EU ratified the Kyoto Protocol, member states were collectively bound by the international treaty to hit their emissions reduction targets, creating the external momentum for finding an effective mechanism to reduce CO<sub>2</sub> pollution. In order to meet its Kyoto commitments, the EU was actively in search of the best policy solution to reduce emissions. While preparing to ratify Kyoto, the EC produced the “Green Paper on GHG Emissions within the European Union,” which advocated for a cap-and-trade scheme to help EU countries meet their collective Kyoto commitments.<sup>53</sup> EC studies showed that a cap-and-trade program would cost €2.9 to €3.7 billion annually—less than 0.1 percent of the EU’s annual GDP—to meet Kyoto targets, while other programs could cost up to €6.8 billion each year to obtain Kyoto goals.<sup>54</sup> Prior to ratifying the Kyoto Protocol, several smaller cap-and-trade programs were already operating within Europe that also increased public acceptance of such policy solution. The United Kingdom established its own cap-and-trade program, Denmark set up a carbon offset program, and even British Petroleum (now BP) created its own internal emissions trading scheme.<sup>55</sup> These programs generated remarkable political momentum and public acceptance of cap-and-trade as an effective policy to address climate change.<sup>56</sup> In the EU’s search for policy solutions to cut CO<sub>2</sub> emissions, cap-and-trade stood as the optimal method.

## 5.2 *Politics in Design*

Once the EC recognized a general consensus in the need to legislate a comprehensive cap-and-trade program to address climate change, the EC, member states and affected firms entered a series of negotiations and designed an accommodating policy with less stringent caps and mostly free allowance allocations. Since the EU is essentially a monetary union, member states retain power over almost all other policy areas, including environmental protection policies. For large-scale reform to occur, all 27 member states must unanimously agree to the changes. The decentralized nature of the EU implied that specific policy provisions, including cap levels and allowance allocations, would be devolved to member states. Accordingly, the 2003 Emission Trading Directive, the authorizing legislation for the EU ETS, gave each state the responsibility to propose its own National Allocation Plan (NAP), which set out the total number of European Union Allowances (EUAs) the state wanted and how it will allocate those allowances to companies.<sup>57</sup> Under the Directive, member states had freedom to decide how many allowances

---

<sup>53</sup>“Green Paper on Greenhouse Gas Emissions Trading within the European Union,” *Commission of the European Communities*, 2000, 4.

<sup>54</sup>“Questions and Answers on Emissions Trading and National Allocation Plans for 2008 to 2012,” European Commission, November 29, 2006, accessed November 27, 2013.

<sup>55</sup> Ellerman, “The EU ETS: Origins,” 68.

<sup>56</sup> “What is the EU doing about climate change?”

<sup>57</sup> “EU Emission Trading Directive,” *Global CCS Institute*, 2010,

<http://www.globalccsinstitute.com/networks/cclp/legal-resources/emission-trading/eu-emission-trading/eu-directive>.

to allocate to each sector as they saw fit, as long as NAPs met Kyoto commitments. Industries played a role in hashing out their desired provisions with member states, though the exact extent of their influence is difficult to extrapolate. Since abatement costs were hard to predict, “brown” interests advocated for less stringent caps and the free allocation of EUAs.<sup>58</sup>

Characteristic of the decentralized process, the EC simply made sure the NAPs meet the criteria set out by the Directive to ensure that each state can reach Kyoto commitments and the European Burden Sharing Agreement (BSA)—an agreement between the EU-15 to collectively reduce 8 percent below 1990 by 2012 and to share such burden depending on each state’s GDP.<sup>59</sup> If the Commission rejected the state’s initial NAP, it would get sent back to the state for renegotiation. Member states even brought legal challenges to contest disagreements with Commission decisions, which significantly lagged the launch of some states’ programs by three to four years.<sup>60</sup> The resulting EU-wide cap is modest and only slightly lower than what emissions would be under Business As Usual (BAU) conditions.<sup>61</sup> The political structure of the EU allowed for “brown” interests to negotiate at the state level, which created a cap-and-trade scheme with less stringent caps.

Allowance allocations were also decentralized and help explain the EU’s less than ambitious policy. The Directive recommended states to auction up to 5 percent of their allowances during the first phase and up to 10 percent in the second.<sup>62</sup> However, business interests opposed allowance auctions, since they feared increased production costs and preferred free allocations. Notably, many consumer advocates opposed the free allocation of allowances, on the grounds that energy-intensive companies could garner windfall profits—receiving allowances for free while passing on higher electricity costs to their customers. Ultimately, the business lobbies won: only four member states proposed auctioning up to 5 percent of their allowances in their plans. The EU ETS auctioned about 0.13 percent of its allowances across all the member states and distributed the rest for free.<sup>63</sup> The less ambitious guidelines mark a discrepancy between Directive guidance and the actual scheme, which can be attributed to the political negotiations among the member states and market actors.<sup>64</sup>

Despite the lax cap and allowance provisions, the EU ETS is still designed to reduce emissions and there is reason to believe the program has not lost all of its environmental ambitions. Many member states opted to allocate fewer allowances to their electricity sector in order to hold this industry to more stringent reduction goals, which greatly appealed to “green” interests. The UK was the first to publish a NAP, which allocated relatively fewer allowances to the electricity

---

<sup>58</sup> Ellerman, “The EU ETS: Origins,” 82.

<sup>59</sup> Ellerman, “The EU ETS: Origins,” 71.

<sup>60</sup> A. Denny Ellerman and Paul L. Joskow, “The European Union’s Emissions Trading System in Perspective,” *Pew Center on Global Climate Change*, May 2008, 10.

<sup>61</sup> Ellerman, “The EU ETS: Origins,” 72.

<sup>62</sup> *Ibid.*

<sup>63</sup> Ellerman, “The EU ETS: Origins,” 73.

<sup>64</sup> *Ibid.*

sector than non-power sectors.<sup>65</sup> The electricity sector emits 60 percent of the carbon emissions,<sup>66</sup> yet does not face foreign competition and have the cheapest potential abatement costs (switching from coal to natural gas).<sup>67</sup> Thus, the UK designated fewer allowances to this sector. Many following NAPs created by the EU-15 adopted similar logic to meet their reduction targets. The power sector agreed to receive fewer allocations, knowing increased production costs can be passed on to electricity consumers, despite consumer opposition to windfall profits. Even though market actors and member states played a large role in decreasing the stringency of the program by proposing high caps and free allowance allocation, many NAPs from the EU-15 were designed to fulfill the BSA, and the EC did its best to make sure that the proposed NAPs would meet Kyoto targets. The resulting policy design reflects the push and pull from “green” and “brown” interests throughout cap-and-trade design negotiations.

### 5.3 *An Assessment of Implementation Issues: The Over Allocation of Allowances*

Due to the devolved politics intrinsic to a supranational organization, negotiations favored member states, which favored the business interests within those states, and led to a relatively modest cap and more free allocation of allowances than originally recommended. While the EC did not intend to drastically over allocate allowances, policymakers did not anticipate other contingencies that could—and did—result in a significant surplus of allowances. In 2006, the EU ETS had 80 million tons of surplus allowances, accounting for about 4 percent of the EU-wide cap.<sup>68</sup> After realizing they could meet the cap, non-power sector actors sold their surplus of allowances near the end of the first compliance period and flooded the market with allowances.<sup>69</sup> The EU’s renewable energy and efficiency mandates may also have contributed to undermining the cap-and-trade program, because companies were already on-track to independently reduce emissions.<sup>70</sup> Lastly, participating firms and government regulators relied on historical emissions to create emissions projection models that defined allowance levels. Original expectations about allocations and prices were incorrect since the models could not consider the risk of a recession.<sup>71</sup> The global recession reduced market activity and carbon emissions. All of these external factors placed a downward pressure on allowance prices.

The second compliance period caps were more stringent than the previous period by 25 to 35 percent.<sup>72</sup> However, a surplus of allowances still accumulated. In February 2013, the EU ETS accumulated 1.5 to 2 billion tons of extra allowances—the equivalent of about a year’s worth of

<sup>65</sup> Barbara Buchner, Carlo Carraro and A. Denny Ellerman, “The Allocation of European Union Allowances: Lessons, Unifying Themes and General Principles,” *MIT Joint Program on the Science and Policy of Global Change*, Report No. 140, October 2006, 14.

<sup>66</sup> Ellerman, “The EU ETS: Origins,” 80.

<sup>67</sup> Ellerman, “The EU ETS: Origins,” 74.

<sup>68</sup> Ellerman, “The EU ETS: Origins,” 78.

<sup>69</sup> Ellerman, “The EU’s ETS in Perspective,” 16.

<sup>70</sup> Brad Plumer, “Europe’s Cap-and-Trade Program Is in Trouble. Can It Be Fixed?” *The Washington Post*, April 20, 2013, accessed October 29, 2013, <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/04/20/europes-cap-and-trade-program-is-in-trouble-can-it-be-fixed/>.

<sup>71</sup> Ellerman, “The EU’s ETS in Perspective,” 13.

<sup>72</sup> Ellerman, “The EU’s ETS in Perspective,” 34.

allowances—driving allowance prices from €20 in 2011 down to €5.<sup>73</sup> Past experiences with over allocation, like in RECLAIM, provide fair warning of the risks and long-term repercussions of endemically low prices. Low allowance prices do not incentivize investments in emissions reduction technology, since reaching compliance with allowance purchases is the cheaper option. The International Energy Agency (IEA) has found that the EU needs to raise allowance prices to \$65 per ton before power plants considering switching from coal to natural gas-generated electricity.<sup>74</sup> Once the economy recovers, prices can spike and overburden covered entities. Some observers often view the EU ETS as an ineffective program. For example, Jeff Swartz of the International Emissions Trading Association, a nonprofit business organization whose goal is to establish an international framework for emissions trading, said that the EU scheme “may well become an example of what not to do.”<sup>75</sup> To pessimists, the policy design, shaped by an intrinsically decentralized and politicized process, rendered the EU ETS a failed endeavor.

#### 5.4 Attempts to Amend the EU ETS in a Recovering Economy

Attempts to amend the EU ETS continue to showcase the role of politics in climate policy, which is often exacerbated in a recovering economy. In response to the allowance surplus and low carbon prices, the European Parliament (EP), the legislative body of the EU, has discussed ‘backloading’ 900 million allowances from the market and reintroducing them when demand increases in 5 years. Backloading allowances would shrink supply and raise allowance prices in the short-run to incentivize advancement in emissions reduction technology and shift the EU’s energy supply.

Since the economy is still recovering from the recession, policymakers and businesses are wary about creating policies that would increase the price of carbon and raise energy costs. Furthermore, backloading opponents argued that the EU needs “longer term predictability in the legislation” and backloading would not give businesses certainty.<sup>76</sup> The backloading proposal failed on a 334 to 315 vote in April 2013, which ironically drove carbon prices down further to €2.75 per ton.<sup>77</sup> “Brown” and “green” continue to influence program implementation—and “brown” interests usually have the upper hand in a recovering economy. Roger Pielke Jr., an environmental studies professor at the University of Colorado Boulder, coined the term the “iron law of climate policy,” which means that when climate policy threatens the economy, even the greenest states back away.<sup>78</sup> This “iron law” definitely holds

<sup>73</sup> “Carbon Trading: ETS, RIP?” *The Economist*, April 20<sup>th</sup>, 2013, accessed October 28<sup>th</sup>, 2013, <http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets>.

<sup>74</sup> Plumer, “Europe’s Cap-and-Trade.”

<sup>75</sup> “Carbon Trading: ETS, RIP?”

<sup>76</sup> Lewis, “EU ETS Faces ‘Existential Crisis.’”

<sup>77</sup> “Carbon Trading: ETS, RIP?”

<sup>78</sup> Bryan Walsh, “If Carbon Markets Can’t Work in Europe, Can They Work Anywhere?” *Time Magazine*, April 17, 2013, accessed October 28, 2013, <http://science.time.com/2013/04/17/if-carbon-markets-cant-work-in-europe-can-they-work-anywhere/>.

true in the EU throughout the design and implementation process, despite the EU's leadership in climate policy, and continues as a prominent theme in Australia and the U.S.

### 5.5 *Is the EU ETS a Success or Failure?*

Despite challenges of over allocation in the EU ETS, the EU is still on track to meet climate mitigation goals under the Kyoto Protocol. MIT environmental scholars, Ellerman and Buchner, argue that over allocation was intended by design. The EC allocated the shortage of allowances to the electricity sector within the EU-15 to allow for more flexibility in other sectors and countries.<sup>79</sup> Over allocation has occurred in the non-power sectors because business interests asserted themselves to create a relatively lenient program. On the other hand, the power and heat sector experienced a net under allocation of allowances, as intended by the EU-15 to meet the BSA.<sup>80</sup> Negotiations between “brown” interests and governments were framed by commitments made in the Kyoto Protocol and the BSA. Thus, the trading scheme has retained some environmental integrity in a few sectors at the cost of environmental accomplishments in others.

In the first trial period, the EU successfully met Kyoto commitments by cutting emissions by 18 percent below 1990 levels in 2012 and set up cap-and-trade infrastructure in a multinational arena.<sup>81</sup> More specifically, the EU-15 over achieved their first Kyoto target, averaging reductions of 12.2 percent below 1990 levels in 2012.<sup>82</sup> A recent European Environment Agency study showed that the EU is also on its way to fulfilling the second compliance phase reduction target of 20 percent below baseline levels before 2020.<sup>83</sup> Though many concessions were made to “brown” interests during the design phase, the EU is still reaching its commitment goals. However, these reductions may principally result from the economic downturn, not actual investments in emissions reduction; low allowance prices will delay emissions reduction throughout the EU. If firms do not make emissions reductions before the economy fully recovers, they may find themselves facing far higher abatement costs as the demand for emission allowances increase rapidly, in which case the EU may not meet its 2020 target. Thus, there is only reason for conditional optimism.

Nonetheless, the EU ETS faces a reality that will be hard to ignore in future climate negotiations: the political structure and interest groups are significant elements that shape cap-and-trade policy and can largely affect the policy's environmental success.<sup>84</sup> Arguably, negotiations and consensus-building around policy change is intrinsic to a liberal democracy and these challenges

<sup>79</sup> Ellerman, “The EU ETS: Origins,” 80.

<sup>80</sup> Ellerman, “The EU ETS: Origins,” 23.

<sup>81</sup> Barbara Lewis, “EU Close to Meeting 2020 Emissions Goal Already – Official Data,” *Reuters*, October 9, 2013, <http://www.reuters.com/article/2013/10/09/us-eu-emissions-idUSBRE9980SF20131009>.

<sup>82</sup> “EU Greenhouse Gas Emissions and Targets,” *European Commission*, <http://ec.europa.eu/clima/policies/g-gas/>.

<sup>83</sup> Leigh Stringer, “EU ‘Largely on Track’ to Meet Carbon and Energy Targets,” *EdieEnergy*, October 10, 2013, accessed November 21, 2013, <http://www.edie.net/news/6/EU--largely-on-track--to-meeting-carbon-and-energy-targets-/>.

<sup>84</sup> Ellerman, “The EU ETS: Origins,” 84.



are bound to occur in the policymaking process. The challenges resulting from the design and implementation of the EU ETS showcase the dynamic, ongoing influence of industry stakeholders and member states in creating and amending the cap-and-trade program, a quality that will not escape climate policy in any democratic institution.

## 6. Australia's Carbon Pollution Reduction Scheme

While the EU ETS case exemplified challenges resulting from the politics throughout program design and implementation, the EU did not struggle with rallying public support for climate policy. Challenges surrounding Australia's ETS emphasize how public support and stakeholder acceptance of climate policy may be the largest barrier to entry for cap-and-trade programs, an issue Stavins and Heinmiller do not consider. Current events in Australia show that the critical bottleneck for cap-and-trade is passing and keeping the legislation in the first place, which depends on the political conditions under which the policy was proposed.

Australia is the only country, besides New Zealand, that has a tax-then-cap program, which installs a tax on carbon first then phases into a cap-and-trade system and is only second in scale to the EU ETS. The Clean Energy Future legislation of 2011 created a permit system that priced a ton of carbon at AUD \$23 in 2012 and raises the price by 2.5 percent to include inflation each year.<sup>85</sup> In 2015, a more flexible price will take over as the program phases into a cap-and-trade system. The scheme includes about 500 of Australia's top polluters, covering about 60 percent of Australia's emissions.<sup>86</sup> In the first year of operation, the program resulted in a 7.4 percent decrease in GHG pollution from the electricity generation industry and a 30 percent increase in renewable energy production,<sup>87</sup> while the GDP grew at a rate of 3.4 percent.<sup>88</sup>

Despite these successes, the Australian program faces a huge political hurdle: a change in political leadership in a parliamentary system which threatens to unravel the program altogether. Australia's trading mechanism design reflects concessions made to "brown" interest via the lenient caps, allocation of free allowances, and financial assistance to industries—all of which enable businesses to comply with the carbon trading scheme more easily and resemble design outcomes of the EU negotiations.<sup>89</sup> However, these design elements may not even be implemented, as the new majority party attempts to repeal the Clean Future Energy bill all

<sup>85</sup> "Australia—The World's Carbon Markets: A Case Study Guide to Emissions Trading," *Environmental Defense Fund and International Emissions Trading Association*, June 2013.

<sup>86</sup> "Australia—The World's Carbon Markets."

<sup>87</sup> "Australia's Emissions Trading Scheme: Implications of an Early Move to a Flexible Price," *World Wildlife Fund*, July 13, 2013, accessed November 17, 2013, [http://awsassets.wwf.org.au/downloads/fs065\\_policy\\_brief\\_australias\\_emissions\\_trading\\_scheme\\_16jul13.pdf](http://awsassets.wwf.org.au/downloads/fs065_policy_brief_australias_emissions_trading_scheme_16jul13.pdf).

<sup>88</sup> "GDP Growth (Annual Percentage)," *The World Bank*, 2012, accessed November 17, 2013, <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>.

<sup>89</sup> The Australian ETS sets the cap to meet the minimum reduction of 5 percent below 1990 levels by 2020. In perspective, the IPCC suggests that developed countries cut carbon emissions between 25 and 40 percent below 1990 levels before 2020 in order to mitigate climate change. The Australian ETS also allows firms to apply for free allowances, if they are considered emissions-intensive and trade-exposed, and there is no fixed amount of allowances that must be auctioned.

together. While business interests in Australia play a similar role in influencing the environmental ambition of the cap-and-trade policy as did ones within the EU, this case study focuses on the critical influence of the political context on cap-and-trade policy outcomes.

The political climate was far more contentious in Australia than in the EU. Different political parties hold opposing views on the role government should play in reducing carbon emissions, and the Australian population also has a more ambiguous point of view on climate change and the need for climate policy. Furthermore, the Australian economy is grounded in natural resource extraction, which exacerbates the political dangers of climate policy for politicians and deters political actors from making unpopular policy choices. Australia's program showcases the critical importance of political context and how cap-and-trade policy can only be politically feasible when it enjoys a solid foundation of public support and acceptance.

### 6.1 A More Turbulent Political Landscape

Many of the current challenges facing Australia's program result from the political landscape in which the program was originally proposed and passed. In the 2007 election, climate change hit center stage, when Kevin Rudd of the center-left Labor Party ran for Prime Minister against 11-year incumbent, the Liberal Party's John Howard. Rudd ran on the campaign platform of addressing climate change, calling climate change the "greatest moral challenge" of this generation,<sup>90</sup> especially for a nation with one of the highest GHG emissions per capita—16.9 metric tons of CO<sub>2</sub> per capita—of any developed country.<sup>91</sup> After Kevin Rudd's victory, the Australian Parliament ratified the Kyoto Protocol that December, which committed Australia to reducing emissions by 5 percent below 1990 levels before 2012 in the first compliance period.<sup>92</sup> Similar to the EU, Australia's ratification of the Kyoto Protocol marked the country's dedication to reducing carbon pollution. The Australian government had external, international pressure to begin discussing an emissions trading program. The 2008 Green Paper, issued by the Labor Party, and the 2008 Garnaut Review Report, commissioned by the Australian government, both advocated for a national cap-and-trade program in Australia as the best way to meet reduction targets.<sup>93</sup>

Despite the Labor Party's commitment to cutting emissions, the Australian economy largely depends on its natural resources and the carbon-intensive mining industry, making environmental regulation on carbon emissions a sensitive issue. Australia houses many coal mining giants, including BHP Billiton—the largest mining company in the world—Rio Tinto, and Xstrata. Furthermore, energy-intensive industries, including iron, aluminum, steel, and chemicals, prospered in Australia's cheap energy economy. Coal generates 80 percent of the

<sup>90</sup> Kevin Rudd, "Climate Change: The Great Moral Challenge of Our Generation," *Australian Labor*, August 6, 2007, accessed November 17, 2013, <http://www.youtube.com/watch?v=CqZvpRjGtGM>.

<sup>91</sup> "CO<sub>2</sub> Emissions (Metric Tons per Capita)," *World Bank*, 2010, accessed November 17, 2013, <http://data.worldbank.org/indicator/EN.ATM.CO2E.PC/countries/1W?display=default>.

<sup>92</sup> "Kyoto Protocol," *Australian Government: Department of Environment*, accessed November 17, 2013, <http://www.climatechange.gov.au/international/negotiations/history-negotiations/kyoto-protocol>.

<sup>93</sup> "Australia—The World's Carbon Markets."

nation's electricity; any carbon pricing regime would have a huge effect on consumers and businesses alike, explaining the large stake industry interests and consumers have in climate policy.<sup>94</sup>

Due to Australia's carbon-intensive economy, the pricing scheme created partisan divisions and generated ambivalent public support. Non-Labor Party members opposed Rudd's original Carbon Pollution Reduction Scheme (CPRS), citing it as harmful to Australian competitiveness and an inconsequential policy solution to climate change due to the possibility of leakage.<sup>95</sup> Opposition leader, Tony Abbott of the center-right Liberal Party, called the policy "a giant new tax on everything."<sup>96</sup> The Australian Senate voted down the CPRS in 2009. Notably, only 48 percent of the Australians were willing to take on costs related to addressing climate change in 2009, compared to 68 percent in 2006.<sup>97</sup> As a result of opposition pressure and the lack of public support, Prime Minister Rudd decided to deprioritize climate policy. Rudd's flip-flopping and consequent loss of credibility led to a drop in his approval ratings.

In June 2010, Rudd was replaced by the Labor Party's Julia Gillard, a known advocate of carbon pricing.<sup>98</sup> Prime Minister Gillard immediately started talks of setting up a carbon pricing mechanism across party lines, with the Independent and Green Party.<sup>99</sup> Before the Senate approved this program, Gillard engaged in long disputes with business interests and suffered low approval ratings, which dropped 5 points to 47 percent.<sup>100</sup> Oscillating approval polls reflect how politically sensitive climate policy can be in the context of a carbon-heavy economy and without a firm foundation of public support. After Gillard introduced the bill in 2011, 60 percent of voters opposed the carbon pricing program while 30 percent agreed with it.<sup>101</sup> Two-thirds of Australians worried about increased living expenses.<sup>102</sup> Even the Labor Party was divided: 49 percent supported the tax-then-cap plan while 41 percent opposed it.<sup>103</sup>

<sup>94</sup> Alison Rourke, "Australian PM Julia Gillard sees approval dwindle on carbon tax U-turn," *The Guardian*, March 16, 2011, accessed November 26, 2013, <http://www.theguardian.com/environment/2011/mar/16/julia-gillard-carbon-tax-australia>.

<sup>95</sup> "Australia—The World's Carbon Markets."

<sup>96</sup> Lenore Taylor, "Tony Abbott's Next Policy Now: Anything but a 'Great Big New Tax,'" *The Australian*, December 2, 2009, accessed November 17, 2013, <http://www.theaustralian.com.au/news/tony-abbotts-next-policy-vow-anything-but-a-great-big-new-tax/story-e6frg6n6-1225805927737>.

<sup>97</sup> "(Not Yet) Marching as to War," *The Economist*, November 5, 2009, accessed November 21, 2013, <http://www.economist.com/node/14807107>.

<sup>98</sup> "Australia—The World's Carbon Markets."

<sup>99</sup> Ibid.

<sup>100</sup> Matt Siegel, "Australian Senate Approves Emissions Trading Plan," *New York Times*, November 7, 2011, accessed November 17, 2013, <http://www.nytimes.com/2011/11/08/world/asia/australian-senate-approves-emissions-trading-plan.html>.

<sup>101</sup> Dennis Shanahan, "Voters Abandon Julia Gillard's Carbon Pricing Plan," *The Australian*, May 3, 2011, accessed November 17, 2013, <http://www.theaustralian.com.au/national-affairs/voters-abandon-julia-gillards-carbon-pricing-plan/story-fn59niix-1226049447761>.

<sup>102</sup> Josie Garthwaite, "Coal-Fired Australia, Buffeted by Climate Change, Enacts Carbon Tax," *National Geographic News*, October 5, 2012, accessed November 27, 2013, [news.nationalgeographic.com/news/energy/2012/10/121005-australia-carbon-tax/](http://news.nationalgeographic.com/news/energy/2012/10/121005-australia-carbon-tax/).

<sup>103</sup> Shanahan, "Voters Abandon Julia."

However, 54 percent of votes reported concern about climate change, and only a sliver (10 percent) thought no policy action needed to be taken.<sup>104</sup> Support for acting on climate change often peak during times of extreme weather: “the long drought [in recent years] made people think this is what Australia would look like” as a result of climate change and galvanized support for climate policy, recalls former Australian diplomat and current fellow at Brookings Institute, Joshua Meltzer.<sup>105</sup> Thus, politicians have been stuck in a bind. Those who pursue climate policy usually face a lot of push-back, lose points in popularity polls, and often view carbon pricing as ‘politically toxic,’ while politicians who refuse action also face public criticism, especially during times of extreme weather.

While voters were wary about the economy, higher living costs, and the environment, negotiations between market actors and policymakers eventually resulted in the Clean Energy Future bill, largely adapted from the CPRS. The bill was rammed through the coalition parliament in November 2011, only passing the Senate on a four vote margin and the House by two votes.<sup>106</sup> Ambivalent public opinion and a lack of consensus for the carbon pricing plan foreshadows the issues the Clean Energy Future bill faces today, exemplifying how crucial public opinion and majority consent are when it comes to designing and implementing a sustainable climate policy.

## 6.2 *The Risk of No Implementation at All*

Even though the Labor Party made design concessions to business interests, why is the carbon pricing scheme on the verge of repeal? The Australian government and public did not rally behind installing climate policy as the EU did. Without public consensus, the Australian program did not have a strong foundation to withstand opposition from the Liberal Party, which focused on the potential economic harms of the climate policy. The Labor party was voted out of power in September 2013 and displaced with the Liberal Party just three months later, with Tony Abbott as the party leader.<sup>107</sup> Abbott campaigned on the platform of repealing Gillard’s bill in order to spare the Australian population from higher prices and the economy from stifled growth. He said that the bill “will drive up the cost of living, threaten jobs, and do nothing for the environment.”<sup>108</sup> Abbott’s rhetoric centered on the need to protect households from high energy prices and how the current reduction program would impede upon Australia’s economy, which has a large mining industry.<sup>109</sup>

<sup>104</sup> Garthwaite, “Coal-Fired Australia.”

<sup>105</sup> Ibid.

<sup>106</sup> Siegel, “Australian Senate Approves.”

<sup>107</sup> Before the September 2013 election, Prime Minister Gillard was removed from office by the Labor Party in June 2013 and replaced by Kevin Rudd, who passed legislation to move the cap-and-trade program launch one year earlier than planned.

<sup>108</sup> Siegel, “Australian Senate Approves.”

<sup>109</sup> Ibid.

The Australian Treasury Department predicted consumer prices would increase by 0.7 percent and electricity and gas prices would increase by 10 percent and 9 percent, respectively.<sup>110</sup> A Strong Growth, Low Pollution study in July 2011 estimated that gross national income per capita would be 0.1 percent less per year in an economy with carbon pricing compared to a BAU economy.<sup>111</sup> Though the difference is low and the Clean Energy Future bill includes considerable industry assistance and household support for increased prices,<sup>112</sup> the burden upon economic growth is still used as a talking point to oppose the carbon pricing policy. Furthermore, calling a policy a tax—even though the end goal is a trading scheme—“certainly makes it difficult to sell it to the community,” said David Pannell, the director of the Center for Environmental Economics and Policy at the University of Western Australia.<sup>113</sup> Tony Abbott’s rhetoric throughout the campaign garnered enough public distrust for the tax-then-cap program to change the majority party in Parliament—even before the cap-and-trade portion of the program began.

On November 13, 2013, Prime Minister Tony Abbott introduced a bill to repeal the tax-then-cap program: the bill “to reduce the bills of the people of Australia.”<sup>114</sup> Abbott said that the repeal would decrease household bills by \$550 on average, power bills by \$200, and gasoline receipts by \$70.<sup>115</sup> To substitute the carbon pricing scheme, Abbott’s Direct Action Plan would provide AUD\$750 million a year to industries that reduce emissions.<sup>116</sup> However, the Plan may not be the most cost-efficient or effective policy. The UNFCCC Executive Secretary, Christiana Figueres, warned that such command-and-control policies would cost more to implement compared to the current program.<sup>117</sup> The Climate Institute found that the Direct Action Plan would not achieve the 5 percent reduction target outlined in the Kyoto Protocol.<sup>118</sup> In another survey, only two out of 35 economists thought that Abbott’s policy would be a better policy solution to reduce Australia’s emissions compared to a cap-and-trade scheme.

<sup>110</sup> Deputy Secretary Steven Kennedy, “Australia’s Clean Energy Future Speech,” *Department of Climate Change and Energy Efficiency*, September 7, 2011, accessed November 27, 2013.

<sup>111</sup> “Australia—The World’s Carbon Markets.”

<sup>112</sup> Firms that may be substantially affected by the policy received federal funding in the current tax regime through a \$8.6 billion aid program. For instance, Alcoa and Queensland Nitrates, both large aluminum producers, received free permits during the 2012-2013 compliance period.

<sup>113</sup> Kate Galbraith, “A Carbon Tax by Any Other Name,” *New York Times*, July 24, 2013, accessed November 27, 2013, <http://www.nytimes.com/2013/07/25/business/global/a-carbon-tax-by-another-name.html>.

<sup>114</sup> “Australia Carbon Tax: Abbott Introduces Repeal Bill,” *BBC News*, November 13, 2013, accessed on November 17, 2013, <http://www.bbc.co.uk/news/world-asia-24923094>.

<sup>115</sup> Katherine Murphy, “Tony Abbott Begins Dismantling Carbon Tax: ‘Our Bill to Reduce Your Bills,’” *The Guardian*, November 12, 2013, accessed November 17, 2013, <http://www.theguardian.com/world/2013/nov/13/abbott-begins-dismantling-carbon-tax>.

<sup>116</sup> Jason Scott, “Australia Needs Global Carbon Trading Now, Industry Lobby Says,” *Bloomberg*, March 7, 2013, accessed December 4, 2013, <http://www.bloomberg.com/news/2013-03-07/australia-needs-global-carbon-trading-now-industry-lobby-says.html>.

<sup>117</sup> “U.N. Climate Chief Says Pricing Carbon is Australia’s Cheapest Option,” *Climate Wire*, October 23, 2013, accessed November 6, 2013, <http://www.eenews.net/climatewire/stories/1059989238>.

<sup>118</sup> Nicholas Reece, “Abbott’s Decision to Abolish the Price on Carbon is Bizarre,” *The Age*, November 18, 2013, accessed November 21, 2013, <http://www.theage.com.au/federal-politics/political-opinion/behold-one-of-historys-greatest-policy-failures-20131117-2xp0g.html>.

Not only do economists and climate leaders think unfavorably of the Direct Action Plan, public opinion polls do not show majority support for repealing the carbon pricing program. In a poll conducted in July 2013, 62 percent of survey respondents wanted to keep the tax-then-cap program, while 38 percent supported repeal.<sup>119</sup> 66 percent of voters believe that climate change is occurring, and 87 percent think it is having an effect on the nation.<sup>120</sup> Despite poll results in the September election, the public cannot seem to send a consistent message about what they want the government to do about climate change. This lack of consistency further complicates and politicizes the implementation of the current tax-then-cap program. The political instability of the current carbon pricing scheme does not provide clarity for business investment decisions and long-term strategic planning; partisan politics to the degree of repealing a cap-and-trade is both bad for business and for the environment.

Based upon the current situation in Australia, future policymakers and policy analysts must recognize the importance of consistent public opinion in shaping policy outcomes and the impacts of changes in leadership—for better or for worse. While the EU ETS demonstrates why policy design is important to maintaining a cap-and-trade program's environmental goals, Australia's current program emphasizes that passing, implementing, and keeping a carbon pricing policy in place proves to be the most important hurdle to overcome. Unfortunately, collective and consistent support for a cap-and-trade program is rare; the public often does not want to risk job loss and economic stagnation for the sake of a safer climate, even if economic growth and environmental responsibility may not be mutually exclusive goals under a cap-and-trade program in the long-run. Cap-and-trade is a policy option that's embedded in political discourse from its birth, design, implementation, and even to its death in the case of a repeal or if the bill does not even come to a vote.

## **7. Carbon Cap-and-Trade in the United States: Dead before Arrival?**

Current events surrounding the EU ETS and the Australian program underscore the significance of the political landscape prior to and throughout a cap-and-trade program's design and implementation. In fact, the U.S. cap-and-trade proposal was so entwined in partisan politics and regional interests that it did not have the support to reach the Senate Floor. While Stavins asserts that cap-and-trade is "optimal in Washington," the pieces did not fit together during the 111<sup>th</sup> Congress to pass such a policy. A number of factors worked against the bill, including the lack of public support, increased partisanship in Congress, and the influence of petroleum and coal lobbies. This case study focuses specifically on the political context in which the policy was proposed and tries to establish why the U.S. cap-and-trade program did not pass Congress, which can provide insight for the future of carbon cap-and-trade in the United States.

---

<sup>119</sup> Chris Johnson, "Most Want to Keep Carbon Tax: Poll," *Sydney Morning Herald*, July 14, 2013, accessed November 17, 2013, <http://www.smh.com.au/federal-politics/political-news/most-want-to-keep-carbon-tax-poll-20130713-2px4d.html>.

<sup>120</sup> "Climate of the Nation 2013: Australian Attitudes on Climate Change," *The Climate Institute*, 2013, 5.

## 7.1 *A Lack of Public Support*

Similar to Australian public sentiment, the American attitude toward climate change is ambiguous, at best, and strongly favors economic interests. The United States remains one of the few developed nations that has not ratified the Kyoto Protocol. Unlike the EU and Australia, the U.S. has no external pressure or international obligation to reduce emissions. Before 2008, Americans consistently polled that the protection of the environment should be given a policy priority in Congress.<sup>121</sup> The 2008 financial crisis and subsequent economic recession marked a clear turning point in American public opinion toward climate change. After the recession hit, Americans indicated that economic growth should be prioritized.<sup>122</sup> The percentage of Americans worried about climate change decreased to the lowest it had ever been—only 36 percent thought protecting the environment should be a priority for Congress.<sup>123</sup> When the economy is in a rut, people become more cautious about imposing costs on industries, which could slow economic recovery. A 2011 Gallup poll showed the largest margin favoring economic growth over environmental protection since Gallup first started polling for this data 30 years ago.<sup>124</sup>

The lack of urgency for climate policy in the public agenda may result from the denial of climate change and the dependence of economic success on energy-intensive industries. The American economy—and the Australian economy, for that matter—is far more reliant upon extractive industries compared to European nations, which might explain why Americans and Australians are not as open to legislative restrictions on carbon emissions and to placing a price on carbon emissions. Unlike Australians, Americans continue to question the reality of climate change. The number of Americans who believe in climate change dropped 39 points to 59 percent from 2006 to 2010.<sup>125</sup> The United States polled the lowest (34 percent) for thinking that climate change is linked to anthropogenic activities compared to other developed nations, ranking below developed Asia, Latin America, Canada, and Western Europe.<sup>126</sup>

Furthermore, climate change is viewed as a ‘back burner’ issue that is not easily translated into a layperson’s daily life as an immediate threat or concern.<sup>127</sup> Ironically, people’s lifestyles, shaped by urban sprawl, cheap fuel, and larger houses, are actually large contributors to carbon emissions and climate change. When the public cannot observe climate change and do not think that it is happening, they are far less likely to change their lifestyle or agree to policy programs

<sup>121</sup> Jeffrey M. Jones, “Americans Increasingly Prioritize Economy over Environment,” *Gallup*, March 17, 2011, accessed November 17, 2013, <http://www.gallup.com/poll/1615/environment.aspx>.

<sup>122</sup> *Ibid.*

<sup>123</sup> *Ibid.*

<sup>124</sup> *Ibid.*

<sup>125</sup> Elisabeth Rosenthal, “Where Did Global Warming Go?” *New York Times*, October 15, 2011, accessed November 17, 2013, [http://www.nytimes.com/2011/10/16/sunday-review/whatever-happened-to-global-warming.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2011/10/16/sunday-review/whatever-happened-to-global-warming.html?pagewanted=all&_r=0).

<sup>126</sup> Julie Ray and Anita Pugliese, “Worldwide, Blame for Climate Change Falls on Humans,” *Gallup*, April 22, 2011, accessed November 17, 2013, <http://www.gallup.com/poll/147242/worldwide-blame-climate-change-falls-humans.aspx>.

<sup>127</sup> Lorezoni and Pidgeon, “Public Views on Climate,” 77.

that may increase their current cost of living. Even more frequent, extreme weather events, like Hurricane Katrina and Hurricane Sandy, have yet to drastically shift public views on climate change. The reprioritization of climate policy in the public eye indicates that trying to pass a national cap-and-trade will be an uphill battle.

## 7.2 Increased Partisanship

On top of the lack of public agreement about climate change, the historically regional issue of climate change has become an increasingly partisan topic on the Hill and throughout the voting population. In the past, climate policy usually creates regional divides between states that rely on carbon-intensive energy sources, such as oil and coal, and those that do not. Coal states, including Wyoming, Kentucky, and Ohio, rely heavily on the coal industry for energy and local jobs. They would be disproportionately affected by the costs of cap-and-trade policy.<sup>128</sup> The Heritage Foundation found that a cap-and-trade program would lead to the loss of 33,000 jobs in Wisconsin in the program's first year and the loss of up to 67,000 jobs by 2035.<sup>129</sup> These projections generate enough discomfort among constituents and Congress, bound to protect their state interests, to ensure that a cap-and-trade was not enacted.

In recent years, climate policy and cap-and-trade have become far more partisan in addition to regional. Under Reagan and H. W. Bush administrations, cap-and-trade actually bore a Republican label, touting the use of market mechanisms and free market forces to reduce emissions. President Bush signed the Clean Air Act Amendments of 1990, which passed on a bipartisan basis: 89 to 11 in the Senate, garnering support from 87 percent of Republicans and 91 percent of Democrats in Senate, and 401 to 21 in the House with similar party breakdowns.<sup>130</sup> Sen. John McCain (R-AZ) even sponsored the Senate's first major carbon cap-and-trade bill in 2003.<sup>131</sup>

Nowadays, Republican rhetoric around cap-and-trade—or any climate policy—has shifted a full 180 degrees. Many GOP politicians are increasingly questioning or denying climate science. In the 112<sup>th</sup> Congress, 74 percent of Republican Senators and 53 percent of Republican Congressmen questioned the science of climate change.<sup>132</sup> Presidential candidate Rick Perry said that climate science “still has not been proven” and is backed by a “substantial number of scientists who have manipulated data.”<sup>133</sup> Rep. Darrell Issa (R-CA) and Ralph Hall (R-TX) are also commonly cited climate deniers, defaming environmental regulations as purposeless job killers.

<sup>128</sup> Tim L. Peckinpugh, “The Politics of Climate Change Legislation,” *K&L Gates*, 2010, accessed October 30, 2013.

<sup>129</sup> Nicolas Loris, “The Costs of Cap and Trade,” *The Heritage Foundation*, September 14, 2010, accessed November 22, 2013, <http://www.heritage.org/research/commentary/2010/09/the-costs-of-cap-and-trade>.

<sup>130</sup> Richard Schmalensee and Robert Stavins, “The Sordid History of Congressional Acceptance and Rejection of Cap-and-Trade: Implications for Climate Policy,” March 7, 2013.

<sup>131</sup> Carol Davenport, “Heads in the Sand,” *National Journal*, December 1, 2011, accessed November 28, 2013, [www.nationaljournal.com/magazine/heads-in-the-sand-20111201](http://www.nationaljournal.com/magazine/heads-in-the-sand-20111201).

<sup>132</sup> Brad Johnson, “The Climate Zombie Caucus of the 112<sup>th</sup> Congress,” *Think Progress*, November 19, 2010, accessed November 22, 2013, <http://thinkprogress.org/climate-zombie-caucus/>.

<sup>133</sup> Davenport, “Heads in the Sand.”



While there are GOP members, such as presidential candidate Jon Huntsman and former Sen. Richard Lugar (R-IN), who openly acknowledge the reality of climate change, their voices are often smothered by the silencing grip that industry groups have on their colleagues and party leadership.<sup>134</sup>

Besides GOP politicians, Republican voters are also taking similar stances toward climate change. In a 2011 Pew poll, 75 percent of far right conservatives, 63 percent of libertarians, and 55 percent of Main Street Republicans believe there is “no solid evidence of global warming.”<sup>135</sup> People’s views on climate change and the need for policy action have become far more politicized and often divide along party lines as well as regional lines, which make bipartisan, commonsense policy such as cap-and-trade a lot harder to achieve.

### 7.3 *The Power of Interest Groups*

The shift among Republicans—both on the Hill and throughout America—can be attributed to the rise of the Tea Party and their policy platform against government regulations, in addition to the rise in electoral funding from industry interest groups.<sup>136</sup> Between low public support and increased partisan pressure, cap-and-trade policy already had slim chances of passing Congress in a political climate that is hostile to any bill that could slow the economic recovery. The influx of campaign financing and advertising funds from oil and gas companies far overshadowed funding from environmental groups, fueling increased partisanship as Republicans defend the interests of their funding sources. 70 percent of campaign contributions from the oil and coal industry went to Republicans.<sup>137</sup> Big Oil contributed \$213 million to members of the Republican Party between 1998 and 2010.<sup>138</sup> During the 2010 election alone, the top five pro-industry, conservative groups contributed \$105 million to GOP candidates, compared to \$8 million of contributions for Democratic candidates from their liberal, environmental counterparts.<sup>139</sup>

In addition, political ads commissioned by industry groups helped to shift public opinion on the urgency of climate policy. In the 1990s and early 2000s, Exxon funded campaigns to attack and raise doubts about climate science, which successfully deterred Congress from ratifying the Kyoto Protocol.<sup>140</sup> In late 2005, Exxon reduced these campaigns after Chief Executive Lee Raymond—the main driver behind funding the campaigns—retired.<sup>141</sup> However, the public sentiment continued to reflect skepticism toward research and scientific conclusions about

<sup>134</sup> 6-term Sen. Lugar was defeated in the 2012 elections by Richard Mourdock, a climate science denier and candidate backed by the Tea Party.

<sup>135</sup> Rosenthal, “Where Did Global Warming Go?”

<sup>136</sup> Davenport, “Heads in the Sand.”

<sup>137</sup> Daniel Weiss, “Anatomy of a Senate Climate Bill Death,” *Think Progress*, October 12, 2010, accessed November 22, 2013, <http://thinkprogress.org/climate/2010/10/12/206855/anatomy-of-a-senate-climate-bill-death/>.

<sup>138</sup> *Ibid.*

<sup>139</sup> *Ibid.*

<sup>140</sup> Steve Coll, “Steve Coll: How Exxon Shaped the Climate Debate,” *PBS*, October 23, 2012, accessed November 22, 2013, <http://www.pbs.org/wgbh/pages/frontline/environment/climate-of-doubt/steve-coll-how-exxon-shaped-the-climate-debate/>.

<sup>141</sup> *Ibid.*

climate change, showcasing the power of wealthy interest groups. Their power lies in their ability to influence public opinion and support politicians that can defend their business interests. The powerful industry lobby, combined with a recovering economy, essentially rendered the cap-and-trade bill ‘dead before arrival.’

Besides influence from pro-business groups, the Tea Party grassroots campaign and Tea Party Republicans placed a lot of pressure on their moderate colleagues to deny discussing any climate policy. The president of Americans for Prosperity—a Tea Party super PAC founded by the Koch brothers of the Koch industries oil conglomerate—said that if Republicans buy into climate change or green energy, “[they] do so at [their] political peril. The vast majority of people who are involved in the [Republican] nominating process—the conventions and the primaries—are suspect of the science.”<sup>142</sup> A candidate’s view on climate change can drastically alter his or her chances of winning primaries, which further increases the partisan divide in this policy space.

When the National Journal tried to interview each GOP member of Congress on the issue of climate change, a Republican staffer said “it’s not a conversation senators feel comfortable having.”<sup>143</sup> When careers are on the line, Republicans have mostly banded together to oppose climate policy and ignore the need for government action, which often means reversing course on their previous views on climate change. For instance, Congressman Fred Upton (R-MI), who once referred to climate change as a “serious problem,” swung to the right during midterm election season and began denying climate science.<sup>144</sup> Notably, the Koch brothers contributed \$20,000 to Rep. Upton’s last midterm campaign.<sup>145</sup> Similar changes of heart have occurred with state Sen. Scott Brown of Massachusetts and Sen. Marco Rubio (R-FL), who both used to support the idea of a cap-and-trade program.<sup>146</sup> While Heinmiller address the politics at play throughout the design process, he does not recognize the critical role of election politics and public opinion in climate policy outcomes. Regulating carbon is an extremely charged issue in both America and Australia, especially when the public remains unsure or split on the issue and sends inconsistent signals to political leadership. This establishes the high barrier to entry for cap-and-trade policy and the policy may not be as “optimal in Washington” as Stavins suggests.

#### 7.4 *What Happened with Cap-and-Trade in Congress?*

The lack of public support, increased partisanship atop regional divides, and powerful industry groups created a political context where cap-and-trade policy could not survive. A Democratic majority within the House of Representatives rammed through a cap-and-trade bill purely along partisan lines with a 219 to 212 vote.<sup>147</sup> Only four percent of House Republicans voted to pass

<sup>142</sup> Ibid.

<sup>143</sup> Ibid.

<sup>144</sup> Ibid.

<sup>145</sup> Ibid.

<sup>146</sup> Alan Greenblatt, “How Republicans Learned to Reject Climate Change,” *National Public Radio*, March 25, 2010, accessed November 28, 2013, [www.npr.org/templates/story/story.php?storyId=125075282](http://www.npr.org/templates/story/story.php?storyId=125075282).

<sup>147</sup> Ryan Lizza, “As the World Burns,” *New Yorker*, October 11, 2010.

the bill.<sup>148</sup> The American Clean Energy and Security Act of 2009, sponsored by Rep. Henry Waxman (D-CA) and Ed Markey (D-MA), is extremely ambitious. The bill set a cap that reduced GHG emissions by 83 percent below 2005 levels by 2050, which suggests a lack of political negotiation with the Republican Party and business interests before passing the bill.<sup>149</sup> However, both houses need to pass the same piece of legislation for a bill to become law, which was highly improbable for such an environmentally ambitious and economically contentious bill in a politically hostile environment.

Democrats did not hold a supermajority in the Senate, adding more obstacles to passing a national cap-and-trade bill.<sup>150</sup> Senator John Kerry (D-MA), Lindsey Graham (R-SC), and Joseph Lieberman (I-CT), a consortium labeled “KGL,” collaborated in writing a Senate cap-and-trade bill. KGL worked with Shell, BP, ConocoPhillips, and even T. Boone Pickens in attempts to gather interest group support—where Heinmiller’s theory of politicking likely occurred. During the bill negotiations, KGL conceded to more natural gas drilling, nuclear energy, and offshore oil in addition to weakening program provisions in order to increase the chances of passing cap-and-trade. If the bill had industry support, KGL hoped that Republicans would reach across partisan lines to vote for the bill.

However, between January 2009 and June 2010, more than \$500 million poured in from the opposition to campaign against cap-and-trade.<sup>151</sup> ExxonMobil, the world’s largest publicly owned oil and gas company, strongly opposed cap-and-trade and was the top spender on lobbying efforts and campaign donations.<sup>152</sup> The firm believed that a cap-and-trade program would entangle businesses in bureaucracy and be too large to successfully implement.<sup>153</sup> In return for financial support, Republicans deployed “cap-and-tax” rhetoric, successfully rebranding and defacing the KGL bill as an energy tax that would increase production costs for businesses and raise prices for households. Granted, these fears of higher prices and economic implications are not unprecedented. The Heritage Foundation, a conservative think tank, reported that gas prices would increase by 58 percent and the average household would pay \$1,200, or 90 percent, more for utilities by 2035 under the Waxman-Markey legislation.<sup>154</sup> Since higher energy prices mean higher production costs for businesses, firms would scale down their workforce while consumers must pay more. Politicians and opponents of cap-and-trade leveraged the fears of hurting the economy with higher prices to block any chance of passing cap-and-trade legislation. The opposition was bolstered by the denial of climate change; if it is not a problem that needs to be solved, why hurt the economy for no reason? Furthermore,

---

<sup>148</sup> Ibid.

<sup>149</sup> Mark Holt and Gene Whitney, “Greenhouse Gas Legislation: Summary and Analysis of H.R. 2454 as Passed by the House of Representatives,” *Congressional Research Service*, 6.

<sup>150</sup> The Senate Democrats lost cloture when Senator Scott Brown (R-MA) was sworn in to fill the seat of late Senator Edward Kennedy (D-MA).

<sup>151</sup> Weiss, “Anatomy of a Senate Climate.”

<sup>152</sup> Ibid.

<sup>153</sup> Ibid.

<sup>154</sup> Loris, “The Costs of Cap and Trade.”

elected officials were concerned about the upcoming 2010 midterm elections and did not want to place their careers on the line by supporting a bill that was branded as an energy tax.<sup>155</sup>

In addition to the partisan divide and influential corporations, regional interests continued to defend the coal industry; KGL could not convince Senate Democrats from coal states to vote for their cap-and-trade bill. These Senate Democrats were bound to fight for the interests of their constituents, who wanted to protect their jobs and maintain low energy prices. In the past, debates around climate policy usually just broke down around geographic lines, and not as much along partisan lines. In the 2009 and 2010 negotiations, KGL had both working against them.<sup>156</sup> Graham, the Republican co-sponsor of the Senate bill, received a lot of pressure from his constituents, the far-right, and party leadership to step down from co-sponsoring the bill. When he did, it truly marked the death of the bill, which did not even reach the Senate Floor for votes. Multiple elements including the lack of public support, increased partisanship, and pushback from powerful interest groups in a recovering economy marked the destined failure of a cap-and-trade bill in a split-party Congress.

### 7.5 *The Future of Cap-and-Trade & Climate Policy in the United States*

Economist William Nordhaus believes that “climate change uncertainty strengthens, not weakens, the case for action now.”<sup>157</sup> There will be mounting mitigation and adaptation costs as temperatures rise above 2 degrees Celsius by 2100.<sup>158</sup> So, effective policies and regulations need to be given sufficient lead time in order to mitigate pollution and climate change effects.<sup>159</sup> However, American public sentiment has not subscribed to Nordhaus’ assertion and is unlikely to until unemployment rates recover. Even though cap-and-trade is considered the most politically viable policy solution compared to a carbon tax, any type of climate policy needs to be introduced into an accepting environment, where the public agrees that action must be taken by Congress and politicians do not fear for their seats if they support a bill that could hurt the economy in the short-run. Despite Stavins’ assertion that cap-and-trade has built-in mechanisms, such as cap-setting and allowance allocation, to bargain with industry interests, this climate policy faces the same political hurdles as any other piece of climate legislation. As exhibited in the United States, “brown” interests had the resources to influence public opinion and policymaker decisions. These sentiments were exacerbated by the uniquely American belief that climate change does not exist and complacency toward congressional action on climate policy.

Though the 113<sup>th</sup> Congress is unlikely to take up any cap-and-trade legislation, the federal government can circumvent Congress and work under the authorizations of the CAA to reduce carbon emissions via issuing regulations and rules. The National Resource Defense Council

<sup>155</sup> Peckinpugh, “The Politics of Climate.”

<sup>156</sup> Schmalensee and Stavins, “The Sordid History.”

<sup>157</sup> Paul Krugman, “Gambling with Civilization,” *The New York Review of Books*, November 7, 2013, accessed November 8, 2013, <http://www.nybooks.com/articles/archives/2013/nov/07/climate-change-gambling-civilization/>.

<sup>158</sup> *Ibid.*

<sup>159</sup> *Ibid.*

advocates for the EPA to use powers authorized by §111(d) of the CAA to create a flexible trading scheme that allows coal-fired power plants to trade credits for energy efficiency compliance.<sup>160</sup> While this regulation could be more cost-effective than traditional command-and-control policies, such regulatory proposal would still receive opposition from interest groups and encounter a lot of legislative constraints. The EPA has consistently issued standards to curb emissions from coal power plants. Though these alternatives may not be as comprehensive or cost-effective of a solution as cap-and-trade, it can avoid the gauntlet-like policymaking process in Congress.

Ultimately, change in the political climate can occur. The general assumption of the divide between “green” and “brown” interests is that they are mutually exclusive. However, policymakers and interest groups have begun to reframe climate policy to communicate that economic and environmental interests can be one and the same; investing in carbon reduction technology can decrease production costs and produce long-term economic gains. Other pro-climate policy lobbies have tried to reframe the issue through a public health lens: reducing CO<sub>2</sub> emissions can also drastically improve public health and decrease national healthcare costs. However, changing the status quo understanding of environmental legislation will be a long-term effort, without immediate returns. Extreme weather events, new political leadership, or a shift in the U.S. energy mix can all contribute to a reassessment of the need for cap-and-trade policy in the U.S. As natural gas—a less carbon-intensive energy source—overtakes coal as the base load energy source in the U.S., members of Congress from coal states may be more likely to support climate policy. Since there is little academic debate left about the viability of cap-and-trade as a way to reduce GHG emissions, cap-and-trade will likely be the policy of choice when the time ripens to discuss climate action.<sup>161</sup> The political climate needs to be accepting and open to the idea of legislative action on climate change first.

## **8. Lessons from the European Union, Australia, and the United States**

The case studies of cap-and-trade policy in the United State and Australia exemplify how passing climate legislation demands aligning many elements in the political climate and is a pre-requisite to enacting a program with staying power. Public opinion, industry influence, the election cycle, and other external factors played into the political context and determined the policy outcome of cap-and-trade policy in both instances. The issue of climate change lacked urgency and legitimacy in the United States, while Australia’s populous struggled to decide what it wanted its government to do about climate change. Rhetoric from conservative parties in both countries reflected fears of increased household and business expenses that exacerbated public wariness toward cap-and-trade in a recovering economy. In contrast, the EU had a political landscape ripe for tackling climate legislation, though the EU experienced design and implementation issues as a result of its own political context.

---

<sup>160</sup> Daniel Lashof, et. al., “Closing the Power Plant Carbon Pollution Loophole, Smart Ways the Clean Air Act Can Clean Up America’s Biggest Climate Polluters,” *National Resources Defense Council*, March 2013, 3.

<sup>161</sup> Schmalensee and Stavins, “The Sordid History.”

The events in the all three cases emphasize the importance of fostering a political climate that is receptive to climate policy and the difficulty of aligning many moving parts: 1) the public needs to agree that climate change is a priority that needs policy action, 2) policymakers must balance the concessions made to interest groups while maintaining the environmental integrity of the program, and 3) bill sponsors must garner some form of stable support across party lines. As exhibited through the issues facing the EU ETS, the Australian carbon pricing scheme, and the cap-and-trade policy proposal in the U.S., passing cap-and-trade policy that's well-designed and well-implemented is a lot harder than it sounds, especially in a recovering economy, even if cap-and-trade is logically the most cost-effective method to reduce carbon emissions.

## **9. The Future of Cap-and-Trade in the World**

Many economists agree that cap-and-trade is the most efficient, cost-effective policy solution to reducing climate change; it has proven itself to be a popular policy in more than 32 instances. In order to design a cap-and-trade policy, stakeholders and policymakers engage in political negotiations that will alter the policy to balance "brown" and "green" interests. The political vetting process can 'water down' the bill and make it less ambitious by setting lenient caps and distributing too many allowances, as in the case of the EU ETS. However, political negotiations are inevitable in a democratic policymaking process, especially in the EU's decentralized system.

However, the immense challenge of passing a cap-and-trade bill and keeping it in place proves that the policy outcome might not have any relation to the policy proposal—as seen in Australia and the United States. Cap-and-trade policy must be introduced in an accepting environment in order to have a chance to withstand powerful industry interests that oppose increased production costs. Moving forward, policymakers and stakeholders must recognize the difficulty of implementing a successful cap-and-trade policy when advocating for this policy solution and keep in mind the political context, public opinion, and the economic landscape.

Despite the difficulties in passing a cap-and-trade program, there is a need and urgency to take national action in order to provide business certainty, avoid future political challenges, and address the causes of climate change. For instance, when a key nation like the U.S. delays national cap-and-trade policy, more regional and subnational programs are created to reduce carbon emissions. A lack of national and international agreements on cap-and-trade design leads to a patchwork of regional programs—as Betsill and Hoffman predict—entangling companies in the bureaucratic red tape that ExxonMobil feared in the first place.

In the long-run, the patchwork of decentralized programs will eventually need to be standardized and linked together to minimize leakage and ensure a level the playing field for businesses in an increasingly globalized world. Linking more systems together will present even more logistical—let alone political—challenges, when more stakeholders and business interests join the negotiation table. Ideally, current global negotiations will lead to long-term international commitments to using cap-and-trade the climate policy of choice and provide predictability for businesses. However, multilateral negotiations will likely move slowly and the

resulting bottom-up process may undermine the cost-effectiveness of the market mechanism.<sup>162</sup>

Without a comprehensive climate policy, businesses will likely face higher mitigation costs when governments install less efficient command-and-control standards. Furthermore, politicians and their constituents will face even more challenges when they do not address climate change now, since extreme weather events will continue to occur more frequently, sea levels will continue to rise, and public health will continue to deteriorate. Understanding the implications of legislative inaction, policymakers around the world must build a climate policy strategy that acknowledges the many contextual elements that factor into the successful design and implementation of a cap-and-trade scheme.

### Acknowledgements

I would like to thank Adam Wolfson and Bill Christian, both of whom have been constant mentors and advisors throughout my research and writing process. I truly appreciate their time and support in my endeavors to explore the wonders of cap-and-trade in our complex world. In addition, I would like to thank Karina Hwang, for peer editing my work. Thanks to Tim Peckinpaugh and Haibing Ma for taking the time to brainstorm initial ideas with me. Finally, I give great thanks to the Robert Day School of Economics for sponsoring my presentation at the MacroTheme Conference in December 2013.

### Abbreviations

BAU	Business as Usual
BSA	Burden Sharing Agreement
CAA	Clean Air Act
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide equivalent
CPRS	Carbon Pollution Reduction Scheme
EP	European Parliament
EPA	Environmental Protection Agency
EC	European Commission
EU	European Union
EUA	European Union Allowance
EU ETS	European Union Emissions Trading Scheme
GHG	Greenhouse Gas
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
KGL	Kerry-Graham-Lieberman
NAP	National Allocation Plan
NO <sub>x</sub>	Nitrous Oxide
PAC	Political Action Committee
RECLAIM	Regional Clean Air Incentives Market
RGGI	Regional Greenhouse Gas Initiative
SO <sub>2</sub>	Sulfur Dioxide
WCI	Western Climate Initiative

<sup>162</sup> Max Horstink and Jan-Willem Bode, “The Future of Global Carbon Markets,” *Ernst & Young*, 2012, 12.

## References

- "Australia Carbon Tax: Abbott Introduces Repeal Bill." *BBC News*. November 13, 2013. Accessed on November 17, 2013. <http://www.bbc.co.uk/news/world-asia-24923094>.
- "Australia—The World's Carbon Markets: A Case Study Guide to Emissions Trading." *Environmental Defense Fund and International Emissions Trading Association*. June 2013.
- "Australia's Emissions Trading Scheme: Implications of an Early Move to a Flexible Price." *World Wildlife Fund*. July 13, 2013. Accessed November 17, 2013. [http://awsassets.wwf.org.au/downloads/fs065\\_policy\\_brief\\_australias\\_emissions\\_trading\\_scheme\\_16jul13.pdf](http://awsassets.wwf.org.au/downloads/fs065_policy_brief_australias_emissions_trading_scheme_16jul13.pdf).
- Betsill, Michele and Matthew Hoffmann. "The Contours of "Cap and Trade": The Evolution of Emissions Trading Systems for Greenhouse Gases." *Review of Policy Research*, Vol. 29, No. 1 (2011), 83-106.
- "Breakdown of Electricity Generation by Energy Source," *The Shift Project Data Portal*, <http://www.tsp-data-portal.org/Breakdown-of-Electricity-Generation-by-Energy-Source#tspQvChart>.
- Buchner, Barbara, Carlo Carraro and A. Denny Ellerman. "The Allocation of European Union Allowances: Lessons, Unifying Themes and General Principles." *MIT Joint Program on the Science and Policy of Global Change*, Report No. 140, October 2006.
- "Carbon Trading: ETS, RIP?" *The Economist*. April 20<sup>th</sup>, 2013. Accessed October 28<sup>th</sup>, 2013. <http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets>.
- "Climate of the Nation 2013: Australian Attitudes on Climate Change." *The Climate Institute*. 2013.
- Coll, Steve. "Steve Coll: How Exxon Shaped the Climate Debate." *PBS*. October 23, 2012. Accessed November 22, 2013. <http://www.pbs.org/wgbh/pages/frontline/environment/climate-of-doubt/steve-coll-how-exxon-shaped-the-climate-debate/>.
- Conniff, Richard. "The Political History of Cap and Trade." *Smithsonian Magazine*. August 2009.
- "CO<sub>2</sub> Emissions (Metric Tons per Capita)." *World Bank*. 2010. Accessed November 17, 2013. <http://data.worldbank.org/indicator/EN.ATM.CO2E.PC/countries/1W?display=default>.
- Davenport, Carol. "Heads in the Sand." *National Journal*. December 1, 2011. Accessed November 28, 2013. [www.nationaljournal.com/magazine/heads-in-the-sand-20111201](http://www.nationaljournal.com/magazine/heads-in-the-sand-20111201).
- "Democrats Lose Supermajority as Brown Sworn In." *Washington Times*. February 5, 2010. Accessed November 22, 2013. <http://www.washingtontimes.com/news/2010/feb/05/democrats-lose-supermajority-brown-sworn/>.
- Ellerman, A. Denny and Barbara K. Buchner. "The European Union Emissions Trading Scheme: Origins, Allocation, and Early Results." Oxford University Press. *Review of Environmental Economics and Policy*, Vol. 1, Issue 1 (2007), 66-87.
- Ellerman, A. Denny and Paul L. Joskow. "The European Union's Emissions Trading System in Perspective." *Pew Center on Global Climate Change*. May 2008.
- Environmental Protection Agency. "An Evaluation of the South Coast Air Quality Management District's Regional Clean Air Incentives Market—Lessons in Environmental Markets and Innovation." November, 2002.
- Environmental Protection Agency. "Cap-and-Trade: Acid Rain Program Results." Accessed October 15, 2013. <http://www.epa.gov/capandtrade/documents/ctresults.pdf>.
- Environmental Protection Agency. "Climate Change Science Overview." *Environmental Protection Agency*. Accessed October 21, 2013. <http://www.epa.gov/climatechange/science/overview.html#human-causes>.
- "EU Emission Trading Directive." *Global CCS Institute*. 2010. <http://www.globalccsinstitute.com/networks/cclp/legal-resources/emission-trading/eu-emission-trading/eu-directive>.
- "EU Greenhouse Gas Emissions and Targets." *European Commission*. <http://ec.europa.eu/clima/policies/g-gas/>.
- Galbraith, Kate. "A Carbon Tax by Any Other Name." *New York Times*. July 24, 2013. Accessed



November 27, 2013. <http://www.nytimes.com/2013/07/25/business/global/a-carbon-tax-by-another-name.html>.

Garthwaite, Josie. "Coal-Fired Australia, Buffeted by Climate Change, Enacts Carbon Tax." *National Geographic News*. October 5, 2012. Accessed November 27, 2013. [news.nationalgeographic.com/news/energy/2012/10/121005-australia-carbon-tax/](http://news.nationalgeographic.com/news/energy/2012/10/121005-australia-carbon-tax/).

"GDP Growth (Annual Percentage)." *The World Bank*. 2012. Accessed November 17, 2013. <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>.

Gillis, Justin. "U.N. Climate Panel Endorses Ceiling on Global Emissions." *New York Times*, September 27, 2013. Accessed October 21, 2013. <http://www.nytimes.com/2013/09/28/science/global-climate-change-report.html?pagewanted=1>.

"Green Paper on Greenhouse Gas Emissions Trading within the European Union." *Commission of the European Communities*. 2000.

Greenblatt, Alan. "How Republicans Learned to Reject Climate Change." *National Public Radio*. March 25, 2010. Accessed November 28, 2013. [www.npr.org/templates/story/story.php?storyId=125075282](http://www.npr.org/templates/story/story.php?storyId=125075282).

Heinmiller, Timothy. "The Politics of 'Cap-and-Trade' Policies." *Natural Resources Journal*, Vol. 47, No. 445 (Spring 2007), 445-467.

Holt, Mark and Gene Whitney. "Greenhouse Gas Legislation: Summary and Analysis of H.R. 2454 as Passed by the House of Representatives." *Congressional Research Service*.

Horstink, Max and Jan-Willem Bode. "The Future of Global Carbon Markets." *Ernst & Young*. 2012.

Intergovernmental Panel on Climate Change. "Climate Change 2013: The Physical Science Basis Summary for Policy Makers." *Contributions of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, September 27, 2013.

Johnson, Brad. "The Climate Zombie Caucus of the 112<sup>th</sup> Congress." *Think Progress*. November 19, 2010. Accessed November 22, 2013. <http://thinkprogress.org/climate-zombie-caucus/>.

Johnson, Chris. "Most Want to Keep Carbon Tax: Poll." *Sydney Morning Herald*. July 14, 2013. Accessed November 17, 2013. <http://www.smh.com.au/federal-politics/political-news/most-want-to-keep-carbon-tax-poll-20130713-2px4d.html>.

Jones, Jeffrey M. "Americans Increasingly Prioritize Economy over Environment." *Gallup*. March 17, 2011. Accessed November 17, 2013. <http://www.gallup.com/poll/1615/environment.aspx>.

Kennedy, Steven. "Australia's Clean Energy Future Speech." *Department of Climate Change and Energy Efficiency*. September 7, 2011. Accessed November 27, 2013.

Krugman, Paul. "Gambling with Civilization." *The New York Review of Books*. November 7, 2013. Accessed November 8, 2013. <http://www.nybooks.com/articles/archives/2013/nov/07/climate-change-gambling-civilization/>.

"Kyoto Protocol," *Australian Government: Department of Environment*, accessed November 17, 2013, <http://www.climatechange.gov.au/international/negotiations/history-negotiations/kyoto-protocol>.

"Kyoto Protocol." *United Nations Framework Convention on Climate Change*. Accessed November 16, 2013. [http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php).

Lashof, Daniel and et. al. "Closing the Power Plant Carbon Pollution Loophole, Smart Ways the Clean Air Act Can Clean Up America's Biggest Climate Polluters." *National Resources Defense Council*. March 2013.

Leguet, Benoit, Noriko Fujiwara, and Anton Georgiev. "The EU Emissions Trading Scheme as a Driver for Future Carbon Markets." *Centre for European Policy Studies*. 2012.

Lewis, Barbara. "EU Close to Meeting 2020 Emissions Goal Already – Official Data." *Reuters*. October 9, 2013. <http://www.reuters.com/article/2013/10/09/us-eu-emissions-idUSBRE9980SF20131009>.

Lewis, Kayleigh. "EU Emissions Trading Scheme Faces 'Existential Crisis.'" *The Parliament.com*. January 28, 2013. Accessed October 29, 2013. <http://www.theparliament.com/latest-news/article/newsarticle/eu-emissions-trading-scheme-faces-existential-crisis/#.Unal8fmsiSo>.

Liptak, Adam. "Supreme Court to Hear Challenge to E.P.A. Rules on Gas Emissions." *New York Times*, October 15, 2013. Accessed October 20, 2015. [http://www.nytimes.com/2013/10/16/us/politics/supreme-court-to-hear-challenge-to-epa-emissions-rules.html?\\_r=0](http://www.nytimes.com/2013/10/16/us/politics/supreme-court-to-hear-challenge-to-epa-emissions-rules.html?_r=0).

- Lorezoni, Irene and Nick Pidgeon. "Public Views on Climate Change: European and USA Perspectives." *University of East Anglia*. Climate Change (2006) 77: 73-95.
- Loris, Nicolas. "The Costs of Cap and Trade." *The Heritage Foundation*. September 14, 2010. Accessed November 22, 2013. <http://www.heritage.org/research/commentary/2010/09/the-costs-of-cap-and-trade>.
- Lizza, Ryan. "As the World Burns." *New Yorker*. October 11, 2010.
- Murphy, Katherine. "Tony Abbott Begins Dismantling Carbon Tax: 'Our Bill to Reduce Your Bills.'" *The Guardian*. November 12, 2013. Accessed November 17, 2013. <http://www.theguardian.com/world/2013/nov/13/abbott-begins-dismantling-carbon-tax>.
- Oberthur, Sebastian and Claire R. Kelly. "EU Leadership in International Climate Policy: Achievements and Challenges." *The International Spectator: Italian Journal of International Affairs*. August 20, 2008. 35-50.
- "(Not Yet) Marching as to War." *The Economist*. November 5, 2009. Accessed November 21, 2013. <http://www.economist.com/node/14807107>.
- Peckinpugh, Tim L. "The Politics of Climate Change Legislation." *K&L Gates*. 2010. Accessed October 30, 2013.
- Plumer, Brad. "Europe's Cap-and-Trade Program Is in Trouble. Can It Be Fixed?" *The Washington Post*. April 20, 2013. Accessed October 29, 2013. <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/04/20/europes-cap-and-trade-program-is-in-trouble-can-it-be-fixed/>.
- Ray, Julie and Anita Pugliese. "Worldwide, Blame for Climate Change Falls on Humans." *Gallup*. April 22, 2011. Accessed November 17, 2013 <http://www.gallup.com/poll/147242/worldwide-blame-climate-change-falls-humans.aspx>.
- Reece, Nicholas. "Abbott's Decision to Abolish the Price on Carbon is Bizarre." *The Age*. November 18, 2013. Accessed November 21, 2013. <http://www.theage.com.au/federal-politics/political-opinion/behold-one-of-historys-greatest-policy-failures-20131117-2xp0g.html>.
- Rosenthal, Elisabeth. "Where Did Global Warming Go?" *New York Times*. October 15, 2011. Accessed November 17, 2013. [http://www.nytimes.com/2011/10/16/sunday-review/whatever-happened-to-global-warming.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2011/10/16/sunday-review/whatever-happened-to-global-warming.html?pagewanted=all&_r=0).
- Rourke, Alison. "Australian PM Julia Gillard sees approval dwindle on carbon tax U-turn." *The Guardian*. March 16, 2011. Accessed November 26, 2013. <http://www.theguardian.com/environment/2011/mar/16/julia-gillard-carbon-tax-australia>.
- Rudd, Kevin. "Climate Change: The Great Moral Challenge of Our Generation." *Australian Labor*. August 6, 2007. Accessed November 17, 2013. <http://www.youtube.com/watch?v=CqZvpRjGtGM>.
- Schmalensee, Richard and Robert N. Stavins. "The SO<sub>2</sub> Allowance Trading System: The Ironic History of a Grand Policy Experiment." *MIT Center for Energy and Environmental Policy Research*. August 2012.
- Schmalensee, Richard and Robert Stavins. "The Sordid History of Congressional Acceptance and Rejection of Cap-and-Trade: Implications for Climate Policy." March 7, 2013.
- Scott, Jason. "Australia Needs Global Carbon Trading Now, Industry Lobby Says." *Bloomberg*. March 7, 2013. Accessed December 4, 2013. <http://www.bloomberg.com/news/2013-03-07/australia-needs-global-carbon-trading-now-industry-lobby-says.html>.
- Shanahan, Dennis. "Voters Abandon Julia Gillard's Carbon Pricing Plan." *The Australian*. May 3, 2011. Accessed November 17, 2013. <http://www.theaustralian.com.au/national-affairs/voters-abandon-julia-gillards-carbon-pricing-plan/story-fn59niix-1226049447761>.
- Siegel, Matt. "Australian Senate Approves Emissions Trading Plan." *New York Times*. November 7, 2011. Accessed November 17, 2013. <http://www.nytimes.com/2011/11/08/world/asia/australian-senate-approves-emissions-trading-plan.html>.
- "Starting Emissions Trading on 1 July 2014." *Australian Government*. July 2013. Accessed November 27, 2013. <http://www.climatechange.gov.au/sites/climatechange/files/files/reducing-carbon/carbon-pricing-policy/cef-policy-summary-moving-ets.PDF>.
- Stavins, Robert. "A U.S. Cap-and-Trade System to Address Global Climate Change." *The*

*Hamilton Project*. The Brookings Institution. October, 2007.

Stavins, Robert. "Addressing Climate Change with a Comprehensive U.S. Cap-and-Trade System." *Oxford Review of Economic Policy*, Vol. 24, No. 2 (2008), 298-321.

Stavins, Robert. "Cap-and-Trade or a Carbon Tax." *The Environmental Forum*, January/February 2008, Environmental Law Institute.

Stavins, Robert. "Experience with Market-Based Environmental Policy Instruments." *Resources For The Future*, Discussion Paper 01-58. November, 2001.

Stringer, Leigh. "EU 'Largely on Track' to Meet Carbon and Energy Targets." *EdieEnergy*.

October 10, 2013. Accessed November 21, 2013. <http://www.edie.net/news/6/EU--largely-on-track--to-meeting-carbon-and-energy-targets-/>.

Taylor, Lenore. "Tony Abbott's Next Policy Now: Anything but a 'Great Big New Tax.'" *The Australian*. December 2, 2009. Accessed November 17, 2013. <http://www.theaustralian.com.au/news/tony-abbotts-next-policy-vow-anything-but-a-great-big-new-tax/story-e6frg6n6-1225805927737>.

"Questions and Answers on Emissions Trading and National Allocation Plans for 2008 to 2012." European Commission. November 29, 2006. Accessed November 27, 2013.

"U.N. Climate Chief Says Pricing Carbon is Australia's Cheapest Option." *Climate Wire*.

October 23, 2013. Accessed November 6, 2013. <http://www.eenews.net/climatewire/stories/1059989238>.

Walsh, Bryan. "If Carbon Markets Can't Work in Europe, Can They Work Anywhere?" *Time Magazine*, April 17, 2013. Accessed October 28, 2013. <http://science.time.com/2013/04/17/if-carbon-markets-cant-work-in-europe-can-they-work-anywhere/>.

Weiss, Daniel. "Anatomy of a Senate Climate Bill Death." *Think Progress*. October 12, 2010. Accessed November 22, 2013. <http://thinkprogress.org/climate/2010/10/12/206855/anatomy-of-a-senate-climate-bill-death/>.

"What is the EU doing about climate change?" *European Commission*. October 31, 2013.

Accessed November 16, 2013. <http://ec.europa.eu/clima/policies/brief/eu/>.