Notes & Comments

The Truth Behind International Climate Agreements: Why They Fail and Why the Bottom-Up is the Way Forward. A Game Theory Analysis

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I. INTRODUCTION

Climate change is one of the biggest problems facing the world today. It is no longer just environmental groups who are warning of the threat. In 2014, the Pentagon released a report in which they determined that climate change was the greatest threat to national security, citing rising sea levels, more violent storms, and increased widespread droughts.[1] Major companies have also joined the call for action, with eighty-one companies signing the American Business Act on Climate Pledge, which calls for these companies to reduce their emissions and invest in clean energy.[2] The companies - including giants such as Apple, Walmart, Target, PG&E, and Monsanto - that have signed the pledge have over $3 trillion in revenue and a total market value of over $5 trillion.[3] Due to the enormity of the problem and the large voices calling for solutions, it is clear that it is time to take action.

The last time the world faced a major international environmental problem, countries banded together and took swift measures to solve the crisis. In 1974, a research paper by Sherwood Rowland and Mario Molina indicated that chlorofluorocarbons (CFCs), chemicals commonly used in aerosols, air conditioning, and refrigeration, were drifting into the upper atmosphere and damaging the ozone layer.[4] In 1987, just thirteen years after the Roland and Molina paper, the world came together to sign the Montreal Protocol, an aggressive international agreement designed to curb the use of CFCs and prevent further damage to the ozone layer.[5] Thanks to the success of the Montreal Protocol, the ozone layer has begun to increase after years of decreasing, and a potential extra two million cases of skin cancer by 2030 have not occurred.[6]

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[1] Coral Davenport, *Pentagon Signals Security Risks of Climate Change*, THE NEW YORK TIMES (Oct. 13, 2014), http://www.nytimes.com/2014/10/14/us/pentagon-says-global-warming-presents-immediate-security-threat.html.

[2] The White House Office of the Press Secretary, FACT SHEET: White House Announces Commitments to the American Business Act on Climate Pledge (Oct. 19, 2015) (on file with author).

[3] *Id*.

[4] Cass. R. Sunstein, *Of Montreal and Kyoto: A Tale of Two Protocols*, 38 ENVTL. L. REP. 10566, 10567 (2008).

[5] *See* Montreal Protocol on Substances that Deplete the Ozone Layer, *opened for signature Sept. 16, 1987*, 1522 U.N.T.S. 29 (entered into orce Jan. 1, 1989) [hereinafter Montreal Protocol].

[6] Associated Press, *Earth's protective ozone layer is beginning to recover, a U.N. panel reports*, THE WASHINGTON POST (Sept. 15, 2014) https://www.washingtonpost.com/national/health-science/earths-protective-ozone-layer-is-beginning-to-recover-a-un-panel-reports/2014/09/15/a814ba9c-39c2-11e4-9c9f-ebb47272e40e_story.html.

It was not long after the Montreal Protocol that the world began to turn its attention to climate change. In 1988, just one year after the signing of the Montreal Protocol, Dr. James Hansen, a scientist with NASA, told a congressional committee that carbon dioxide buildup was causing the global warming trend.[7] Shortly following Hansen's testimony, 165 countries signed the United Nations Framework Convention on Climate Change in 1992 (UNFCCC).[8] The UNFCCC is an international treaty which serves as a framework for international cooperation to fight climate change.[9] The UNFCCC called on the signatory countries to come together and create a binding international agreement to fight climate change.[10]

However, unlike the success of the Montreal Protocol, there has not been a successful strong international agreement on climate change to complement the UNFCCC. The United States famously never ratified the Kyoto Protocol and Canada dropped out in 2011, citing the fact that the goals of Kyoto were unreachable due to a lack of agreement between the United States and China.[11] Subsequent attempts to reach an agreement have not been successful either. The parties to the Kyoto Protocol, including the United States, will meet every year, unless otherwise specified, for a Conference of the Parties (COP).[12] The COP aims to add to the existing protocol and negotiate further deals.[13] Unfortunately, this negotiation has been unsuccessful, as evidenced by the 2000 climate talks, the 2009 Copenhagen Accord, and the 2014 talks in Lima, which all failed to produce an agreement.[14]

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[7] Philip Shabecoff, *Global Warming Has Begun, Expert Tells Senate*, THE NEW YORK TIMES (June 24, 1988), http://www.nytimes.com/1988/06/24/us/global-warming-has-begun-expert-tells-senate.html?pagewanted=all.

[8] *See Generally* United Nations Framework Convention on Climate Change, *opened for signature June 4, 1992*, 1771 UNTS 107 (entered into force Mar. 21, 1994). [hereinafter UNFCCC]

[9] United Nations, *Background on the UNFCCC: The international response to climate change*, UNITED NATIONS FRAMEWORK ON CLIMATE CHANGE CONVENTION, http://unfccc.int/essential_background/items/6031.php (last visited March 9, 2016 11:47 AM).

[10] UNFCCC, *supra* note 8.

[11] *Kyoto Protocol Fast Facts*, CNN (March 30, 2016 1:12 PM) http://www.cnn.com/2013/07/26/world/kyoto-protocol-fast-facts/.

[12] United Nations, *Conference of the Parties*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/bodies/body/6383.php (last visited Feb. 24, 2016).

[13] *Id.*

[14] ICTSD, *COP 6: US-EU Differences Blamed for Failure of Climate Change Negotiations*, INTERNATIONAL CENTER FOR TRADE AND SUSTAINABLE DEVELOPMENT (Nov. 28, 2000), http://www.ictsd.org/bridges-news/bridges/news/cop-6-us-eu-differences-blamed-for-failure-of-climate-change-negotiations (arguing that the meeting failed to produce an agreement due to a number of disagreements between the US and the EU on vital issues); John Vidal, Allegra Sratton & Suzanne Goldenberg, *Low targets, goals*

Robert Putnam's two-level game theory perfectly explains why the Montreal Protocol succeeded, and why the Kyoto Protocol and other international climate agreements failed. Two-level game theory states that in any international negotiation, there is a second ongoing negotiation on the domestic level in order to determine what kind of agreement can ultimately be ratified by the relevant domestic legal procedures.[15] A two-level game theory analysis suggests that it is unlikely that there will ever be a strong international climate agreement because the United States would need two-thirds of the Senate to ratify any such agreement. Due to the Senate's current conservative tilt and the industry opposition to any strong international climate agreement, which in turn influences the Senate, the United States will only ever be able to ratify an international agreement if it is weak on emissions requirements. The inability of the United States to ratify a strong international climate agreement has helped shift the world towards a bottom-up approach[16] to climate change. In addition to the problems posed by Level II issues in the United States, this shift to a bottom-up approach has come about because it allows countries and regional governments to take quicker decisive action on climate change without having to wait for international negotiators to hammer out their differences.

The outcome of the recent COP in Paris exemplifies the global shift to a bottom-up world. Unlike the COP failures in 2000, 2009, and 2014, the meeting in Paris resulted in the signing of a substantial international climate agreement.[17] While some have criticized the deal for not doing

dropped: Copenhagen ends in failure, THE GUARDIAN (Dec. 18, 2009), http://www.theguardian.com/environment/2009/dec/18/copenhagen-deal (quoting a chief negotiator as saying the accord has "the lowest level of ambition you can imagine. It's nothing short of climate change scepticism in action. . ."); Geoffrey Lean, *How the Lima climate change talks failed*, THE TELEGRAPH (Dec. 15, 2014), http://www.telegraph.co.uk/news/earth/11293478/How-the-Lima-climate-change-talks-failed.html (arguing that the issues in climate change are just too big for negotiators to successfully confront and solve).

[15] *See* Robert D. Putnam, *Diplomacy and Domestic Politics: The Logic of Two-Level Games*, 42 INT'L ORG. 427 (1988).

[16] A top-down approach refers to a system where countries agree to international forms of organization and compliance, each party is expected to follow the agreement exactly, and a body that represents the member states of the agreement governs the agreement.) *See* Rafael Leal-Arcas, *Top-Down Versus Bottom-Up Approaches For Climate Change Negotiations: An Analysis*, 4 THE IUP J. OF GOVERNANCE AND PUB. POL'Y. 7, 8 n.5 (2011). Conversely a bottom-up approach refers to a system with no global form of compliance where various mitigation efforts happen on a city, community, state, or single national level. *See* Steve Rayner, *How to Eat an Elephant: A Bottom-Up Approach to Climate Policy*, 10 CLIMATE POL'Y 615, 617 (2010).

[17] Emily Gosden, *Paris Climate Agreement 'A Major Leap For Mankind'*, THE TELEGRAPH (Dec. 12, 2015), http://www.telegraph.co.uk/news/earth/paris-climate-

enough, it is still a major achievement when compared to past climate agreements.[18] The Paris Agreement aims to limit each country's temperature rise to two degrees Celsius with a goal of reducing that number to one point five degrees Celsius.[19] The Paris Agreement was unique because it was the first international agreement to embrace the bottom-up approach, asking each country to submit their own plan to reduce emissions.[20] Each country pledges to follow their plan and update their goals in five years' time.[21] Furthermore, the Paris Agreement also acknowledges and supports state and regional governments (also known as subnational governments) efforts to fight climate change.[22] The support for subnational governments goes beyond mere words. The Paris Agreement makes it easier for less developed countries to secure access to funds from initiatives like the Green Climate Fund, and thus aids local governments in building resilience to climate change[23] and funding policies and initiatives in the fight against climate change.[24]

In light of the pledge and review decision at the COP 21 in Paris, this paper will look at how the world transitioned to a bottom-up approach and why it is the best way forward. This journey will begin by analyzing what Robert Putnam's two-level game theory is, what it means, how it works, and how it can explain the difficulty in securing an international climate agreement. Next, it will look at the negotiations and success of the Montreal Protocol compared to the negotiations and subsequent failure of the Kyoto Protocol using the two-level game theory to explain why the Montreal Protocol succeeded and the Kyoto Protocol failed. Finally, the

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change-conference/12047909/Paris-climate-change-agreement-a-major-leap-for-mankind.html.

[18] *Id.*

[19] Fiona Harvey, *Paris climate change agreement: the world's greatest diplomatic success*, THE GUARDIAN (Dec. 14, 2015), http://www.theguardian.com/environment/2015/dec/13/paris-climate-deal-cop-diplomacy-developing-united-nations.

[20] Natasha Geiling, Todd Stern: After The Paris Climate Agreement, Countries Of The World 'Are Not Going Back', THINK PROGRESS (Dec. 15, 2015), http://thinkprogress.org/climate/2015/12/15/3732172/todd-stern-paris-climate-agreement/.

[21] *Id.*

[22] See Paris Agreement to the United Nations Framework Convention on Climate Change, opened for signature Apr. 22, 2016, U.N. Doc. FCCC/CP/2015/L.9 (Dec. 12, 2015) (stating the parties to the Agreement intend to "mobilize stronger and more ambitious climate change action by all Parties and non-Party stakeholders, including . . . subnational authorities").

[23] David Jackson, COP21 Paris Agreement Recognizes Role of Subnational Levels of Government in Strengthening Resilience to Climate Change, UNCDF (Dec. 14, 2015), http://www.uncdf.org/en/cop21-paris-agreement-recognizes-role-subnational-levels-government-strengthening-resilience-climate.

[24] *Id.*

analysis will conclude by discussing why the two-level game theory means that a bottom up, pledge and review approach is the best way forward in order to ensure that there is concrete action taken to mitigate the effects of climate change.

II. ROBERT PUTNAM'S TWO-LEVEL GAME THEORY

Robert Putnam's two-level game theory is an examination of international negotiations and the criteria needed to successfully reach an international agreement.[25] The theory centers on the idea that there are two levels of negotiations - the international and subnational level - in any international negotiation, and that every party involved in a negotiation – at both the international and subnational level - has a range of acceptable outcomes known as a win-set.[26] Additionally, in the context of a climate change agreement, it is important to focus on the attitudes of the four largest emitters of greenhouse gasses (China, the USA, the European Union, and India) towards mandatory emissions cuts.[27]

A. Level I and Level II Negotiations

A central premise of Putnam's two-level theory is that there are in fact two levels of negotiations going on during any international negotiation:[28] international and domestic.[29] The international negotiations are the current negotiations going on between two countries and are considered Level I negotiations.[30] These Level I negotiations are the more traditional talks that people think about when considering international treaties and agreements. Level I negotiations include, for example, the 2014-2015 negotiations between the United States and Iran over Iran's nuclear program or the negotiations between the United States, Canada, and Mexico that created NAFTA. Many believe that Level I negotiations are the only component required to enter into a successful international treaty. However, as two-level game theory demonstrates, there is a second layer of domestic negotiations taking place underneath an international deal.

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[25] Putnam, *supra* note 15.

[26] *Id.* At 434-437.

[27] Mengpin Ge, Johannes Friedrich & Thomas Damassa, *6 Graphs Explain the World's Top 10 Emitters*, WORLD RESOURCES INST. (Nov. 25, 2014), http://www.wri.org/blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters.

[28] Putnam, *supra* note 15, at 433-34.

[29] *Id.*

[30] *Id.* At 434, 436.

These domestic negotiations take place between the Level I party responsible for negotiating an international agreement – the executive branch, in the context of the United States - and the Level II institutions responsible for ratifying the agreement – the Senate.[31] The Level II institutions are often the formal procedures needed for ratification, such as a two-thirds vote in the Senate, but can also include any formal or informal process required to endorse an international deal.[32] A wide array of sources - from governmental and public opinions to industry support for or opposition to a teaty - influence Level II negotiations.[33] Furthermore, the subsequent failure to ratify a treaty, either because a party chose to opt out or was unable to convince the Level II institutions to accept the deal, can have a profound effect on future negotiations between two parties, as it diminishes trust in the opposing party and hurts cooperation.[34] This problem is further compounded by the fact that most Level I negotiators are ignorant to the political realities influencing the Level II negotiations and institutions in other countries. [35]

In the United States, the president would be conducting the Level I negotiations at the international level while simultaneously conducting Level II negotiations with the United States Senate, because the Senate must ratify any treaty by a two-thirds vote. Furthermore, in a representative democracy, the affected industries and the public at large tends to be heavily involved in Level II negotiations.[36] For example, if the United States were negotiating a treaty with Canada on the trade of agricultural products, the executive branch would negotiate with Canada but also have to negotiate with the US Senate, which in turn is influenced by the agricultural industry, to find a deal that is acceptable to all parties. Level II negotiations then lead to an acceptable deal range, or win-set.

B. Win-Sets

In the most basic sense, a win-set is the range of possible final terms that a country can accept in an international negotiation and still manage to get the treaty ratified.[37] The desires of a country's Level II institutions and the affected industry heavily influence the range of a country's win-set.[38] In terms of getting a deal done, larger win-sets are better because

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[31] *Id.* at 436.
[32] *Id.*
[33] *Id.*
[34] *Id.* at 438-39.
[35] *Id.* at 452.
[36] *Id.* at 433 ("During my tenure as Special Trade Representative, I spent as much time negotiating with domestic constituents (both industry and labor) and members of the U.S. Congress as I did negotiating with our foreign trading partner").
[37] *Id.* at 437.
[38] *Id.* at 437, 441-42.

they give more latitude to the international negotiators and therefore increase the chances of finalizing a deal.[39] However, having a larger win-set is not always the most ideal scenario during negotiations. Countries with smaller win-sets can use the threat of no ratification, and therefore no treaty, to push the deal in a direction more favorable to their interests.[40] Therefore, the final treaty is more likely to resemble something close to what the country with a small win-set had desired.[41]

For example, if two countries, Country A and Country B, were attempting to negotiate a nuclear disarmament treaty, the extent of the treaty would depend on the size of each country's win-set. If Country A was fully committed to beginning the disarmament process and living in a world free of nuclear weapons and Country B was not committed to disarmament, the outcome of the treaty would likely be minimal disarmament. This is because Country A's win-set would be larger - any sort of disarmament treaty would begin the push to a nuclear weapon free world - while Country B's win-set would be smaller, as they would not favor a major disarmament deal and only be looking to agree to a miniscule amount of disarmament. Under these conditions, Country B would be able to exploit the latitude granted to Country A negotiators by virtue of their larger win-set and ultimately negotiate an agreement that included a limited amount of disarmament. The size of win-sets essentially correlates to leverage. The less likely it is that a country is willing to agree to a treaty (smaller win-set) the more leverage that country has in dictating terms in negotiations with countries who are more willing to agree to a treaty (larger win-set).

Three factors affect the size of a country's win-set: Level II preferences and coalitions, Level II institutions, and the strategies of Level I negotiators.[42] This section will briefly examine how each factor affects the size of a country's win-set.

1. Level II Preferences and Coalitions

In terms of Level II preferences, when the benefits/costs of an international agreement are high, the industry whose interests are affected will end up playing a very active role in the ratification process and will exert special influence over it.[43] When looking at how the industry's opinions will affect a Level I win-set, one must consider their preference for any agreement versus a "no-agreement" scenario.[44] If the relevant

[39] *Id.* at 437-38.
[40] *Id.* at 440.
[41] *Id.*
[42] *Id.* at 441-42.
[43] *Id.* at 445.
[44] *Id.* at 442.

industry suffers no negative effects in a no-agreement scenario but would suffer some negative effects if an agreement occurs, then the win-set will be smaller.[45] For example, if the United States was negotiating an international agreement which would lead to price controls on pharmaceutical drugs, the pharmaceutical industry would oppose the deal because a no-agreement scenario, i.e., no price controls, would be preferable to the outcome of the negotiations. A no-agreement preference would lead to a smaller win-set for the United States, likely one that would not mandate price controls. An industry's preference for a no-agreement scenario can be one of the most important factors in determining not only a country's win-set but also the likelihood of international negotiations to result in a treaty. If the Level II institutions and coalitions of negotiating countries, especially major countries, prefer or are not adverse to a no-agreement scenario, there is no incentive to compromise in a negotiation. This lack of incentive will lead to a deal with weak controls, or to no deal at all. Therefore, in relation to the climate change world, for a strong deal to occur, it is important that none of the major parties' Level II institutions prefer a no-agreement scenario.

2. Level II Institutions

The nature of Level II institutions also plays a significant role in the size of a country's win-set. [46] The term "Level II institutions" refers to the ratifying body in each country.[47] The more complicated a ratification process is, the smaller a country's win-set will be.[48]Dictatorships typically have larger win-sets due to the fact they will not need to get public approval for a treaty.[49] The United States, however, will always have a smaller win-set in any international negotiation due to the fact that ratification requires a two-thirds vote in the Senate.[50] Senate ratification is quite a complex process and will usually involve approval from both political parties, as well as endorsement from the major organizations and industries affected by the deal.[51]

3. Level I Negotiators and Strategies

Level I negotiators and their strategies also play a role in the size of a country's win-set. [52] A Level I negotiator can increase the chance of ratification, thereby increasing his win-set, by offering incentives to the

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[45] *Id.*
[46] *Id.* at 448.
[47] *Id*
[48] *Id.* at 436, 448.
[49] *Id.* at 448.
[50] *Id.*
[51] *See Id.* at 448. (sources supports, but does not directly state author's assertion)
[52] *Id.* at 450.

Level II institutions to help the ratification process.[53] For example, in the United States, if the president wished to increase chances of ratification, they could offer senators projects, such as public works projects, or support for those senators' states in order to 8bring them on board.[54] Furthermore, if a Level I negotiator enjoys immense popularity in their country, then ratification of any negotiated deal by the Level II institution is more likely, which serves to increase the country's win-set.[55] For example, in the United States, it is likely that President George W. Bush would have had an easier ratification process, thereby a larger win-set, for any international agreement he negotiated after the terrorist attacks of 9/11 due to his high popularity and approval ratings.[56] While the popularity of negotiators and the use of incentives can increase chances of ratification for an international agreement, they are unlikely to affect the chances of passing an international climate agreement in the United States. There are two reasons for this: first, incentives, such as public work projects, probably are not enough to overcome strong industry opposition,[57] and second, due to the massive partisan divide in the United States, it is unlikely that any president will enjoy a high enough popularity rating to obtain Senate ratification of a climate agreement.[58]

III. APPLYING TWO-LEVEL GAME THEORY TO INTERNATIONAL CLIMATE AGREEMENTS: WHY MONTREAL SUCCEEDED

[53] *Id.*

[54] *Id.*

[55] *Id.* at 451.

[56] *Presidential Approval Ratings -- Gallup Historical Statistics and Trends, GALLUP (Nov. 14, 2014 1:21 PM), http://www.gallup.com/poll/116677/presidential-approval-ratings-gallup-historical-statistics-trends.aspx.*

[57] : See Douglas Fischer, "Dark Money" Funds Climate Change Denial Effort, SCIENTIFIC AMERICAN (Dec. 23, 2013), http://www.scientificamerican.com/article/dark-money-funds-climate-change-denial-effort/ (stating that $558 million dollars has been given to climate change denial groups between 2003 and 2010); Food, Fossil Fuels, and Filthy Finance, OXFAM INTERNATIONAL (Oct. 17, 2014), https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp191-fossil-fuels-finance-climate-change-171014-en.pdf (finding that United States fossil fuel industry spends approximately $160 million a year on lobbying).

[58] See Political Polarization in the American Public, PEW RESEARCH CENTER (June 12, 2014), http://www.people-press.org/2014/06/12/political-polarization-in-the-american-public/ (finding that politically active Democrats and Republicans are becoming more and more ideologically opposed and polarized).

AND KYOTO FAILED

The success of the Montreal Protocol and the failure of the Kyoto Protocol provide case studies for applying the two-level game theory to the world of international climate agreements because both agreements dealt with pressing international environmental problems - ozone at Montreal and climate change at Kyoto - that required collective and coordinated international action to solve.

The Montreal Protocol dealt with substances that deplete the ozone and was a success because it halted the use of these substances and has slowly reversed the damage to the ozone layer.[59] The Kyoto Protocol was the world's first attempt to deal with the problem of climate change and is widely considered a failure due to the fact that the United States failed to ratify the treaty and due to its lack of binding emissions cuts on developing countries such as China and India.[60] Isolating each protocol to examine what led up to the negotiations and then applying two-level game theory to the proceedings gives a clear and concrete explanation as to why the oft-used top-down iteration of international climate agreements is unlikely to succeed.

A. Montreal Protocol Success

In 1974, research surfaced which showed the world that CFCs were endangering and deteriorating the earth's protective ozone layer.[61] The CFCs in question were mainly aerosols used in air conditioning, refrigeration, packaging, and solvents in cleaning.[62] It was clear that the world needed to take immediate action to solve the problem, and by 1985, twenty countries had signed the Vienna Convention, which established a framework for negotiating a protocol to deal with CFCs.[63] In 1987, the world came together to negotiate and sign the Montreal Protocol.[64] Thirty years after the signing of the Montreal Protocol, there is evidence that it

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[59] Associated Press, *supra* note 6.

[60] Steven Gelis, Kyoto Protocol, 10 years later: Did deal to combat greenhouse emissions work and what of its future?, NATIONAL POST (Feb.14, 2015), http://news.nationalpost.com/news/kyoto-protocol-10-years-later-was-the-deal-to-combat-greenhouse-emissions-successful-and-what-of-its-future (stating that the Kyoto Protocol was flawed from the beginning, in part because the United States never ratified it and due to its lack of emissions cuts on China and India).

[61] Sunstein, *supra* note 4.

[62] Peter M. Morrisette, The Evolution of Policy Responses to Stratospheric Ozone Depletion, 29 U.N.M. NAT. RESOURCES J. 793, 795 (1989).

[63] *See generally* Vienna Convention for the Protection of the Ozone Layer, *opened for signature* March 22, 1985, 26 I.L.M. 1516. (entered into force Sept. 22, 1998).

[64] *See* Montreal Protocol, *supra* note 5.

has succeeded in reversing damage done to the ozone layer and therefore avoiding a massive health crisis.[65] In order to understand why the Montreal Protocol negotiations worked so successfully, it is necessary to examine the win-sets of the United States and the European Union (then, the European Community) in both the lead up to the negotiations and during the actual negotiations themselves. Because developing countries were not present at the negotiations and because the negotiations were mainly between the United States and the European Community, these are the only two entities that warrant examination in this case-study.[66]

1. Pre-Negotiation Win-Sets

In the 1970s the United States accounted for almost fifty percent of the world's CFC use.[67] In the years immediately following the 1974 study, news coverage of the ozone depletion caused American consumers to cut their demand for aerosol sprays containing CFCs by more than half.[68] The United States Congress also responded to the changing political winds and amended the Clean Air Act to allow the EPA to better regulate CFCs.[69] Following the Clean Air Act amendment, in 1978, the EPA used the Toxic Substances Control Act[70] to ban CFCs from use in nonessential applications of aerosol propellants.[71] This had the effect of reducing American contribution to ozone depletion by about ninety-five percent.[72] While the American chemical industry did lobby against aggressive controls,[73] the United States was compelled to act due to the overwhelming evidence that public health was in danger and therefore immediate action was preferable.[74]

Europe, on the other hand, was not ready to take such quick and drastic measures. The general feeling in Europe was that the science

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[65] Associated Press, *supra* note 6. Ozone levels climbed by four percent over a period of thirteen years from 2000 and 2013. The United Nations has estimated that without the Montreal Protocol there would have been an extra 2 million cases of skin cancer by 2030.

[66] Moments in U.S. Diplomatic History: Negotiating the Montreal Protocol on protecting the Ozone Layer, ASSOCIATION FOR DIPLOMATIC STUDIES AND TRAINING (last visited Oct. 11, 2015), http://adst.org/2014/09/negotiating-the-montreal-protocol-on-protecting-the-ozone-layer/

[67] Sunstein, *supra* note 4.

[68] *Id.*

[69] Cass R. Sunstein, Montreal and Kyoto, A Tale of Two Protocols 9 (Univ. of Chi. Law Sch. Olin Law & Econ. Working Paper No. 302, 2006), available at http://www.law.uchicago.edu/files/files/302.pdf.

[70] Toxic Substances Control Act, Pub. L. No. 94-469, 90 Stat. 2003 (1976).

[71] Sunstein, *supra* note 69.

[72] *Id.*

[73] *Id.* at 10

[74] Sunstein, *supra* note 4.

behind ozone depletion did not warrant such drastic measures.[75] Furthermore, unlike their American counterparts, the European public was indifferent to the issue and were not putting pressure on their governments to act.[76] Finally, and most importantly, European industry was strongly opposed to taking regulatory action. A UK company, Imperial Chemical Industries, was one of the larger CFC producers in the world and led the charge in Europe in fighting strong regulatory measures.[77] The United Kingdom was undoubtedly influenced by Imperial Chemical Industries' position and played a large role in shaping the European Community's early "wait and learn" response.[78]

In terms of win-sets for a negotiation, the above circumstances would point towards a weaker deal that the Europeans would favor. The United States would have had a larger win-set in the lead-up to the negotiations as they had already proven that they were willing to take the action that the American public demanded. Some may argue that this should have had the effect of reducing the American win-set, because they would demand equally strong responses from other parties; however, this would be an incorrect assessment. Because the United States had taken action already, they would not accept a no-agreement scenario. Instead, some sort of mandatory cuts for the Europeans would be preferable. Because the United States would not accept a no-agreement scenario, the United States' win-set would be larger, especially compared to the Europeans, since the United States would favor any sort of mandatory cuts. A larger win-set would allow the United States to be pushed in negotiations, especially by the Europeans' comparatively small win-set.

Unlike the United States, the Europeans had a very small win-set due to widespread industry opposition and the lack of public outcry. The industry in Europe strongly opposed regulations and would have preferred the no-agreement scenario, further shrinking the European win-set. Therefore, it is likely that at the time the only deal Europe would have accepted would have involved no mandatory cuts, or very miniscule cuts. This smaller win-set would have given Europe the advantage going into negotiations.

Given the circumstances and the win-sets at the time, one would expect the Montreal Protocol to represent something close to what the Europeans wanted: no mandatory cuts, and if any were required, they would be minimal. However, ultimately, the Montreal Protocol proved to be a strong agreement. Changes in the political and economic realities in

[75] Sunstein, *supra* note 69 at 10.
[76] *Id.*
[77] *Id.*
[78] *Id.* at 13.

the lead up to the negotiations, which altered the United States' and Europe's win-sets, explain why the Montreal Protocol ultimately proved to be a strong deal.

2. Negotiating the Montreal Protocol

In the lead-up to the final Montreal Protocol negotiations, the European Community favored a simple freeze of CFC production at 1986 levels.[79] The United States favored a freeze followed by a ninety-five percent cutback over the next ten to fourteen years.[80] In a two-level game analysis, one would expect the final deal to either only have a freeze, or a freeze and minimal cut-backs, due to the comparative sizes of Europe's and the United States' win-sets. However, in reality, the final deal called for a freeze and then a 50 percent cutback by 1998.[81] A reduction in the American win-set and an expansion of the European win-set explains why the final agreement was much stronger than what the Europeans initially desired.

Change in industry preference helped reduce the American win-set. In 1986, one year before the final protocol negotiations, DuPont and other American chemical companies had developed safe alternatives to CFCs.[82] Now any deal which involved a significant reduction of CFC use would massively favor the American industry, which in turn led the industry to prefer a strong agreement.[83] Generally, the United States' strong preference for a deal would seem to make their win-set larger because any sort of agreement involving a freeze of CFC production would be more favorable to the industry than a no-agreement scenario. However, in the lead-up to the 1987 negotiations, it became increasingly clear that the American industry favored a strong aggressive international deal, one that included a broad phase-out of CFC use, and that prevented manufacturers from moving CFC production to non-signatory states.[84] Therefore, the industry helped shrink the American win-set as it could derive a massive commercial benefit from a strong agreement, and it continued to apply pressure to reach such an agreement.

Politics also played a role in shrinking the American win-set. In 1987, the United States Senate, the Level II institution responsible for ratification, by a vote of 80-2 passed a resolution asking President Regan to take aggressive action to deal with the CFC problem and protect the

[79] Morrisette, *supra* note 62 at 810.
[80] *Id.*
[81] Sunstein, *supra* note 4 at 10568.
[82] Sunstein, *supra* note 69 at 12.
[83] *Id.*
[84] *Id.*

ozone layer.[85] The resolution called for the President to seek an international agreement with an immediate freeze on CFC production and insisted on no less than a fifty percent phase out of CFC use.[86] The passage of the resolution signaled another shrink in the American win-set. The fact that the Senate resolution called for at least a fifty percent phase out indicated that a less aggressive deal was now incompatible with the United States' position.

President Regan reinforced the desire for a strong deal when he sent a cable to the chief US negotiator, Richard Benedick, encouraging him to maintain a strong U.S. negotiating position.[87] These political maneuverings had the effect of reducing the size of the American win-set because now the negotiators had a mandate to seek a deal that contained no less than a fifty percent phase out. However, shrinking the American win-set alone should not have been enough to negotiate the final Montreal Protocol. Due to the original no-agreement preference of the Europeans, a successful Montreal Protocol required the growth of the European win-set.

While the United States was reducing their negotiating win-set, the European Community's win-set was actively growing. There were two major developments that helped expand the European Community's win-set: new scientific discoveries regarding the ozone layer and increased public pressure. In 1985 and then again in 1987, new findings indicated that an ozone hole above Antarctica had grown to the size of the United States.[88] This discovery softened the European stance when it came to mandatory cut-backs:[89] the danger of the ozone hole caused European environmental groups to pressure their governments for a deal.[90]

In the lead-up to the Montreal Protocol negotiations in 1987, the chief U.S. negotiator spoke multiple times, including to West German and Austrian newspapers, calling the European position on the deal "ridiculous. . . . and totally unacceptable."[91] These statements were important to help galvanize public support in Europe for a strong deal and put further pressure on the European negotiators to negotiate such an

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[85] RICHARD E. BENEDICK, OZONE DIPLOMACY: NEW DIRECTIONS IN SAFEGUARDING THE PLANET 62 (Harvard Univ. Press 1991).

[86] Sunstein, *supra* note 69 at 13.

[87] Benedick, *supra* note 85 at 73. For information on who the chief negotiator was *see* Richard Benedick, *Science, diplomacy, and the Montreal Protocol*, THE ENCYCLOPEDIA OF EARTH (Jun. 12, 2007 3:57 PM), http://www.eoearth.org/view/article/155895/ (Information on the chief negotiator).

[88] Sunstein, *supra* note 69 at 11.

[89] Morrisette, *supra* note 62 at 811.

[90] *Id.*

[91] BENEDICK, *supra* note 85 at 71.

agreement.[92] A final reason that the European Community accepted a 50 percent cut back compromise is that the cutback was ultimately easier for their industry to achieve due to the fact that CFC substitutes in aerosols were readily available by this time.[93] Scientific developments regarding the state of the ozone layer combined with public pressure to address the issue had the effect of enlarging the European win-set. Rather than accepting simply a freeze or a no-agreement scenario, European negotiators were open to mandatory phase outs. This change in the European win-set ultimately allowed for a the parties to negotiate a strong deal in Montreal.

3. Conclusion

Today, nearly thirty years after the signing of the Montreal Protocol, it has been a resounding success. The ozone layer is regaining what it lost and risk of skin cancer has lowered significantly.[94] Successful negotiations on a strong deal occurred because the win-sets of the two main negotiating partners, the United States and the European Community, eventually aligned. For the United States, three different factors - public health concerns, industry support for a deal, and Senate preference for an agreement - combined to create a smaller win-set favoring a strong protocol. Of course, the American win-set was not so small as to allow no latitude: the United States did not prefer a no-agreement scenario and did not steadfastly stand by their original call for a ninety-five percent phase out. On the European side, an originally small win-set favoring no deal or only a freeze of CFC production at 1986 levels was eventually expanded, causing them to lose any preference for a no-agreement scenario, due to scientific advancement and public pressure. Ultimately, the United States and Europe successfully negotiated the Montreal Protocol because neither entity's Level I or II institutions preferred a no-agreement scenario and both entities had large enough win-sets to allow them latitude to negotiate successfully. Following the success of the Montreal Protocol, there were hopes that the world would reach a similar deal to address the climate change problem.[95] However, that hope quickly evaporated, due to the failure to negotiate a strong international climate agreement in Kyoto.

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[92] *Id.*

[93] James H. Maxwell & Sanford L. Weiner, *Green Consciousness or Dollar Diplomacy? The British Response to the Threat of Ozone Depletion,* 5 INT'L ENVTL. AFF. 19, 31 (1993).

[94] Associated Press, *supra* note 6.

[95] BENEDICK, *supra* note 85 at 208-210.

B. Kyoto Protocol Failure

Contrary to common perception, scientists knew of climate change long before the release of Al Gore's *An Inconvenient Truth*. Physicist John Tyndall first theorized the concept of climate change in 1864.[96] Thirty-two years later, in 1896, fellow physicist Svante Arrhenius expanded on Tyndall's research, predicting that in the future there would be warming caused by the burning of coal.[97] In 1988, ninety-two years after Arrhenius' prediction and one year after the successful Montreal Protocol negotiations, Dr. James Hansen of NASA stood before the Senate Energy and Natural Resources Committee and stated that the 130 year global warming trend was definitively attributable to human activity.[98] Four years later, in 1992, countries from all over the world negotiated and signed the UNFCCC, which called for global action on climate change.[99] Five years later, and with some maneuvering in between, many countries, including the United States, signed the Kyoto Protocol.[100]

Despite the fact that the United States signed the protocol, President Clinton never put it forward for ratification: he knew such ratification was impossible, due to the stance of the Senate.[101] President Bush ultimately withdrew the United States from Kyoto in 2001, citing the exemption of developing countries and the Kyoto Protocol's potential to harm the U.S. economy as the reasons he opposed the treaty.[102] For any international agreement to work and make meaningful emissions cuts, it needs the United States and China to ratify the deal, since these countries have the highest carbon emissions.[103] While the European Union still aims to

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[96] Steven Sherwood, Science controversies past and present, 64 PHYSICS TODAY 39, 40 (2011).

[97] *Id.*

[98] Shabecoff, *supra* note 7.

[99] UNFCCC *supra* note 8.

[100] Kyoto Protocol to the United Nations Framework Convention on Climate Change, opened for signature Mar. 16, 1998, U.N. Doc. FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 (entered into force Feb. 16, 2005) [hereinafter Kyoto Protocol].

[101] Peter Saundry, Kyoto Protocol and the United States, THE ENCYCLOPEDIA OF EARTH (Feb. 26, 2013), http://editors.eol.org/eoearth/wiki/Kyoto_Protocol_and_the_United_States.

[102] Julian Borger, Bush kills global warming treaty, THE GUARDIAN (Mar. 29, 2001, 3:28 PM) http://www.theguardian.com/environment/2001/mar/29/globalwarming.usnews.

[103] See To succeed, international climate negotiations must be tailored to US and China, CARBON BRIEF (Nov. 11, 2013) http://www.carbonbrief.org/to-succeed-international-climate-negotiations-must-be-tailored-to-us-and-china (stating that any successful international climate agreement will need the US and China to agree to it). For emissions data see Each Country's Share of CO2 Emissions, UNION OF CONCERNED SCIENTISTS http://www.ucsusa.org/global_warming/science_and_impacts/science/each-countrys-share-of-co2.html#.VhqadXpViko (last updated Nov. 18, 2014).

comply with Kyoto,[104] it has not been successful in reducing global greenhouse gas emissions due to the lack of binding cuts on China and the lack of ratification on the part of the United States.[105]

Due to the manner in which the Kyoto Protocol negotiations unfolded over the course of five years, from the UNFCCC signing to the final negotiations in 1997, the protocol makes for the perfect case study on the difficulties that still exist today in trying to find a strong international climate agreement. Applying Putnam's two-level game theory to the Kyoto Protocol negotiations reveals the multitude of hurdles that stand in the way of any international climate agreement. In order to fully understand why Kyoto did not work, it is important to begin with the background before the negotiations, namely the UNFCCC, the Berlin Mandate, and the Byrd-Hagel resolution.

1. Framing the Kyoto Protocol: The UNFCCC, the Berlin Mandate, and the Byrd-Hagel Resolution

The process for negotiating the Kyoto Protocol began with the signing of the UNFCCC in 1992 at a United Nations Conference on Environment and Development in Rio de Janeiro.[106] The United States signed the UNFCCC on June 12, 1992 and ratified it October 15, 1992.[107] The purpose of the convention was to create a framework for future international climate change negotiations.[108] The convention called for the parties to negotiate a protocol that would stabilize emissions levels of greenhouse gases at 1990 levels by the year 2000.[109] The fact that the United States ratified the UNFCCC is not significant because the convention does not mandate any binding emissions cuts on the parties.[110] So, while the United States signed and ratified the UNFCCC, win-sets and Level II institutions' preferences did not play a factor because there were

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[104] See generally Tracking progress towards Kyoto and 2020 targets in Europe, EUROPEAN ENVIRONMENT AGENCY (Nov. 7 2010), available at http://www.eea.europa.eu/publications/progress-towards-kyoto.

[105] Gelis, supra note 60 (stating that the Kyoto Protocol was flawed from the beginning, in part because the United States never ratified it and due to its lack of emissions cuts on China and India).

[106] UNFCCC, supra note 8. For location of conference see United Nations Framework Convention on Climate Change, SCIENCE DAILY (Nov. 18, 2015, 7: 42 PM) http://www.sciencedaily.com/terms/united_nations_framework_convention_on_climate_change.htm

[107] Status of Ratification of the Convention, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php (last visited Nov. 18, 2015).

[108] *See generally* UNFCCC, *supra* note 8.

[109] UNFCCC, *supra* note 8 at art. 4 (2)(b).

[110] UNFCCC, *supra* note 8.

no legal consequences for affected actors.

In 1995, three years after the signing of the convention, the parties to the convention (called the conferences of parties, or COP) met for the first time in Berlin.[111] The purpose of the COP was to begin negotiations and the procedures required to move towards the implementation of the directives laid out in the UNFCCC.[112] The outcome of the Berlin COP meeting was a document called the Berlin Mandate.[113] This mandate recognized that developing countries have a right to grow economically and that developed countries were responsible for the majority of "historical and current greenhouse gas emissions".[114] Thus, the mandate stated that when the parties come together to negotiate a final protocol, they would not impose any binding emissions cuts on developing countries.[115] This mandate reinforced the view of developing countries like China and India, who argued that the developed countries created the climate change problem, and developing countries should not have to stall their economic growth when the wealthy developed nations had benefited for years from greenhouse gas emitting technology.[116]

The Berlin Mandate did more than just eliminate the developing countries' win-sets. The mandate also had the effect of drastically shrinking the American win-set. In June of 1997 the United States Senate—in response to the Berlin Mandate—passed the Byrd-Hagel Resolution.[117] The Byrd-Hagel Resolution, which passed by a vote of 95-0, stated in no uncertain terms that the United States should not sign any agreement that required mandatory emissions cuts for the United States without also mandating emissions cuts for developing countries; in addition, the resolution stated that no mandatory emissions cuts should be accepted if such cuts would harm the United States' economy.[118] This resolution, therefore, created an extremely small win-set for the United States: its Level II institution had sent a clear message that it would not accept cuts unless developing countries also accepted cuts. Since developing countries were not going to accept cuts due to the Berlin Mandate and their own miniscule win-sets, the only way the Senate would

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[111] Conference of the Parties (COP), UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/bodies/body/6383.php (last visited Nov. 18, 2015).

[112] *Id*.

[113] *See* United Nations Framework on Climate Change, Conference of the Parties, Berlin, Ger. *The Berlin Mandate*, U.N. Doc. /CP/1/CP.1 (1995).

[114] *Id.* at art. (I)(1)(d).

[115] *Id*. at art. I(1)(d) and art. II(1)(b).

[116] Sunstein, *supra* note 4 at 21.

[117] S. Res. 98, 105th Cong. (1997).

[118] *Id.* at 1(A).

accept a treaty was if the United States was not given any mandatory emissions requirements. The Senate had made it clear that they did not mind a no-agreement scenario (and may actually have preferred it), thus severely minimizing the likelihood that the world could negotiate a successful deal at Kyoto.

2. The Kyoto Protocol Negotiations

The final negotiations over the Kyoto Protocol took place in December of 1997 and the world adopted the final protocol on December 11, 1997.[119] These final negotiations were the conclusion of a process that began with the first COP meeting in Berlin in 1995.[120] Due to the Byrd-Hagel resolution, the United States entered the final negotiations with a very small win-set. The United States' win-set would only allow them to accept an agreement that either called for equivalent emissions cuts from developing countries like China and India, or an agreement that would call for no mandatory emissions cuts for the United States. Conventional wisdom would suggest that due to the United States' small win-set, the final protocol should resemble something that would fit in this win-set. The outcome, however, was the opposite. The Kyoto Protocol called for the United States to reduce emissions by seven percent below 1990 levels and required no mandatory emissions cuts for developing nations.[121]

Unlike the Montreal Protocol, the Kyoto Protocol did not feature two negotiating parties' continuously evolving win-sets eventually meeting and therefore striking a deal. Instead, the Kyoto Protocol featured a multinational bargaining process in which many parties had small win-sets which were opposed to the negotiating constraints imposed on the United States by the Byrd-Hagel resolution. Unlike the United States—who had a small win-set favoring no heavy action thanks to the Senate—major international negotiating parties, such as the European Union (EU), had small win-sets favoring strong action on international climate change.[122]

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[119] *Making those first steps count: An Introduction to the Kyoto Protocol*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/essential_background/kyoto_protocol/items/6034.php (last visited Feb. 13, 2016).

[120] *Towards a Climate Agreement*, UNITED NATIONS, http://www.un.org/climatechange/towards-a-climate-agreement/ (last visited Feb. 13, 2016).

[121] Kyoto Protocol, *supra* note 100 at Annex B.

[122] On average European member states felt ecologically vulnerable to the effects of climate change, believed that abatement costs wouldn't be high, and that their industry was ready to capitalize on an increased demand for clean energy. These factors would mean that European member states would try to push climate change action forward. See DETLEF F. SPRINZ & MARTI WEIß, DOMESTIC POLITICS AND GLOBAL CLIMATE POLICY IN INTERNATIONAL RELATIONS AND GLOBAL CLIMATE

There are three related explanations for the outcome of the Kyoto Protocol, which seemingly ignored the win-set of one of the highest emitters and a party crucial to any hope of a successful protocol. First, the international support for a strong climate deal was too much for the United States to overcome, no matter how small their win-set was. Second, the international community had a fundamental misunderstanding about domestic politics in the United States and the meaning of the Byrd-Hagel resolution. Finally, the United States Senate would not ratify any internationally supported climate change protocol because industry opposition was too strong.

a. International Support for a Strong Climate Change Deal Overcame the United States' Win-Set

Throughout the Kyoto Protocol negotiations, there was strong international support for a deal that required heavy emissions cuts for developed countries. The G77, an intergovernmental group of developing countries, desired uniform emissions cuts by at least fifteen percent for all developed countries.[123] The EU also favored strong action and a high reduction of greenhouse gas emissions.[124] Finally, the Association of Small Island States - an association of countries most vulnerable to the effects of climate change - were pushing for deep emissions cuts by developed countries.[125] These negotiating positions demonstrate that on some level, that the international community, like the United States, also had a small win-set, albeit one favoring a strong international deal. The competing small win-sets only made it harder for the United States to negotiate an agreement favorable to the Byrd-Hagel resolution.

The consolidation and integration of the EU allowed the Europeans to match the United States' bargaining power, thus making life more difficult for the US negotiators. The EU had gained influence and bargaining power in international negotiations and politics over the years thanks to strategic delegation by member countries.[126] Because membership in the EU required accepting any treaty to which the EU was a party, the EU was able to avoid the domestic constraints of each of their member countries' Level II institutions.[127] This group model also gave the

CHANGE 67, 80 (Urs Luterbacher & Detlef F. Sprinz eds., 2001).

[123] Diana Liverman, *Conventions of climate change: constructions of danger and the dispossession of the atmosphere,* 35 J. OF HIST. GEOGRAPHY 279, 291 (2009).

[124] Elena McLean & Randall Stone, The Kyoto Protocol: Two-Level Bargaining and European Integration, 56 INT'L STUD. Q. 99, 102 (2012).

[125] Liverman, *supra* note 123.

[126] Strategic delegation refers to the idea of member countries giving up a certain amount of autonomy over domestic policy. *See* McLean, *supra* note 124, at 100-101.

[127] *Id.* at 100.

EU a stronger bargaining position than each individual country would have.[128] The EU was then able to combine their desire for a strong climate agreement with their influential bargaining position and push back against the United States' small win-set.

Because of the constraints imposed by the Byrd-Hagel resolution, and despite international support for a strong deal, the US negotiators made an effort to tailor the Kyoto Protocol to their Level II institution, the United States Senate.[129] In early 1997, the US negotiators proposed that the protocol include an evolution clause which would negotiate emissions targets for all countries, including developing countries, by 2005.[130] The negotiators believed that this proposal fit into the spirit of the Berlin Mandate because developing countries would not have to accept emissions cuts in the Kyoto Protocol itself.[131] However, the evolution clause never came to pass.[132] It faced fierce opposition from not only developing countries but also from the EU.[133]

Another attempt to satisfy the Byrd-Hagel resolution occurred in October of 1997 when President Clinton gave a speech suggesting that the United States would commit itself to 1990 emissions levels by 2008-2010.[134] This proposal did not sit well with the international community, who generally assumed that the Kyoto Protocol would require emissions cuts below the 1990 level.[135] The US negotiators also opposed any implementation of short-term emissions reduction targets, a major business and industry issue, as a way of trying to harmonize the view of the Senate and the international community.[136]

These proposals, and their rejection, show that the United States effectively had their win-set nullified in the negotiating process. The small win-sets of the other negotiating parties, particularly the EU, who were able to match the United States' bargaining power through integration and consolidation, made it near impossible for the US negotiators to leverage the United States' own small win-set and force the negotiations to go in a direction that would have satisfied Byrd-Hagel. Furthermore, a fundamental misunderstanding by the international community of the workings of domestic politics in the United States and the meaning of the

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[128] *Id.*

[129] Joanna Depledge, *Against the Grain: The United States and the Global Climate Change Regime*, 17 GLOBAL CHANGE PEACE & SECURITY 11, 15-19 (2005).

[130] *Id.* at 15.

[131] *Id.*

[132] *Id.* at 16.

[133] *Id.*

[134] *Id.*

[135] *Id.*

[136] *Id.* at 17.

Byrd-Hagel resolution only served to further undermine and nullify the effects of the United States' small win-set.

b. The European Union Did Not Understand the Byrd-Hagel Resolution

One of the features of two-level game theory is that in international negotiations, Level I negotiators are often ignorant of the Level II negotiations and institutions in other countries.[137] This ignorance was on full display throughout the course of the Kyoto Protocol negotiations. A number of European negotiators believed that the Byrd-Hagel resolution was just a bargaining tactic and that the Clinton Administration had the political experience and strength to push a deal through the Senate.[138] A few years after the conclusion of the Kyoto Protocol negotiations, one member of the German delegation stated that the consensus among European negotiators was that the Byrd-Hagel was "just another resolution" and that "Parliaments pass resolutions all the time, without governments paying attention."[139]

This skepticism about the Byrd-Hagel resolution, combined with the strong international support for an aggressive climate deal, helps to explain why the EU rejected many American proposals and ignored the American's small win-set. Furthermore, it was unlikely for the United States to get any internationally acceptable deal ratified by the Senate due to heavy industry opposition. Finally, it was unlikely for the United States to get any internationally acceptable deal ratified by the Senate due to heavy industry opposition.

c. Industry Opposition to the Kyoto Protocol was Too Strong to Overcome

While the US negotiators had many of their proposals that were friendly to the Byrd-Hagel resolution rejected, they still managed to have some Byrd-Hagel friendly proposals accepted into the final Kyoto Protocol. The United States proposed numerous "flexibility mechanisms," including multi-year targets and emissions-trading and banking.[140] The international community eventually agreed to these proposals despite some initial skepticism.[141] The US negotiators likely thought that the Senate would be more accepting of these market friendly proposals as

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[137] Putnam, *supra* note 15, at 452.

[138] Jon Hovi, Detelf Sprintz & Guri Bang, *Why the United States did not become a party to the Kyoto Protocol: German, Norwegian, and US perspectives*, 18 EUR. J. OF INT'L REL. 129, 137-38 (2010).

[139] *Id.* at 138-39.

[140] Depledge, *supra* note 129, at 16.

[141] *Id.* at 17.

opposed to a command and control type agreement which would rest all the compliance power with the government.[142] Furthermore, the negotiators somewhat managed to bring developing countries under the umbrella of the Kyoto Protocol in order to try to satisfy the demands of the Byrd-Hagel resolution.

The US negotiators tried to accomplish this inclusion of developing countries through the insertion of the Clean Development Mechanism (CDM) into the protocol.[143] The CDM began as a proposal called the Green Defense Fund (GDF) put forward by the Brazilian delegation.[144] The GDF eventually changed into the CDM due to negotiations between the US negotiators and their Brazilian counterparts.[145] The CDM allowed developed countries to exceed their emissions requirements so long as they funded projects in developing countries that reduced an equivalent amount of emissions and promoted sustainable development.[146] The US negotiators saw the CDM as a way of trying to satisfy the Byrd-Hagel resolution.[147] Ultimately, the efforts of the US negotiators to insert provisions that were potentially friendly to the Byrd-Hagel resolution were irrelevant due to strong industry opposition to any sort of deal in the United States.

As previously discussed, Putnam's two-level game theory teaches that in a representative democracy, the interests of affected industries play a strong role in deciding a country's win-set because these industries are a part of country's Level II institutions.[148] For the United States and the Kyoto Protocol, this meant that US negotiators at Kyoto not only had to worry about negotiating with other parties, but also had to keep in mind how the affected industry—which was any fossil fuel related industry—viewed the deal and what kind of action they desired.

In addition to the fossil fuel industry, car makers, corn farmers, steel mills, and coal miners also opposed the Kyoto Protocol.[149] These industries launched a very successful lobbying campaign within the United States Congress.[150] This lobbying caused the United States to pull away from the rest of the world's position on climate change and take a

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[142] *Id.*

[143] *Id.* at 16.

[144] Franck Lecocq & Philippe Ambrosi, *The Clean Development Mechanism: History, Status, and Prospects*, 1 REV. OF ENVTL. ECON. AND POL'Y 134, 134 (2007).

[145] *Id.*

[146] *Id.* at 134-35.

[147] Depledge, *supra* note 129, at 16.

[148] *Putnam supra* note 15, at 448.

[149] *Id.*

[150] *Id.*

hardline stance when it came to including developing countries.[151] Furthermore, The Global Climate Information Project, an industry coalition, launched a $13 million dollar advertising campaign with the goal of defeating any international climate treaty.[152] This intense lobbying by industry groups is what pressured the Senate into passing the Byrd-Hagel resolution.[153] It was the intense lobbying practiced by the industry that made it near impossible for the United States to negotiate a friendly deal.

3. Conclusion

Unlike the success of the Montreal Protocol, time has lessened the world's opinion of the Kyoto Protocol. The Kyoto Protocol has failed to slow or even reduce carbon emissions; they have actually increased since its signing in 1997.[154] Through a two-level game theory analysis, it is clear that the Kyoto Protocol was doomed from the start. On one end of the spectrum sat the EU, who wanted to take aggressive action on climate change, and developing countries, who believed that only developed countries should be responsible for making emissions cuts. On the other end of the spectrum sat the United States Senate, the American Level II institution, who demanded no mandatory emissions cuts unless the mandate included developing countries. Stuck in the middle was the United States' negotiating delegation and executive branch, the Level I institution.

The US negotiators could not play a typical two-level game and force other countries to agree with their small win-set. Other countries' demand for action meant that almost every negotiating party had a small win-set and the United States stood alone in its position on soft action on climate change. Ultimately, President Clinton signed the Kyoto Protocol as a merely symbolic gesture.[155] The Clinton Administration never tried to submit the Kyoto Protocol to the Senate for ratification, acknowledging that it had no chance of passing due to the lack of mandatory emissions cuts for developing countries.[156] President Bush ultimately pulled the United States out of the treaty in 2001.[157] While the Kyoto Protocol failed

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[151] *Id.*

[152] *Id.*

[153] *Id.*

[154] Duncan Clark, Has the Kyoto Protocol Made Any Difference to Carbon Emissions?, THE GUARDIAN (Nov. 26, 2012), http://www.theguardian.com/environment/blog/2012/nov/26/kyoto-protocol-carbon-emissions.

[155] Laurie Goering, Clinton Signs Pact On Global Warming, THE CHICAGO TRIBUNE (Nov. 13, 1998), http://articles.chicagotribune.com/1998-11-13/news/9811130120_1_greenhouse-gas-emissions-greenhouse-gases-global-warming

[156] Saundry, *supra* note 101..

[157] *Id.*

to achieve any significant climate action, its failure serves to inform the world about the futility of trying to negotiate similar top-down international climate agreements.

IV. BEYON KYOTO: WHY A STRONG CLIMATE AGREEMENT NEVER MATERIALIZED

There have been eighteen different COPs in the years between the signing of the Kyoto Protocol in 1997 and the signing of the Paris Agreement in December of 2015.[158] None of the eighteen COPs managed to produce any form of strong international agreement. The main reason that no aggressive deal has materialized is because of the nature of the two-level game. While almost twenty years have passed since the signing of the Kyoto Protocol, many of the factors have not changed. In the United States, Level II opposition and industry opposition to any aggressive international deal remains very strong. This opposition means that the United States still has too small of a win-set to make any sort of aggressive international agreement.

Fossil fuel companies in the United States still spend an inordinate amount of money funding climate change denial studies.[159] Industry opposition to climate change action spent almost $140 dollars funding climate change denial efforts between 2003 and 2010.[160] ExxonMobil spent large amounts of money in 2014 and 2015 lobbying against climate change action.[161] Recent congressional resolutions about climate change evidence the effects of this intensive lobbying by the industry. In January of 2015, the United States Senate voted to agree that climate change was real but that the Senate denied any manmade involvement in it.[162] Furthermore, at the end of 2015, the Senate and House passed a joint resolution disapproving of the Clean Power Plan, the method by which the

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[158] *Meetings*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE http://unfccc.int/meetings/items/6240.php. (last visited Mar. 16, 2016)

[159] Peter C. Frumhoff & Naomi Oreskes, Fossil fuel firms are still bankrolling climate denial lobby groups THE GUARDIAN (Mar. 25, 2015) http://www.theguardian.com/environment/2015/mar/25/fossil-fuel-firms-are-still-bankrolling-climate-denial-lobby-groups

[160] Fischer, *supra* note 57.

[161] Suzanne Goldenberg, *ExxonMobil gave millions to climate-denying lawmakers despite pledge*, THE GUARDIAN (July 15, 2015), http://www.theguardian.com/environment/2015/jul/15/exxon-mobil-gave-millions-climate-denying-lawmakers.

[162] Suzanne Goldenberg, US Senate refuses to accept humanity's role in global climate change, again, THE GUARDIAN (Jan. 22, 2015), http://www.theguardian.com/environment/2015/jan/22/us-senate-man-climate-change-global-warming-hoax.

United States will comply with the Paris Agreement.[163] Industry lobbying helps to create Level II opposition to climate change which prevents any aggressive international action, as evidenced by negotiations that took place after the signing of the Kyoto Protocol.

Attempts to negotiate an aggressive international climate deal following the signing of the Kyoto Protocol serves as further proof that any such deal is near impossible to achieve. In 2000, at the COP six in Moscow, there was an attempt to negotiate further agreements and operational matters under the context of the Kyoto Protocol.[164] However, these talks fell apart due to differences between the United States and Europe on many different matters.[165] In 2009, there was another COP meeting, this one ending with an agreement called the Copenhagen Accord.[166] On its surface, the agreement looked hopeful because it called for the United States, Brazil, China, and India to make emissions cuts.[167] However, in reality the accord was not legally binding: instead it was a political framework.[168] Furthermore, the accord called for legislative backing for the United Sates to take climate action, which did not happen.[169] Finally, the talks in Lima in 2014 failed to produce any sort of climate agreement.[170] The failed negotiations in Moscow, Copenhagen, and Lima are only further evidence of the impossibility associated with attempting to negotiate a climate change agreement.

The nature of a two-level game means that it is unlikely that there will ever be an aggressive legally binding international climate agreement. Even if the Democratic Party were to win a majority of Senate seats in the 2016 election, it is still unlikely that any climate treaty could get the sixty-

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[163] S.J. Res. 24, 114th Cong. (2015).

[164] COP 6: US-EU Differences Blamed for Failure of Climate Change Negotiations, INTERNATIONAL CENTRE FOR TRADE AND SUSTAINABLE DEVELOPMENT (Nov. 28, 2000), http://www.ictsd.org/bridges-news/bridges/news/cop-6-us-eu-differences-blamed-for-failure-of-climate-change-negotiations.

[165] *Id.*

[166] David Biello, U.S. Commits to Greenhouse Gas Cuts under Copenhagen Climate Accord, THE SCIENTIFIC AMERICAN (Jan. 29, 2010), http://www.scientificamerican.com/article/us-commits-to-greenhouse-gas-cuts-under-copenhagen-accord/.

[167] *Id.*

[168] Alden Meyer, The Copenhagen Accord: Not Everything We Wanted, But Something to Build On, UNION OF CONCERNED SCIENTISTS, http://www.ucsusa.org/global_warming/solutions/reduce-emissions/the-copenhagen-accord.html#.Vur455wrLIU. (last visited Mar. 17, 2016).

[169] Biello, *supra* note 166.

[170] Geoffrey Lean, How the Lima climate change talks failed, THE TELEGRAPH (Dec. 15, 2014), http://www.telegraph.co.uk/news/earth/11293478/How-the-Lima-climate-change-talks-failed.html.

seven votes needed for ratification. Therefore, even if the world successfully negotiated an aggressive legally binding international climate treaty, it would be very unlikely that the United States would ratify it, leading to the deal having the same issues as the Kyoto Protocol. Furthermore, while developing countries, like China and India, have begun to show some willingness to make emission cuts, it is unlikely that they would agree to mandatory emissions cuts in any treaty to which the United States was not a party. For these reasons, the fight against climate change has switched to a bottom-up approach, as evidenced by subnational initiatives and the pledge and review nature of the Paris Agreement.

V. THE BOTTOM-UP WORLD: HOW PLEDGE-AND-REVIEW AND SUBNATIONAL INITIATIVES ARE LEADING THE FIGHT AGAINST CLIMATE CHANGE

In the world of climate change, a top-down approach refers to a system where countries agree to international forms of organization and compliance, each party is expected to follow the agreement exactly, and a body that represents the member states of the agreement governs the agreement.[171] The Kyoto Protocol was an attempt at a top-down agreement because it set targets that its member countries had to meet and the Conference of Member Parties to the Kyoto Protocol governed it.[172] Conversely, a bottom-up approach refers to an approach without a singular global form of compliance.[173] A bottom-up approach attempts to implement policy at a lower level, whether at the city level, state level, or national level.[174] The national level approach to climate change refers to a single country's climate change mitigation plan, that is, its emissions cuts goals, and its methods for achieving those goals.[175] One country's emissions cuts goals and methods would not be binding on any other country because every country would choose its own measures based on what works best for them.[176] Because of the failings of the Kyoto Protocol

[171] Leal-Arcas, *supra* note 16.

[172] see Kyoto Protocol supra, note 118 at Appendix B (discussing emission cuts); see Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/bodies/body/6397.php. (last visited, Mar. 16, 2016) (discussing governing structure).

[173] Rayner, *supra* note 16.

[174] *Id.*

[175] *Id.*

[176] *Id.*

and other top-down approaches to climate change, the world has begun to shift to the bottom-up formula. The pledge and review nature of the Paris Agreement and subnational initiatives are evidence of this shift.

A. The Paris Agreement

Countries signed and agreed to the Paris Agreement in December 2015, thus signaling a major step in the fight against climate change.[177] While environmental groups have complained that the Paris Agreement does not do enough to fight climate change, it is still a major achievement because it is a large scale international climate agreement.[178] Furthermore, unlike the Kyoto Protocol, under the Paris Agreement, developing countries like China and India have pledged to make emissions cuts.[179] The Paris Agreement was able to achieve these things because it was not subject to the constraints of a two-level game.

The Paris Agreement's switch to a bottom-up method, as opposed to a top-down method, is a prime example for how the constraints of a two-level game has changed the world of international climate deals. As previously demonstrated, it is impossible to negotiate a traditional top-down climate agreement due to the opposition from the United States' Level II institution: the Senate. Large lobbying contributions from fossil fuel industries has helped the Senate maintain its hardline stance against climate deals. Therefore, as the Paris Agreement demonstrates, any successful climate agreement must avoid the need for ratification by the U.S. Senate.

By working within a bottom-up model, rather than a top-down model, the Paris Agreement was able to avoid having to insert measures that then would have required Senate ratification. This is key as it shows the Paris Agreement's intent to side-step the constraints of a level-two game in order to get a deal done. It also displays that this bottom-up method is the only way to get such a deal done. This section will first examine how the Paris Agreement avoided the need for ratification, before moving on to examine how the U.S. and other countries are planning on complying with the agreement.

1. The Paris Agreement: Avoiding Ratification

A major feature of the Paris Agreement is its pledge and review

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[177] Gosden, *supra* note 17.

[178] *Id.*

[179] Justin Worland, What to Know About the Historic 'Paris Agreement' on Climate Change, TIME MAGAZINE (Dec. 12, 2015), http://time.com/4146764/paris-agreement-climate-cop-21/.

system. Under this system, each country submits their own plan to cut emissions.[180] Each country would review their plan every five years and then adopt new pledges based on the situation at the time.[181] The pledge and review provisions of the Paris Agreement allow it to avoid the Senate by selectively applying legally binding language.[182] Under the Paris Agreement, a country's pledge to reduce emissions cuts are not legally binding.[183] The review aspect of the agreement, however, is legally enforceable.[184] This scheme means that the Paris Agreement avoids the Senate ratification process, and therefore avoids the constraints of a two-level game.[185]

While the lack of legally binding language in the pledge section can lead to some fear that countries will not comply with their pledges, social pressure and the need to maintain good faith in international bargaining will help force compliance.[186] For the United States, the lack of legally binding language means that the Paris Agreement is an executive agreement and therefore is not subject to Senate ratification;[187] however, this could pose a problem in the future, since executive agreements are not binding on future presidents.[188] While some have argued that the Paris Agreement is in fact a treaty that requires Senate ratification,[189] it is an executive agreement because it does not alter American sovereignty, and

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[180] David Victor, Why Paris Worked: A Different Approach to Climate Diplomacy, YALE ENVIRONMENT 360 (Dec. 15, 2015), http://e360.yale.edu/feature/why_paris_worked_a_different_approach_to_climate_diplomacy/2940/.

[181] *Id*.

[182] Suzanne Goldenberg, How US negotiators ensured landmark Paris climate deal was Republican-proof, THE GUARDIAN (Dec. 13, 2015), http://www.theguardian.com/us-news/2015/dec/13/climate-change-paris-deal-cop21-obama-administration-congress-republicans-environment.

[183] *Id*.

[184] *Id*.

[185] *Id*.

[186] Samantha Page, No, The Paris Climate Agreement Isn't Binding. Here's Why That Doesn't Matter, THINK PROGRESS (Dec. 14, 2015), http://thinkprogress.org/climate/2015/12/14/3731715/paris-agreement-is-an-actual-agreement/.

[187] Ashley Alman & Daniel Marans, Barack Obama Praises Paris Climate Change Agreement, THE HUFFINGTON POST (Dec. 12, 2015, 5:36 PM), http://www.huffingtonpost.com/entry/obama-paris-climate-agreement_us_566c8cf1e4b0fccee16ed503.

[188] John Bolton & John Yoo, Paris climate conference: Without Congress' support, Obama's deal making powers are limited, LOS ANGELES TIMES (Dec. 1, 2015, 5:00 AM), http://www.latimes.com/opinion/op-ed/la-oe-boltonyoo-paris-climate-deal-not-binding-20151201-story.html.

[189] Marlo Lewis Jr., The Paris Climate Agreement Is a Treaty Requiring Senate Review, COMPETITIVE ENTERPRISE INSTITUTE (February 24, 2016), https://cei.org/content/paris-climate-agreement-treaty-requiring-senate-review.

it does not require the United States to pass legislation to comply with the agreement.[190] Furthermore, the Paris Agreement complements existing United States law found in the Clean Air Act[191] and *Massachusetts v. EPA*,[192] and it elaborates on commitments made in the UNFCCC which the Senate ratified.[193]

This drafting of the Paris Agreement shows an acknowledgement of the realities of the constraints of the two-level game. While most countries probably would favor a top-down binding model for climate change, this bottom-up method is the only way to avoid the need for ratification by the U.S. Senate. If the world wants to get climate deals done, it must switch to a bottom up method in order to escape the two-level game. As it currently stands, the United States plans on complying with the Paris Agreement through the Clean Power Plan.

2. The Paris Agreement: Complying With the Agreement

President Obama announced the Clean Power Plan on August 3, 2015.[194] The plan aims to reduce carbon pollution from power plants.[195] The plan's final goal is to cut carbon pollution from the power sector by thirty percent from 2005 levels.[196] The EPA estimates that the Clean Power Plan will have climate and health benefits for the country worth between $50 and $90 billion dollars.[197] While the recent Supreme Court stay threw the future of the plan into doubt,[198] there is a higher chance that it will

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[190] Bolton, *supra* note 188. (discussing the Iran Nuclear deal, the authors note that it is an executive agreement because it does not affect United States sovereignty or require any new legislation).

[191] Clean Air Act, Pub. L. No. 88-206, 77 Stat. 392 (1963).

[192] Massachusetts v. Environmental Protection Agency, 549 U.S. 497 (2007) (holding that the Clean Air Act authorizes the EPA to declare that carbon dioxide is a pollutant and regulate it under the act).

[193] Daniel Bodansky, Legal Options For U.S. Acceptance Of A New Climate Change Agreement 14, CENTER FOR CLIMATE AND ENERGY SOLUTIONS (May 2015), available at http://www.c2es.org/docUploads/legal-options-us-acceptance-new-climate-change-agreement.pdf.

[194] *Clean Power Plan for Existing Power Plants* ENVIRONMENTAL PROTECTION AGENCY (last visited Feb. 26, 2016). http://www.epa.gov/cleanpowerplan/clean-power-plan-existing-power-plants.

[195] *Clean Power Plan for Existing Power Plants*, ENVIRONMENTAL PROTECTION AGENCY, http://www.epa.gov/cleanpowerplan /clean-power-plan-existing-power-plants (last visited Feb. 26, 2016).

[196] *Id.*

[197] *Id.*

[198] Fiona Harvey & Suzanne Goldenberg, *US clean power plan setback 'will not affect Paris climate change deal'*, THE GUARDIAN (Feb. 10, 2016), http://www.theguardian.com/environment/2016/feb/10/us-clean-power-plan-setback-will-not-affect-paris-climate-change-deal.

survive legal challenges with the passing of Justice Scalia.[199] If the Senate approves President Obama Supreme Court nomination to fill the vacancy, it will tilt the balance of the court in the plan's favor.[200] If the plan makes it to the Supreme Court before the President appoints a new justice, a four-four ruling would likely come to pass.[201] This ruling would leave the lower court's ruling in place, which is likely to be in favor of the plan.[202] If President Obama's successor gets to appoint the new justice and they are a Democrat, then again the Supreme Court will tilt in the plan's favor.[203] The only outcome that would likely kill the plan is if a Republican administration succeeds President Obama and the new administration appoints a new conservative justice.[204] However, given that three out of the four scenarios uphold the Clean Power Plan, it is likely to survive a legal challenge. In addition to the United States taking steps to cut emissions under the Paris Agreement, developing countries such as China and India are also pledging to reduce emissions.[205]

Getting developing countries on board, especially China and India, is an important step in the fight against climate change because these two countries are currently first and fourth in emissions respectively.[206] Per the terms of the Paris Agreement, both China and India submitted their Intended Nationally Determined Contribution (INDC), more commonly known as their emission reduction pledges.[207] Both countries' plans aim to tackle their current emission levels.

China's climate plan features three main emission-related targets and goals. The first goal, is to peak carbon-dioxide emissions by the year 2030.[208] The next target is to lower carbon-dioxide emissions from 2005 levels per unit of GDP by sixty to sixty-five percent. [209] In order to meet

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[199] Richard Martin, *Scalia's Death Boosts Chances for Obama's Clean Power Plan,* MIT TECHNOLOGY REVIEW (Feb, 16, 2016), https://www.technologyreview.com/s/600816/scalias-death-boosts-chances-for-obamas-clean-power-plan/.

[200] *Id*.

[201] *Id*.

[202] *Id*.

[203] *Id*.

[204] *Id*.

[205] Worland, *supra* note 213.

[206] Mengpin Ge, Johannes Friedrich & Thomas Damassa, *6 Graphs Explain the World's Top 10 Emitters*, WORLD RESOURCES INSTITUTE (Nov. 25, 2014). http://www.wri.org/blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters.

[207] *INDCs As Communicated By Parties,* UNITED NATIONS FRAMEWORK ON CLIMATE CHANGE CONVENTION (last visited Feb. 26, 2016 12:49 PM) http://www4.unfccc.int/submissions/INDC/Submission%20Pages/submissions.aspx.

[208] *Id*.

[209] *Inside China,* THE CLIMATE GROUP (October 2015),

its goal, China must reduce its carbon intensity between three point six to four point one percent every year.[210] Furthermore, China hopes to increase the presence of non-fossil fuels in its primary energy consumption to about 20% by 2030.[211] China's climate plan has outlined five different implementation/emission control methods to meet their ambitious goals. The first way is to both control coal emissions and subsequently to create targets to increase solar, wind, and natural gas capacities.[212] Another method is to control the emissions of the iron, steel, and chemical industries.[213] China also hopes to promote the growth of the service industry and other low-emissions industries.[214] The final set of emissions that China hopes to control is emissions from buildings and transport.[215] Finally, China also has a plan to implement a cap and trade system to help comply with their pledge.[216]

India's pledge to reduce emissions relies on a transition to clean energy and an increase in forest cover.[217] India committed itself to reducing its emissions by thirty three to thirty five percent below 2005 levels by 2030.[218] India aims to install at least two hundred gigawatts of renewable power capacity by 2030.[219] This goal is building on a previous promise of one hundred seventy five gigawatts by 2022.[220] Furthermore, India aims to create a carbon sink through additional forest cover.[221] The sink would be able to absorb two point five to three billion tons of carbon dioxide.[222] While India has not been clear on how it would implement its forest plan beyond measures already in place, a success here would go a long way toward reducing emissions.[223] These national pledges to reduce emissions as part of the Paris Agreement are a very important feature of the bottom-up world. Another important feature is subnational initiatives

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http://www.theclimategroup.org/_assets/files/China-Insight-briefing.pdf

[210] *Id.*

[211] *Id.*

[212] *A Closer Look at China's New Climate Plan (INDC),* THE WORLD RESOURCES INSTITUTE (July 2, 2015), http://www.wri.org/blog/2015/07/closer-look-chinas-new-climate-plan-indc

[213] *Id.*

[214] *Id.*

[215] *Id.*

[216] *China's ambitious plan to limit carbon emissions, explained,* VOX (September 25, 2015) http://www.vox.com/2015/9/25/9399055/china-climate-cap-trade.

[217] Apurba Mitra et. al., *5 Key Takeaways from India's New Climate Plan (INDC),* WORLD RESOURCES INSTITUTE (Oct. 02, 2015). http://www.wri.org/blog/2015/10/5-key-takeaways-india%E2%80%99s-new-climate-plan-indc.

[218] *Id.*

[219] *Id.*

[220] *Id.*

[221] *Id.*

[222] *Id. c*

[223] *Id.*

to fight climate change.

B. Subnational Initiatives to Fight Climate Change: Acre, Brazil and California

Subnational initiatives to fight climate change are another important feature of the new bottom-up world.[224] Subnational initiatives refer to climate change initiatives either on a city level, community level, or state level. This section will examine two states from different countries who are making great strides in fighting against climate change. These states are Acre (Brazil) and California.

Acre is the westernmost state in Brazil and covers the southwest portion of the forest zone of the Amazon River basin.[225] Rainforests cover almost ninety percent of the state, making it an important location in the fight against climate change.[226] Acre managed to reduce deforestation by seventy percent between 2003 and 2008.[227] Furthermore, between 1998 and 2009, Acre lost less than four percent of their forest at a time when neighboring Amazon states were losing between four point seven and eleven point eight percent.[228] Acre achieved a reduction in deforestation by instituting a forest policy that called for responsible forest management.[229]

One of the biggest forest management program is called the State Environmental Service Incentive System (SISA), which enhances ecosystem management incentives.[230] SISA helps to forge private-public partnerships and incentivizes the protection of forests in Acre.[231] SISA was built off of the back of more than a decade of "sustainable forest-based development policies."[232] SISA establishes incentives for various

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[224] Leal-Arcas, *supra* note 204.

[225] *Acre*, THE ENCYCLOPEDIA BRITANNICA (last visited Feb. 26, 2016 1:15 PM). http://www.britannica.com/place/Acre-state-Brazil.

[226] Kate Evans, *SPECIAL REPORT: How a remote Amazonian state is leading the way in climate change policy* CENTER FOR INTERNATIONAL FORESTRY RESEARCH (Nov. 4, 2013). http://blog.cifor.org/17275/special-report-how-a-remote-amazonian-state-is-leading-the-way-in-climate-change-policy?fnl=en.

[227] *Acre, Brazil: Subnational Leader in REDD+* CLIMATE FOCUS (May 2013). http://www.climatefocus.com/sites/default/files/acre_brazil.pdf/.

[228] *Id.*

[229] *Id.*

[230] *Id.*

[231] *Id.*

[232] Amy E Duchelle, et. al, *Acre's State System of Incentives for Environmental Services (SISA), Brazil*, CIFOR (last visited Oct 14, 2016). *Available at http://www.cifor.org/redd-case-book/case-reports/brazil/acres-state-system-incentives-environmental-services-sisa-brazil/.*

"environmental services".[233] SISA has many components, the most important of which might be ISA-Carbon.[234]

ISA-Carbon—a program which falls under the umbrella of SISA—seeks to achieve a reduction in emissions by reducing and stopping deforestation and forest degradation.[235] Initially the ISA-Carbon program was aimed at vulnerable areas in Acre, however the program has since been expanded to cover the entire state.[236] However, ISA-Carbon also includes sub-programs which focus on themes such as indigenous land or cattle ranches, or on geographic areas.[237] The goal of ISA-Carbon is to intervene in these areas, and through incentives encourage land-owners and others in the area to maintain current levels of emission reductions and attempt to improve them through reduced deforestation.[238] ISA-Carbon is funded both from domestic funds and programs and from international initiatives.[239] According to proposal from the State of Acre—as part of the Under 2 MOU—ISA-Carbon has played an important role in reducing deforestation in the state.[240] Furthermore, ISA-Carbon's emission reductions are checked every five years.[241]

These initiatives and their success in Acre are important, as Acre continued to fight climate change even when international action stagnated. Subnational programs such as this can serve as a model for future states and countries as they look to implement their own climate change policies.

Acre is not the only state to take the climate change fight head on: California has also aimed to curb its emissions even absent national action. California is the second largest greenhouse gas emitter in the United States, emitting 353 million metric tons of carbon dioxide a year.[242] California attempted to reduce its emissions by passing a cap and trade bill

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[233] *Acre*, GOVERNOR'S CLIMATE & FOREST TASK FORCE (last visited October 14, 2016). *Available at* http://www.gcftaskforce.org/documents/Acre_brochure_cop17.pdf.

[234] World Wildlife Fund, *Environmental Service Incentive System In The State of Acre, Brazil* 28, WWF (2013). *Available at* http://awsassets.panda.org/downloads/acre_brazil_sisa_report__english_10_13.pdf.

[235] *Id.*

[236] *Id.* at 30.

[237] *Id.* at 31.

[238] *Id.* at 31.

[239] *Id.* at 32.

[240] *Acre State Carbon Emission Reduction Proposal Until 2030* 6, GOVERNMENT OF ACRE (last visited Oct. 14, 2016). *Available at* http://under2mou.org/wp-content/uploads/2015/05/Acre-appendix-English.pdf.

[241] *Id.*

[242] Bobby Magill, *Texas, California Lead Nation in Carbon Emissions* CLIMATE CENTRAL (Oct. 29, 2015). http://www.climatecentral.org/news/carbon-emissions-spike-in-some-states-19615.

long before the creation of Clean Power Plan by the Obama Administration.[243] Due to an executive order by Governor Jerry Brown, California's cap and trade program aims to reduce the state's emissions to forty percent below 1990 levels by 2030.[244] Some have called California's cap and trade program the most comprehensive in the nation:[245] it regulates electricity generation and large stationary energy sources such as oil refineries, among others.[246] So far, it seems that the program has been a success, as emissions in the state have fallen since its implementation in 2013.[247] In addition, the cap and trade program has not harmed the state's economy in any visible way.[248] Like Acre, California is slowly becoming an example for other states and countries as they look for model cap and trade programs to help reduce emissions.[249] Subnational success stories, like California and Acre, in the fight against climate change provide a blueprint for others to take action and are therefore an important feature of the switch to a bottom-up world.

VI. CONCLUSION

Climate change is a pressing issue on which the world must take action. The longer that response takes, the worse the negative effects will be. Warmer temperatures will mean rising ocean levels and increased severity in storms. It will mean a greater displacement of people and a refugee crisis unlike any seen before in history. This does not have to be the way forward, however. If the countries of the world begin to reduce emissions, they will be taking the critical steps needed to mitigate the fallout from climate change. But the world cannot take action in a traditional sense - the constraints of a two-level game will not allow it. The failure of the Kyoto Protocol, compared to the success of the earlier

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[243] *California Cap And Trade*, CENTER FOR CLIMATE AND ENERGY SOLUTIONS (last visited Feb. 26, 2016 1:45PM). http://www.c2es.org/us-states-regions/key-legislation/california-cap-trade.

[244] Chris Megerian & Michael Finnegan, *California's greenhouse gas emission targets are getting tougher* LOS ANGELES TIMES (Apr. 29, 2015). http://www.latimes.com/local/political/la-me-pc-jerry-brown-orders-emission-targets-for-climate-change-20150429-story.html.

[245] Jason Dearen, *California 'Cap-And-Trade' Plan Poised To Be Finalized (VIDEO)* THE HUFFINGTON POST (Oct. 20, 2011). http://www.huffingtonpost.com/2011/10/20/california-cap-and-trade_n_1022314.html.

[246] *Carbon Market California* ENVIRONMENTAL DEFENSE FUND (last visited Feb. 26, 2016). http://www.edf.org/sites/default/files/content/ca-cap-and-trade_1yr_22_web.pdf.

[247] Michael Hiltzik, *Emissions cap-and-trade program is working well in California* Los Angeles Times (Jun. 12, 2015). http://www.latimes.com/business/hiltzik/la-fi-hiltzik-20150613-column.html.

[248] *Id.*

[249] *Id.*

Montreal Protocol, demonstrates these constraints. While political leaders and international negotiators may wish to take action, the political realities of the United States will not allow such action. The United States Senate creates too small of a win-set for the United States executive branch to work with internationally. For any treaty to pass the Senate, it must be too weak to make any real difference to the climate change fight.

It is for these reasons that the world is switching to a bottom-up approach. The Paris Agreement is perhaps the largest indicator of this switch. The pledge and review method employed by the Paris Agreement allows each country to determine what it can do to reduce emissions and then improve those targets every five years. More importantly, the nature of the Paris Agreement allows the United States to avoid the Senate altogether, thus escaping from the constraints of a two-level game. Subnational initiatives to fight climate change are also becoming more and more prevalent and important as time goes on. These initiatives allow states to take quick decisive action while nations drag their feet, and they provide lessons on how to implement successful climate change policies.

Mahatma Gandhi once said, "Earth provides enough to satisfy every man's needs but not every man's greed." This quote has never been more relevant than today. As the world moves forward in the bottom-up model, each state and nation must keep Gandhi's lesson in mind. While the bottom-up model is not the ideal approach to fighting climate change, it is a workable approach. So long as nations and policy makers are cognizant not only of the needs and wants of their countrymen but the needs of the world as a whole, there can be success in the fight against climate change.