Understanding the problem of relative gains in international climate change negotiations: Can realism help explain the failure of the international climate regime?

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Abstract:

One of the key challenges facing international climate change cooperation has been the reluctance of states to accept the asymmetrical distribution of emission reductions and financial burdens. In turn international climate change treaties have a poor record with both the Kyoto Protocol and Paris Agreement being met with international reluctance, non-compliance, and withdrawal. While many factors can explain the lack of international success on climate change, this dissertation argues that the costs of climate change mitigation directly trigger relative gains concerns that go unanswered in most international climate change treaties. By using the case studies of the Montreal Protocol, Kyoto Protocol and the Paris Climate Agreement, this paper assesses how the problem of relative gains is addresses and mitigated in each individual treaty. It also tests if international institutions can overcome economic and security concerns endemic to the international system. It finds that the international climate regime complex has been unable to address the relative gains problems related to the international redistribution of wealth and emissions. It further finds that these problems are likely to increase as the world moves away from an international system with a clear hegemonic power, towards an international system with more direct competition.

Contents:

List of Abbreviations:

CC- Climate Change

CBDRRC – Common but Differentiated Responsibilities and Respective Capabilities

CDM – Clean Development Mechanism

CFCs – Chlorofluorocarbons

CO2 – Carbon dioxide

EPA – Environmental Protection Agency

IEL – International Environmental Law

GHG - Greenhouse gasses

GW- Global Warming

IPCC – Intergovernmental Panel on Climate Change

K.P. – Kyoto Protocol

MEA – Multilateral Environmental Agreement

NDC – Nationally Determined Contributions

PCA – Paris Climate Agreement

U.N.- United Nations

UNEP- United Nations Environment Program

UNFCCC – United Nations Framework Convention on Climate Change

Introduction:

Climate change has become one of the defining political issues of the 21st Century, with 2019 seeing global protests and strikes in favour of more international action.[1] Despite the increase in national and international interest in climate change, international climate cooperation continues to produce mixed results. This cooperation includes a myriad of bilateral and multilateral agreements signed on a regional level, and the truly international conventions, agreements and protocols negotiated through the different organs of the U.N, broadly defined as the international climate regime complex.[2] Although limited success has been achieved on a regional level and in the mitigation of key Greenhouse gases (GHG) such as Chlorofluorocarbons, international emissions are still increasing beyond a sustainable level.[3] In addition to this global increase in emissions, the history of U.N sponsored international climate agreements is one of compromise, non-ratification, non-compliance, and withdrawal. Most recently seen in the Trump administration's decision to withdraw from the Paris Climate Agreement (PCA) from November 2020.[4] As 2020 also marks one of the key target years in the Nationally Determined Contributions (NDCs) admitted by the signatory parties to the PCA. It seems fitting to analyse the success and failure of the international climate regime. The problem of creating and maintaining an international response to climate change has received a lot of scholarly interest. However, most of the debate surrounding the climate regime has been dedicated to the institutional structures of the U.N and how cooperation can

[1] Michael Schellenberger, *Apocalypse Never: Why Environmental Alarmism Hurts Us All,* (Harper Collins Publishers: New York, 2020).
[2] Robert Keohane and David G. Victor, 'The Regime Complex for Climate Change', *Perspective on Politics,* Vol.9, 1, (2011).
[3] Hannah Ritchie and Max Roser, 'CO2 and Greenhouse Gas Emissions', *Our World in Data,* (2017). Last accessed: 30.07.2020. https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions#citation.
[4] U.S State Department, 'On the U.S withdrawal from the Paris Agreement', (2019). Last accessed: 30.07.2020. https://www.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement/.

be improved through increased monitoring and better emission targets as can be seen in the work of Robert Keohane and David G. Victor.[5] This emphasis on cooperation is mainly done to achieve a compromise between developing and developed nations on the issue of emission reductions. As a result of this bargaining, international negotiations represent ample material to investigate the motivations of states in the international political order.

Hypothesis:

It is my hypothesis that relative gains act as the primary motivating factor in international negotiations and that it can help explain the historical failure of the international climate regime. I will argue that relative gains have remained a fundamental structural issue in international climate change negotiation, since the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. Key factors in this agreement, namely the distribution of funds from developed to developing nations, as well as the unequal requirement for the reduction of emissions between the two directly triggers relative gains concerns. As this concept of common but differentiated responsibilities and respective capabilities (CBDRRC), was created in the wake of the Cold War, it represents an outdated representation of emissions, wealth, and power. I hypothesise that this structural issue causes a fundamental relative gains concern overlooked in most academic literature on climate change.

Relative gains theory indicate that states will be less likely to sign, ratify and abide by agreements as their geopolitical situation becomes less secure. In other words, relative gains concerns will have a stronger impact on the success of climate treaties in an international system without a clear hegemonic power. As a result, it offers an interesting lens through which to analyse the past and present international climate regime.

Methodology:

I will begin by outlining the academic framework for my thesis. This will be done through a review of the academic literature for both the liberal and realist approach to international relations and their respective approach to climate change negotiations. I

[5] Keohane and Victor, 'The Regime Complex for Climate Change'.

will then review the historical success of the international climate regime and why it deserves attention.

To test the impact of relative gains, I will be utilising a qualitative analysis based on three different, yet comparable case studies, the Montreal Protocol signed in 1987, the Kyoto Protocol signed in 1997 and the Paris Agreement signed in 2015.[6] A qualitative analysis of the language in these agreements will test whether relative gains play an important role in international climate change. The counter argument that international institutions can mitigate relative gains can be tested by locating the specific factors liberal academics argue lower relative gains. Chapter one will test if the creation of norms, laws, and an international moral framework lowers distrust and relative gains concerns. Chapter two will test if the economic costs of climate change mitigation are less than the cost of climate change. In the final chapter I will test if the security threat of climate change can overrule temporary relative gains concerns.

Most international treaties are subject to several amendments and alterations and often build on previous conventions. These three agreements have been chosen due to their relevance in the academic literature as well as their international scope.

I will complement the qualitative study with quantitative analysis on the correlation between the treaties and the emissions of the United States and China. These two nations have been picked because they remain the world's biggest emitters of greenhouse gasses (GHGs). The two nations have also been historically opposed to international climate agreements, seen in America's withdrawal from the Kyoto Protocol and the Paris Agreement and China's reluctance to accept legally binding controls on emissions. Finally, as both nations have seen their geopolitical role change drastically since 1987, they offer a good case study to test the impact of unipolarity on relative gains

Literature Review:

The global nature of climate change and the increasing need for mitigation through international cooperation has drawn a lot of interest from scholars. Most of the literature has focussed on creating a common field of climate science that is aimed at creating shared norms and ideas surrounding the impact of climate change. This

emphasis on cooperation has mainly made climate change the interest of liberal and neo-liberal academics. The most active scholars within this field have been Robert Keohane and Robert Axelrod. These scholars have written extensively on international cooperation, mainly using game theory to explain the actions of states in the international order.[7] As a result, they accept that states in an anarchic structure have incentives to cheat other nations, as seen in games like the prisoner's dilemma. However, they argue that as states continually interact with each other on the international stage, they have more incentives to cooperate as this can provide them with greater absolute gains. Increased interaction can also increase the information available between partners, create shared norms and allow for greater ease of cooperation. Furthermore, their theory is mainly characterised by the idea that international institutions can foster cooperation by allowing for a greater transfer of information and through the independent monitoring of compliance. This theory implies that international organisations have a direct impact on the policy of nations and that international organisations have some agency themselves.

As climate change constitutes a global existential threat, it should, according to neo-liberal theory, provide ample grounds for inter-state cooperation. Scholars like Keohane and Victor have applied this neo-liberal framework to climate change mainly through the international legal framework defined as the climate regime complex.[8] Through their work, they find that norms created through the sharing of information and international cooperation have a correlation to effective climate change mitigation.[9] However, their work is not free from criticism. Their application of game theory has been questioned by liberal scholars like Kathryn Harrison and Lisa McIntosh Sundstrom for not correctly accounting for the domestic implications of international negotiations.[10] Including the domestic factors that influence international climate change cooperation presents climate change as a two-level game, domestic and international. The importance of domestic factors has also been raised by other liberal academics like Elena V. McLean and Randall W. Stone.[11] There is also a large

[7] Robert Axelrod, 'The Emergence of Cooperation among Egoists', *The American Political Science Review,* Vol.75, 2, (1981) and Robert Axelrod and Robert O. Keohane, 'Achieving Cooperation under Anarchy: Strategies and Institutions', *World Politics,* Vol. 38, 1, (1985).
[8] Keohane and Victor, 'The Regime Complex for Climate Change'.
[9] Ibid.
[10] Kathryn Harrison, Lisa McIntosh Sundstrom, *Global Commons, Domestic Decisions: The Comparative Politics of Climate Change,* (London: MIT Press, 2010).
[11] Elena V. McLean and Randall W Stone, 'The Kyoto Protocol: Two-Level Bargaining and European Integration', *International Studies Quarterly*, Vol. 56, 1, (2012).

amount of legal scholarship focusing on the effects and implementations of international climate laws as seen in the work of Markus Vordemeyer.[12] Furthermore, the need to improve domestic economic growth has remained a consistent hurdle in most international treaties on climate change. It often takes the form of a 'North-South' divide or a divide between the 'developed and developing world'.[13] However, as the first climate treaties were written over thirty years ago, many argue that the traditional definitions used to separate countries based on economic development are outdated. This has led realist scholars like Susan Strange to question the validity of using a regime-oriented analysis in its entirety. Her study argues that the term regime, when applied to the international political arena, creates a false sense of order, and simplifies the dynamic changes in the world into a static system.[14] Other scholars like Patrick Porter and John J. Mearsheimer are also critical of the liberal idea of international order. Their work argues that states are still the main driving force within the international order and that the economic, political, and military power of each nation is what translates into power.[15]

The failures of the international climate regime complex, as well as the rising securitisation of climate change have led several realist scholars to re-examine climate negotiations through the lens of realism. Scholars such as Mark Purdon have contributed to the debate by critically assessing the underlying political costs of international cooperation and climate change.[16] He argues that the international response to climate change necessitates an asymmetric transfer of technology and resources. This inevitably results in concerns regarding relative gains among the participating countries. Other realist scholars like Ken Sofer are far more optimistic towards international cooperation on climate change. He argues that external threats

[12] Markus Vordermayer, 'The Extraterritorial Application of Multilateral Environmental Agreements', *Harvard International Law Journal*, Vol. 59, 1, (2018).
[13] Lars Engberg-Pedersen, Climate Change Negotiations and their Implications for International Development Cooperation, (Danish Institute for International Studies, 2011), p.43.
[14] Susan Strange, 'Cave! Hic Dragones: A Critique of regime analysis', *International Organizations,* Vol.36, 2, (1982).
[15] Patrick Porter, *The False Promise of Liberal Order: Nostalgia Delusion and the Rise of Trump*, (Cambridge: Polity Press, 2020) and John J. Mearsheimer, *The Great Delusion: Liberal Dreams and International Realities*, (London: Yale University Press, 2018).
[16] Mark Purdon, 'Neoclassical Realism and International Climate Change Politics: Moral Imperative and Political Constraint in International Climate Finance', *Journal of International Relations and Development,* Vol. 20, (2017).

to a state's survival forces them to overlook temporary relative gains concerns.[17] His argument builds the case that climate change should be viewed as an existential threat in need of a coordinated international response. This approach builds upon the work of Kenneth Neal Waltz on war and alliances and argues for a temporary alliance following the model of a military alliance.[18]

This idea of international cooperation on climate change is not without its critics. Joseph M. Grieco has been one of the most vocal critics against the work of both Keohane and Axelrod.[19] He argues that a state's primary aim is survival and that this triggers the state to maintain a defensive positionality in international cooperation. Not only is his theory critical towards liberal theories, but his emphasis on anarchy and the constant need for states to rebalance the power of their adversaries and allies alike undermines the argument of Sofer. In this way, Grieco encapsulates the main tenants of the neo-realist approach to international relations. The theoretical foundation of neo-realism is the notion that the state is the sole political actor in world politics and that the international world order is one of anarchy. States deal with this anarchy by adopting a policy of defensive positionality. In other words, they perceive their security and wealth in relation to other states. This forces the state to account for the actions and payoffs of other states when making international concessions. Grieco proposes the following function to explain a state's utility; U is a state's utility, V is a state's individual payoff and their partner's payoff is symbolised by W, k symbolises a state's coefficient to the sensitivity to payoff gaps, U=V-k(W-V).[20] The coefficient will vary depending on the security and political relations between the state and its partner, but it will always be greater than 0. This utility function nicely summarises the main argument between the liberal and realist approach, namely the dichotomy of a state as an atomistic or positional actor. This academic divergence carries with it severe implications in relation to international cooperation and negotiations. The liberal and neo-liberal school argue that states will use international

[17] Ken Sofer, 'The Realist Case for Climate Cooperation', *Centre for American Progress,* (2015). Last accessed: 30.07.2020. https://www.americanprogress.org/issues/security/news/2015/11/30/126356/the-realist-case-for-climate-change-cooperation/

[18] Kenneth Neal Waltz, *Man, The State and War: A Theoretical Analysis,* (New York: Colombia University Press, 2001).

[19] Joseph M. Grieco, *Cooperation among Nations: Europe, America and Non-tariff Barriers to Trade,* (London: Cornell University Press, 1990) and Joseph M. Grieco, Robert Powell and Duncan Snidal, 'The Relative Gains Problem for International Cooperation', *The American Political Science Review,* Vol. 87, 3, (1993).

[20] Joseph M. Grieco, 'Anarchy and the Limits of Cooperation: A Relist Critique of the Newest Liberal Institutionalism', *International Organization,* Vol. 42, 3, (1988), 500-502.

institutions to create compromises that overall lead to greater absolute gains to all parties involved. The realist and neo-realist school, on the other hand, argue that states will only commit to international agreements if they see individual gains from cooperation and are likely to withdraw from any agreement where their partner is perceived as gaining a greater deal.[21] This is because, whereas the liberal idea of states being atomistic actors allows all states to accept costs for greater absolute gains, the realist notion of anarchy and positionality makes the state regard their gains in relations to others. Thus, liberal scholars widely believe in the notion of absolute gains, and realists believe in relative gains.

The history of the Climate Change Regime Complex.

The history of climate change as a political issue dates to the early 1970s when scientist and meteorologists started to notice signs of human activity impacting the climate. This movement saw limited international success in the 1970s, as can be seen in the Stockholm Conference which led to the creation of the United Nations Environment Program (UNEP) in 1972, and multilateral treaties such as the Geneva Convention on Long-Range Transboundary Air Pollution in 1979.[22] The international interest and focus grew throughout the 1980s when the Arctic Ozone hole was discovered.[23] This caused two major developments; in 1987 several countries adopted the Montreal Protocol to phase out seven chlorofluorocarbon (CFC) gasses, and in 1988 the Toronto Conference called for a 20% reduction in carbon-dioxide emissions by 2005.[24]

Further international cooperation saw the adoption of the Framework Convention on Climate Change (UNFCCC) after the seminal U.N meeting in Rio de Janeiro in 1992.[25] This framework is critical since it institutionalised the concept of differentiated commitments to climate change between the developed and developing countries in Article 3. The concept that developed countries would take the lead in climate change was already featured in the Montreal Protocol, but the UNFCCC made the distinction static with its 42 'Annex-1' countries. This 'developed versus non-

[21] Ibid.
[22] UNFCCC, *A Guide to the Climate Convention Process,* (UN:2002), p.8.
[23] Graham Epstein, Irene Pèrez, Michael Schoon, Chanda L. Meek, 'Governing the Invisible Commons: Ozone Regulation and the Montreal Protocol', *International Journal of the Commons,* Vol.8, 2, (2014).
[24] Nancy C. Wilson, 'Toronto Climate Conference Calls for Sharp Cuts in Carbon Dioxide Emissions', *Climate Alert,* Vol.1, 3, (1988).
[25] UN, *United Nations Framework Convention on Climate Change,* (UN:1992).

developed' or 'North versus South' dynamic was heavily influenced by dependence theory and the work of Eduardo Galeano.[26] The separation of developed and developing nations further created a moral implication that developing nations had the right to develop and create emissions to even the historical emissions of the developed world. As a result, it created an asymmetric structure that emphasised legally binding emission cuts in the developed countries and voluntary participation by developing nations.

In 1997 members of the UNFCCC adopted the Kyoto Protocol, which attempted to set out legally binding international goals for developed countries, also known as Annex-1 countries.[27] However, the United States refused to ratify and eventually left the protocol over the controversial burden put on Annex-1 countries.[28] The protocol required acceptance and ratification by at least 55 parties accounting for 55% of emissions in Article 25 before entering into force. This proved especially hard after the United States pulled out of the protocol and was only achieved in 2004 after several concessions were bestowed onto Canada and Russia.[29]

In 2005 global emissions were 34% higher than in 1988, thus marking the failure of the Toronto conference.[30] In 2009 a summit in Copenhagen collapsed due to China's unwillingness to offer real action to curb its emissions.[31] This was the first attempt at reshaping the "common but differentiated approach".[32] The frustration over China's unwillingness to change, and the binding targets of the protocol eventually led Canada to withdraw from the Kyoto protocol in 2011.[33] Russia and Japan also refused to implement new targets after the end of the initial commitment period from 2008-2012. In the end, only the European Union member states were willing to officially accept new emission targets in the second Kyoto period.[34] The second

[26] Eduardo Galeano, *Open Veins of Latin America: Five Centuries of the Pillage of a Continent,* Trans: Cedric Belfrage, (New York: New York University Press, 1997).
[27] UNFCCC, *Kyoto Protocol to the United Nations Framework Convention on Climate Change,* (UN:1998).
[28] Martin Phillipson, 'The United States Withdrawal from the Kyoto Protocol', *Irish Jurist,* Vol.31, (2001).
[29] McLean and Stone, 'The Kyoto Protocol: Two-Level Bargaining and European Integration'.
[30] Ritchie and Roser, 'CO2 and Greenhouse Gas Emissions'.
[31] Daniel Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', *The American Journal of International Law,* Vol.104, 2, (2010).
[32] Ibid.
[33] UNFCCC, Canada's withdrawal from the Kyoto Protocol and its effect on Canada's reporting obligations under the Protocol, (UN:2014).
[34] Babette Never, 'Power in Global Climate Governance' in Climate Change: International Law and Global Governance: Volume II: Policy, Diplomacy and Governance in a Changing Environment, (Baden-Baden: Nomos, 2013), p.220.

commitment period therefore failed to gain enough signatories to enter into force. As a response, a new international climate conference was held in 2015. This treaty, known as the Paris Agreement tried to set a specific global climate target committing signatories to keep global warming well below 2˚C by 2100.[35] It allowed each nation to pursue this goal through Nationally Determined Contributions (NDC).[36] This was done in part to overcome the lack of commitments from developing nations, as they could contribute with a plan that fitted their own domestic situation. However, the agreement was criticised by some for not correcting the asymmetric emission system favouring the developing states. This pressure eventually led the United States to withdraw from the agreement with its secession set for November 2020.[37]

This short history shows that the international approach to climate change has so far been one of compromise, non-ratification, non-compliance, and withdrawal. The one exemption to this trend remains the Montreal Protocol which has been ratified and implemented by every U.N. member. However, recent data indicate that the level of compliance with the protocol is questionable at best, with researchers discovering large quantities of banned substances emanating from China.[38] This means that even the most successful climate treaty has serious compliance issues. As a result, it should not be controversial to state that the international climate regime has failed. Even its proponents, Keohane and David openly accept its ineffectiveness.[39]

Chapter 1: The moral argument for Climate Change Cooperation

The humanitarian argument is one of the main arguments in favour of international cooperation on climate change. It argues that developed nations have a moral responsibility to help developing nations combat the effects of climate change. Richer states should bear the brunt of the burden since they have emitted more GHGs and possess greater technological and economic means. This moral argument is not always made explicitly; however, it is apparent in the rhetoric surrounding both the treaties and negotiations on climate change. Terminology such as the 'tragedy of the commons', and the 'world's doers of good' clearly indicate a set of moral norms

[35] UNFCCC, *Paris Agreement,* p.3.
[36] Ibid.
[37] U.S State Department, 'On the U.S withdrawal from the Paris Agreement'.
[38] Matt McGrath, 'Ozone Layer: Banned CFCs Traced to China say scientists', *BBC,* (2019). Last Accessed 30.07.2020. https://www.bbc.com/news/science-environment-48353341.
[39] Keohane and David G. Victor, 'The Regime Complex for Climate Change'.

surrounding climate change.[40] The language in international treaties also indicates a sense of morality. This moral concern goes further than the previously mentioned 'common but differentiated approach to climate change'.[41] The Paris agreement begins with the parties: acknowledging the common concern that climate change poses to humanity, and it also requires states to acknowledge: 'their respective obligations on human rights'.[42] This language clearly indicates that there exists a moral dimension to climate change negotiations. Other examples can be seen in the reactions caused when parties break these norms, the United States was deemed 'internationally irresponsible', 'provocative' and blamed for 'sabotage' upon leaving the Kyoto Protocol.[43] Liberal scholars such as Axelrod, Keohane and Victor put great emphasis on the importance of these norms. Their argument is that international institutions can further the creation of these norms and use the taboo of breaking rank as a tool to enforce compliance.[44] They also make the case that these norms can translate from the international arena down to the domestic level and incentivise change through domestic pressure.[45] Their argument is similar to the argument made by McLean and Stone, who argue that morals and norms play a big role in domestic politics.[46] This moral approach to foreign policy has mainly been the domain of liberal and neo-liberal academics. Their academic dominance of this field stems partly from their interests in international institutions, but it has also been helped by the perceived fact that neo-realism largely ignores the impact of international norms and domestic factors.[47] Yet, Purdon points out that realists are not indifferent to moral factors. However, they recognise that moral factors and international norms are constrained by the need for states to protect their own relative strength.[48] In essence, this means that any international system will inherently be built to maximise the distribution of the relative gains for the most powerful states. This can, in the most severe cases, have disastrous implications for lesser states as seen in Thucydides'

[40] Harrison, Sundstrom, *Global Commons, Domestic Decisions: The Comparative Politics of Climate Change.*
[41] UN, *United Nations Framework Convention on Climate Change,* (UN:1992).
[42] UNFCCC, *Paris Agreement*.
[43] Phillipson, 'The United States Withdrawal from the Kyoto Protocol'.
[44] Peter Haas, Robert Keohane and Marc A. Levy, 'Institutions for the Earth', *Environment Science and Policy for Sustainable Development,* 1992.
[45] Keohane and David G. Victor, 'The Regime Complex for Climate Change'.
[46]McLean and Randall W Stone, 'The Kyoto Protocol: Two-Level Bargaining and European Integration'.
[47] Purdon, 'Neoclassical Realism'.
[48] Ibid.

'Melian dialogue'.[49] However, the realist notion that morality is subjective and fleeting only means that states cannot blindly rely on the morality of other states, it does not equate to a denial of moral factors in all negotiations.

Purdon continues by arguing that moral factors are important in addressing climate change, but that the main consideration for policymakers is not international norms but rather their respective domestic norms and morals.[50] Bringing domestic factors into play helps develop the model of international climate negotiations as a two-level game.[51] However, it complicates the picture immensely as each nation is likely to be facing separate domestic factions and norms, thus making a general theory difficult. It is also far easier for scholars to assess moral factors in those cultures they know compared to other cultures. This means that a lot of the scholarly work on climate change tends to have a Western European bias.[52] A western-centric view is partly justified as these states have been the driving force behind the international climate change regime since its inception. These 'enthusiastic nations' as Victor calls them have generally been positive to enforce strict emission goals on themselves, while simultaneously offering to finance international mitigation efforts.[53] On the surface, this seems to be a confirmation of the liberal argument, and Keohane has used the existence and success of multilateral treaties between these 'enthusiastic' countries as an indication that shared norms and morals can help guide truly international treaties.[54] However, this approach is very problematic as it ignores the fact that these nations not only share the same moral view on climate change, but they share a similar economic and political understanding of the world. Even more importantly, most of them take part in the same military alliance, namely, NATO. All these factors limit the relative gains concerns dramatically and cannot be extrapolated to fit a truly international climate treaty.[55]

Finally, there is little evidence to support the claim that these nations are acting solely based on humanitarian concerns or domestic morals. As Purdon points out much of

[49] Thucydides, *The Peloponnesian War,* Martin Hammond (trans.), (Oxford: Oxford University Press, 2009), p.302.
[50] Purdon, 'Neoclassical Realism'.
[51] McLean and Stone, 'The Kyoto Protocol: Two-Level Bargaining and European Integration'.
[52] Haas, Keohane and Levy, 'Institutions for the Earth'.
[53] David G. Victor, *Global Warming Gridlock: Creating More Effective Strategies for Protecting the Planet,* (Cambridge: Cambridge University Press: 2011) p.54.
[54] Haas, Keohane and Levy, 'Institutions for the Earth'.
[55] Porter, *The False Promise of Liberal Order, pp.40-43.*

the funding for the international mitigation efforts has simply been rerouted from existing development aid programs.[56] The change in funding has a rational explanation, as the funding of green projects that function as carbon sinks in the developing world can be subtracted from the overall emissions of developed nations through the use of Clean Development Mechanisms (CDMs).[57] Furthermore, Steffen Kallebekken and Hege Westskog find that the developed nations stand to gain almost twice as much as the global average from this system.[58] Their findings are similar to what Hans Morgenthau argued; that even in the case of humanitarian and economic aid, there exists some underlying notion of a quid pro quo between the giver and recipient. His argument is that economic aid has always been a diplomatic tool to further the interests of the giving state, either in a direct financial or diplomatic return. He also argued that the need to rebrand bribes as 'economic aid' is due to a perceived shift in the norms and morals of the international political system.[59] However, the basic premise of a quid pro quo remains the same despite the more ethical name. Morgenthau, therefore, argued that relying blindly on 'legal positivism' in the hope that international morals and norms could restrain actors underestimated the underlying processes of international politics.[60] Realists are not the only ones with this view, Neo-Marxists have also argued that there exists a general premise for disguising policies with the aid of nice-sounding phrases, although they argue that markets and profits are the main cause for this deception.[61] Finally, Babette Never has argued that the European Union has gained significant structural power within international organisations by taking the lead on climate change.[62] Despite this criticism, liberal academics remain adamant that norms constrain actors and help structure the otherwise anarchic international system. There is some basis for their analysis, and even neoclassical realists incorporate the domestic moral angel in their analysis. However, the moral argument remains hard to quantify. So, to test the

[56] Purdon, 'Neoclassical Realism'.
[57] Steffen Kallebekken and Hege Westskog, 'Should Developing Countries take on Binding Commitments in a Climate Agreement? An Assessment of Gains and Uncertainty', *The Energy Journal,* Vol.25, 3, (2005), 49.
[58] Ibid.
[59] Hans Morgenthau, 'A Political Theory of Foreign Aid', *The American Political Science Review,* Vol.56, 2, (1962).
[60] William E. Scheuerman, 'Realism and the Left: The Case of Hans J. Morgenthau', *Review of International Studies,* Vol.34, 1, (2008) and Michael C. Williams, 'Why Ideas Matter in International Relations: Hans Morgenthau, Classical Realism and the Moral Construction of Power Politics', *International Organization,* Vol.58, 4, (2004).
[61] Scott Prudham, 'Pimping Climate Change: Richard Branson, Global Warming, and the Performance of Green Capitalism', *Environment and Planning A.*, Vol.41, (2009).
[62] Never, 'Power in Global Climate Governance', 222.

liberal premise, we can assess the effect of international norms and domestic factors in the negotiations and language in our three international treaties.

The Montreal Protocol is the oldest of the three treaties and remains the only one that has been ratified by every single U.N member.[63] As a result of this success, one would expect the protocol to incorporate large levels of norms and morals. However, the protocol remains largely technical in its rhetoric. The introduction of the protocol makes an acknowledgement that human health is important and that humans can impact the climate and the Ozone layer to the detriment of the planet.[64] Compared to later documents, this rhetoric is rather stale and bureaucratic. The protocol then continues to outline the need to cut the production and consumption of specific gasses that harm the Ozone layer and stipulates the legal framework for this to happen. Special consideration is made for developing states and their special economic situation. However, it does so in a very different manner to the later treaties. Firstly, the Montreal Protocol bans the export and trade of Chlorofluorocarbon gasses from developed nations to developing nations not party to the treaty, in effect starving potential buyers of their main supply. Secondly, the protocol only allows for a limited special consideration for developing states. Article 5 of the protocol outlines that developing states are granted ten years to comply with the overall treaty, and their developing status no longer grants them special status if they reach a consumption of above 0.3 kg per capita of CFC gasses.[65] This is in stark contrast to the later more fixed segregation between developed and developing countries set out in the UNFCCC.[66]

The Kyoto Protocol built upon the previous framework set out in the UNFCCC, and as a result, it incorporated the framework's differentiation between developed and developing nations (Annex 1.). The protocol also tried to cover a wider area than the Montreal protocol before it. Article 2, paragraph 3; states: 'Annex 1. shall strive to implement policies and measures under this Article in such a way as to minimise adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties,

[63] Epstein, Pèrez, Schoon and Meek, 'Governing the Invisible Commons: Ozone Regulation and the Montreal Protocol'.
[64] UNFCCC, *Kyoto Protocol to the United Nations Framework Convention on Climate Change,* (UN:1998).
[65] Ibid.
[66] UN, *United Nations Framework Convention on Climate Change,* (UN:1992).

especially developing country'.[67] This part of the protocol clearly bestows a moral responsibility onto the developed nations to help the developing ones. The protocol also went further than its predecessor attempting to implement and elaborate policies on everything from agriculture, energy, and domestic tax policy in Annex-1 countries while omitting to put any constraints on the developing nations.[68] The different treatment was criticised by some of the 'enthusiastic' countries at the time and became a big problem as the protocol required 55 of the parties constituting 55% of the total emissions to ratify it before it could enter into force. This problem was made worse when the United States Senate passed the Byrd-Hagel resolution, a bipartisan resolution that made it difficult for the U.S to commit to any international treaty that only required emission reductions from Annex-1 countries.[69] This domestic setback made American ratification of the Kyoto protocol impossible. Even more troubling was the fact that the U.S constituted most of the world's emissions at 5.75 billion tons of CO2 in 1998.[70] To reach the needed amount of ratifications the 'enthusiastic' European nations needed the collaboration of Russia, Canada, Australia and Japan. Japan was initially willing to help, due partly to their own involvement in the protocol as it was negotiated in Kyoto. If the protocol failed, it would have directly impacted Japanese prestige on the world stage.[71] Russia, however, proved far less willing to submit themselves to international calls for emission reductions.

If Axelrod, Victor and Keohane are correct, then Russia as a 'non-enthusiastic' state would need some incentives to join, but primarily they should be moved by the need to conform to international norms. However, as Stone and McLean found in their case study on the Kyoto negotiations, the moral factors present in the 'enthusiastic' states served to bolster Russia's bargaining power and caused a weakening of the protocol.[72] As Russian ratification of the protocol was essential, Russia managed to use the threat of non-ratification to ensure very lenient terms. This was bolstered by the fact that politicians in the 'enthusiastic' states had already officially supported the protocol and were subject to domestic pressure at home. Russian diplomats, on the other hand, could point to low domestic support for emission reductions as a political cost, thus arguing for lower better terms. In this way, the Russian diplomats managed

[67] UNFCCC, *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, (UN:1998).
[68] Ibid.
[69] Phillipson, 'The United States Withdrawal from the Kyoto Protocol', 295.
[70] Ritchie and Roser, 'CO2 and Greenhouse Gas Emissions'.
[71] Scott Barrett, 'Political Economy of the Kyoto Protocol', *Oxford Review of Economic Policy,* Vol. 14, 4, (1988).
[72] McLean and Randall W Stone, 'The Kyoto Protocol: Two-Level Bargaining and European Integration'.

to turn the lack of domestic support into tangible gains for themselves. The other post-soviet Eastern European states were not that fortunate. As Stone and McLean indicate in their case study, many of these states were in the process of gaining European Union membership at the same time as the Kyoto Protocol was being negotiated. Stone and McLean finds that these nations were willing to be included in the Annex-1 group, thus ensuring stronger emission regulations.[73] The liberal argument would indicate that these states wanted to integrate into the European community and take part in their norms and morals, and this was certainly part of their motivation. However, one cannot ignore the relative economic, political, social, and security gains European Union membership rewarded each of these states. As a result, Stone and McLean draw a direct correlation between the willingness of the Eastern European nations to ratify and accept the Kyoto protocol and their perceived reward in accession to the European Union.[74] This is supported in the work of Dale C. Copeland that shows that future trade expectations can help aid international negotiations.[75]

Finally, the Paris Agreement went even further than the Kyoto Protocol. Not only did it follow up on the points made in the Kyoto and Montreal protocol, it included the: 'eradication of poverty' and the 'ending of hunger'.[76] It also emphasised that: 'Parties should when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity'.[77] These aims are admirable and are a part of the broader development goals of the U.N, yet they are also ambitious for a treaty meant to help fight climate change. As nations have their own social and cultural norms, it is plausible that the increase of western norms and morals might cause conflict instead of cooperation. The agreement also did little to counteract the established notion of developed and developing states inherited from the UNFCCC despite being negotiated more than twenty years later. This continued to be a point of contention and was a direct cause for the United States withdrawal

[73] Ibid.
[74] Ibid.
[75] Dale C. Copeland, ' Economic Interdependence and War: A Theory of Trade Expectations', *International Security,* Vol. 20, 4, (1996), 5-41.
[76] UNFCCC, *Paris Agreement*.
[77] Ibid.

under the Trump administration.[78] There is also little proof that even the 'enthusiastic' states are solely motivated by these lofty goals as most are on track to miss their own emission goals.[79]

In conclusion, there is a strong moral and humanitarian argument to be made for international cooperation on climate change. However, there is little proof that this argument transfers into tangible action. The Montreal Protocol is the treaty with the least amount of moral rhetoric, yet it remains the most successful of our three case studies. Subsequent treaties institutionalised the developed and developing status of nations and put the moral and financial burden on the developed parties. The Kyoto Protocol and Paris Agreement also greatly expanded the scope of climate action, which was necessary to protect the climate, but it proved difficult to ratify when it only applied to developed nations. Finally, morals are not intrinsically applicable to international negotiations. In some cases, they can even be a detriment as we have seen in the case study surrounding Russia's ratification of the Kyoto Protocol. Therefore, outside the 'enthusiastic states' there is little evidence that morals can be a contributing factor in achieving international cooperation.

Chapter 2: The Economic Argument for Climate Change Cooperation

Climate change has been conceptualised by many academics as essentially an economic problem. This argument presents climate change as a 'tragedy of the commons' on a global scale.[80] Proponents of this theory argue that excessive economic growth is a detriment to the environment and can only be sustained for a limited period. Furthermore, the earth only has a limited amount of resources available, and so it is in our own interest to manage and utilise these resources in the best sustainable way possible. However, each nation also has a right to exploit their own natural resources, and these environmental concerns are often set against the general need for economic development. This problematic balance between domestic economic development and concerns regarding international climate change can be traced back to the UNFCCC. The convention acknowledged the need for developing states to expand their economy while at the same time recognising the need to lower global emissions.[81] It attempted to overcome this dichotomy by

[78] U.S State Department, 'On the U.S withdrawal from the Paris Agreement'
[79] Ritchie and Max Roser, 'CO2 and Greenhouse Gas Emissions'.
[80] Harrison, Sundstrom, *Global Commons, Domestic Decisions*.
[81] UN, *United Nations Framework Convention on Climate Change,* (UN:1992).

advocating for the developed nations to take the lead in limiting global climate change. This was based on the perceived fact that developed nations had historically emitted more GHGs and the fact that they possessed the economic means to pay for costly mitigation efforts. This asymmetrical response was mainly justified by the existential threat that climate change posed to the entire global community. As a result, a common threat perception is essential to justify the long-term costs of climate change mitigation.

The fact that excessive economic development causes environmental problems is not new. It's earliest form dates all the way back to 1798 and the work of Thomas R. Malthus.[82] Further works on the effects of population growth and resource management can be seen in the Club of Rome and their seminal work *The Limit to Growth.* In this work, they predicted societal collapse by 2010, due to over-population, increased pollution, lack of food and a collapse of natural resources.[83] These apocalyptic predictions were largely based on computer models using factors such as the consumptions patterns and resource reserves in 1972 and assumed exponential growth to continue until reaching unsustainable levels. However, as economists like Bjørn Lomborg have pointed out, these variables were static and did not take into effect the innovative part of economic development. Technological innovation made resources that were predicted to be completely depleted by 2010 become cheaper, more accessible, and in some cases, even superfluous through the creation and discovery of cheaper and better alternatives.[84] Despite these miscalculations, the report became widely circulated and admired by policymakers and journalists alike. The report by the Club of Rome represented just one attempt at modelling the effects of an increasing human population and increased consumption on the environment. These models are important in the realm of climate cooperation as they attempt to quantify the future impacts and threats posed by climate change. Creating a serious analysis is important, especially as climate change will have an impact on future economic growth and requires direct economic costs in the present in the form of mitigation. However, it is incredibly hard to create a good and accurate model of the future. As a result, we have many reports that claim varying degrees of

[82] Oded Galdor and David N. Weil, 'Population, Technology, and Growth: From Malthusian Stagnation to the Demographic Transition and beyond', *The American Economic Review*, Vol. 90, 4, (2000).
[83] Bjørn Lomborg, 'Environmental Alarmism, Then and Now: The Club of Rome's Problem and Ours', *Foreign Affairs,* Vol.91, 4, (2012).
[84] Ibid.

costs related to climate change, ranging from the apocalyptic to a more manageable level. Furthermore, many of these reports admit their analysis contain some margins of error, as is seen in the Intergovernmental Panel on Climate Change (IPCC) and their use of different assessment criteria, ranging from low to high confidence in their own assessments.[85]

Generally, the scientific consensus on climate change only goes as far as accepting that climate change is happening, and that pollution caused by human activity likely has an impact on climate change. Apart from this, there is less agreement surrounding what the future implications of climate change will be, how big of an impact humanity has on the climate, when climate change will be irreversible and what mitigation efforts can be introduced to combat climate change effectively. An example of this academic divergence can be seen in the work of Richard S. Lintzen who argues that the overreliance on climate modelling proves to be consistently wrong, while still agreeing that human activity does cause global warming.[86] Even Victor, who is arguing for more direct climate action, agrees that much of the perceived scientific consensus, such as the aim of limiting global warming to 2 degrees Celsius is more conjecture than hard science.[87] It is not just academics who have this opinion, international studies such as the Oslo and Paris commission found that there was a lack of accurate data and a problem with reliant modelling. Still, it concluded that 'frequent absence of accurate data' should not justify a lack of preventative measures against climate change.[88] The scientific consensus is important when addressing the economic argument because the need to fund present mitigation efforts to avoid future calamity presents a problem of future discounting.[89] Future discounting means that humans have a tendency to discount future rewards in favour of rewards in the present.[90] In the area of climate change, this translates to nations being more interested in increasing economic growth rather than addressing long-term climate change. To overcome this problem, some reports such as the Stern review uses the threat of future costs in the form of more extreme

[85] IPCC, *Special Report: Global Warming of 1.5 C,* (2018). Last accessed: 30.07.2020. https://www.ipcc.ch/sr15/.
[86] Peter S. Lindzen, 'Is the Global Warming Alarm Founded on Fact?' in Ernesto Zedillo (ed.), *Global Warming: Looking Beyond Kyoto,* (Washington D.C: Brookings Institution Press, 2008).
[87] Victor, *Global Warming Gridlock,* p.6.
[88] Oslo and the Paris Commissions, 'Large Combustion Installations: Emissions and reduction in emissions of heavy metals and persistent organic compounds', (1997), p.4.
[89] Partha Dasgupta, 'Discounting Climate Change', *Journal of Risk and Uncertainty,* Vol.23, 2/3, (2008).
[90] Ibid.

weather events, uncontrolled climate migration and other climate-induced calamities to justify a large increase in the funding of mitigation efforts.[91] Although this argument is moderately effective in countering the threat of future discounting, it still does not change the fact that future costs attributed to climate change are at best academic assessments based on a scientific model and at worst pure conjecture.[92] This is in stark contrast to the costs proposed in order to mitigate climate change, which are clear, immediate and immense. Even so, the scientific consensus does imply a 5-20% reduction in global GDP by 2050 if there is no successful mitigation of climate change and the world warms with 2-5 degrees Celsius.[93]

This ties into the liberal argument of Axelrod, Victor and Keohane, as a reduction in global GDP presents an economic argument in favour of collective action. Therefore, absolute gains should motivate all countries to make general reductions in emissions and increase investment in mitigation efforts. Yet, many liberal academics admit that problems such as the uncertainties surrounding climate change and the financial cost required for large emission cuts produce barriers for countries to accept international agreements that limit economic development.[94] Keohane and Victor argue that the best way around these barriers is better institutions that allow for easier bartering between nations and allow for easier conflict resolution.[95] However, a big problem with this approach is that it still relies on international cooperation without addressing some key structural issues. The first structural problem is the rigid divide between developed and developing nations which has remained since the introduction of the UNFCCC. Mos developed nations have already reached a peak in their national emissions while developing nations are still increasing their own.[96] Even the U.S which was one of the last developed nations to reach a peak in its national emissions reached it in 2007.[97] Furthermore, many of the states that were considered to be developing in 1992 have now achieved a greater level of development. China has surpassed the United States as the biggest emitter in the world in gross numbers,

[91] Stern and Jacobs, 'The Stern Review', viii.
[92] Victor, *Global Warming Gridlock,* p.6.
[93] Stern and Jacobs, 'The Stern Review', viii-x.
[94] Victor, *Global Warming Gridlock,* pp.6-10.
[95] Keohane and Victor, 'The Regime Complex for Climate Change'.
[96] Ritchie and Roser, 'CO2 and Greenhouse Gas Emissions', *Our World in Data*.
[97] EPA, 'Inventory of U.S Greenhouse Gas Emissions and Sinks 1990-2018', *Environmental Protection Agency,* (2020). Last Accessed 25.08.2020. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

while still being considered a developing nation.[98] The economic rise of China was further aided by the financial crisis of 2008, which hit the developed nations harder than many developing nations. As a result, the economic rise of China has made some states, particularly the U.S more sensitive to relative gain concerns.[99] The second structural problem is the fact that, as the emissions of the developing world increases, so does their bargaining power in international climate negotiations. Babette Never points this out, stating that the developing nations with high emissions are in a stronger structural position in international negotiations as any agreement without their ratification becomes ineffective. This means that the international climate regime effectively rewards non-cooperation by increasing the bargaining power of the nations that increase their own emissions.[100] Finally, the distribution of negative effects related to climate change are not spread evenly, with the Stern review stating that countries in the northern hemisphere might see marginal gains from a warming climate and the global south suffering the worst effects.[101] These conditions create different threat perceptions between different states, and this was confirmed in a recent survey by Pew Research Centre, that found there were large differences in how people conceptualised the threat of climate change across nations and regions.[102]

All these problems mean that climate change trigger different relative gains concerns for different states. These concerns are particularly visible in the 'common but differentiated responses to climate change' advocated by the UNFCCC. In the international climate regime, this is often also referred to as the 'equity' principle. Richer states have more resources, more emissions per capita and have historically emitted more than other states and should therefore take more action.[103] Still, there are several problems with this 'equity principle'. According to the Stern review, even if developed nations cut their emissions by 60-80% by 2050, developing nations will be required to take significant action as well.[104] Furthermore, Lars Engberg-Pedersen argues that even if the review was accepted by all developed parties there remains a

[98] Ritchie and Roser, 'CO2 and Greenhouse Gas Emissions', *Our World in Data*.
[99] Purdon, 'Neoclassical Realism', 276.
[100] Never, 'Power in Global Climate Governance', p.219.
[101] Stern and Jacobs, 'The Stern Review', vii.
[102] Moira Fagan and Christine Huang, 'A look at how people around the world view climate change', *Pew Research Centre,* (2019). Last Accessed: 15.08.2020. https://www.pewresearch.org/fact-tank/2019/04/18/a-look-at-how-people-around-the-world-view-climate-change/
[103] Lynette H. Ong, 'The Apparent "Paradox" in China's Climate Policy', *Asian Survey*, Vol.52, 6, (2012), 1144.
[104] Stern and Jacobs, 'The Stern Review', vii.

large difference between the economic cost of 60% and 80% reductions in emissions.[105] There is also little evidence to suggests that all developed nations are willing to sustain the high economic cost needed to meet either of these goals. In fact, the opposite seems to be true. The latest report from the Environmental Protection Agency (EPA) shows a direct correlation between lower emissions in the U.S since 2007 and an increase in cheap and available natural gas.[106] This indicates that costs are the key driver in emission reductions, not the threat of climate change. Costs are also a clear motivating factor in national mitigation efforts. China has been hesitant to accept any international treaty that would limit their own emissions. This is because economic development is essential to bolster the legitimacy of the Chinese Communist Party (CCP).[107] Domestic pressure also plays a part, as Never shows in her study, with the Chinese coal sector having a de facto veto on government decisions relating to climate.[108] However, the CCP has introduced several measures to limit emissions and increase energy efficiency in recent years.[109] Initially, this seems to indicate that China is trying to address some of the global challenges relating to climate change. Yet, Lynette H. Ong argues that the increase in policies on energy efficiency and emission controls have been implemented because they are perceived to be necessary to further economic development in China.[110] These two examples seem to indicate that some states will implement climate policies in line with international climate agreements only when there is a valid economic reason to do so. It also indicates that economic growth or domestic economic reasons are more important than the more general international threat posed by climate change. One reason for this phenomenon can be found in the work of Robert D. Putnam and the theory of international negotiations as a two-level game. He argues that domestic interests impact the ability of politicians to accept international deals.[111] Any international treaty will therefore have to balance the costs it enforces on ratifying parties and the benefits the parties receive. Or as Aynsley Kellow argues 'any policy

[105] Engberg-Pedersen, Climate Change Negotiations, p.16.
[106] EPA, 'Inventory of U.S Greenhouse Gas Emissions and Sinks 1990-2018'.
[107] Ong, 'The Apparent "Paradox" in China's Climate Policy', 1140.
[108] Never, 'Power in Global Climate Governance', 222.
[109] Ong, 'The Apparent "Paradox" in China's Climate Policy'.
[110] Ibid.
[111] Robert D. Putnam, 'Diplomacy and Domestic Politics: The Logic of Two-Level Games', *International Organization*, Vol.42, 3, (1988).

adopted in ignorance of national interests is doomed to fail'.[112] To verify this theory, we can return to our three case studies.

The Montreal protocol starts by acknowledging the threat posed by substances that deplete the Ozon layer and recognising it as a global threat.[113] It follows up this claim by relating it back to 'relevant scientific knowledge, taking into account technical and economic considerations'.[114] The inclusion of economic considerations indicates that creating a common threat perception is vital to justify any expenses in the treaty. Furthermore, the language in the protocol is clearly aware of the economic costs it imposes and allows for a transition period where states can consume and produce banned gasses for domestic consumption. Most of the paragraphs in Article 2 are related to minimising the transition costs related to the protocol. The article also deals with the threat of non-compliance by limiting the trade and import of products made with Ozone destroying substances by parties outside the protocol as can be seen in Article 4. This directly makes the economic incentives better for the states inside the protocol and harms the states outside it. Finally, the aims of the protocol are limited with 7 CFCs gasses outlined in the original treaty. The limited number of banned substances allowed the participating parties to mitigate the domestic economic impact from the treaty by transitioning to other gasses. The list of banned substances has been extended in later editions of the protocol, but they still only cover substances that directly affect the Ozone layer. All these efforts severely limited the negative economic impacts of the protocol and led to its success. According to the latest data Ozone-depleting substances have declined drastically since 1997.[115] The success of the treaty is only diminished by the fact that China still emits large quantities of banned substances.[116]

The Kyoto protocol tried to go a lot further and limit carbon dioxide emissions. These emissions are far harder to substitute or mitigate than the previous CFC gasses. As a result, the protocol attempted to put restrictions in place that had a far greater economic impact than the previous Montreal protocol. Furthermore, the Kyoto protocol built upon the previous UNFCCC framework, which meant that it was only

[112] Aynsley Kellow, 'The Political Economy of the Kyoto Protocol', *Agenda,* Vol. 5, 3, (1998), 289.
[113] UN, *Montreal Protocol on Substances*.
[114] Ibid.
[115] Hannah Ritchie and Max Roser, 'Ozone Layer', *Our World in Data,* (2017). Last accessed: 30.07.2020. https://ourworldindata.org/ozone-layer#summary
[116] McGrath, 'Ozone Layer: Banned CFCs Traced to China say scientists'.

legally binding for the Annex-1 countries. This meant that the large economic cost of the agreement was asymmetrical, and disproportionality affected developed nations. To overcome this economic barrier, the Kyoto protocol proposed a system known as Clean development mechanisms (CDMs) in Article 12. These were intended to allow the developed nations to fund sustainable projects in the developing world and subtract the resulting emission reductions from their own emissions. Although initially successful, the CDMs have received a lot of criticism for being open to manipulation and for failing to limit emissions.[117] Furthermore, the developing nations with more developed infrastructure managed to take better advantage of the CDMs making China, Brazil, and India, the chief benefactors of the roughly 27 billion dollars' worth of investment.[118] Purdon also found that the developed states most likely to participate in the CDM market were also the ones that voluntarily reduced their own emissions.[119] This seems to indicate that the CDM system was not enough to negate the negative economic impacts of the protocol in all nations. Developed nations did see a decline in emissions during the first period of the Kyoto Protocol. However, the emission reductions also correlated with the fall of the Soviet Union and the economic depression that followed, so it is hard to quantify the success of the Kyoto Protocol.[120] Finally, the CDM system received a lot of criticism in the second round of the Kyoto Protocol and failed to get enough participating parties to accept it. This indicates that the CDMs and the carbon markets proposed in the Kyoto Protocol were not enough to overcome the individual relative gains concern for most of the nations involved.

The Paris Climate Agreement tried to overcome the problems that caused the second round of the Kyoto Protocol to fail by allowing states to create their own Nationally Determined Contributions (NDCs). Article 2 further tried to unify some of the scientific data by setting out a general goal of limiting global warming to 1.5 degrees Celsius above pre-industrial levels.[121] It also stressed the need to ensure finance flows to mitigate climate change while still adhering to the 'equity' principle. This language was clearly included to create a common threat perception and a common goal. The NDCs also tried to incorporate a greater sense of national agency, allowing the

[117] Shreekant Gupta, 'India, CDM and Kyoto Protocol', *Economic and Political Weekly,* Vol. 38, 41, (2003).
[118] Purdon, 'Neoclassical Realism', 280.
[119] Ibid, 281.
[120] Florian Schierhorn, 'Large Greenhouse gas savings due to changes in the Post-Soviet Food Systems', *Environmental Research Letters,* Vol.14, 6, (2019).
[121] UNFCCC, *Paris Agreement,* p.3.

different participating states to create their individual plans so long as it was in line with the general goal of limiting global warming. However, Article 4 still calls on developed nations to take the lead with 'economy-wide' absolute emission reductions.[122] While developing nations are promised more financial assistance if they continue their mitigation efforts. Furthermore, the first paragraph of the article calls on all parties to reach a peak in their emissions as soon as possible, and then make reductions to their overall emissions. This is done without addressing the fact that most developed states had already reached this peak by the time the Paris agreement was signed. All these economic requirements create a very asymmetric burden. The inclusion of these points was done to get China and other big emitters to sign the agreement as the 'common but differentiated principle' was seen by the Chinese negotiators as essential for their commitment.[123] A 'common but differentiated principle' is even included in China's first NDC, which shows how important this principle is to China.[124] The United States makes no mention of the equity principle in their NDC. However, they show that their emission reductions are on track for the goals outlined in the agreement.[125] This is mostly due to the cheap and available natural gas as is shown in the EPA report from 2018.

In conclusion, we can see that the international climate regime complex has been unable to establish a compelling and coherent threat perception among all the participating states. The large disparity in the scientific and academic community concerning the cost of climate change creates enough space for states to consider their own economic interests. This problem is compounded with the asymmetrical financial relationship endemic in the UNFCCC treaty. The Montreal Protocol preceded the treaty and was, therefore, able to adopt a more flexible definition of developing nations. It also restricted only a small number of specific substances and therefore enacted limited costs on the parties involved. The other agreements went far wider, trying to impose restrictions on a wider scale and in an asymmetrical manner. This naturally causes relative gains concerns in several states and caused inherent friction in the treaties. Both the Kyoto Protocol and the Paris agreement saw marginal success in limiting and reducing emissions in the developed world.

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[122] Ibid, p.4.
[123] Never, 'Power in Global Climate Governance', p.221.
[124] UNFCCC, *China's First Nationally Determined Contribution Submission,* (2016), p.1. Last accessed: 30.07.2020. https://www4.unfccc.int/sites/NDCStaging/Pages/Search.aspx?k=china
[125] UNFCCC, *U.S.A First Nationally Determined Contribution submission*, (2016). Last accessed: 30.07.2020. https://www4.unfccc.int/sites/NDCStaging/Pages/Search.aspx?k=U.S.A

However, the treaties were aided by the decline of the Soviet Union and the technological development of fracking which allowed the U.S to reduce its emissions. Both of which happened outside the borders of the international climate community. Furthermore, China and other developing nations have started to expand mitigation efforts as part of the CDM scheme and to mitigate local environmental disasters that hinder economic development. Even so, the emission reductions seen in the developed world has been offset by the rising emissions in the developing world, and the latest figures show that the world is on track to miss the symbolic aim of limiting global warming to 2 degrees Celsius.[126]

Chapter 3: The Security argument for International Climate Change Cooperation

Climate change has become increasingly securitised in recent years.[127] In 2008 the United Kingdom's National Security Strategy outlined a link between climate change and security claiming: 'climate change is perhaps the greatest challenge to global stability and security and therefore to national security'.[128] A 2008 revision of the European Security Strategy by the European External Action Service (EEAS) further found a need to implement climate change into future European Strategy.[129] In 2014 the IPCC stressed the security effects of climate change in its fifth assessment report.[130] Other European powers such as Denmark, Sweden, Spain and France have also integrated climate change into their national strategies, which shows the increasing interest in climate change as a security issue. It is not just a European phenomenon the United States Army publishing an extensive report outlining the potential risks, threats, and effects from climate change in 2019.[131] Conceptualising climate change as a security challenge is intrinsically tied to the threat that it poses to the stability of the global political system. Mass drought can cause a rippling effect where collapsing food production in the global south causes mass migration never seen before. This threat is outlined in the U.S Army report, the Stern Review, and the

[126] Ritchie and Roser, 'CO2 and Greenhouse Gas Emissions', *Our World in Data*.
[127] Lorraine Elliot, Climate Change, Migration and Human Security in South East Asia, *S. Rajaratnam School of International Studies*, (2012), p.1.
[128] Richard Youngs, 'Climate Change and E.U Security Policy: An Unmet Challenge', *Carnegie Endowment for International Peace*, (2014), 5.
[129] Ibid, 3.
[130] Ibid, 4.
[131] Max Brosig, Parker Frawley, Andrew Hill, Molly Jahn, Michael Marsicek, Aubrey Paris, Matthew Rose and Nicole Thomas, 'Implications of Climate Change for the U.S Army', *United States Army War College*, (2019).

European Security Strategy. Mass migration can even cause the breakdown of national borders as we know them, or as stated by one IPCC contributor: 'National Borders will become irrelevant in some areas…..you can set up a wall and attempt to contain ten thousand, twenty thousand, one million, but not ten million migrants'.[132] Climate change also has serious implications for the domestic security and stability of several western nations. Rising sea levels have a direct impact on nations, especially those that are already close to or below sea level such as the Netherlands. Mitigation efforts if not done correctly, will also have a severe impact on the stability of nations. Agriculture, transportation, and energy production constitute the majority of the emissions in the U.S according to the EPA report.[133] These sectors are more than just sectors of a nation's economy, they are the very stability modern developed societies are built upon. Any international treaty that severely limits a nations ability to control these areas will therefore be a major breach of sovereignty. Food shortages, energy blackouts and crumbling infrastructure are also real possibilities if mitigation efforts are poorly implemented or the system is not adequately resilient to withstand the effects of climate change.

These security concerns are generally acknowledged by most members of the international climate change regime complex. Yet, these threats do not exist in a vacuum. Other security concerns already embedded in the structure of the international order also affect the ability of nations to cooperate on climate change. As Purdon states: 'The international strategic environment has been evolving to make relative gains more security-relevant for developed nations'. However, the salience of relative gains is also affected by the individual nation's resilience, vulnerability as well as its contribution to the balance of power.[134] This theory is supported by Grieco, who points out that the coefficient (k) in a nation's utility function will vary depending on the security situation of the nation in question.[135] However, Keohane, Victor and Axelrod argue that not all redistributions in the international system trigger relative gains concerns. Rather it depends on the strategic environment in which the redistribution takes place.[136] The large amount of cooperation surrounding the climate change regime complex seems to support the

[132] Schellenberger, *Apocalypse Never: Why Environmental Alarmism Hurts Us All, p.3.*
[133] EPA, 'Inventory of U.S Greenhouse Gas Emissions and Sinks 1990-2018'.
[134] Purdon, 'Neoclassical Realism',276.
[135] Grieco, 'Anarchy and the Limits of Cooperation', 500-502.
[136] Purdon, 'Neoclassical Realism',276.

liberal argument of Keohane, Victor and Axelrod. Yet, its failures also support the neorealist argument proposed by Purdon and Grieco. One easy way to test these theories is to look at the strategic environment surrounding the climate change debate. As the climate change regime complex started during the Cold War and has continued through to the present day, it offers a great case study to assess the impacts of the broader strategic environment on relative gains concerns among nations. If the neorealist argument is correct, then the economic and technological rise of developing nations will over time threaten the established power balance and will therefore trigger relative gains concerns in developed countries. Furthermore, if climate change brings cataclysmic damage in the form of droughts, floods, and mass migration, it is possible that these effects might lessen the willingness for nations to cooperate. Especially if self-preservation becomes more essential than international mitigation and cooperation, this is in line with the realist/ neorealist argument that the final priority of each nation is its own survival. However, if the liberal argument is correct, then the opposite would be true. Increasing devastation should increase international cooperation by limiting relative gains concerns, and economic development in the developing world will be encouraged by the developed nations as a tool to mitigate climate change.

The Montreal Protocol was negotiated towards the end of the Cold War. The international strategic environment was generally dominated by the two superpowers; the United States and the Soviet Union, each with their respective allies.[137] According to Grieco's theory each side would have a very high coefficient as the Cold War made each nation hypersensitive to relative gains concerns. However, despite these tensions both parties became signatories to the original protocol. This would indicate that the fear of depleting the Ozone layer was enough to mitigate relative gains concerns. Yet, the fact that both superpowers with their respective allies willingly signed the document indicate that the protocol functioned more as a leveller, limiting both parties equally. It is also hard to measure the long-term success of the protocol as the Soviet Union collapsed before the legal commencement period of the protocol started. It is therefore unknown if both parties would have followed the treaty if the Cold War continued into the 1990s. Finally, as described in the previous chapter the

[137] David A. Lake, *Entangling Relations: American Foreign Policy in Its Century,* (Princeton: Princeton University Press: 1999), p.198.

economic costs of the protocol were limited to a few key gasses in the initial period, this could have served to limit the fears surrounding relative gains. Even with all these problems, the Montreal Protocol does serve as proof that two competing superpowers can overcome relative gains concerns to help fight environmental problems. In the period after the Cold War the protocol managed to gain ratification by all U.N member states, which indicates that the protocol managed to survive the fluctuations in the global political order.

The Kyoto Protocol was negotiated and signed during the period after the fall of the Soviet Union. This period saw the United States ascend as the unrivalled superpower with economic, and military power far exceeding any other state on the planet. Or as David A. Lake put it in 1999: '(the United States) Released from the constraints of the Cold War competition, is the dominant superpower, free to act where and when its interests and desires lead'.[138] This unrivalled power position should have made the coefficient of the United States become as low as it possibly could. Yet, despite their dominance as the world's sole superpower, the United States Senate passed the Byrd-Hagel resolution restricting the participation of the United States in any international climate agreement that put legal restrictions on developed nations but not developing ones.[139] The United States had the biggest emissions of any other nation in 1997, which directly translated into bigger costs if they were to accept legally binding emission reductions.[140] Even so, the gap in economic and military power between the U.S and its closest adversary was to grand to be bridged through binding emission reductions. In 2001 the United States still maintained an unparalleled position as the world's hegemonic power. Yet, on April 27, 2001, the administrator of the Environmental Protection Agency announced that the U.S would withdraw from the Kyoto Protocol. The reasoning behind the Bush Administration's decision were in their own words; lacking scientific proof in support of the protocol, lacking commitments from developing nations and the costs of implementing the protocol.[141] The unilateral withdrawal from the treaty is not completely unprecedented. As Anthony Lake the assistant to the president on National Security Affairs under Bill Clinton put it: 'Only one factor can determine whether the United

[138] Lake, *Entangling Relations: American Foreign Policy in Its Century*, p.198.
[139] Phillipson, 'The United States Withdrawal from the Kyoto Protocol',295.
[140] Ibid, 294-298.
[141] Ibid, 292.

States should act multilaterally or unilaterally and that is America's interests'.[142] Thus it is clear that the Kyoto Protocol was not deemed to be in the United State's interests. However, the withdrawal of the U.S from the Kyoto Protocol at the height of their power does not bode well for other international climate agreements. Especially since the rise of other powers is likely to make relative gains concerns even more pronounced for the United States.

The Paris Agreement was signed and negotiated in 2016.[143] American hegemony had been significantly diminished compared to the period just after the Cold War. The United States was still the world's leading military and economic power, but the gap between the U.S and 'developing' nations like China was closing fast. In 1980 China's GDP was less than $300 billion by 2015 it was $11 trillion, second only to the United States.[144] In some areas like consumption, automobile production and other sectors China has even surpassed the United States.[145] After the 2008 financial crash China even surpassed the United States as the chief driving engine in the world economy.[146] China is still adamant that they are a 'developing' nation in relation to climate change negotiations. They support this claim by focusing on historical emissions and emissions per. capita in order to justify their protected status.[147] China is currently the world's biggest single emitter, and some studies seem to indicate that most of their emissions go unreported. Still the Paris agreement accepted China as a 'developing' nation and continued the separation between Annex-1 and non-annex one nations from the UNFCCC. The rise of China should have increased the sensitivity of the U.S to relative gains and this seems to be the case as the U.S State Department listed the unfair economic impact on American workers, and taxpayers as a core reason for their withdrawal from the Paris Agreement.[148] Furthermore, the recent policy changes in trade away from a reliance on China and towards a more domestic approach also indicate that the U.S is more sensitive to relative gains.[149]

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[142] Lake, *Entangling Relations: American Foreign Policy in Its Century*, p.199.
[143] UNFCCC, *Paris Agreement,* (UN:2015).
[144] Graham Allison, *Destined for War: Can America and China Escape Thucydides's Trap?*, (London: Scribe Publications, 2017),p.6.
[145] Ibid, p.7-9.
[146] Ibid, p.10.
[147] Ong, 'The Apparent "Paradox" in China's Climate Policy', 1140-1142.
[148] U.S State Department, 'On the U.S withdrawal from the Paris Agreement'.
[149] Thomas J. Christensen,' Fostering Stability or Creating a Monster? The Rise of China and U.S Policy toward East Asia', *International Security,* Vol.31, 1, (2006), 81.

In conclusion there is little to indicate the fact that international climate agreements can overcome the security concerns related to relative gains. The United States and Soviet Union both signed the Montreal Protocol, but it was a limited agreement that put equal restrictions on both parties. Furthermore, it is unclear if the agreement would have been as successful had the Soviet Union continued to exist. The Kyoto Protocol was signed when the U.S was in an unparalleled power position. Even so American interests trumped the international agreement. Finally, the Paris Agreement was negotiated when the U.S and the international security order was less stable than before. The rise of China and its ability to avoid legally binding commitments is of great concern to the U.S and has had a direct effect in the reasoning behind the U.S withdrawal. Finally, most of the 'enthusiastic' nations rely on NATO and the U.S to secure themselves, thus grating them a relatively safe environment. These security concerns carry with them serious implications for future international climate cooperation. As Purdon points out if climate change does cause severe disruptions to global food and energy supplies there is little to support the idea that it will increase cooperation. In fact, the opposite is more likely, as can be seen 2011 when Russia banned the export of wheat to Europe following a severe drought in, order to secure its own food supply.[150]

Conclusion

Climate Change will continue to be a defining political issue in the 21st century. The world is on track to miss the global warming target of 2˚Celsius and the future of the international climate regime complex is unclear with the U.S set to leave the Paris Agreement in November 2020. Although, some progress has been made on the regional level and within 'enthusiastic' developed nations there remains a large gap between the commitments of developing and developed nations. This gap in commitments creates relative gains concerns and has become institutionalised since the creation of the UNFCCC in 1992. The other mitigating factors often lauded by liberal academics to support international climate change cooperation are shown to be too weak to counter the general defensive positionality of states. The moral or humanitarian argument in favour of climate change cooperation is effective in the nations where climate change is important to the domestic audience. However, this

[150] Purdon, 'Neoclassical Realism',276.

does not make the argument salient in an international negotiation, and in some cases as with Russian participation in the Kyoto Protocol can even serve to lessen the international agreement. Furthermore, there is little to indicate that even the 'enthusiastic' states are willing to fund mitigation efforts without gaining anything in return. The second argument that climate change mitigation is less expensive than the costs of uncontrolled Global Warming is also flawed. If climate change is the apocalyptic disaster that some scholars claim, then there should be no debate surrounding the cost of mitigation as one cannot justify saving money if the alternative is the destruction of human civilization. However, the debate itself suggests that there is lacking agreement on the potential fallout from climate change. The costs are also asymmetrical with the developed countries bearing the brunt of the cost. Again, this redistribution of wealth directly triggers relative gains concerns, especially as the developing nations have increased their economic, military, and political power since the institutionalisation of these differences in 1992. Finally, the long-time horizon endemic to climate change allows for the influx of more temporary security concerns. As both America and China see their own geopolitical position threatened by the other, neither party is likely to sign any treaty that disproportionately affects one power and not the other. This is especially worrying as the 21st Century is likely to see both increased geopolitical rivalry between America and China as well as an increasing need to mitigate climate change. Although, this thesis is generally critical to the international climate change regime complex. It is not arguing that climate change mitigation is not essential, nor is it an attempt at minimising the terrible cost that climate change can have in the global south. It is merely meant as a critique against the signing of international climate treaties that clearly goes against the national interests of certain nations as these are likely to fail. The successful negotiation of a climate treaty does not necessarily equate to real climate change mitigation. Instead the obsessive need to focus on international treaties obscures the real domestic changes, as is seen with the U.S and their reduction in emissions. Finally, any future climate agreement needs to move away from the developed versus developing framework and allow for an even levelling between America and China, if not it risks perpetuating the present gridlock.

Appendix 1.

UNFCCC: Annex-1 nations	UNFCCC: Non-Annex 1 nations
Australia	Afghanistan
Austria	Albania
Belarus	Algeria
Belgium	Andorra
Bulgaria	Angola
Croatia	Antigua and Barbuda
Cyprus	Argentina
Czechia	Armenia
Denmark	Azerbaijan
Estonia	Bahamas
European Union	Bahrain
Finland	Bangladesh
France	Barbados
Germany	Belize
Greece	Benin
Hungary	Bhutan
Iceland	Bolivia
Ireland	Bosnia and Herzegovina
Italy	Botswana
Japan	Brazil
Latvia	Brunei
Liechtenstein	Burkina Faso
Lithuania	Burundi
Luxemburg	Cabo Verde
Malta	Cambodia
Monaco	Cameroon
Netherlands	Central African Republic
New Zealand	Chad
Norway	Chile
Poland	China
Portugal	Colombia
Romania	Comoros
Russian Federation	Congo
Slovakia	Cook Islands
Slovenia	Costa Rica
Spain	Côte d'Ivoire
Sweden	Cuba
Switzerland	Democratic People's Republic of Korea
Turkey	Democratic Republic of Congo
Ukraine	Djibouti
United Kingdom	Dominica
United States of America	And more including India, South Korea, Qatar, and all other U.N Members states.[151]

[151] An interactive comprehensive list can be found at: https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states?field_national_communications_target_id%5B514%5D=514.

2.

Time of Signing:	Agreement:	Signatories:	Aims of Agreement:	Result:
1987	Montreal Protocol	Remains the only agreement to be signed and ratified by all 197 UN members.	Limit and reduce 6 initial and later 100+ specific Chlorofluorocarbon (CFC) gasses harmful to the Ozone layer.	Widely regarded as the most successful international agreement. In 2019 reports found China emitting CFC's since 2012 in violation of treaty.
1997	Kyoto Protocol	Currently 192 parties.	Set legally binding international goals for Annex 1. Countries together with an international climate finance system.	Limited success, European countries saw emission reduction mainly due to collapse of USSR. Global emissions still increased. U.S and Canada withdrew from the protocol. The second commission period from 2012 failed to gain new commitments.
2015	Paris Agreement	All UNFCCC members (189 nations are parties to it).	Broad goals that could be set on the national levels to maintain the global temperature increase below 2˚C by 2100.	U.S., set to withdraw in 2020, and most countries on track to miss their national targets. Global emissions still rising.

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