Climate Change: 2022-2023 Topic Proposal

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Introduction/2 Page Summary

Climate change is a pressing global crisis that has the potential to dramatically change life on earth. A consensus of climate scientists believes that climate change is human-induced, already causing significant damage to the environment and, absent emissions reductions, will devastate the livelihoods of future generations.[1] In many ways, climate change magnifies other global risks: it makes disease spread more likely, decreases access to necessities like food and water, drives poor health outcomes and increases the global disparity between developed and underdeveloped countries.[2] These are not only far-off and uncertain outcomes. Many of these risks, such as desertification the Middle East and Africa and disparate health outcomes in urban America, can be seen today.

In addition to the material effects of a changing global environment, the psychological impacts are damaging as well. A 2019 poll found that the prospect of devastating climate change is causing fear, anxiety and anger among a "solid majority" of American teenagers.[3] The same *Post-KFF* poll found that Black and Hispanic teens expressed the strongest sense of urgency, because "they are more likely to live in vulnerable areas and less likely to be able to insulate themselves" from the drawbacks of the changing environment.[4] Even those in wealthy and resilient environments feel a looming threat, and associated guilt, of contributing to a problem that will undoubtedly devastate the poorest of the global poor.[5]

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[1] James Powell, "Scientists Reach 100% Consensus on Anthropogenic Global Warming," *Bulletin of Science, Technology and Society*, https://doi.org/10.1177/0270467619886266, 2019.
[2] Michael Gordy, "Climate Change as a Magnifier and Meta-disaster," *Disaster Risk Reduction and the Global System*, https://doi.org/10.1007/978-3-319-41667-0_13, 2016.
[3] Sarah Kaplan and Emily Guskin, "Most American teens are frightened by climate change, poll finds, and about 1 in 4 are taking action," *Washington Post*, https://www.washingtonpost.com/science/most-american-teens-are-frightened-by-climate-change-poll-finds-and-about-1-in-4-are-taking-action/2019/09/15/1936da1c-d639-11e9-9610-fb56c5522e1c_story.html, 2019.
[4] Kaplan and Guskin, "Most Americans teens"
[5] Kaplan and Guskin, "Most Americans teens"

There are a variety of proposed solutions to this vexing problem. Some argue that the solution requires de-growth: a drastic change in the industrial economy.[6] Techno-optimists believe that the solution is to grow our way out of the problem, with enhanced technologies and improved energy efficiency. Another group, comprised largely of economists and social scientists, believes that there are economic and regulatory fixes, such as a carbon price or enhancements to the Clean Air Act.[7] Alternatively, some believe that the solution should not focus on reducing consumption, but instead requires geo-engineering of the planet to accommodate rising emissions without drastically raising temperatures.[8] Although each solution is similar in that it attempts to address the problem of climate change, each comes with its own unique benefits and drawbacks.

Despite the importance of the climate change debate, fewer than half of K-12 teachers discuss the topic with their students.[9] When it is discussed, it is most frequently taught in science classrooms, which, although important, ignores the social, economic and political elements of the topic.[10] This reality is reflected in national polling, which found that "the number of teenagers who say they are being taught in school how to mitigate climate change appears to be on the decline."[11] Thus, a debate topic focused on the contributing factors, harm *and* solutions to climate change has the potential to address a significant pedagogical gap in our nation's educational system.

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[6] Giorgos Kallis, "In defense of degrowth," *Ecological Economics*, Volume 70, No. 5, 2011.
[7] Noah Kauffman, "Putting a price on carbon: Reducing emissions," http://admin.indiaenvironmentportal.org.in/files/file/Putting_a_Price_on_Carbon_Emissions.pdf, 2016.
[8] Joan-Pau Sanchez, "Optimal Sunshade Configurations for Space-Based Geoengineering near the Sun-Earth L1 Point," PLOS One, Volume 10, No. 8, 2015.
[9] Anya Kamenetz, "8 ways to teach climate change in almost any classroom," *National Public Radio*, https://www.npr.org/2019/04/25/716359470/eight-ways-to-teach-climate-change-in-almost-any-classroom, 2019.
[10] Kamenetz, "8 ways to teach"
[11] Kaplan and Guskin, "Most Americans teens"

Potential resolutions[12]

The primary focus of each resolution will be forcing the affirmative to actively restrict emissions. Unlike policies that have a downstream *effect* of limiting warming (e.g., painting roofs a lighter color, planting trees, building high-speed rail systems, etc.), topical affirmatives must impose a direct restriction on greenhouse gas emissions.

Resolutions number one and two are my preferences. Number one is broad, allowing affirmative teams a variety of mechanisms by which they could restrict emissions. It entirely encompasses resolution two, and also includes regulatory mechanisms like amendments to the Clean Air Act or enhanced policing via the Environmental Protection Agency. It could target specific sectors, and there is no reason to believe that the affirmative would be required to defend a specific agent. I would imagine that resolution number one would elicit concerns that it is *too broad*; however, resolution two may resolve those criticisms.

Resolution two is more narrow than resolution one; but, I believe that it has a more balanced division of affirmative and negative ground. The carbon price resolution would allow the negative team to read regulatory changes as counterplans, while the affirmative team would defend its specific pricing mechanism versus those changes. These would be good debates, because there are strong defenses of a price: it is the clearest signal to businesses and fossil fuel producers, it can be imposed on imported goods to change global emissions prices and it is an efficient way to modify consumer preferences. Thus, affirmative teams under resolution two would have ample opportunity to refute the regulations counterplan. It is possible that resolution number two would elicit concerns that it is *too narrow*. However, for over two decades there has been an intense debate about the viability of a carbon tax and cap-and-trade, including dozens of

[12] Definitions of these terms can be found towards the conclusion of the paper.

articles comparing the two against each other. Although the debate may be narrow, it is deep and rich, and it would encourage debaters to research varying nuances of each mechanism. For example, should a cap-and-trade be upstream or downstream, should the permits be traded or auctioned, what should the cap be set at, should it be linked to the global market, etc. Similarly, should a carbon tax be imposed at the point of production or consumption, what should the revenue be spent on, should it be revenue neutral, should the tax apply to all goods at the border, etc. These are concerns that economists and environmentalists have been addressing for years; hopefully, debaters on the topic would walk away with a strong understanding of these varying nuances.

Resolution 1: Elegant, broad

The United States Federal Government should substantially increase restrictions on greenhouse gas emissions in the United States.

Resolution 2: Carbon price

The United States Federal Government should impose a substantial carbon price in the United States.

Resolution 3: Cap-and-trade + Carbon price

The United States Federal Government should substantially increase restrictions on greenhouse gas emissions through a cap-and-trade and/or carbon price.

Resolution 4: Less elegant, potential debates over agent

The United States Federal Government should enact a domestic climate policy, at least substantially increasing restrictions on greenhouse gas emissions in the United States.

Resolution 5: Less elegant, potential debates over agent, list

The United States Federal Government should enact a domestic climate policy, at least substantially increasing restrictions on greenhouse gas emissions through a cap-and-trade and/or carbon price in the United States.

Resolution 6: Zero-Carbon economy

The United States Federal Government should require a transition the United States to a zero-carbon economy.

Timeliness and Material

Climate change is a suitable topic for today's socio-political moment. As the science concerning climate change has become more certain, and the effects of a changing environment have become clearer, global warming has been thrust into the national spotlight. A simple search on Google News or Lexis/Nexis demonstrates that the topic is consistently covered by the contemporary newsmedia. Dozens of topic-relevant books are published monthly, and several think tanks (Post Carbon Institute, Center for Climate and Energy Solutions, International Institute for Environment and Development, Brookings, Center for American Progress, Aspen Institute, Urban Institute, etc.) regularly publish climate change-centered works.

Climate change is also a contemporary focus of politicians and social movements. The 2020 presidential campaign focused heavily on climate change, with Democratic candidates largely agreeing about the need for significant intervention to limit greenhouse gas emissions.[13] Additionally, the Sunrise Movement, a youth movement to stop climate change, has developed into a salient political force as thousands of young people across the country have united around fighting climate change and promoting a sustainable economy. Black Lives Matter has

[13] Anthony Zurcher, "US 2020 election: Climate change takes centre stage amid wildfires," *BBC News*, https://www.bbc.com/news/election-us-2020-54156598, 2020.

consistently emphasized that racial justice requires climate justice and has made environmental justice "part of its policy platform from the start."[14]

However, this topic is not *too* timely: the Biden administration is unlikely to pursue significant restrictions on greenhouse gas emissions before or during the 2022-2023 debate season.[15] On Earth Day 2021, President Biden promised to the international community that the U.S. would make significant reductions in emissions.[16] However, the limitations of the Senate filibuster, progressive concerns about the inequality-producing effects of a carbon tax and competing political priorities are factors that, in combination, make the pursuit of a national emissions restriction extremely unlikely.[17] Instead, the federal government will pursue incremental technological advances and make promises of emissions reductions that the United States is unlikely to keep absent new regulations.[18]

Scope

Climate change affects everyone. Some of these impacts are mundane: home insurance premiums are rising, more people succumb to seasonal to allergies than ever before and cities are raising taxes at a marginally higher rate to repair damage from climate change accommodate climate resiliency measures.[19] However, some of these impacts are far more dangerous: entire communities are being washed away by rising sea levels, hurricanes are growing in frequency and intensity, and habitat loss is increasing at a rapid pace. The climate change reality that was

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[14] Ayana Elizabeth Johnson, "Black Lives Matter and the climate," *How to Save a Planet*, https://gimletmedia.com/shows/howtosaveaplanet/39habgl, 2020.
[15] Greg Ip, "Carbon tax sidelined in Biden's push on climate, taxes," *Wall Street Journal*, https://www.wsj.com/articles/support-for-carbon-tax-grows-except-where-it-matters-most-11616590985, 2021.
[16] Scott Waldman, "Biden Promises to Slash Greenhouse Gas Emissions 50 Percent by 2030," *Scientific American*, https://www.scientificamerican.com/article/biden-promises-to-slash-greenhouse-gas-emissions-50-percent-by-2030/, 2021.
[17] Brady Dennis "Biden faces 'moment of truth' as he weighs key U.S. climate promise," *Washington Post*, https://www.washingtonpost.com/climate-environment/2021/03/23/biden-paris-climate-pledge/, 2021.
[18] Dennis, "Biden faces 'moment of truth'"
[19] Renee Cho, "10 climate change impacts that will affect us all," *State of the Planet*, https://news.climate.columbia.edu/2019/12/27/climate-change-impacts-everyone/, 2019.

"once-seemingly" on the "distant horizon keeps moving up on us."[20] The next decade will be "make or break" for whether these harms become permanent fixtures of humanity's future.[21]

Although every student will be affected in some way by climate change, each of their experiences may be unique. Debaters across the country have an opportunity to tie debates about climate change to their own personal experiences. Debaters in Miami and New Orleans may choose to discuss the vulnerability that their communities feel due to rising sea levels; debaters in the Midwest may express concern about the lack of access to water and changing agricultural patterns; debaters in the Northeast may note the frequency of hurricanes disrupting their way of life; and, debaters in Texas and California may note their experience during recent energy blackouts.

Range and Interest

Debates about climate change are accessible for debaters of all skills. Most students likely have a basic understanding of climate change; however, few have a deep understanding for the complexities of climate policy. The topic is great for novices, because there is accessible research and very clear policy proposals. At its core, the topic is quite simple: do the negative economic effects of climate restrictions outweigh the benefits.

However, it is also great for advanced debaters. The debate encapsulates extremely complex elements of climate policy design and important philosophical debates over humanity's relationship to the Anthopocene that allow for creative counterplans and kritiks. The section of

[20] Los Angeles Times, "Editorial: Biden must set aggressive carbon reduction goals to meet Paris climate targets," https://www.latimes.com/opinion/story/2021-04-18/biden-carbon-reduction-paris-climate-targets-global-warming-cop26, 2021.
[21] Hersh Shefrin, "President Biden's policy mistake about carbon pricing will be monumental," Forbes, https://www.forbes.com/sites/hershshefrin/2021/03/25/president-bidens-monumental-climate-policy-mistake-about-carbon-pricing-will-be-very-costly/?sh=18cffeb16b51, 2021.

the paper dedicated to affirmative and negative ground will demonstrate the depth and scope of the climate change topic.

Quality

Centering debates on the important topic of climate change encourages students to investigate political, historical, scientific and economic discussions that are central to civic discourse. Because climate change intersects with all facets of life, this topic will keep the interest of debaters interested in economics, health, agriculture, engineering, racial inequity, colonialism, and more.

Balanced affirmative and negative ground

Affirmative Ground[22]

The advantages to restricting greenhouse gas emissions are manifold. Affirmative cases will be on their strongest footing when arguing about the positive benefits of reducing the worst effects of global warming. However, they will also be able to claim advantages based on limiting global warming, reducing negative environmental effects of fossil fuel production, enhancing green-tech innovation, improving the image of the United States globally and encouraging other countries to meet their treaty-based Paris commitments. In addition to these economy-wide advantages, there are sector-specific advantages. For example, affirmative cases could argue that greenhouse gas restrictions improve the resilience of electricity grids or improve the innovation of the US electric vehicle market.

For students wanting to discuss more critical advantages (e.g., anti-black racism, settler colonialism, neoliberalism, etc.), topical affirmatives provide an opportunity to do so. The legacy of fossil fuels and the ramifications of climate change both intersect with these pernicious

[22] The evidence supporting these affirmative arguments can be found in the "supporting evidence" section of the document.

structures of power. Although an emissions restriction might not eliminate the cause of the harm, it would address an important material implication that devastates the most disadvantaged people globally.

In addition to these topic-specific harms, there are mechanism-related advantages. Proponents of carbon taxes and cap-and-trade schemes argue that these would be an ideal way for the government to generate revenue to fund other important national projects.

Negative Ground[23]

There are several potential disadvantages to restricting greenhouse gas emissions. Although the negative arguments are frequently economic in nature, they are diverse. First, negative teams will likely argue that greenhouse gas restrictions hurt the U.S. economy by spiking consumer energy costs and immediately stranding assets of major fossil fuel corporations. Second, negative teams can argue that limiting fossil fuel consumption hurts the economies of fossil fuel exporting countries. Countries that rely heavily on the export of oil and natural gas would potentially be devastated by a fast global transition to renewable energy. The reaction in these fossil fuel exporting countries would consist of slashing of important social services, heightened domestic instability and/or diversionary conflicts.

For many of the advantages listed in the previous section, there is a corresponding disadvantage. A negative team could accept the premise that an emissions restriction would boost U.S. climate leadership but argue that it would be better to have the E.U. or China lead the global climate future. Similarly, a negative team could accept the premise that the affirmative facilitated a fast transition to renewable energy but argue that it would be harmful to mine the minerals needed for advanced renewable technologies.

[23] The evidence supporting these negative arguments can be found in the "supporting evidence" section of the document.

There are also political disadvantages to sweeping climate legislation. The Obama administration's emphasis on health care over other priorities demonstrated that major legislative priorities trade off, and the political capital spent on one might prevent other major initiatives from passage. Similar arguments have been made about the Biden administration's political priorities.

In addition to disadvantages, the negative would have several counterplans available. First, non-restriction counterplans, like economic incentives, would likely be popular. These counterplans would argue that restricting emissions is a more economically harmful way of promoting green innovation than targeted subsidies for technological innovation. Second, counterplans that respond to the harm of global warming differently (adaptation or geo-engineering) would be popular. These non-mitigation strategies would avoid disadvantages based on lowering fossil fuel consumption. Finally, some agent counterplans would potentially be available depending on the resolution chosen. The stem phrase of "enact a domestic climate policy" may carry connotations of legislative or statutory action. So, executive counterplans and counter counterplans would likely be popular. The more elegant, less wordy, resolutions would not make these agent counterplans as competitive.

Finally, there is ample negative critical ground. Critical economists are concerned that merely tinkering within the neoliberal structures greases the wheels of industrial capitalism and its associated harms. Other critical theorists disavow the Paris agreement as upholding western values and its targets as implicitly sacrificing large portions of the global south. There are also criticisms centered on representing warming as apocalyptic or as a security threat. These, in addition to other stock criticisms, provide more than sufficient fodder for critically interested debaters and coaches.

Pre-evidence conclusion

Climate change holds great potential as a debate topic. Nationally, K-12 students are interested in the topic, but generally lack the knowledge necessary to carry informed climate conversations. The topic has strong affirmative advocates and disadvantages that allow negative teams to engage with qualified evidence.

This paper has thus far been written as a topic paper, not as a debate brief. Admittedly, it has been reliant on footnote and asserted the existence of compelling arguments on both sides of the debate. In what follows, I break with the prose. Instead, briefed evidence will be found that supports: definitions of terms in the resolution, affirmative advocates and tools to write affirmative advantages, and negative arguments.

Definitions

The following definitions broadly describe the most pertinent terms in the above resolutions.

"Federal Government" means the United States government
Black's Law 99
(Dictionary, Seventh Edition, p.703)
Federal Government
The U.S. government—also termed national government

Enact means binding and enforceable
John C. **Philo in 2019**
Anthony D. Paris (P71525) SUGAR LAW CENTER FOR ECONOMIC & SOCIAL JUSTICE; AMICI CURIAE BRIEF OF THE SUGAR LAW CENTER FOR ECONOMIC & SOCIAL JUSTICE, THE MICHIGAN CHAPTER OF THE NATIONAL LAWYERS GUILD, THE MICHIGAN IMMIGRANT RIGHTS CENTER, FARMWORK LEGAL SERVICES OF MICHIGAN AND THE CENTER FOR COMMUNITY BASED ENTERPRISE IN OPPOSITION TO THE CONSTITUTIONALITY OF 2018 PA 368 and 2018 PA 369; https://courts.michigan.gov/Courts/MichiganSupremeCourt/oral-arguments/2018-2019/Documents/159160_33_02_AC_SLC.pdf

Article 2, § 9 gives the Legislature the power to "**enact**" a citizen's initiative before the measure is placed on the ballot. The provision reads: "[a]ny law proposed by initiative petition shall be **either enacted or rejected by the legislature** without change or amendment." Const 1963, art 2, § 9 (emphasis added). The framers and the electorate in 1963 would have shared an understanding that the term "enacted" encompasses and requires that an initiative, in fact, takes effect as a law of this state. As stated by the Michigan Supreme Court, "the primary objective of constitutional interpretation is to determine the original meaning of the provision … at the time of ratification." Nat'l Pride at Work, Inc, 481 Mich at 67. The original meaning is determined based on the rule of "common understanding." People v Nutt, 469 Mich at 573. The rule of common understanding holds that "the people are understood to have accepted the words employed in a constitutional provision in the sense most obvious to the common understanding." Id. (emphasis added). The court determines common understanding by the term's plain meaning at the time of ratification. Nat'l Pride at Work, Inc., 481 Mich at 67-68. Common words are given their plain meaning, obvious on their face. Phillips v Mirac, Inc., 470 Mich 415, 422; 685 NW2d 174, 179 (2004). Only when words have no plain meaning, may the Court then ascribe a legal or technical meaning. Id. (citing Silver Creek Drain Dist v RECEIVED by MSC 6/19/2019 5:06:00 PM 11 Extrusions Div, Inc, 468 Mich 367, 375; 663 NW2d 436 (2003); Michigan Coalition of State Employee Unions v

Civil Service Comm, 465 Mich 212, 222-223; 634 NW2d 692 (2001), quoting 1 Cooley, Constitutional Limitations (8th ed), p 132). "Courts … may "discern the 'plain meaning' by reference to a dictionary." Citizens Protecting Michigan's Constitution v Sec'y of State, 280 Mich App 273, 295; 761 NW2d 210 (2008) (citing Nat'l Pride at Work, Inc 481 Mich at 67-69). See also People v Duncan, 494 Mich 713, 723; 835 NW2d 399 (2013). The common understanding of the term 'enact' incorporates an understanding that a measure in fact becomes effective and binding on citizens as a law of this state. It is inconceivable that the majority of persons who ratified art 2, § 9 understood the term "enact" to simply mean a formal vote of the state Legislature without the law ever becoming effective. Common definitions of the word support this understanding. Dictionary.com defines the verb 'enact' to mean "to make into an **act or statute**", where an act and statute are defined as a law and law is defined as "principles and regulations established in a community by some authority and applicable to its people [and] … **recognized and enforced** by judicial decision." Dictionary.com, <http://www.dictionary.com > (accessed June 17, 2019) (emphasis added). An act or statute that never comes into effect and that is not intended to come into effect is not a law under lay understandings and such measures have not been 'enacted' as those terms are commonly understood now or in 1963. The New Oxford American Dictionary shares this understanding, defining 'enact' as to "make law" and "put into practice." New Oxford American Dictionary, p. 570 (3rd ed). Law is again defined as "the system of rules that a particular … community recognizes as regulating actions of its members and may enforce" and "a thing regarded as having the binding force or effect of a formal system of rules." Id. at 989. Again, the Random House Unabridged Dictionary, defines 'enact' as "to make into an act or statute." Random House Unabridged Dictionary, p. 639 (2nd ed). Both an act and a statute are defined as a law. Id. at pp. 29 & 1862. 'Law' is defined as "the principles and regulations established in a community by some authority and applicable to its people … recognized and enforced by judicial decision." Id. at 1089 (emphasis added). Webster's Seventh New Collegiate Dictionary defines 'enact' as "to establish by legal or authoritative act" and "to make (as a bill) into law." Webster's Seventh New Collegiate Dictionary, p. 272 (1963). 'Establish' is defined as "to institute (as a law) permanently by enactment or agreement." Id. at 284. And again, 'law' is defined as "a binding custom or practice of a community : a rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority." Id. at 478. Webster's New World Dictionary, College Edition also defines 'enact' as "to establish by legal or authoritative act" and "to make (a bill, etc.) into law" with substantially similar definitions to the words 'establish' and 'law' noted above. Webster's New World Dictionary, College Edition, p. 477 (1960). In all instances, the definition of 'enact' encompasses a requirement that the measure at issue be made binding and enforceable and that it become a rule that is, in fact, in effect. **This is particularly true in the context of laws**, which in all cases are commonly understood to be binding rules that is enforceable by an authority. **An initiative is therefore only fully 'enacted' when there is an intent that a measure become binding and enforceable**. Enactment is not complete until that occurs. Thus, an initiative could not be amended or repealed by the Legislature until that process is complete. Common understandings of the term 'enacted' as found in art 2, § 9 requires that the initiative cannot be amended or repealed until the law becomes effective and, as explained in the following section, not until the next legislative session following the session in which the measure becomes effective (when enactment is completed).5

Enact exclusively means the Congress, not the courts or executive

Ayers 18 - Assistant Professor of Law and Director of the Government Law Center, Albany Law School (Ava, "Federalism and the Right to Decide Who Decides," *63 Vill. L. Rev. 567*, Lexis)//BB

Is it safe to assume that the phrase "enact a State law" and its variants refer to legislative action, as opposed to executive, judicial, or administrative actions? Dictionaries confirm that the verb "**enact**" generally refers to legislative action, rather than executive, judicial or administrative actions.62

start footnote 62

62. For example, the Oxford English Dictionary defines "enact" as "[o]f a **legislative** authority: To make into an act." Enact, Oxford English Dictionary, http:// www.oed.com/view/Entry/61514?rskey=8kxjq3&result=3&isAdvanced=false#eid [Permalink unavailable] (last visited Apr. 10, 2018).

end footnote 62

And when Congress wants to allow non-statutory state action, it does so explicitly, by using language like this: Nothing herein shall be construed as interfering with such rights as the States now have either to the waters within their borders or to adopt such policies and enact such laws as they may deem necessary with respect to the appropriation, control, and use of waters within their borders, except as modified by the Colorado River compact or other interstate agreement.63 When Congress wishes to do so, it is quite capable of using language that includes non-legislative actions. For example, when the federal Real Estate Settlement Procedures Act preempts inconsistent "State law," it takes care to define "law" broadly: "'Law' as used in this section includes regulations **and** any enactment which has the force and effect of law and is issued by a State or any political subdivision of a State."64 Another statute likewise provides that "[n]o State or political subdivision thereof may enact, prescribe, issue, continue in effect, or enforce any law (including any regulation, standard, or other provision having the force and effect of law)" that transgresses on the relevant areas.65 Similarly, the Airline Deregulation Act preempts "a law, regulation, or other provision having the force and effect of law" that applies to the relevant subject matter.66 Another example of congressional tolerance for non-legislative state action is the federal E-Sign Act, under which e-signatures cannot be denied legal effect in any transaction affecting interstate

commerce.67 That Act preempts any "State statute, regulation, or other rule of law"—note the care to include non-legislative action.68 It then exempts from preemption not only state "enactments," but any state action that "constitutes an enactment or adoption of the Uniform Electronic Transactions Act."69 Even though this statute is anticipating the possibility of states adopting model statutes, it uses the phrase "enactment or adoption," taking care to allow for state action other than legislation. In other words, the law allows states to adopt a model statute through non-legislative means. At times, then, Congress is remarkably protective of states' non-legislative lawmaking. Against this backdrop of congressional care in using the word "enactment," it seems reasonable to assume that statutes referring to the "**enactment**" of a state "law" **do indeed refer to action by the legislature**. The question is an important one, because (as noted above) there are many such statutes.

Enact can also mean more than just legislative

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The text of the savings clause does not limit "enactments of State law" to legislative enactments.85 Opponents, nevertheless, argue that only a legislature may enact a law.86 However, plain meaning and popular use of the word "enact" is not so limited. The Merriam-Webster Dictionary does not define "enact" as an action exclusive to legislatures; it is merely defined as "to establish by legal and authoritative act," or "to make into law. . . ."87 "Enact" is not defined, nor is it generally thought of, as an action unique to legislatures.

Further, **courts commonly refer to court-enacted rules**. For example, the California Supreme Court has discussed the "rules of court enacted in response to [a] constitutional amendment . . . .",88 the Delaware Supreme Court has referenced a "statute or rule of court enacted under authority of law",89 and many other state supreme courts and federal appellate courts often have pointed to court-enacted rules.90 These cases refer to court-enacted rules that deal with bearing the cost of printing a transcript record,91 rules setting the requirements for appeal in state court proceedings,92 and rules prescribing class action requirements.93 The plethora of these examples indicates that courts have not restricted the ability to "enact" a law to the legislature.

The fact that these cases refer to court-enacted "rules" rather than "laws" is of little significance. Similar to legislative enactments of law, court rules have "the force of law" and are in this important way **indistinguishable** from legislative laws.94 The U.S. Court of Appeals for the Second Circuit has stated that "[l]ocal rules have the force of law, as long as they do not conflict with a rule prescribed by the Supreme Court, Congress, or the Constitution."95 The Committee, citing Black's Law Dictionary, notes, "'[L]aw means more than statutes and includes legislation, judicial precedents, rules, and legal principles . . ."96 Thus, it follows that a state court may enact a law sufficient to activate § 1621's savings clause.

An emissions restriction must prevent emissions, not production of a good

Zeller 7 – MA @ the Kansas State University (Todd, "THE UNITED STATES ACID RAIN PROGRAM: ARE TRADABLE EMISSION PERMITS WORKING EFFICIENTLY?," Proquest Theses)

The first policy method of pollution control is to directly limit the amount of pollutants each utility is allowed to emit. This can be done with a restriction on the plant's production **level of the good** (**production restriction**), electricity, or a restriction on the **plant's emissions** level (**emissions restriction**). New technology makes plant-specific emissions restrictions possible. As we will see, emissions restrictions will be more cost effective than production restrictions. If the government chooses to regulate the **goods** market, i.e., a production restriction, it will specify the total quantity of production allowed for each of the power plants. Production levels will be restricted in order to reduce emissions. The quantity each plant is allowed to produce may be based on the average emissions produced in the industry. To achieve efficiency, regulators will mandate a production level where SMC=SMB.5

In general, the use of quantity restrictions in an otherwise competitive market means that the producers are made better off because they are able to receive a higher price per unit when production is reduced. Conversely, consumers of the good are worse off due to the quantity restriction because they are consuming less of the good and have to pay a higher price for it. This is illustrated in Figures 2.1 and 2.2. Figure 2.1 illustrates the market outcome. Figure 2.2 illustrates the quantity restriction which equates SMC with SMB.6 We see that the quantity restriction transfers surplus from consumers to producers. The area of triangle ABC is the lost surplus due to the restriction; however, it is more than offset by the value of the pollution reduction due to the regulation.7

Even though consumers are made worse off, if the socially optimal level of production is correctly estimated, then society as a whole will be better off. Note that a production restriction does not allow the firms flexibility in choosing how to abate. Moreover, a production restriction does not give firms incentive to find innovative and least-cost ways to abate.

Alternatively, the government can regulate **emissions**. However, although more cost-effective than a production restriction, an emissions restriction will not be cost effective in general. To see why, consider the following. If the government chooses to establish a market for pollution reduction, then it specifies the **total amount of allowable pollution** and

then divides this amount, possibly equally, between all of the power plants. For this to be possible, it must monitor the emissions at each plant. It also may specify which technologies the plants are allowed to use. To illustrate this case, I will use Gruber's example (pp. 133-138) and Figure 2.3. Total pollution is at 400 units prior to the government intervention. The marginal external damage (MD) of each unit of pollution is $100 which equals the benefit to society for each unit abated. Suppose that the government wants to reduce pollution by 200 units, and that there are two power plants, A and B, with differing marginal cost of abatement (MC) curves. The government could adopt a policy of equal emissions reduction across plants and require that both plants reduce emissions by 100 units each.

A restriction requires direct intervention, not mere supervision

Schiedler-Brown 11 – JD, brief filed in St of Washington (DOCKET: 11-2-19357-8 SEA)

3. The ordinary definition of the term "restrictions" also does not include the reporting and monitoring or supervising terms and conditions that are included in the 2001 Stipulation. Black's Law Disctionary, fifth edition,(1979) defines "restriction" as; A limitation often imposed in a deed or lease respecting the use to which the property may be put. The term "restrict' is also cross referenced with the term "restrain." Restrain is defined as; To limit, confine, abridge, narrow down, restrict, obstruct, impede, hinder, stay, destroy. To prohibit from action; to put compulsion on ; to restrict; to hold or press back. To keep in check; to hold back from acting, proceeding, or advancing, either by physical or moral force, or by interposing obstacle, to repress or suppress, to curb. In contrast, the terms "supervise" and "supervisor" are defined as; To have general oversight over, to superintend or to inspect. See Supervisor. A surveyor or overseer. . . In a broad sense, one having authority over others, to superintend and direct. The term "supervisor" means an individual having authority, in the interest of the employer, to hire, transfer, suspend, lay off, recall, promote, discharge, assign, reward, or discipline other employees, or responsibility to direct them, or to adjust their grievances, or effectively to 16 recommend such action, if in connection with the foregoing the exercise of such authority is not of a merely routine or clerical nature, but required the use of independent judgment. Comparing the above definitions, it is clear that the definition of "restriction" is very different from the definition of "supervision"—very few of the same words are used to explain or define the different terms. In his 2001 stipulation, Mr. Kincheloe essentially agreed to some supervision conditions, but he did not agree to restrict his license.

A restriction must forbid a particular activity, which is distinct from merely discouraging it

Coyle 4 – JD Candidate (Anne, "A MODEST REFORM: THE NEW RULE 32.1 PERMITTING CITATION TO UNPUBLISHED OPINIONS IN THE FEDERAL COURTS OF APPEALS," 72 Fordham L. Rev. 2471)

Professor Barnett's criticism of the language of the New Rule 32.1 does not reach the core tension between promoting judicial accountability through free citation on the one hand, and discouraging judges from writing opinions at all in certain types of cases on the other hand. Nonetheless, Professor Barnett made a legitimate point that the term "restriction" is ambiguous. 258 Is a local rule disfavoring citation a restriction? 259 Only to the extent that such a rule **forbids** citation in certain circumstances (for instance, where counsel fails to show "persuasive value with respect to a material issue that has not been addressed in a published opinion"), Professor Barnett argued, could such a rule be considered a restriction. 260 If considered a restriction, the local rule would then be impermissible under the New Rule 32.1. 261 Other local rules that **discourage** citation are "merely [2500] hortatory," and therefore do not violate the New Rule 32.1. 262 Professor Barnett suggested that requiring circuits to parse and redraft their rules to bring them into conformance with the New Rule 32.1 could diminish the necessary political support from the circuits for its enactment. 263 On the other hand, there is no reason for the local circuit rules to disfavor citation to unpublished opinions. As a practical matter, parties are not likely to cite unpublished opinions unless there is no published, hence binding, case on point; for this reason, citation of unpublished opinions will remain "disfavored" by the parties themselves. 264 Moreover, no circuit disfavors citation to other nonbinding legal authorities such as law review articles. Thus, it would be better to interpret, following the Committee Notes, any rule that disfavors or discourages citation as a "restriction," and require the courts to rewrite their rules. 265

'Restriction' must confine to a specific permitted amount

WTO DSB 11 (2011 WTO DS LEXIS 66)

Restrictions on domestic production or consumption

7.393 The Panel recalls that a WTO-inconsistent measure may be justified pursuant to Article XX(g) if the respondent whose measure is being challenged can demonstrate that its measure is made effective in conjunction with restrictions on domestic production or consumption.

7.394 The term "restriction" is defined as: "A thing which restricts someone or something, a limitation on action, a limiting condition or regulation" and as "[t]he action or fact of limiting or restricting someone or something," specifically "[d]eliberate limitation of industrial output n618 the action or fact of **confining or binding** the extent, amount, duration, etc. of permitted n619 -- in the case of Article XX(g) -- domestic production or consumption. n620 The Panel considers that the ordinary meaning of "restriction" is that which has a limiting effect.

Restriction is defined by the boundary, not the penalty

Cox 1879 – Judge, State of Ohio, District Court, Hamilton County (J, "STROBRIDGE & CO. v. WINCHELL, 1879 Ohio Misc. LEXIS 109)

By becoming [5] incorporated under the act of 1872, and associating themselves together as provided in the 1st section of the act of 1852, the members of the association are, so far as the general corporate act applies to that kind of organization, entitled to all its rights, privileges, and powers conferred, and subject to all the restrictions of the same. The term restriction is **not** to be taken to mean penalties or liabilities, but simply as restraining or limiting the powers of the association **within** the **bounds** of corporate power, as prescribed by the legislature.

A restriction is defined by the level of allowed emissions, not the cost or penalty for use

Anell et al. 89 - Chair of WTO decision panel (Lars, Mr. Lars E.R. Anell : Mr. Hugh W. Bartlett Mrs. Carmen Luz Guarda, other members. "CANADA - IMPORT RESTRICTIONS ON ICE CREAM AND YOGHURT" Report of the Panel adopted at the Forty-fifth Session of the CONTRACTING PARTIES on 5 December 1989 (L/6568 - 36S/68) http://www.wto.org/english/tratop_e/dispu_e/88icecrm.pdf)

Governmental Measures to Restrict Domestic Production
25. Canada maintained that it effectively managed the supply of all domestically produced milk, through the provincial controls on fluid milk and the joint federal provincial market share quota system for industrial milk. It was an agreed interpretation of the General Agreement that "in interpreting the term "**restrict**" for the purposes of paragraph 2(c), the essential point was that the measures of domestic restrictions effectively keep output **below the level** which it would have attained in the absence of restrictions" (Havana reports, page 89). The Canadian programmes restricted production to a level less than would be the case without the governmental controls. Farmers' participation in the supply management programmes was mandatory. Production quotas were ultimately established at the individual farm level, and the imposition of severe financial disincentives for overproduction assured the effectiveness of the system. The level of return received by producers for over-quota industrial milk was lower than the cash cost of production. The over-quota levy thus effectively restricted production above the quantitative level established by the quotas. Over the last decade there had been under-production of milk in some years, and over production in others. In the most recent six years, over-quota production of milk averaged only one per cent of total milk production. While it could not be directly demonstrated that production would be higher in the absence of the programmes, there was considerable indirect evidence that it would be. Each province fully utilized its Market Share Quota (MSQ) and applications for increased MSQs indicated that farmers had the capacity and willingness to produce more milk at the current prices if not restricted by the over-quota levy. Canada further cited recent econometric analyses which indicated that milk production would be 31 to 39 per cent higher in the absence of restrictions.
26. The United States argued that Canada had failed to demonstrate that it effectively restricted domestic production of milk. The differentiation between "fluid" and "industrial" milk was an artificial one for administrative purposes; with regard to GATT obligations, the product at issue was raw milk from the cow, regardless of what further use was made of it. The use of the word "permitted" in Article XI:2(c)(i) required that there be a **limitation** on the total quantity of milk that domestic producers were authorized or **allowed** to produce or sell. The provincial controls on fluid milk **did not restrict** the quantities permitted to be produced; rather dairy farmers could **produce and market as much milk as could be sold** as beverage milk or table cream. There were no penalties for delivering more than a farmer's fluid milk quota, it was only if deliveries exceeded actual fluid milk usage or sales that it counted against his industrial milk quota. At least one province did not participate in this voluntary system, and another province had considered leaving it. Furthermore, Canada did not even prohibit the production or sale of milk that exceeded the Market Share Quota. The method used to calculate direct support payments on within-quota deliveries assured that most dairy farmers would completely recover all of their fixed and variable costs on their within-quota deliveries. The farmer was permitted to produce and market milk in excess of the quota, and perhaps had an economic incentive to do so. 27. The United States noted that in the past six years total industrial milk production had consistently exceeded the established Market Sharing Quota, and concluded that the Canadian system was a **regulation** of production but not a **restriction of** production. Proposals to amend Article XI:2(c)(i) to replace the word "restrict" with "regulate" had been defeated; what was required was the reduction of production. The results of the econometric analyses cited by Canada provided no indication of what would happen to milk production in the absence not only of the production quotas, but also of the accompanying high price guarantees which operated as incentives to produce. According to the official publication of the Canadian Dairy Commission, a key element of Canada's national dairy policy was to promote self-sufficiency in milk production. The effectiveness of the government supply controls had to be compared to what the situation would be in the absence of all government measures.

An economic impediment is not a restriction---it must be prohibited in certain instances

VAN HOOMISSEN 95 – Judge, Supreme Court of Oregon (Bayridge Assocs. Ltd. Partnership v. Department of Revenue, 321 Ore. 21, Lexis)

The majority characterizes taxpayers' use of the property for low-income housing as coming "from a binding agreement with a governmental agency, the breach of which would entail serious financial consequences to taxpayers." 321 Ore. at 29. This evidences a misunderstanding of the facts. No "binding agreement" with the federal government is shown. Taxpayers may withdraw from the low-income housing program at any time. It is true that, should taxpayers withdraw from the program, the recapture provisions of the law provide that the claimed tax credits may be lost. In essence, by failing to continue using the apartments as low-income housing for the required number of years, taxpayers may lose certain

tax advantages. While the choice not to use the property for low-income housing in the future may indeed [37] result in financial consequences to taxpayers, they are free to make that choice, forego the tax credits provided by IRC § 42, and charge market rents or use the property for another purpose. The availability of tax credits, however, does not "impose" a restriction. Taxpayers voluntarily chose to participate in the federal low-income housing program, because taxpayers thought it was financially advantageous to do so.

A choice not to abide by a zoning ordinance, however, results in much more serious consequences than failing to receive a tax incentive in the form of a federal credit. See, e.g., ORS 215.185 (where use violates ordinance implementing a comprehensive plan, local government may "in addition to other remedies provided by law, institute injunction, mandamus, abatement, or other appropriate proceedings to prevent, temporarily or permanently enjoin, abate, or remove the unlawful * * * use"). A zoning ordinance is clearly a "governmental restriction as to use * * * under applicable law[.]" A voluntary choice to make use of one's property in a certain manner to maximize the return on one's investment, however, **is not** a "governmental restriction as to use."

The majority has confused the federal government's offer of a financial incentive (tax credits) to a property owner who voluntarily agrees to use its property in a certain manner and a taxpayer's voluntary acceptance of that offer, i.e., an economic impediment created by contract, with a "governmental restriction as to use" of that property. The text of ORS 308.205 (1989) and IRC § 42 do not support the majority's result. I reject the majority's reliance on the fact that "even if taxpayers wanted to use the properties for commercial or industrial purposes, and even if those purposes were permitted by applicable zoning laws, the governmental restrictions placed on those properties would inhibit such a use." 321 Ore. at 30. Although a sale or a change in use might be in some ways "**inhibited**" by the tax credit elections, it would **not be "prohibited**." Taxpayers may withdraw from the federal program and lose the tax credits. Taxpayers may sell the property to a new buyer, who could raise the rents to market rates and lose the tax credits.

Prefer narrow definitions of the word restriction

Heinze 3 - Senior Lecturer in Law, University of London, Queen Mary, has held fellowships from the Fulbright Foundation and the French and German governments. He teaches Legal Theory, Constitutional Law, Human Rights and Public International Law (Eric, "The Logic of Liberal Rights A study in the formal analysis of legal discourse," p. 16-17)

Variety of 'restrictions'

The term 'restriction', defined **so broadly**, embraces **any number** of familiar concepts: 'deprivation', 'denial', 'encroachment', 'incursion', 'infringement', 'interference', 'limitation', 'regulation'. Those terms commonly comport differences in meaning or nuance, and are **not** all **interchangeable** in standard legal usage. For example, a 'deprivation' may be distinguished from a 'limitation' or 'regulation' in order to denote a full denial of a right (e.g. where private property is wholly appropriated by the state 16 Agents without compensation) as opposed to a partial constraint (e.g. where discrete restrictions are imposed on the use of property which nonetheless remains profitably usable). Similarly, distinctions between acts and omissions can leave the blanket term 'restriction' sounding inapposite when applied to an omission: if a state is accused of not doing enough to give effect to a right, we would not colloquially refer to such inaction as a 'restriction'. Moreover, in a case of extreme abuse, such as extrajudicial killing or torture, it might sound banal to speak merely of a 'restriction' on the corresponding right. However, the term 'restriction' will be used to include all of those circumstances, in so far as they all comport a purpose or effect of extinguishing or diminishing the right-seeker's enjoyment of an asserted right. (The only significant distinction which will be drawn will be between that concept of 'restriction' and the concept of 'breach' or 'violation'. The terms 'breach' or 'violation' will be used to denote a judicial determination about the legality of the restriction.6) Such an axiom may seem **unwelcome**, in so far as it **obliterates subtleties** which one would have thought to be **useful in law**. It must be stressed that we are seeking to eliminate that variety of terms not for all purposes, but only for the very narrow purposes of a formal model, for which any distinctions among them are irrelevant.

There is contrary affirmative evidence that a restriction is *not* a prohibition

Words and Phrases 4 (Volume 37A, p. 406)

Miss. 1927. To "restrict" is to restrain within bounds; to limit; to confine; and does not mean to destroy or prohibit. Dart v. City of Gulfport, 113 So. 441, 147 Miss. 534.

Domestic policy is defined as direct regulation of firms or individuals in the US--- international policy is distinct, and includes global tax harmonization

Stavins 97 – Professor of Business and Government, John F. Kennedy School of Government, Harvard University (Robert, "Policy Instruments for Climate Change: How Can National Governments Address a Global Problem?," http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-97-11.pdf)

2. THE MENU OF POLICY INSTRUMENTS

Two distinct categories of policy instruments need to be considered to address global climate change. First, there are fundamentally domestic policy instruments, intended to enable individual nations to achieve their specific targets

or goals. Second, there are international (bilateral, multilateral, or global) instruments that can be employed jointly by groups of nations. By necessity, I investigate both domestic and international instruments, but it should be acknowledged at the outset that although there is abundant precedent for national environmental policy actions, there is much less experience with successful environmental initiatives at the international level. The "exceptions that may prove the rule" include the successful agreements for stratospheric ozone and the somewhat less successful international whaling agreements. In the case of global climate change, the challenges are significantly greater than either of those experiences might suggest. It is most reasonable to anticipate that stringent climate change policies will be adopted by individual nations only to the degree that those nations perceive that positive net benefits -- including international transfers -- will be forthcoming (Carraro and Siniscalco 1993; Heal 1994). The general point has been made in the starkest terms by Nordhaus and Yang: "It is single nations, not the United Nations, that determine energy and environmental policy, so any grand design to slow global warming must be translated into national measures" (1996, p. 742). On the other hand, there is little doubt that successful policies to address this truly global environmental problem will require the adoption of international agreements. Hence, it is necessary to consider both domestic and international policy instruments. 2.1 Criteria for Instrument Choice From an economic perspective, the first candidate criterion for instrument assessment should probably be relative efficiency, that is, the degree to which instruments are capable of maximizing net benefits.3 But the efficiency criterion can be problematic, because it requires not only knowledge of the costs of abatement, but also knowledge of the benefits of abatement. And the latter requires both an understanding of the physical consequences of climate change and the economic valuation of those consequences. This information burden is overwhelming in many circumstances, as it surely is at present in the global climate context; and so frequently the less ambitious criterion of cost effectiveness has been used, that is, seeking a policy instrument that achieves a given target or goal (which may or may not represent the efficient level of control) at minimum aggregate cost of abatement.4 In either case, whether an efficiency or cost-effectiveness criterion is employed, it is of course important that costs be measured correctly. This is easier said than done, since the full costs of environmental regulation involve a number of disparate elements (Table 1).5 Many policy makers and much of the general public would identify the on-budget costs to government of administering environmental laws and regulations as the cost of environmental regulation. Most analysts, however, would identify the direct capital and operating expenditure associated with regulatory compliance as the fundamental element of the overall cost of regulation.6 Additional direct costs include legal and other transaction costs, the effects of refocussed management attention, and disrupted production. "Negative costs" (in other words, non-environmental benefits) of environmental regulation, including the productivity impacts of a cleaner environment and the potential effects on innovations of regulation should, in theory, also be considered. General equilibrium effects associated with product substitution, discouraged investment, and retarded innovation constitute another important layer of costs, as do the transition costs of real-world economies responding over time to regulatory changes. Finally, some social impacts are given substantial weight in political forums, including those on jobs and economic security.7 Thus, correctly assessing cost effectiveness is by no means a trivial task. Other criteria can also be very important in comparing policy instruments. Individual nations will inevitably choose their own sets of criteria (explicitly or implicitly) to distinguish among alternative policy instruments. Although these chosen criteria will be functions of individual socioeconomic and cultural contexts, in many cases the following will likely be among those considered: probability that the environmental goal will be achieved; efficiency or costeffectiveness; dynamic incentives for innovation and the diffusion of improved technologies; flexibility and adaptability to exogenous changes in technology, resource use, and consumer tastes; distributional equity8; and feasibility in terms of political implementation and administration. Several of these criteria -- including efficiency, cost effectiveness, dynamic effects on technological change, distributional equity, and political feasibility -- are particularly important in the climate change context.

2.2 Domestic Policy Instruments

The most frequently employed approach in virtually all countries of the world for addressing a variety of environmental problems has been to set standards and directly regulate the activities of firms and individuals: so-called command-and-control instruments (Table 2). Conceivably, such approaches could be employed in the greenhouse context as well. By mandating standards, governments could ban or attempt to alter the use of materials and equipment considered to be damaging. For example, standards could be applied to buildings (energy efficiency), fuel use by motor vehicles, energy efficiency of household durables, and the content of fuels. In contrast, market-based instruments have recently been employed by governments to alter price signals to ensure that polluters face direct cost incentives to control emissions. The primary market-based instruments to be considered for greenhouse management are taxes and tradable permits. Under a true emissions tax, a charge is imposed per unit of pollutant discharge.9 A closely related application would be a tax on the carbon content of fossil fuels. As an alternative, under an emission trading scheme, sources receive permits to emit, and can then buy and sell these permits among one another.10 Because these market-based instruments have the effect of inducing decision-making units (typically firms) to choose control levels at which their marginal abatement costs are the same, overall pollution abatement costs will, in theory, be minimized.11 That is, market-based instruments can, in principle, be cost effective.

2.3 International Policy Instruments

Climate change is truly a global commons problem. The location of emissions of greenhouse gases has no effect on the global distribution of damages, and so free-riding problems plague unilateral or multilateral "solutions." Further, nations will not benefit proportionately from greenhouse-gas abatement policies. In fact, some countries -- such as Canada and Russia -- might experience no benefits from control, since they actually stand to gain from global climate change (due to the effects of increased temperatures and precipitation on agricultural production). Thus, for some countries, costs of control may exceed benefits. This means that to be successful an international (voluntary) agreement needs to include a mechanism for transferring gains to countries that would otherwise not benefit from joining an agreement. This is a central challenge for any international policy instrument that is to allocate responsibility among nations. It is at least conceivable that standards could be employed that are uniform among countries participating in an international emissions reduction agreement. It would be difficult, however, to achieve wide agreement about any large set of specific instruments, because such approaches would place severe limits on individual countries' domestic policy choices. An alternative regulatory approach would involve countries agreeing on fixed national emission levels. But marginal abatement costs would then vary greatly among participating countries, and so total global abatement costs would be much greater than necessary. Instead, some degree of aggregate cost effectiveness could be achieved if market-based instruments were employed internationally. Four possibilities stand out. First, if countries agreed to apply the same level of domestic greenhouse taxes (**harmonized**

domestic taxes), marginal abatement costs would tend to be equalized among countries. Second, a uniform international tax on greenhouse emissions could be employed, with the total tax revenue being allocated among participating countries according to some set of rules. A third potentially cost-effective approach would be a system of international tradable permits, in particular, a system of tradable carbon rights, the total allocation of which would reflect the overall emissions target. International permit trade would establish a market price -- an implicit international tax rate -- which would equate marginal abatement costs among countries, leading -- in theory -- to a cost-effective solution. Within the context of such an international tradable permit scheme, participating countries could then use whatever domestic policy instruments they chose to achieve their permit-determined targets. They might employ domestic tradable permits, domestic taxes, or conventional regulations.12 A fourth market-based instrument, closely related to the concept of international tradable permits, is joint implementation, essentially bilateral trading arranged on an ad hoc basis. This policy mechanism, which we also consider below, has received considerable attention from policy makers and others in the past few years.

Climate policy must be primarily focused on emissions reductions

Sorrell 3 – Professor of energy policy @ Sussex, energy and climate policy specialist with 25 years of experience in academic and consultancy research (Steven "INTERACTION IN EU CLIMATE POLICY," Scholar)

The term climate policy is used here to refer to measures which have a primary **or subsidiary** aim of reducing greenhouse gas **emissions**. These include energy taxes, negotiated agreements, support mechanisms for renewable electricity and subsidies for investment in energy efficiency. Measures such as these have been used for many years to achieve broader policy objectives, such as security of supply or social equity. Furthermore, climate change is a pervasive challenge which touches upon most areas of public policy (e.g. agriculture, transport, housing, land use planning). This means that the scope for interaction between climate policy and other areas of public policy is very large indeed.

'Climate policies' must have solving warming as their 'primary purpose'---that distinction is vital because everything potentially influences the climate

Lecocq 16 - Lead author of IPCC, lecturer at AgroParisTech, and director of CIRED. Franck's research focuses on the economics of climate change, including, inter alia, inter- and intra-generational equity, relationships between climate change and development, carbon markets, and the role of forests in climate policy (F, "Climate Change and Agriculture Worldwide," p. 302-303)

Climate policies, however, are only part of the toolbox available to governments to combat climate change, for they are defined as policies **intended**—by implication, **primarily**—**to combat climate change**. Speaking of co-benefits clearly emphasizes that implicit hierarchy of objectives.
However, there are many examples of public policies whose primary purpose is clearly not to combat climate change but which nevertheless have significant effects on emissions and/or on adaptive capacity. Town planning is a good example. Because they structure urban space, town planning policies play a key role in determining transport needs for households and businesses, and hence GHG emissions, and yet economic (property tax, construction financing, etc.) and social considerations (access to housing, risks Of segregation, etc.) are most often their priority.
The distinction between climate policies and those whose main objective is not to combat climate change (referred to herein, for want of a better name, as non-climate policies) may **appear** purely rhetorical, but the distinction is an **important one** in the public climate change debate. Focusing the debate on climate policies alone tends to put the spotlight on very specific forms of public action, such as carbon taxes, markets for tradable emission permits, or the creation of dedicated funds (for adaptation or mitigation), etc. Conversely, anything that makes for better integration of the climate issue into 'non-climate' policies is overshadowed.

Sector-specific prices are 'climate policies'

Edmonds 12 – PhD in economics @ Duke, Battelle Fellow Joint Global Change Research Institute (James, "Climate Change Modeling Methodology,"p. 169)

A climate policy refers to a policy scheme designed to deliberately limit the magnitude of climate change, often involving mitigation of greenhouse gases. Integrated assess- ment models (IAMs) represent climate policies in abstract forms. The most commonly modeled climate policy is attaching a universal price on emissions of carbon dioxide (or carbon dioxide equivalent of other greenhouse gases). Such policy represents a universal carbon tax or an econ- omy-wide cap-and-trade policy. Other forms of climate policies, such as differential carbon price **by sector** or renew- able portfolio standards, have also been used in IAMS.

‘Climate policy’ reduces vulnerability to warming---includes all adaptation measures

Pielke 2 – PhD, Associate Professor in the Environmental Studies Program and a Fellow of the Cooperative Institute for Research in the Environmental Sciences (Roger, “STATEMENT OF DR. ROGER A. PIELKE, JR. TO THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS OF THE UNITED STATES SENATE,” Lexis)

figure 7 omitted

Figure 7. How our perspective on ‘global warming’ might change. Rather than defining climate policy as energy policy, we might instead more clearly distinguish the two with implications for research and policy.

The arguments presented in this testimony highlight a need to distinguish ‘climate policy’ from ‘energy policy’ (Figure 7). ‘Climate policy’ refers to the actions that organizations and individuals take to reduce their vulnerability to (or enhance opportunities afforded by) climate variability and change.[22] From this perspective governments and businesses are already heavily invested in climate policy. In the context of hurricanes and floods, climate policies might focus on land use, insurance, engineering, warnings and forecasts, risk assessments, and so on. These are the policies that will make the most difference in reducing the future impacts of climate on society.

The conventional view is that climate policy is energy policy. However, much of the debate and discussion on climate change revolves around energy policy and ignores the fact that such policies, irrespective of their merit, can do little to address growing societal vulnerabilities to climate around the world. In all contexts, improving policies targeted on the societal impacts of climate depends on a wide range of factors other than energy policy. Consequently, in light of the analyses presented here, a common interest objective of climate policy would be to improve societal and environmental resilience to climate variability and change, and to reduce the level of vulnerability. Climate policy should be viewed as a complement, not an alternative, to energy policies.

‘Policy’ requires a specific plan

5th Circuit Appeals 2013 (SIERRA CLUB v. COUNTY OF FRESNO, 2013 CA App. Ct. Briefs LEXIS 4669, Lexis)

The logical starting point in the construction of LU-A.1 is the General Plan's definition of "policy" as a "**specific statement** guiding action and implying **clear commitment**." (AR 14273.) When the word "shall" is used in a policy, it is "an unequivocal directive." (AR 14274.) Thus, whatever its meaning, LU-A.1 is a specific commitment stated as an unequivocal directive.

Greenhouse gas emissions are the following 6

Steinmiller ’00 – Senior Vice President and General Counsel for Conner Strong & Buckelew

Heather A., COMMENT: STEEL INDUSTRY WATCH OUT! THE KYOTO PROTOCOL IS LURKING, Villanova Environmental Law Journal, 2000, 11 Vill. Envtl. L.J. 161

II. Background

A. Greenhouse Effect Generally

The greenhouse effect is a natural phenomenon that occurs in the troposphere. n11 It begins when ultraviolet radiation travels from [*163] the sun, through the atmosphere, to the Earth. n12 The Earth absorbs some of this ultraviolet radiation and releases the remaining radiation back into space in the form of infrared energy. n13 Greenhouse gases absorb much of this infrared energy. n14 This entire process is called the greenhouse effect. n15 The greenhouse effect prevents too much infrared energy from escaping into space and keeps the Earth's temperature warm enough to sustain life. n16 Many scientists warn that excess emissions of greenhouse gases into the atmosphere accelerates the greenhouse effect. n17 The excess emission of greenhouse gases decreases the amount of infrared energy released into space and traps more infrared energy in the Earth's troposphere. n18 The trapping of infrared energy increases [*164] the Earth's temperature and causes abrupt changes in the weather, such as floods, hurricanes, droughts, and higher sea levels. n19 The gases contributing to the greenhouse effect are: (1) carbon dioxide, (2) methane, (3) nitrous oxide, (4) hydrofluorocarbons, (5) perfluorocarbons, and (6) sulfur hexafluoride. n20 While both human activity and natural causes can create the first [*165] three of these gases, only human activity creates the last three. n21 Carbon dioxide is the most pervasive among the gases and, therefore, will be the major focus of the discussion.

The private sector is non-governmental persons and entities

Senate Report 95 (Senate Report. 104-1)

"Private sector" is defined to cover all persons or entities in the United States except for State, local or tribal governments. It includes individuals, partnerships, associations, corporations, and educational and nonprofit institutions.

Affirmative Evidence – Harms

There's a narrow window to avoid climate catastrophe

Orszag 3-2-2021, chief executive officer of financial advisory at Lazard. He was director of the Office of Management and Budget from 2009 to 2010, and director of the Congressional Budget Office from 2007 to 2008 (Peter, "Congress's Infrastructure Plan Must Put Climate First," *Bloomberg*, https://www.bloomberg.com/opinion/articles/2021-03-02/biden-s-build-back-better-plan-must-put-climate-over-deficit)

Yet sacrificing climate investments at the altar of budget neutrality would be a grave mistake. **We have reached a crucial moment** in the climate debate. Lazard's studies of the levelized cost of energy and storage have documented stunning declines in the expense of generating and storing renewable energy. What's more, a generation of electricity-producing capacity needs to be replaced, and hydrogen technology may be on the verge of a revolution. The **window for making bold investments** to cut the risk of catastrophic climate change **remains open**, **but it won't stay open** forever. There's a reason Bill Gates took this moment to write a book about the clean-energy transition: He knows **it's essential to act now to "avoid a climate disaster**." So there are two fundamental risks in requiring deficit neutrality for new climate investments: It would shift the debate to offsets, rather than the need for ambitious new investment. And the investments would be scaled back to match the available offsets, making the legislation insufficiently ambitious. 3 Forced to choose between going big on climate mitigation or limiting deficit expansion, I would take the first option without hesitation. Fiscal problems can be fixed in the future if need be, but the opportunity to fix climate change won't last. If our main concern is our legacy for future generations, **climate must be the priority**.

Biden rejoining Paris is necessary but insufficient to solve global warming. Climate policy is key

Dennis 12-22-2020 (Brady, "The U.S. will soon rejoin the Paris climate accord. Then comes the hard part.," *Washington Post*, https://www.washingtonpost.com/politics/2020/12/22/biden-paris-climate-accord/)

Leaders from 75 countries gathered this month — virtually, of course — to mark the fifth anniversary of the Paris climate accord and to outline more ambitious plans to cut planet-warming emissions in the critical years ahead. The United Kingdom vowed to stop funding fossil fuel projects abroad. The European Union said it will push to cut emissions 55 percent by 2030. Canada detailed plans to ramp up its tax on carbon to more than $130 per ton over the same period. A handful of smaller countries pledged to reach net-zero emissions by 2035, if not sooner. Three dozen nations have declared a "climate emergency" inside their borders. "They recognize the urgency and the stakes," said António Guterres, secretary general of the United Nations. "**It's time for all countries to do the same**." Dangerous new hot zones are spreading around the world The one glaring absence at the anniversary gathering: the United States. The nation that has historically spewed more greenhouse gases into the atmosphere than any other, and the only country to withdraw from the global pact, was nowhere in sight. But just before the Dec. 12 event got underway, President-elect Joe Biden blasted out a statement, vowing to rejoin the Paris agreement "on day one" and to restore the United States as a world leader in climate action. "I'll immediately start working with my counterparts around the world to do all that we possibly can, including by convening the leaders of major economies for a climate summit within my first 100 days in office," he said. Biden promised to put the nation on a path to achieve net-zero emissions by 2050, to ensure that the shift toward cleaner energy brings new U.S. jobs, and to "listen to and engage closely with the activists, including young people, who have continued to sound the alarm and demand change from those in power." Biden's promises no doubt provided relief to many world leaders, who are eager for the United States to rejoin an effort that remains far from meeting the goals forged five years ago in Paris. But Biden **may not find as warm a reception** as he hopes when the United States steps back onto the global stage in 2021. Instead, he is likely to encounter a **hopeful but wary world**. "**The U.S. has to do a lot to rebuild trust**," said Harjeet Singh, global climate lead for the advocacy group ActionAid. "**It really needs to find a way to convince the world that this time, the U.S. is genuine** ly ready to do its share." Many in the international community have harbored resentment about the United States' seeming inability, or unwillingness, to live up to its lofty promises to the rest of the world when it comes to climate change. President Trump announced early in his tenure that he would withdraw the nation from the Paris accord — insisting that following through with the nonbinding pledges of the Obama era could economically disadvantage the country. But the United States has wavered even before Trump, most notably on a key global climate treaty forged in 1997, known as the Kyoto Protocol. The United States signed that global climate treaty in 1998 under the Clinton administration, but did not ratify the deal and backed away from it under President George W. Bush. Over the years, the United States has failed to hit its own emissions-cutting targets — even as overall emissions have decreased. It also has not adequately contributed to a fund meant to help vulnerable nations that have done little to cause climate change but are most affected by it. President Bill Clinton makes a statement celebrating the Kyoto Protocol on climate change on "There's no papering it over," John Holdren, an environmental policy professor at Harvard who served as President Barack Obama's top science adviser, said of the loss of

trust the United States has suffered internationally during the Trump era. "**It's going to involve more than just saying we are back. We are going to have to demonstrate we are back, and we are going to have to demonstrate it powerfully**."

Warming leads to extinction---it's a conflict-multiplier and defense doesn't assume non-linearity

Kareiva 18, Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al. (Peter, "Existential risk due to ecosystem collapse: Nature strikes back," *Futures*, 102)

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (climate change, global freshwater cycle, and ocean acidification) do pose **existential risks**. This is because of intrinsic **positive feedback loops**, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield **surprises**. In addition, climate, freshwater, and ocean acidification are all directly connected to the provision of **food** and **water**, and shortages of food and water can create **conflict** and social unrest. Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields). Climate change intersects with freshwater resources because it is expected to **exacerbate drought** and **water scarcity**, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. Ample clean water is not a luxury—it is essential for human survival. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease. Finally, ocean acidification is linked to climate change because it is driven by CO2 emissions just as global warming is. With close to 20% of the world's protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases **storm frequency** and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, **coastal communities will be exposed to unprecedented storm surge**—and may be ravaged by recurrent storms. A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition "rare" (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare **extreme events** because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people. 4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes Humans are remarkably ingenious, and have **adapted** to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm. In contrast, today's great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, **the Earth's climate system is rife with positive feedback loops**. In particular, as CO2 increases and the climate warms, that very warming can cause more CO2 release which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth's climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios. Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002). Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that forest fires will become more frequent and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the "Thomas fire" that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This catastrophic fire embodies the sorts of positive feedbacks and interacting factors that could **catch humanity off-guard** and produce a true **apocalyptic event**. Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with

stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming. Out of all types of feedbacks, water vapor and the ice-albedo feedbacks are the most clearly understood mechanisms. Losses in reflective snow and ice cover drive up surface temperatures, leading to even more melting of snow and ice cover—this is known as the ice-albedo feedback (Curry, Schramm, & Ebert, 1995). As snow and ice continue to melt at a more rapid pace, millions of people may be displaced by flooding risks as a consequence of sea level rise near coastal communities (Biermann & Boas, 2010; Myers, 2002; Nicholls et al., 2011). The water vapor feedback operates when warmer atmospheric conditions strengthen the saturation vapor pressure, which creates a warming effect given water vapor's strong greenhouse gas properties (Manabe & Wetherald, 1967). Global warming tends to increase cloud formation because warmer temperatures lead to more evaporation of water into the atmosphere, and warmer temperature also allows the atmosphere to hold more water. The key question is whether this increase in clouds associated with global warming will result in a positive feedback loop (more warming) or a negative feedback loop (less warming). For decades, scientists have sought to answer this question and understand the net role clouds play in future climate projections (Schneider et al., 2017). Clouds are complex because they both have a cooling (reflecting incoming solar radiation) and warming (absorbing incoming solar radiation) effect (Lashof, DeAngelo, Saleska, & Harte, 1997). The type of cloud, altitude, and optical properties combine to determine how these countervailing effects balance out. Although still under debate, it appears that in most circumstances the cloud feedback is likely positive (Boucher et al., 2013). For example, models and observations show that increasing greenhouse gas concentrations reduces the low-level cloud fraction in the Northeast Pacific at decadal time scales. This then has a positive feedback effect and enhances climate warming since less solar radiation is reflected by the atmosphere (Clement, Burgman, & Norris, 2009). The key lesson from the long list of potentially positive feedbacks and their interactions is that **runaway climate change**, and runaway perturbations have to be taken as a serious possibility. Table 2 is just a snapshot of the type of feedbacks that have been identified (see Supplementary material for a more thorough explanation of positive feedback loops). However, this list is not exhaustive and the possibility of undiscovered positive feedbacks portends **even greater existential risks**. The many environmental crises humankind has previously averted (famine, ozone depletion, London fog, water pollution, etc.) were averted because of political will based on solid scientific understanding. We cannot count on complete scientific understanding when it comes to positive feedback loops and climate change.

Emissions disproportionately impact vulnerable and marginalized populations – causes hunger, disease, and increased physiological violence

Parncutt 19 (Richard Parncutt, Professor @ the Centre for Systematic Musicology, University of Graz, "The Human Cost of Anthropogenic Global Warming: Semi-Quantitative Prediction and the 1,000-Tonne Rule," Front. Psychol., 10/16/19, https://doi.org/10.3389/fpsyg.2019.02323, TM)

Greenhouse-gas emissions are indirectly causing future deaths by multiple mechanisms. For example, **reduced food** and **water supplies** will exacerbate **hunger**, **disease**, **violence**, and **migration**. How will anthropogenic global warming (AGW) affect global mortality due to poverty around and beyond 2100? Roughly, how much burned fossil carbon corresponds to one future death? What are the psychological, medical, political, and economic implications? Predicted death tolls are crucial for policy formulation, but uncertainty increases with temporal distance from the present and **estimates** may be **biased**. Order-of-magnitude estimates should refer to literature from diverse relevant disciplines. The carbon budget for 2°C AGW (roughly 1012 tonnes carbon) will indirectly cause roughly 109 future premature deaths (10% of projected maximum global population), spread over one to two centuries. This zeroth-order prediction is relative and in addition to existing preventable death rates. It lies between likely best- and worst-case scenarios of roughly 3 × 108 and 3 × 109, corresponding to plus/minus one standard deviation on a logarithmic scale in a Gaussian probability distribution. It implies that one future premature death is caused every time roughly 1,000 (300–3,000) tonnes of carbon are burned. Therefore, any **fossil-fuel project** that burns millions of tons of carbon is probably **indirectly killing thousands** of future people. The prediction may be considered valid, accounting for multiple indirect links between AGW and death rates in a top-down approach, but unreliable due to the uncertainty of climate change feedback and interactions between physical, biological, social, and political climate impacts (e.g., ecological cascade effects and co-extinction). Given universal agreement on the value of human lives, a **death toll** of this **unprecedented magnitude** must be avoided at all costs. As a clear political message, the "1,000-tonne rule" can be used to defend human rights, especially in developing countries, and to clarify that climate change is primarily a human rights issue. Introduction Anthropogenic global warming (AGW) is a human rights issue (Amnesty International, n.d.; Caney, 2010). It is violating the rights of future people—especially, in developing countries that will suffer the most. Lancet Countdown on health and climate change has warned that "A rapidly changing climate has dire **implications** for every aspect of human life, **exposing vulnerable populations** to **extremes** of **weather**, altering patterns of **infectious disease**, and **compromising food security**, safe drinking **water**, and **clean air**" (Watts et al., 2018). UN Environment (2019) found that "nearly one quarter of all deaths globally in 2012 could be attributed to modifiable environmental risks, with a **greater portion occurring** in populations in a **vulnerable situation** and in **developing countries**" (p. 22). From a legal perspective, "a right to a healthy environment in various formulations is recognized by the constitutions of 118 nations around the world" (Kravchenko, 2007, p. 539). Progress toward global emissions reductions has been consistently slow (Ge et al., 2019). Contrary to the primary aim of the United Nations Climate Change Conferences held yearly since 1995, emissions increased by 2.2% per year on average between 2005 and 2015 (Le Quéré et al., 2018) and peaked again in 2018 (International Energy Agency, 2019). The current rate of carbon emissions is some 10 times greater than the last time global mean surface temperature (GMST) was relatively high, 56 million years ago (Gingerich, 2019). AGW has therefore become a global emergency (Ripple et al., 2017). In responding to this challenge, it may help to express the urgency in new terms by shifting attention from economic to human costs, which are incomparably greater (Nolt, 2011a, 2015). The aim of this contribution is to defend the human rights of present and future people from the fatal indirect consequences of AGW caused by greenhouse gas (GHG) emissions and AGW by addressing the quantitative relationship between fossil carbon burned now and future deaths attributable to AGW. The broader context involves interculturality and anti-racism research. The **failure** of **rich countries** and **corporations** to adequately **mitigate AGW** is **racist** in the sense that the **protagonists are mainly white** and the **victims** are mainly **black** (cf. Kaijser and Kronsell, 2014). AGW may also be considered **sexist**, given known **gender differences** in effects of AGW on **health** and

life expectancy (World Health Organisation, 2011). AGW is **ageist** in that the **emissions** of today's older people will disproportionately **affect today's young people** (Page, 1999). How much fossil carbon must be burned to cause a future human death? Despite the inherent uncertainties, it is interesting to attempt a zeroth-order estimate, based on semi-quantitative considerations of the current state of global climate, the current global rate of emissions, and the complex, non-linear relationships among the amount of carbon burned, corresponding changes in GMST, current mortality in connection with poverty, and future death tolls. The question is explicitly interdisciplinary: it involves humanities (e.g., philosophy, history), sciences (e.g., physics, mathematics, statistics, psychology), practically oriented disciplines (e.g., law, medicine, international development), and disciplines that mix these groups (economics, sociology). "The greatest potential for contributions from psychology comes not from direct application of psychological concepts but from integrating psychological knowledge and methods with knowledge from other fields of science and technology" (Stern, 2011, p. 314). Of all the living and non-living things that humans encounter in their everyday lives, human lives are usually considered the most valuable (Harris, 2006)—regardless of the assumed value of non-human life (Kellert, 1997). Moreover, people are universally considered inherently more important than money (cf. Sayer, 2011); this general idea holds even if a human life can be assigned monetary value corresponding to the amount that others are willing to pay to save it. The value of a quality-adjusted life year (QALY) according to this criterion may effectively be of the order of $100,000 (Hirth et al., 2000). Can the continued use of fossil fuels be justified after comparing today's health and longevity benefits with future health and longevity deficits due to AGW? The following text begins with a summary of ways in which AGW will shorten human lives in the future. The idea of a human life as a mathematical unit of value is then introduced. After a consideration of the use of numbers and words in public discourse on AGW, and the psychological mechanisms that might distort estimates of future death tolls, an approximate top-down estimate is presented for the relationship between carbon burned now and deaths caused in the future. Ethical and political implications are addressed. How Anthropogenic Global Warming will Cause Premature Deaths Historically, burning carbon has had a large positive effect on human life expectancy and quality of life (Steinberger and Roberts, 2010; Jorgenson, 2014). Without explicitly considering AGW, United Nations (2017b) estimated that from 1960 to 2100, global mean life expectancy will have increased from 46 to 83 years, among other things due to increasing availability of energy for agriculture, heating, cooking, transport, manufacture, and construction. But carbon-based economies are also causing life-years to be lost in the future. The political challenge, therefore, is to maintain increases in life expectancy due to industrialization while minimizing losses in life expectancy due to AGW by replacing carbon-based power sources by sustainable ones. The following brief summary of widely accepted climate impact predictions illustrates the magnitude of the problem: 1. **Rising seas** will **threaten coastal** homes and **cities**. **Salination** of agricultural soils will **destroy farming** land. 2. Dry areas will become drier with longer **droughts, loss of** ground **water**, and **deglaciation**. Agriculture will be seriously affected. 3. Serious **storms** (hurricanes, cyclones, and tornadoes) will become more **frequent** and **dangerous** (Knutson et al., 2015), destroying crops and buildings, and **causing floods** and **epidemics** (cf. the cholera outbreak that followed Cyclone Idai in Mozambique in 2019; Nguyen et al., 2019). 4. **Heat waves** will become more frequent and **intense**. When wet-bulb temperatures approach human skin temperature, **body temperature** can **no longer** be **regulated by perspiration**—with fatal consequences. 5. The current rate of **species extinction** (biodiversity loss)—already 100–1,000 times faster than without humans—will **continue to increase** (sixth mass extinction event). Each of these points will affect supplies of food and fresh water, increasing current death rates due to hunger and disease. In addition, AGW will affect the nutritional content of staple crops such as rice and wheat; when carbon dioxide (CO2) levels double relative to pre-industrial levels, an additional 175 million people may be zinc deficient; 122 million, protein deficient (Smith and Myers, 2018). These points may interact with each other, causing ecological cascade effects and co-extinctions. AGW will also increase the incidence and magnitude of international conflicts including water wars (Petersen-Perlman et al., 2017). There is an additional **risk of "runaway" AGW**, in which GMST continues to rise after anthropogenic emissions stop—driven by **natural positive feedback processes** that are **not canceled** by **negative ones**: 1. **When ice melts, less** radiated **heat** from the **sun is reflected** back into space, so more is absorbed, causing more ice to melt (Albedo). 2. As the **carbon content** of oceans and soils **increases**, their **ability to absorb CO2 falls** (Gattuso et al., 2015). 3. When **permafrost** (tundra) peat **thaws**, it **releases CO2**, **methane** (CH_4), and **nitrous oxide** (N_2O), causing **more warming** and melting (Voigt et al., 2017). Permafrost peat contains about 1,700 Pg carbon—about twice as much as the entire atmosphere—of which 30% (68–508 Pg) could be released by 2100 (MacDougall et al., 2012). Atmospheric CH_4 concentration has unexpectedly accelerated in recent years (Nisbet et al., 2018). 4. Forests will dry out at the same time as weather conditions that cause **fires** (dry soil, high temperature, low humidity, and high winds) become more **frequent**. Fires **produce CO2**, causing more warming and drying (Gabbert, 2018; Reidmiller, 2018). Forest dieback can be caused by a combination of drought and bark-beetle infestation, caused in turn by AGW (Sangüesa-Barreda et al., 2015). Beetle-caused dieback can switch a forest from a carbon sink to a carbon source (Hansen et al., 2013a). Between 1984 and 2016, the European forest area affected by mortality doubled—largely due to AGW and land-use changes (Senf et al., 2018). 5. **Extreme temperatures** caused by climate change will **increase human energy consumption** for **heating** and **cooling** (International Energy Agency, 2019). When feedbacks are taken into account, the global carbon budget for limiting AGW to 2 or 1.5°C is reduced by "several years of anthropogenic carbon dioxide emissions at present rates" (Lowe and Bernie, 2018, abstract).

Affirmative Evidence – US is Key

The US is key to mitigate global climate change

Podesta & Stern 2020 - *Founder and a Member of the Board of Directors of the Center for American Progress. He served as Chief of Staff for U.S. President Bill Clinton and Counselor to U.S. President Barack Obama, overseeing climate and energy policy. **Senior Fellow at the Brookings Institution and served as Special Envoy for Climate Change under U.S. President Barack Obama.
*John & **Todd, May/June 2020, A Foreign Policy for the Climate, Foreign Affairs, https://www.foreignaffairs.com/articles/united-states/2020-04-13/foreign-policy-climate

The United States' relative absence from climate mitigation and adaptation efforts under the Trump administration has been highly problematic. U.S. resources, influence, and expertise—**not to mention the United States' enormous carbon footprint**—make the country an **indispensable player** in such discussions and actions. Pull the United States out of the equation, and the energy and focus dedicated to fighting climate change dwindles from **Beijing** to **New Delhi** to **Brasília**. In spite of the recent lull, however, the United States' policy toward climate change could be rapidly transformed, especially with a new president in the White House. We have sketched out what the changes could look like if climate were made the central organizing principle of U.S. foreign policy. The public, for its part, is increasingly eager to be led, as are large swaths of the business community. The international community will doubtless remain a bit wary of the sharp turns that U.S. politics can produce, but **other countries are hungry for the United States to lead again**. A new president who sees the climate threat for what it is could make a **game-changing difference**. It is late in the day, **but not yet too late**.

Affirmative Evidence – Solvency – Cap and Trade

FYI: Here's how cap and trade works + where it's been used.

Peace & Ye 20, Janet Peace: Senior Vice President of Policy and Business Strategy at the Center for Climate and Energy Solutions (C2ES) from 2011 to 2020. Jason Ye: Associate Director for Outreach at the Center for Climate and Energy Solutions (C2ES). (April, "Market Mechanisms: Options for Climate Policy," *The Center for Climate and Energy Solutions*, https://www.c2es.org/site/assets/uploads/2020/04/market-mechanisms-options-climate-policy.pdf, accessed 04-21-2021)
CAP-AND-TRADE PROGRAM
Another **market-based mechanism** is a **cap-and-trade program**. This approach is "**quantity-based**." Instead of setting a price on each unit of pollution, the regulatory authority determines a **total quantity of pollution** (a "cap") that will be allowed. Companies buy and sell emission allowances (**tradable certificates** that allow a certain amount of emissions) based on their needs. The limited number of these allowances creates scarcity. The requirement that regulated businesses hold enough allowances to cover their emissions ensures the cap is met and creates demand for the allowances.1 If it is less costly for a company to reduce emissions than to buy allowances, the company will reduce its own emissions. Similarly, if a company can reduce emissions below its requirements, so it has excess allowances, those allowances can then be banked for future use or sold in an open market to a firm that finds it more difficult (costly) to reduce emissions.
Because there is a scarcity of allowances and businesses can trade them, the allowances are valuable and lead to a price on greenhouse gas emissions. This price provides a continuous incentive to reduce emissions and innovate since firms can save money if they reduce their emissions and avoid buying allowances. Some firms may actually be able to raise revenue by selling their excess allowances. This is particularly true if firms are allocated some number of allowances for free—allowances are grandfathered to existing emitters. Since the allowances are valuable, how they are distributed has implications. If they are given away for free, this is a financial benefit to the recipients. If they are auctioned, the resulting revenue can be channeled to specific groups or uses (see Box 3). As discussed below, cap and trade has been successfully used to reduce ozone-depleting substances under the **Montreal Protocol**, acid rain under the **Clean Air Act**, greenhouse gases under programs in **Europe**, in **California** and **10 U.S. states** in the Northeast and Mid-Atlantic.

Cap and trade's the most effective policy to cut emissions – multiple examples prove.

Keohane 18, Senior Vice President at Environmental Defense Fund (Nathaniel, "How Cap and Trade Works," *The Environmental Defense Fund*, https://www.edf.org/climate/how-cap-and-trade-works, Accessed 04-21-2021)
**Note: Date is not provided in the article but studies from 2018 are cited, meaning the piece was written in 2018 or after.

The best climate policy — environmentally and economically — limits emissions and puts a price on them. **Cap and trade** is one way to do both.

It's a system designed to reduce pollution in our atmosphere.

The cap on greenhouse gas emissions that drive global warming is a firm limit on pollution. The cap gets stricter over time.

The trade part is a market for companies to buy and sell allowances that let them emit only a certain amount, as supply and demand set the price.

Trading gives companies a strong incentive to save money by cutting emissions in the most cost-**effective** ways.

Caps limit harmful emissions

The government sets the cap across a given industry, or ideally the whole economy. It also decides the penalties for violations.

Carbon dioxide and related pollutants that drive global warming are main targets of such caps. Other pollutants that contribute to smog can also be capped.

In carbon dioxide's case, the heat-trapping greenhouse gas mixes into the upper atmosphere and has a global effect. Reducing emissions locally lowers levels around the world.

Companies are allowed to emit set amounts

The total amount of the cap is split into allowances, each permitting a company to emit one ton of emissions. (You'd have to drive 2,400 miles, roughly the distance between New York and Las Vegas, to emit that much carbon dioxide.)

The government distributes the allowances to the companies, either for free or through an auction.

The cap typically **declines over time**, providing a growing incentive for industry and businesses to reduce their emissions more efficiently, while keeping production costs down.

Trading can lead to cuts in pollution sooner

Companies that cut their pollution faster can sell allowances to companies that pollute more, or "bank" them for future use.

This market — the "trade" part of cap and trade — gives companies flexibility. It increases the pool of available capital to make reductions, encourages companies to **cut pollution faster** and **rewards innovation**.

Because there are only so many allowances available, total pollution drops as the cap falls.

As companies use established techniques to lower emissions, such as adopting energy-efficient technology, entrepreneurs see opportunity.

Ever wonder why you don't hear about acid rain anymore? Thank cap and trade, which slashed levels of sulfur dioxide to solve the problem — at a fraction of the projected cost.

Cap and trade is **lowering emissions globally**

A market-based approach like cap and trade allows countries to make more ambitious climate goals.

China, the world's largest greenhouse gas emitter, launched the initial phase of a national carbon market in 2017 with help from EDF.

The new emissions trading system is expected to be the world's largest, dwarfing all existing programs, and is a central component of China's strategy to tackle climate pollution.

The national program builds on pilot emissions trading systems, which have included elements of cap and trade and are already underway in seven cities and provinces in China.

They cover more than 2,600 companies in regions with a population of more than 258 million.

In the European Union's Emissions Trading System, capped emissions from stationary structures were 29% lower in 2018 than when the program started in 2005.

In the United States, California's climate policies have led to a steady decline of the state's carbon dioxide pollution. The centerpiece is the cap-and-trade program, which EDF has helped design and implement.

California's emissions from sources subject to the cap declined 10% between the program's launch in 2013 and 2018. Meanwhile, the state's economy is thriving [PDF].

Cap and trade makes even deeper cuts possible when countries cooperate, such as the United States and Canada.

California and Quebec connected their systems in 2014, building a strong market that shows great potential.

Cap and trade's better than a carbon tax alone – salience, political backlash, industry resistance, program durability, and market linkage.

Burtraw 20, Darius Gaskins Senior Fellow at Resources for the Future. Burtraw was a 2018-2019 visiting scholar at the Kleinman Center. (Dallas, January 9th, "Robust Carbon Markets: Rethinking Quantities and Prices in Carbon Pricing," *The Kleinman Center for Energy Policy*, https://kleinmanenergy.upenn.edu/research/publications/robust-carbon-markets-rethinking-quantities-and-prices-in-carbon-pricing/, Accessed 04-21-2021)

In practice the most important applications of carbon pricing use a quantity approach with **cap and trade**. For policymakers, advantages of cap and trade are that it makes the environmental goal **more salient**. In early emissions markets, a political advantage of cap and trade was that emissions allowances could be given away for free, **avoiding the public's enormous resistance to new taxes**. However, in recent markets the majority of allowances are distributed through auctions, yielding proceeds similar to a tax.

Where necessary, free allocation of allowances can be used to **mollify industry resistance**. Exempting industry from a carbon tax can also mollify industry resistance. Sources that receive allowances for free nonetheless retain an incentive to reduce their emissions. Over time, it is perhaps easier to reduce free allocation in favor of an auction than it is to reverse exemptions under a tax.

Moreover, emissions allowances are typically bankable. Because they can be saved for use in future years, allowances are fungible assets that encourage firms to take early action when it is cost effective to do so. This helps support **program durability**. Cap and trade also provides opportunities for **linking markets**. Perhaps most relevant at the state level in the United States, implementation of cap and trade often does not require legislation, whereas legislation is always required and often a super majority is required to implement a tax.

Affirmative Evidence – Solvency – Carbon Tax

A carbon tax is the center of successful mitigation strategies---it's most efficient, demonstrates ambition internationally, and raises revenue.

Majkut 20, PhD, MA, director of climate policy at the Niskanen Center. (Joseph, 6-30-2020, "Responses to the carbon pricing section of the House Select Committee on the Climate Crisis Democratic Staff Report", *Niskanen Center*, https://www.niskanencenter.org/responses-to-the-carbon-pricing-section-the-house-select-committee-on-the-climate-crisis-democratic-staff-report/)

Silver bullet or not, there are powerful arguments for putting a carbon price at the **center** of **climate mitigation strategies**. Congress has **clear constitutional authority** to levy taxes. A carbon tax is **economically efficient** and **does not discriminate** between industries based on their technical capacity to decarbonize or geographical or political influence. Firms pay based on the carbon-intensity of their production. Meanwhile, it **clearly demonstrates practical ambition internationally** by setting a public price instead of relying on complex regulations. And with a relatively **low administrative burden at the Treasury**, the carbon tax **frees up other agencies** (DOE, EPA, FERC, and others) to implement **complementary efforts**.

Lastly, a carbon price is **unique** in its ability to **raise revenue** that can **lower the costs** imposed on households, **smooth** the energy transition, and **invest in innovation or infrastructure**. The revenue point is **critical** if Congress wants to use **all the building blocks** to assemble a **national climate policy**. For example, the MARKET CHOICE Act uses a small portion of carbon tax revenue to support **innovation** in **carbon capture** and **storage**—and is more generous than any previous piece of legislation.

A national carbon pricing scheme cheapens renewables, suppresses emissions, redistributes wealth, and triggers global follow-on and price linkage.

Edenhofer 21, director and chief economist of the Potsdam Institute for Climate Impact Research. He is also the director of the Mercator Research Institute on Global Commons and Climate Change and professor of the Economics of Climate Change at the Technische Universität Berlin and he provided scientific advice on carbon pricing to the German Chancellor Angela Merkel. (Ottmar, 1-20-2021, "Carbon pricing could be the Biden administration's climate tool", *The Hill*, https://thehill.com/opinion/energy-environment/534985-carbon-pricing-could-be-the-biden-administrations-climate-tool)

What can the new administration do to keep Americans safe from climate risks? There's in fact a **whole toolbox to open** after **4 years of neglecting the climate issue** — but some tools are **more effective than others**.

Of course, the U.S. will get back into the Paris Climate Agreement, which was signed by almost all governments worldwide. That's good since climate stabilization efforts need to be international, just like climate impacts do not stop at a country's borders. The world needs the U.S., and the U.S. needs the world. Yet the Paris Agreement means to bring down each nation's GHG emissions to **net zero by mid-century**. How can this **actually be achieved?**

Building a **national carbon dioxide pricing scheme** is what economists like myself find to be the **most effective tool**. Putting a price on what destabilizes our climate, on carbon dioxide, really means taxing the bad instead of goods. **Clean renewable energy** becomes **cheaper** when emitting GHGs — most notably carbon dioxide — becomes **more expensive**. While the government sets a direction to head for, it is completely up to businesses **which way they choose to get there**. It is a **market-based solution**.

This is why it is a nonpartisan policy. The Biden-Harris administration now has **the historic chance to make it a reality**. Yet, for instance, in January 2020 already veteran Republicans such as George P. Shultz, who served as secretary of State under President Ronald Reagan and as secretary of Treasury under President Richard M. Nixon, proposed a carbon tax. They called it the conservative fiscal solution. It is to some extent, but it mainly is one thing: it's reasonable.

Part of the good news is that pricing carbon dioxide is not new. California, which alone is the fifth biggest economy of the world, and Massachusetts have already quite some experience with carbon pricing. The same goes for Europe and China, also Canada and Japan — basically the greatest partners and competitors of the U.S. My country, Germany, just established a national pricing scheme to complement the European Emissions Trading System (ETS). The new administration can look at what they did, check what works well and what could be improved. It can ground its action on robust experience of others — and do better.

A U.S. carbon pricing system should work **across sectors**, from **energy production**, to **industry**, **transport** and to **housing** and **agriculture**. It should include a minimum price to provide a **reliable framework** so businesses have **certainty for planning**. Importantly, such a pricing scheme can generate **substantial income** — money that to some extent can be used to compensate low-income families, by **sending** Christmas **checks** or by **lowering** **energy taxes** or, if a government chooses so, by investing some part of it into improving U.S. **infrastructure**.

In any case, carbon pricing can be designed revenue neutral, giving back the money to the people. This is not just a matter of making it more acceptable, but a matter of social justice. Poor people pay a relatively greater part of their income for their energy bills than rich ones. Hence we need to compensate the poor. Yes, some things will become more costly under carbon pricing, but the cost of living does not need to increase. If, however, climate destabilization would go on unmitigated, costs will increase — not just for the U.S. as a whole, but also for individual citizens, since for instance supply chains for businesses get interrupted more frequently driving up their costs, and so on.

The science is clear that pushing the clean transformation **makes sense economically**. The transition will be difficult, no doubt about that. But new, green technology also means **new, sustainable jobs**. It means **a new industrial revolution** — the next big thing, complementing the digital revolution. More and more companies around the world — such as tech giant Google and financial powerhouse Blackrock and even truck makers — are aware of that and say they want to be part of the pioneers, not the laggards.

In a second step, **after introducing it nationally**, a U.S. carbon pricing system could be **linked** with those in place in **Europe** and **China**. This would assure a **level playing field for everyone**, including **U.S. businesses**. Interacting prices would **assure achieving climate stabilization** at the lowest cost because they would happen wherever you get the biggest GHG reduction bang for the buck. If this **linking of pricing schemes** would **succeed**, this could be a **real breakthrough** in countering climate destabilization. It would mark history.

A domestic tax AND border adjustment forges a carbon coalition that forces Chinese decarbonization and denies the CCP the ability to weaponize negotiations for geopolitical gain.

Erickson & Collins **21**, *Andrew S., Professor of Strategy at the U.S. Naval War College's China Maritime Studies Institute and a Visiting Scholar at Harvard University's Fairbank Center for Chinese Studies. **Gabriel, Baker Botts Fellow in Energy and Environmental Regulatory Affairs at Rice University's Baker Institute for Public Policy and a Senior Visiting Research Fellow at the Oxford Institute for Energy Studies. (Author, May/June 2021, "Competition With China Can Save the Planet", *Foreign Affairs*, https://www.foreignaffairs.com/articles/united-states/2021-04-13/competition-china-can-save-planet)

Washington should build a **coalition of like-minded partners**—largely drawn from the industrialized member states of the Organization for Economic Cooperation and Development—to **pressure China** into sourcing its energy supplies **more sustainably**. In 2019, the OECD countries commanded nearly **75 percent of global GDP and** accounted for about 35 percent of the world's carbon dioxide emissions. Such a coalition, incorporating key players among this group, including **Australia**, **Canada**, **France**, **Germany**, **Italy**, **Japan**, **So**uth **Ko**rea, and the **U**nited **K**ingdom, has a good chance of establishing the **critical mass needed** to **pressure Beijing to cut emissions**. Together with the

United States, those countries boasted an aggregate GDP of nearly $43 trillion in 2019—approximately **half** of total global GDP, according to the World Bank.

An assembled coalition should seek to use **carbon taxation**—a levy on goods or services corresponding to their carbon footprint, or the emissions required to make them—to **change Chinese behavior**. **Led by the United States**, the key industrial democracies that collectively account for the world's largest market bloc should **institute domestic carbon taxes**, preferably **benchmarked to a negotiated standard** and with provisions that would allow the rate to be **increased** on an annual or biannual basis, if necessary. These countries should then institute **carbon border adjustment mechanisms**: a tax on imported goods based on their assessed carbon footprints if they come from a place with no or lower carbon pricing.

Much of the data required to assess the carbon footprints of imported goods already exist commercially, particularly for large-volume goods such as steel, aluminum, cement, ceramics, automobiles, and other such highly energy-intensive products often made in China. Objective, publicly available carbon footprint audits would help defuse accusations from Beijing that Chinese firms were being unfairly singled out and provide a basis for the resolution of any disputes at the World Trade Organization in the event that Beijing retaliated with punitive tariffs or other measures against goods from a country participating in the carbon alliance.

Such a **coordinated system** would make carbon-intensive Chinese goods less competitive and **reduce the disadvantages** that manufacturers in the United States face from **coal-fired Chinese competitors**. But more important, it would **force China to take decarbonization seriously**. Even as China tries to reorient its economy to domestic consumption, Chinese firms still **crave access to global export markets**. With **carbon border adjustment mechanisms** in place, Chinese firms would **have** to **change the way they source energy** to **remain economically viable** in key foreign markets.

Carbon taxation now attracts **serious attention** on **both sides of the Atlantic**, and the world's democracies are generally significantly ahead of China when it comes to both meaningfully pricing carbon and having the industrial and energy-sourcing preconditions in place to make the transition to a future of net-zero carbon emissions viable. **Sixteen** European countries **already tax carbon** to varying degrees, and the European Commission is considering a carbon border tax as part of the European Green Deal. Meanwhile, bills proposing carbon taxation have been sponsored by both Democratic and Republican lawmakers in the U.S. Congress.

Equally important, big companies—including those with an existential interest in fossil fuels—also appear to accept the inevitability of carbon taxation. Court filings have revealed that in 2017, business planners at ExxonMobil—the doyen of international oil and gas firms—were already assuming a tax on carbon dioxide emissions in the OECD countries of $60 per metric ton by 2030. For perspective, consider that a carbon tax of $60 per metric ton would increase gasoline pump prices by about 54 cents per gallon, adding an average of roughly $245 to each American's annual fuel bill. Most people would not welcome the additional cost, but it is bearable. Carbon taxation would be more palatable if part of the revenue raised went to a national innovation fund, with the remainder returned to households through direct payments via so-called carbon dividends, as has been advocated by former U.S. Secretaries of State James Baker and George Shultz. Carbon dividends could be means-tested, with proportionally larger payments going to lower-income individuals and households to compensate for the inherently regressive nature of what is, in effect, a tax on energy inputs. Other countries in the carbon alliance could adopt a **similar approach** to convince their respective societies of the **merits of carbon taxation**.

The implications for Chinese firms would be **more severe**. **To remain competitive**, Chinese industrial players would be incentivized to invest in new energy sources and **cleaner, greener manufacturing processes**. This would, in turn, **push** China toward a **less carbon-intensive economic model**. At that point, the United States and its allies would already have a mechanism in place to make sure that Beijing **remained committed to decarbonization**—the ability to increase carbon tax rates to counter Chinese backsliding. And for its part, China would be far less able to **weaponize climate change negotiations** at the **expense of the global commons**.

A **climate competition strategy** of this kind would also **suit** the **Biden** administration**'s domestic priorities**. A carbon tax with border adjustment provisions would bring manufacturing **jobs back to the United States** and **boost** the various other **industries** that support production activities. It would encourage the deployment of technologies that seek to **prevent emissions from reaching the atmosphere**—**direct air capture**; **soil-based sequestration**; and other **carbon capture**, utilization, and **storage** practices and **technologies**—which would keep domestic oil and gas production **viable** in an **emission-constrained world**. Carbon taxation

would also stimulate the greater development of **wind and solar energy** and of small modular nuclear reactors, and potentially even the development of geothermal energy. As such, it would help strengthen and even expand the abundance of U.S. domestic energy sources needed to **fuel** the **manufacturing renaissance** the Biden administration **clearly seeks**. Together, these advantageous effects would help **ensure the domestic support necessary** to sustain carbon taxation over the long term and **reassure other countries** that the United States can remain a **committed partner** for the **decades** that will likely be needed to make a lasting transition to a lower-emission world.

Affirmative Evidence – Answer to Economy Disadvantage

Warming is worse for the economy than the DA

Ponciano 2-12-2021 (Jonathan, "Here's What Biden's $2 Trillion Climate-Focused Infrastructure Plan Means For Stocks And The Economy," *Forbes*, https://www.forbes.com/sites/jonathanponciano/2021/02/12/bidens-2-trillion-climate-focused-infrastructure-plan-means-for-stocks-and-the-economy/?sh=4f0ef24627b4)

"The research is clear: Without efforts to slow climate change, GDP growth will fall," Bank of America economists led by Michelle Meyer said in a note to clients Friday, citing top economists, including Treasury Secretary Janet Yellen, who estimate unmitigated climate change could reduce global gross domestic product by up to 25% this century. Biden's climate change plan will be a "double-edged sword" for the U.S. economy as a result of tougher environmental regulations, higher fuel standards and a limited expansion of "dirty" energy that could yield long-term damage to the commodities-oriented sectors, as well as oil and gas firms. Expected carbon neutrality efforts could be particularly harmful for energy and utilities firms, though the economists note the "overall purge" that's hit such industries in recent years have **likely already priced in the negative expectations**; the S&P 500 Energy Index is down 19% over the past year alone.

Negative Evidence – Carbon Outsourcing Disadvantage

The plan causes carbon outsourcing---reverses solvency.

---AT: border adjustment taxes solve the link

Plumer 17, citing Glen Peters, a scientist at the CICERO Center for International Climate Research and a key figure at the Global Carbon Project. (Brad, 4-18-2017, "How rich countries "outsource" their CO2 emissions to poorer ones", *Vox*, https://www.vox.com/energy-and-environment/2017/4/18/15331040/emissions-outsourcing-carbon-leakage)

What outsourcing emissions might mean for a (theoretical) **carbon tax**

Another fun question is what this sort of emissions outsourcing might mean for climate policy going forward. If the US ever got serious about adopting **strict limits on CO2 emissions**, one thing policymakers might worry about is that many of America's factories and plants would simply **move overseas**, **blunting the plan's effectiveness**.

In an email, Peters told me there's little evidence that US or European Union climate policies have caused much "carbon leakage" of this sort to date. In part that's because US policies have either been too weak or have been focused on sectors like power plants that can't be shipped overseas. And the EU, for its part, often carves out exemptions in its climate policies for energy-intensive industries like steel or cement. (Most of the current "leakage" happens purely through shifts in international trade flows.)

Still, this is something to consider going forward. In the US, one of the climate policies that wonks love to kick around is a carbon tax, which would increase the cost of emitting CO2 within our borders. Most carbon tax plans envision some sort of **border adjustment** — in which imports from other countries would be taxed and US exports would be exempt — in order to **limit emissions offshoring**.

But as this 2015 paper from Donald Marron, Eric Toder, and Lydia Austin of the Tax Policy Center points out, border adjustments for carbon taxes are much, much easier said than done. It's simple enough to slap a carbon tax on, say, petroleum imports, since measuring the CO2 embedded in a gallon of gasoline is straightforward. But what about the CO2 embedded in **cars**? Or **computers**? Or toys? This is quite hard:

There is **no way** the United States can **practically measure the carbon content** of goods manufactured overseas because it depends on the production technologies used in making both the goods and on the

methods used in manufacturing intermediate inputs (such as steel in automobiles). Complex sets of import duties that the United States **cannot show are directly related** to any specific characteristic of an imported product might also **run afoul of trade agreements**.

One possible approach, the paper notes, would be to forget about border adjustments for most products and instead just offer output subsidies for a select few industries that are energy-intensive but also vulnerable to trade competition and hence would be most vulnerable to carbon outsourcing — such as iron and steel, aluminum, chemicals, refining, pulp and paper, and so on. This isn't perfect, but pretty much any border-adjustment approach runs into legal, economic, or environmental problems, and some amount of clumsy jury rigging is probably unavoidable. Now, granted, as my colleague David Roberts recently pointed out, it's vanishingly unlikely that Congress is going to be passing a carbon tax anytime soon, so this is hardly worth agonizing over right now. But it's a good reminder that **trade** can make tackling a global problem like climate change that **much more complicated**.

The plan triggers an exodus to corporate tax havens.

Arvin & Green 21, *Jariel, Foreign/World Fellow @ Vox. **Jessica F., an associate professor of political science at the University of Toronto whose work focuses on global environmental politics. (3-5-2021, "Fixing climate change: Close the offshore wealth loophole", *Vox*, https://www.vox.com/2021/3/5/22310179/carbon-tax-climate-change-wealth-tax)

Jessica Green

I looked at the studies of the EU's actual performance: If you try to isolate how much emissions fell because of the EU's Emissions Trading System, estimates have only placed it at around **one** to three **percent per year,** which is **not a lot**.

Plus, the EU is a set of countries that are **very wealthy** and have a **significant regulatory capacity**. I mean, they are literally **armies of bureaucrats** who are working on this issue. And they have a **lot of political will**. So in many ways, the EU has been the **most likely** case for success — and it's **still not that great.**

Jariel Arvin

So it's a success story in a way, but it's still not effective enough. I'd like to talk more about what you're proposing countries do instead of, or at least in addition to, carbon pricing. The argument involves getting countries to change their tax policies to eliminate corporate tax havens, is that right?

Jessica Green

The basic idea is that **each country** makes its **own laws** about how much they tax individuals and corporations, and the rules around **transparency**. A handful of countries, including the UK through [overseas territories] like the British Virgin Islands, have set their corporate tax rates **very low** or **nothing at all.**

So if you are a **multinational corporation** like **Google** or **Amazon**, or an oil and gas company, you can say, "Okay, well, then I'm going to have some of my company incorporated in the British Virgin Islands. And if I report my profits, they will **only get** taxed at **3 percent**, as opposed to 15 percent back in the UK. So that's just literally money in the bank. And as long as I don't repatriate that money to the UK, I don't have to pay taxes on that money."

It gets really complicated — international tax law is very complex. But there are ways you can **create subsidiaries** or **parts of a corporation** and **route your money** in different ways to **take advantage** of the most **advantageous tax laws**.

Jariel Arvin:

Are there any countries you'd say are worse than others when it comes to doing this?

Jessica Green:

There's a handful: Switzerland, the Netherlands, the UK with its overseas territories and protectorates like the Cayman Islands, Jersey, the Isle of Man, and Bermuda; and the Bahamas.

Jariel Arvin

Okay, so I think I get how these corporate tax havens work and why companies use them. But how does this relate to climate change? Is it that this kind of financial secrecy enables companies to engage in **bad environmental behavior** without facing **economic consequences?**

Jessica Green

There are two ways. One is direct: We know, for instance, that [many] firms that offshore their wealth are linked to **deforestation in the Amazon**. These are companies that are doing bad environmental stuff, and they have money to do that in part because they **offshore some of their wealth**.

The second way is indirect. If you believe — as I do as a political scientist — that money is power, well: We know that fossil fuel companies are **offshoring** some of their profits, which makes them wealthier and therefore **more powerful** in their ability to **influence political processes** to **slow down decarbonization policy**.

Negative Evidence – Economy Disadvantage

A carbon tax would devastate the US economy

IER 10 http://instituteforenergyresearch.org/wp-content/uploads/2009/03/Carbon_Taxes_Primer.pdf Carbon Taxes: Reducing Economic Growth—Achieving No Environmental Improvement

A carbon tax set at a wrong level will cause great economic harm. Even the proponents of carbon taxes, such as Yale University Professor William Nordaus, find that once there is deviation from worldwide participation, the costs of achieving environmental global improvements **dramatically rise.** Nordhaus' economic model shows that an overly ambitious and/or inefficiently structured policy can swamp the potential benefits of a perfectly calibrated and efficiently targeted plan. distort the market, render the tax code even more complicated, and hide yet another round of handouts to well-connected special interests. 14 For example, Nordhaus' optimal plan yields net benefits of $3 trillion ($5 trillion in reduced climatic damages and $2 trillion in abatement costs). Yet, other popular proposals have abatement costs that exceed their benefits. The worst is former Vice President Al Gore's 2007 proposal to reduce carbon dioxide emissions 90 percent by 2050. Nordhaus' model estimates this plan would make the world more than $21 trillion poorer than if there were no controls on carbon dioxide.15 Realistically, a carbon tax would lead to lower energy use and lower economic output because low-**carbon replacement technologies simply do not exist**. Carbon taxes effectively increase the cost of fossil fuels in an effort to make non-fossil fuels more economically attractive. The technologies to significantly reduce greenhouse gas emissions from fossil fuels, however, **are decades away and extremely costly.**16 Consider automobile use and gas prices. People have begun to transition toward fuel-efficient cars, but the real impact of high gasoline prices in 2008 was to reduce vehicle miles traveled. Just as higher fuel prices led to less driving, higher energy prices will lead to reduced energy consumption. That will lead to a corresponding drop in our ability to make economic choices. Given current technologies**, carbon taxes will result in less economic output**. The graphic below illustrates that point. The implication is clear—there is a strong correlation between energy use and GDP. Just because a proposal is "budget neutral" for the government does not mean it is "budget neutral" for American families. Carbon taxes or cap and trade programs will transfer wealth from rural areas, where people drive more and use more energy, to more densely populated urban areas.17 Not coincidentally, many urban and Northeastern politicians favor a cap and trade program or carbon taxes. Also, carbon taxes will disproportionally harm states that generate the majority of their electricity from coal-fired power plants.18 9. Domestic carbon taxes, even in the best case, can only produce marginal impacts on climate. In 2006, China surpassed the United States as the world's largest emitter of carbon dioxide. These states tend to be more rural states. 19 But the difference in emission growth rates is striking. According to data from the Global Carbon Project, from 2000 through 2007, global total greenhouse gas emissions increased 26 percent. During that same period, China's carbon dioxide emissions increased 98 percent, India's increased 36 percent and Russia's increased 10 percent. Carbon dioxide emissions in the United States increased by three percent from 2000 through 2007.20 These data are displayed in the graphic below: As time goes on, the United States will emit a smaller and smaller share of the world's total greenhouse gas emissions, 21 which makes unilateral efforts— such as a domestic carbon tax—an ineffective way to influence climate. If the United States were to completely cease using fossil fuels, the increase from the rest of the world would replace U.S. emissions in less than eight years.22 If we reduced the carbon dioxide emissions from the transportation sector to zero, the rest of the world would replace those emissions in less than two years.23 10. Domestic carbon taxes will force more industries to leave America. Energy costs are a major expenditure for heavy industry. America's natural gas prices are the highest in the world,24 even though we have the world's sixth largest proven natural gas reserves.25 The high price of natural gas has significantly contributed to the loss of more **than three million manufacturing jobs** since 2000.26 Carbon taxes will drive up the cost of natural gas because companies would use it as a substitute for coal in electricity production, which means increased electricity costs for industry and increased natural gas prices. This is especially troublesome for chemical companies, all of which use natural gas not only as an energy source, but also as a feedstock. Higher natural gas prices will force them to pursue options offshore and overseas, **reducing American jobs**. 11. Domestic carbon taxes cannot address "leakage." High costs of doing business in America **will force jobs and economic activity to leave this country** in favor of countries with lower energy prices. China and India have stated they will not impose burdensome climate regulations on their citizens.27 Because not all countries will implement carbon taxes, **industries will take their jobs to countries where taxes do not eat their profits**. Despite a huge American economic sacrifice, global emissions will remain the same.

Negative Evidence – Resource Exporting Economy Disadvantage

Successful climate policy necessitates exporter revenue collapse

Manley et al. **17** David Manley - National Resource Governance Institute, James Cust - The World Bank, and Giorgia Cecchinato – London School of Economics, "Stranded Nations? The Climate Policy Implications for Fossil Fuel-Rich Developing Countries," Oxford Centre for the Analysis of Resource Rich Economies (https://www.economics.ox.ac.uk/images/Documents/OxCarre_Policy_Papers/OxCarrePP201634.pdf)
*FFRDCs = fossil fuel rich developing countries

THE WORLD'S CARBON BUDGET AND STRANDED RESERVES Fossil fuels may be plentiful from a geological point of view, but if the world burns all available fossil fuels the impact on the climate will be severe. Emerging research suggests that the world should aim to restrict the accumulated carbon and other greenhouse gases emitted between 2011 and 2050 to 1,100 Gigatonnes of carbon dioxide equivalent (McGlade and Ekins, 2014; Allen et al. 2009; Allen et al. 2015, Meinhausen et al. 2009). This limit is referred to as the world's 'carbon budget'. Breaking this budget significantly risks deteriorating global environmental and social conditions and 'runaway' climate change—in which natural positive feedback loops contribute to ever greater climate change effects. In comparison, the estimated combustible carbon dioxide content of the world's reserves3 of oil, gas, and coal in 2014 was 2,900 gigatonnes (McGlade and Ekins 2014). Therefore, to avoid using up the world's carbon budget and causing extreme climate change, two thirds of existing fossil fuel reserves must remain undeveloped Keeping two thirds of reserves in the ground necessitates a significant reduction in the world's use of fossil fuels. **This, in turn, necessitates a** long-term **decline in the demand for fossil fuels**, which could occur if governments impose carbon taxes or similar policies[4]; if there is a broad transition to alternative energy supplies, such as nuclear or renewables; or if economic activity becomes significantly more efficient in using energy. Reserves may also remain undeveloped if governments impose policies to limit the market supply of fossil fuel resources. 5 **A fall in fossil fuel demand**, other things equal, **will lead to a fall in fossil fuel prices**. This might lead to existing reserves remaining undeveloped or 'stranded'. Meanwhile projects that remain commercially viable will be less valuable. This in turn may diminish the rents and therefore tax revenues fossil fuel extraction can generate for producing countries. To understand this, consider an example from the global oil market. The price received for a barrel of oil is roughly the same for all projects after accounting for relatively small differences in the quality of oil (such as viscosity) and transport costs. However, costs will differ considerably across location and geology. Figure 2 shows a representative global supply curve that ranks all oil projects from least to most expensive in terms of unit costs of production. For any given market price, lower cost projects, on the left part of the supply curve, will have a higher asset value per barrel than high cost projects. If the producer price falls, say in response to a climate policy, some projects with costs higher than the prevailing price will become stranded, while some value of all remaining operating projects will be foregone. Asset stranding and significant falls in values in the fossil fuel industry are not new, the recent commodity price slump has stranded many projects already and fossil fuel companies have seen the value of their assets reduced by many millions of dollars. However, the scale of such an outcome under, for example, an **effective** global climate policy would be entirely new. **It would also imply a permanence not normally considered during commodity price slumps**. For example, figure 3 shows estimates of the proportion of reserves already discovered that could become permanently stranded if the world keeps to its carbon budget. THE LIKELIHOOD OF CARBON MARKET RISK Whether governments can implement effective climate policies to reduce global fossil fuel consumption or whether alternative energy sources gain sufficient market share is highly uncertain. This paper does not directly address this uncertainty but assumes that the probability is greater than zero. Further, even if the probability is low, the impact on fossil-fuel rich countries may be very large for the reasons discussed. This has some corollary to the so-called 'fat-tailed risk' or the 'precautionary principle' of climate damages—where the probability of an impact is low, but the impact itself is high, necessitating precautionary actions (Weitzman 2011). Given these conditions fossil-fuel rich countries should carefully consider how their policy choices might be modified by carbon market risk and what type of, and how urgent, such precautionary actions should be. We will address these policies in the final part of this paper. The likelihood of a permanent fall in fossil fuel demand, or 'carbon market risk' rest on four factors. First, governments of carbon emitting countries could impose policies that keep emissions within the global carbon budget. This could take the form of demand-side policies, such as consumer taxes, or supply-side measures such as producer taxes or quantity restrictions, or some mix of these policies. The Paris COP21 made some advance towards countries imposing climate policies but it is unclear how the result of these negotiations will influence policy. Second, the market share of renewables, nuclear and other alternatives to fossil fuels could increase substantially. Solar and wind power capacity has increased exponentially during the last decade, although starting from a small base in comparison to fossil fuel-derived energy. Currently 13 percent of global primary energy supply is from renewables. Projected shares of renewable energy to total energy in 2030 in this share range from 14 percent—by Exxon—to 43 percent—by Geotechnical and Environment Associates (Meister Consultants Group 2015). The International Energy Agency, an often quoted authority on the subject, forecasts that renewables will still account for only 15 percent of global energy supply by 2040 (IEA 2015). However, the IEA has consistently underestimated renewables growth in the past, and so can be considered relatively pessimistic (Metayer et al. 2015). Third, energy efficiency measures could improve to reduce future energy demand. There are signs that this will happen. The world economy is gradually 'decarbonising'—greenhouse gas emissions per dollar of GDP are falling. From 2000 to 2014, the carbon intensity of economic activity has fallen by 1.3 percent each year on average, although total greenhouse gas emissions are still rising as the global economy grew 3.7 percent a year on average over the same period (PWC 2015). This decarbonisation trend is set to continue. The carbon intensity of the Chinese economy, already the largest greenhouse gas emitter in the world, fell by two percent in this period, and 6.7 percent in 2013 to 2014. In addition, Green and Stern (2015) forecast that Chinese carbon emissions will peak by 2025. A fourth factor is the success or failure of carbon capture and storage (CCS) methods—including both initiatives to expand 'carbon sinks' such as forests, and technologies that directly prevent carbon emission from entering the atmosphere. If these develop, there is less need to restrict fossil fuel production for climate change purposes: the carbon and other greenhouse gases can be removed from the atmosphere and stored. However, CCS faces three problems: first, aside from forests, man-made CCS methods are not currently commercially viable; second, retrofitting CCS technologies to transport, power stations and other carbon emitters appears prohibitively expensive; and third, there is currently few viable methods to safely store carbon without sufficiently reducing the risks of carbon leaking into the atmosphere after being 'captured (Helm 2015). FROM STRANDED ASSETS TO STRANDED NATIONS: THREE CHALLENGES The risk of stranded assets for fossil fuel investors is receiving increasing attention and concern from researchers and analysts, in particular the work by Carbon Tracker (see Leaton 2013). If stranded assets are a concern for investors, we argue they should be an even bigger concern for many fossil fuel-rich developing countries. We focus on fossil fuel-rich developing countries (FFRDCs), which we define as those countries: 1) whose value of known fossil fuel reserves is at least 25 percent of their total wealth (Produced, Intangible, Foreign and Natural assets)6 OR the value of fossil fuel production is at least 10 percent of GDP; AND 2) whose GNI per capita is less than USD 12,736 (Middle, Low middle or Low income country definition according to World Bank classification). Figure 4 maps these FFRDCs; the appendix describes how we calculated fossil fuel values. For these FFRDCs, the realisation of carbon market risk—the widespread adoption of carbon policies, rise in alternative energy use or the decarbonisation of the world economy—resulting in a permanent fall in the producer price of fossil fuels presents three challenges. CHALLENGE 1: FFRDCS ARE HIGHLY EXPOSED TO CARBON MARKET RISK According to one estimate, of the USD 25 trillion of fossil fuel value at risk, fossil fuel-rich governments face 80 percent of the risk (Nelson 2014). A fall in fossil fuel prices for producers **significantly** reduces the rents available from fossil fuel extraction on existing investments, and makes further development of reserves less profitable, potentially stranding much of their fossil fuel reserves and related

assets. This reduces government revenues collected from fossil fuel extraction and non-fiscal benefits to the domestic economy. A decline in government revenues in particular restricts the ability of governments to support economic development—although strong public financial management practices can help governments, in the short term, to shield their budgets to abrupt changes to government revenues. Fossil fuel-rich developing countries (FFRDCs) currently hold a significantly proportion of their national wealth in the form of fossil fuel reserves and related assets (figure 5) and their fossil fuel wealth is more at risk of a permanent decline in prices than non-FFRDCs (figure 7). The possibility of a permanent fall in fossil fuel use exposes these countries to the risk of losing this portion of national wealth.7 Figure 5 shows that FFRDCs ranked according to the value of fossil fuel reserves to GDP. Their median ratio of fossil fuel reserves to GDP is 3.66, compared with a median for non-FFRCs of 0.58. Note that prospective countries that are potentially rich in fossil fuels but with few developed projects and currently low production rates—Tanzania, Uganda, Guatemala, among others—do not fall within our definition of 'fossil fuel-rich developing countries'. However, the analysis and policy implications in this paper are highly relevant for these countries as they create policies that will govern their sectors over the next few decades. Important factors in valuing FFRDCs' reserves are the assumptions on fossil fuel prices, costs and the social discount rate. We have chosen to use prices realised in 2015 which are low by historical standards, and so produce a relatively optimistic -for FFRDCs- estimate of the value at risk. We analyse the value of production from reserves, rather than rent, so ignore costs of exploration, development and production. In addition, we have chosen a social discount rate of four percent, as used by the World Bank to estimate wealth values in World Bank (2011). Figure 7 shows the effect of a simulated decline in prices for the whole set of fossil fuel-rich developing countries, comparing the value of reserves given constant prices and the value of reserves given a steady decline in prices of two percent year-on-year. This price decline is assumed purely to illustrate the effect of a declining price path. In practice, the price decline may be higher or lower than this, and is unlikely to be a smooth decline.8 The assumption of a smooth decline in prices abstracts away from the likely path of prices. **The combination of climate change policies and the rising market share of alternative energy sources may result in an abrupt and permanent fall in prices** at some point in the future. For further discussion of our modelling of a price decline, please refer to the Appendix. The value-at-risk column in figure 7 shows the difference in the value of reserves assuming current prices are maintained, and the value of reserves assuming a year-on-year decline of two percent. The difference is largely determined by the rate at which countries can deplete their reserves, which we assume to be equal to the current production rate in each country. Countries with lower reserveto-production ratios are likely able to extract their resources faster than those with high reserve-toproduction ratios and avoid more of the effect of a fall in future values. Venezuela, for example, has large reserves and low production rates, so could see a fifth of the value of its reserves cut under the assumed fall in prices. CHALLENGE 2: FFRDCS COULD BE LESS ABLE TO DIVERSIFY THEIR CARBON MARKET RISK Not only are FFRDCs exposed to a possible permanent fall in fossil fuel use, but—compared with fossil fuel companies—FFRDCs are less able to diversify their exposure (Mitchell et al. 2015). This suggests that the arguments made of the dangers of stranded assets for fossil fuel companies are even more relevant for fossil fuel-rich developing countries. The ability to diversify or reduce their exposure to carbon market risk depends on two factors. First, the time and cost of converting their fossil fuel related assets into other non-related assets, such as cash—known in the financial sense as the asset's liquidity. Second, the ability to hold a diversified portfolio of assets. In terms of market liquidity, companies can relatively easily divest from fossil fuel related assets into assets less exposed to carbon market risk. While it is likely that as more companies seek to divest liquidity will fall, but with sufficient time, an orderly transition can occur. Companies own the extraction rights to relatively few booked reserves, with relatively high production rates. For example, in 2013, the reserve-to-production ratios for all oil and gas companies were 12.8 years and 13.9 years respectively (EY 2013). Therefore, companies can, in principle, stop replacing their reserves and run down their existing reserves over the next 13 to 14 years. Although, given that most oil companies currently seek to maintain or increase their reserves, this is unlikely to happen immediately. In comparison to companies, FFRDCs hold fossil fuel assets that are less financially liquid. For FFRDCs, fossil fuel assets can typically only be converted at the rate based on the time taken to develop and produce from an extraction project. Using past reserve-to-production ratios as an indicator of the speed at which countries can convert their subsoil assets into cash, figure 8 shows that most countries must wait many decades (a median of 45 years) to liquidate their fossil fuel wealth, unless they can find ways to increase their rates of production. For those countries that enter development agreements with private sector companies, the depletion of reserves will be equal between countries and companies—the same reserve is being depleted. What accounts for difference in reserve-to-production ratios is the national ownership and production of reserves led by state-owned enterprises in many FFRDCs. For instance, 18 of the 23 countries in figure 8 have national oil companies. 9 In addition to being able to liquidate their fossil fuel assets quicker than FFRDCs, companies also own or manage a more diversified portfolio of fossil fuel assets, for example across a variety of different countries and with different cost profiles; in contrast to countries whose fossil fuel reserves are geographically bound. Further, few resource rich countries have successfully diversified their economies and holding foreign assets has been limited by the rate of depletion and ability to hold revenues as savings (Venables 2016). Sovereign wealth funds (SWFs), in which funds are invested in foreign assets, are one way for a government to hold a wider range of non-fossil fuel linked assets. However, making funds available for this purpose can be difficult given government expenditure needs within the country, and can increase the risk of inappropriate use of these funds (Bauer 2014). Further, the assets of sovereign wealth funds owned by FFRDC governments represent only three percent of their fossil fuel reserves on average (see figure 9). CHALLENGE 3: FFRDCS MAY PURSUE POLICIES THAT INCREASE EXPOSURE TO CARBON MARKET RISK In addition to being exposed and limited in their ability to diversify from carbon market risk, some of the economic policies common to fossil fuel-rich countries may increase FFRDCs' exposure. First, National Oil Companies (NOCs), common in oil-rich countries, involve the investment of state capital into fossil fuel assets. If the expected life of these assets is long enough that declining oil, gas or coal prices will impact returns, or a government cannot liquidate these assets at a reasonable value, then governments, by investing in an NOC, may be increasing the exposure of national wealth and public assets to carbon market risk. This exposure increases for NOCs that operate reserves abroad in the same manner as other oil companies are exposed to carbon market risk (see above). Figure 10 shows the significant values of state ownership in NOCs in FFRDCs [fossil fuel rich developing countries] (for which there is data). Second, some governments seek to capture value by encouraging the domestic private sector to participate in oil, gas, and coal supply chains, often known as promoting 'local content'. This aims to increase the share of the proceeds from extraction retained by the domestic economy. In addition, some local content policies aim to develop skills of local workers and advance business practices that spread to other sectors in the economy not directly related to extraction. However, whatever the objectives, such policies to promote local content may increase a country's exposure to the carbon market risk by increasing the total share of a country's assets (either foregone public revenues, or a share of the nation's human or physical capital) that would be exposed to a fall in fossil fuel demand. If the public, physical and human capital investment in local content delivers high returns—both in the financial and social sense—in the earlier rather than later years, or if the skills and business developed to supply fossil industries can be applied to other sectors, the carbon market risk is reduced. However, if local content takes many years to develop, foregoes significant tax revenues, or has limited value outside the fossil fuel sector, these policies may increase countries' exposure. Third, fossil fuel rich countries have tended to develop economies that are relatively carbonintensive. Figure 11 shows that petroleum and coal producers (highlighted in red and blue respectively) emit a larger amount of carbon per dollar of GDP than non-fossil fuel producers). A chief policy that has led to this carbon intensive development is the tendency for fossil fuel producers to subsidise fuel consumption (Friedrichs and Inderwildi 2013). This is a concern for countries wishing to reduce global carbon emissions, but also a concern for fossil fuel-rich countries seeking to reduce exposure to the carbon market risk. These countries could suffer in two ways. First, if their trading partners (such as the European Union) impose a carbon consumption tax: a policy in which the consumers of products are taxed according to the carbon content of the product, rather than a tax imposed on carbon emitters (Helm 2015). Second, they would suffer if climate finance initiatives reward those countries that do reduce fossil fuel consumption or emissions.

Successful climate policy reduces demand and investment for fossil fuels---tanks the industry---it's about concrete policy not just announcements

Sen and Schickfus 2020 - *Leibniz Institute for Economic Research at the University of Munich **Leibniz Institute for Economic Research at the University of Munich

*Suphi Sen and **Marie-Theresvon Schickfus, Climate policy, stranded assets, and investors' expectations, Journal of Environmental Economics and Management Volume 100, March 2020, 102277, https://doi.org/10.1016/j.jeem.2019.102277

As early as 2012, global financial services companies drew attention to the risk of coal investments becoming stranded as a consequence of the 2°C "carbon budget."1 This carbon budget specifies the maximal amount of cumulative carbon emissions that can be emitted without surpassing a 2°C temperature increase above preindustrial levels (Meinshausen et al., 2009; Allen et al., 2009). Therefore, climate policies might render fossil-fuel assets worthless prior to the end of their economic life time. We study whether the current market valuation of companies owning fossil fuel assets reflects this risk of stranding assets.2 A failure to price in this risk can lead to costly consequences for the whole economy. First, the resulting misallocation of capital due to delayed divestment could render the transition to clean capital more expensive (IPCC, 2014; IRENA, 2017a). Second, a sudden and unexpected tightening of carbon emission policies (Batten et al., 2016) or sudden changes in expectations in the presence of tipping points

(Krugman, 1991) **can lead to abrupt repricing of fossil fuel assets**. This situation can result in a negative supply shock through changes in energy use and second-round effects in financial markets.3 Financial institutions such as the Bank of England, the Dutch Central Bank (DNB), the Inter-American Development Bank (IDB), and the European Systemic Risk Board (ESRB) have identified the mispricing of stranded asset risk as a potential systemic risk and threat to financial stability.4 Therefore, we analyze the interaction between investors' expectations and the development of climate policies. Investors' reactions to new policies depend on their prior expectations, which, in turn, are shaped by previous policies. This interaction is central to the current paper: What are investors' priors regarding stranded asset risk, and (how) do these priors change when climate policy proposals are announced? In particular, we analyze (i) whether investors have already priced in expected losses due to the carbon budget, (ii) whether they only respond to concrete policies, and (iii) whether they expect firms to be financially compensated for stranded assets. To answer these questions, we exploit the gradual development of a climate policy proposal in Germany targeting lignite assets and investigate how adjustments of this proposal have affected the market valuation of firms active in electricity production. We find that investors did not react to **announcements** of the initial "climate levy" proposal, which was directed at stranding lignite assets by charging an extra fee on carbon emissions (Stage 1). Investors also did not respond when the proposal transformed into a compensation mechanism (Stage 2), paying plant owners for not running their units. Only announcements that the compensation mechanism may not go through due to violating state aid rules (Stage 3) resulted in a significant and negative reaction. Our findings show that investors do care about the stranded asset risk, but with an expectation of a compensation mechanism. Our analysis starts from the notion that the evolution of climate policies and the expectations of investors are interrelated. First, climate policies and policy proposals provide signals that shape how the investors perceive the stranded asset risk. For instance, setting a price on CO_2 emissions or imposing a cost on fossil resource extraction5 can reduce demand, slow down investment in fossil infrastructure, and cause asset stranding. Alternatively, policies addressing fossil-fuel reductions may compensate fossil-fuel owners for leaving their reserves unburned. For example, Harstad (2012) proposed that, in the absence of a global climate agreement, "the coalition's best policy is to simply buy foreign deposits and conserve them".6 Second, **investors' reactions to policy signals depend on their prior expectations regarding the likelihood of asset stranding and the credibility of climate policy announcements**. For example, they may have already devalued assets following information on the carbon budget implied by the Paris Agreement, or they may find it difficult to translate the concept of a carbon budget into stranded asset risk.7 In the latter case, they would wait for further information on climate policies with clear asset stranding implications. Even the announcement of climate policies does not necessarily lead investors to reassess the likeliness of asset stranding, if they expect a compensation mechanism. The policy proposal we investigate provides the opportunity to disentangle the effects of these policy signals and expectations. By tracking the stock market response to different stages of the proposal, we can draw conclusions about investors' prior expectations and how they evolved in the course of the policy's development. Our baseline estimation strategy is a short-run event study analysis. We investigate whether there are abnormal returns to the assets of three publicly listed energy companies that can be associated with the three stages of the policy proposal.8 The pattern in the reactions to the different stages of the proposal helps us to identify whether an individual event surprised the investors. Furthermore, we test for effects in the power futures market to establish surprise empirically. Finally, we provide anectodal evidence for our empirical findings on the presence of surprise. We provide an extensive robustness analysis related to the identification of the event effects. First, we conduct placebo tests for the nonevent days just prior to the event days to verify the model's performance in predicting the counterfactual returns. Second, as an alternative to using a market price index to control for average market conditions, we estimate a synthetic portfolio aiming to produce a counterfactual control unit.9 These estimations show that our results are not driven by the endogeneity of the market price index to the event shocks. Third, in order to control for industry-wide shocks, we use an energy utility company without any lignite-related assets as the control unit, leading to a difference-in-differences estimation of abnormal returns. Finally, by using a news search engine, we identify a small number of potentially confounding events and verify that our results are not driven by these events. Our paper contributes to the literature on empirical assessments of market reactions to emission reduction policies, often in the form of event studies. Lemoine (2017) and Di Maria et al. (2014) find that market players do act in anticipation of demand-side policies. Ramiah et al. (2013) and Linn (2010) show that stock investors react to announcements of national carbon emission pledges or the introduction of emission trading programs, respectively. Koch et al. (2016) find evidence that regulatory events drove EU ETS allowance prices. In the German power market context, Oberndorfer et al. (2013) investigate the stock market effects of voluntary actions such as the inclusion of firms in a sustainability stock index. However, to date, investor expectations with regard to specific policies directed at stranding assets or to compensation mechanisms have not been studied. There are few papers investigating empirically how investors price in unburnable carbon risk. Batten et al. (2016) conclude that the announcement of the Paris Agreement in December 2015 had a positive effect on the valuation of renewable energy companies, but no significant effect on fossil fuel companies. Mukanjari and Sterner (2018) report similar results both for the Paris Agreement and the U.S. presidential election in 2016. Griffin et al. (2015) find that the publication of the Meinshausen et al. (2009) article in Nature led to a statistically significant, yet fairly small, reduction in the stock returns of oil and gas firms. They mention several reasons why this effect might be so small. One reason is investors' expectations with respect to technological developments: this is what Byrd and Cooperman (2016) examine, concluding that investors are aware of the relevance of carbon capture and storage (CCS) in allowing continued carbon use, but that they have already priced in stranded asset risk. A second potential reason is that **investors are more concerned with specific energy policies**, which is what this article examines in detail.

Carbon taxes slash export prices and wreck fuel markets – excess consumption is leaked at lower prices which turns the aff

Strand '10 (Jon Strand – PhD in Economics @ the University of Oslo, holds a char as professor of economics at the University of Oslo, Economist formerly in the Development Resarch Group, Environment and Energy team at the World Bank, "Taxes versus Cap-and-Trade in Climate Policy when only some Fuel Importers Abate," November 2010, http://econpapers.repec.org/paper/cesceswps/_5f3233.htm)

This paper demonstrates that, for reasons completely apart from the two reasons just given, taxes and caps are not (and are often far from) equivalent as climate policy instruments when different groups of countries have **conflicting interests in fossil fuels markets**. This difference works **in favor of taxes** over cap solutions for the countries implementing (or benefiting from) a climate policy, thus reinforcing the general preference for taxes over caps. This conclusion stems from a fundamental assumption that I consider realistic, namely that **fuel markets** and climate policy interests are related, and dominated by two groups of countries with **clashing interests**. One group has interests in establishing such policies, and is at the same time a major fossil fuel importer. The other group exports fossil fuels and has no apparent interest in climate policy. My model below reflects these basic features, in a highly stylized way. In my model, one group of countries consumes all and produces no such fossil fuels, and has a climate policy concern. The other group of countries produces all and consumes no fossil fuels. The first group can then be identified with all countries apart from a small group of fuel **(mainly oil) exporters**; the second group comprises these fuel exporters, notably the **OPEC countries** and **Russia**.6 In the model I assume, realistically, that today not all but **only some** of the policy-oriented group of countries (the "policy bloc") have established a climate policy, and in a fully coordinated way. Other fuel-importing countries (the "fringe") **have no policy**. They act in an uncoordinated fashion, and each country is small and has no market power. The producer countries as group, and the policy bloc as a group, are however both assumed to behave non-competitively in the fossil fuels markets, so that policies are fully coordinated within each of these two groups. Policies are not coordinated across these two groups. The model is static by focusing on **shortrun demand** and **supply relations**. Many further issues are not directly addressed by this paper, in particular, the issue of fossil fuels as exhaustible resources.7 In particular, Sinn's (2008) "green paradox" argument, that carbon pricing could lead to increased emissions in the short run, is ignored.8 I then show that a tax solution is preferred to a cap-and-trade (c-a-t) solution, for both the policy bloc and the fringe. The difference lies in the response of a monopolistic fuel exporter, setting the fossil fuel export price, to a tax versus the response to a cap. Generally, importers' demand for fuel will be less elastic when some of these countries set a cap. This effect is stronger when the policy bloc is larger. The demand function will then be less elastic, leading to a higher fuel export price. This hurts both the policy bloc and the fringe. A focus of this paper is on effects on the fringe of alternative climate policy regimes in the policy bloc. The analysis shows that individual countries in the fringe will **fare best** when the policy bloc sets a carbon tax, and when the fuel demand from the policy bloc constitutes a large fraction of overall demand. Put otherwise, the smaller the fringe, the more each country in the fringe will benefit from being **"free riders" on a carbon tax** set by the policy bloc. The reason is that a large policy bloc translates into great market power of this bloc in the fossil fuel markets. The optimal carbon tax is then higher for a larger policy bloc; and it puts more **downward pressure on the export price** for a given tax. This all translates into a **lower fuel export price**, which **benefits the fringe**. A similar benefit for the fringe, due to a large policy bloc, does not materialize under a cap policy. The fuel export price is then in most cases set higher by exporters when the policy bloc comprises a larger share of total demand; not lower as under a carbon tax. In the appendix I consider cases where cap set by the policy bloc in the c-a-t case consists of the entire fossil fuel consumption; as is in particular the case when the policy bloc consists of all fuel-importing countries. I show that the equilibrium internal trading price in the bloc's c-a-t scheme then always equals zero. The best possible solution for the policy bloc is then that achieved in a Stackelberg equilibrium with the policy bloc as leader (setting its cap before the exporter sets its fuel tax). This solution is however still inferior to the tax equilibrium, from the point of view of fuel importers. This paper extends results from previous related papers, Strand (2009, 2011), treating similar cases. **None of these papers considers a fringe**. Strand (2011) considers two fuels, one imported (oil), and one produced by fuel consumers. The importer's oil demand function is then elastic under a cap, making some rent extraction from the exporter possible in this case. The main conclusion, that a tax policy dominates a cap policy for fuel importers, however remains. A background for these results was derived in an early (static) model by Berger, Fimreite, Golombek and Hoel (1992) (without explicit optimization of climate targets by importers). Two other papers will be mentioned. Berg, Kverndokk and Rosendahl (1997) studied implications for rent extraction in the oil market of a carbon cap. They argued that OPEC countries, acting as a dominant producer and facing a producing fringe, tends to lose from a cap but largely because this group must take the **necessary production cuts** in order to **maintain a given oil export price** (so that the fringe loses less). Johansson et al (2009) consider a long-run model of the oil market, and argue to the contrary that OPEC will lose little by a carbon price implemented by demander countries. Their argument is that oil will remain considerably cheaper than alternative, renewable, energies, making considerable rent extraction possible for oil producers. The strategic difference between a tax and a cap policy, crucial in my model, is not discussed in these two last papers.

Negative Evidence – Renewables Bad Disadvantage

Scaling up renewables bottlenecks access to REMs (rare earth minerals)**---collapses military readiness and tech leadership.**

Grier, 18 (Peter Grier; a Washington, D.C. editor for The Christian Science Monitor. Citing USAF Lt. Col. Justin C. Davey in a 2011 Air War College report; February 2018; "Rare-Earth Uncertainty"; *Air Force Magazine*; http://www.airforcemag.com/MagazineArchive/Pages/2018/February%202018/Rare-Earth-Uncertainty.aspx)

Their names sound as if they are part of some science fiction universe: yttrium, dysprosium, samarium, neodymium. They are **rare-earth elements** (REEs)—little-known but **crucial ingredients** in much modern US military **aerospace technology**. Take lasers. Lockheed Martin is working on a small, high-power laser weapon that the Air Force Research Laboratory wants to test in a tactical fighter aircraft by 2021. Its active gain medium is a flexible optical fiber **infused** with a **rare-earth element** such as erbium or neodymium. Rare-earth elements are widely used in **strong, permanent magnets** impervious to temperature extremes. They are used in **fin actuators,** in **missile guidance, and control systems**; disk drive **motors** installed in **aircraft** and **tanks**; **satellite communications**; and **radar** and **sonar systems.** As might be expected given their importance to national security, these elements used to come from the United States. From the 1960s to the 1980s, the US was the global leader in rare-earth mining and production. That is **no longer the case**. In recent decades China has become the source of **90 to 95 percent** of world **rare-earth oxides** and the producer of a **majority** of the globe's strongest **rare-earth magnets.** Many US officials and lawmakers view this situation with apprehension. They are pushing for solutions that range from **stockpiling critical minerals** to the development of substitutes and the reopening of key domestic mines. "It's a very real concern, and it obviously depends on the elements. But we use them for important technologies to keep us all safe," said CIA Director Mike Pompeo, in response to an inquiry at a May 2017 Senate Intelligence Committee hearing on worldwide threats to the US. The rare-earth element group consists of 17 minerals. Fifteen are from a chemical group known as the lanthanides; scandium and yttrium are the other two. All share similar geochemical characteristics, generally resembling the chemical makeup of aluminum. Their slight differences in atomic structure give them different optical, electrical, metallurgic, and magnetic qualities. That makes them useful for a wide array of industrial applications. Despite their name, rare-earth elements are relatively widespread in the earth's crust. They are about as abundant as some major metals, such as copper and chrome. Even rare **REEs** are more common than gold. Their "**rarity**" stems from that fact that they are found in **low concentrations**, up to a few **hundred** parts per million by **weight**, at most. That makes it **difficult** and thus **expensive to separate** them from surrounding substances into **useful products**. **Development** and **construction** of **large-scale rare-earth element recovery infrastructure** can take a **decade** or longer. While unfamiliar to most Americans, REEs are vital components for a wide array of industries. Their unusual physical and chemical properties produce valuable effects when small amounts are combined with other minerals. According to a US Geological Survey, yttrium, europium, and terbium are used to make phosphors—substances that emit luminescence—for the flat panel display screens that are ubiquitous in modern electronics. The glass industry is a large user of rare earths for polishing and to provide color and special optical qualities to finished products. Digital camera lenses can be up to 50 percent lanthanum. REEs are used as catalysts in the production of petroleum and in automotive catalytic converters. They help make lighter flints and fluorescent light bulbs. But their fastest-growing use, and the one arguably most important for US national security, is in lightweight, strong, durable magnets. "Exceptionally notable is how REE alloys revolutionized the magnet trade and subsequently enhanced the products of all other businesses relying on that industry," wrote USAF Lt. Col. Justin C. Davey in a 2011 Air War College report. The magnets, and by extension the elements, are now common in consumer electronics and indispensable for many defense applications. Samarium-cobalt magnets are more resistant to demagnetization than those made from any other material. This quality—called high coercivity—means high temperatures do not make them lose magnetic strength. That makes them the best choice for many military applications, according to Davey. In contrast, neodymium-iron-boron magnets are incredibly strong and light. By weight they are almost 10 times more powerful than traditional ferrite magnets. That makes them ideal for use in the tiny electronic components such as disk drives that have helped make possible decades of computer-driven innovation. The **world's push for renewable energy sources** may only **increase the demand** for **non-renewable REE magnets**. A Toyota Prius, for example, uses about two pounds of neodymium in its hybrid power system. **Wind turbines** need lots of neodymium—new models use up to **two tons** of neodymium magnets. The Department of Defense is not a major user of rare-earth elements, relatively speaking. Defense accounts for about five percent of US consumption, according to a Congressional Research Service background report on the subject. But REEs are **integral** to a **vast array** of **Pentagon weapons** and **general equipment**. **Flat screens** and **hard drives** are **pervasive in the military**, from office computers to **combat aircraft, ships, and vehicles. Missile guidance** and **control motors** and **actuators** depend on small, powerful **rare-earth magnets.** If it were not for them, precision-guided weapons such as the satellite-guided Joint Direct Attack Munition would require much bulkier and more expensive hydraulic systems. The generators that produce electrical power for aircraft all contain samarium-cobalt magnets. The stealth technology that produces white noise to help conceal the sound of helicopter rotor blades uses such magnets as well. F-22 tail fins and

rudders move due to motors with powerful, miniature REE magnets. Electronic warfare jamming devices use rare-earth materials, as do laser targeting systems and nascent laser weapons. Each stealthy F-35 strike fighter requires 920 pounds of rare-earth material, according to DOD. Each Arleigh Burke DDG-51 destroyer requires 5,200 pounds. An SSN-774 Virginia-class submarine needs 9,200 pounds. The ability of **US contractors** to **quickly make use of technological innovations** and **translate them** into **high-quality military systems** is a **pillar of the nation's defense**. Given that, the Pentagon is likely to become even more dependent in the coming years on high-tech magnets, motors, lasers, computers, and electric-drive systems that use rare-earth materials.

Negative Evidence – Solvency Takeouts

Climate policy accelerates global warming

Lazarus 15 – Senior Scientist and is director of the U.S. Center, based in the Seattle office of the Stockholm Environmental Institute (Michael, "Supply-side climate policy: the road less taken," STOCKHOLM ENVIRONMENT INSTITUTE WORKING PAPER NO. 2015-13, http://sei-us.org/Publications_PDF/SEI-WP-2015-13-Supply-side-climate-policy.pdf)

The combustion of fossil fuels is by far the largest human source of global greenhouse gas emissions, releasing more than 30 billion tonnes of CO2 into the atmosphere each year (IPCC 2014). Reducing fossil fuel combustion is thus a top priority for climate policy. For decades, policy-makers and international agreements have sought to achieve this goal through energy efficiency, low-carbon technology, carbon pricing, and other measures aimed at reducing demand for fossil fuels. Focusing on the point of combustion makes intuitive sense, but efforts so far have yet to put fossil fuel use on a trajectory consistent with keeping global warming below 2°C. Recognizing this shortcoming, policy-makers, researchers and activists have begun to look at the supply side of the fossil fuel economy – and the potential for supply-side measures to complement demand-side climate policies. A key insight driving these new approaches is that the political and economic interests and institutions that underpin fossil fuel production help to perpetuate fossil fuel use, and even to increase it. From this emerging vantage point, continued investment in fossil fuel exploration, extraction, and delivery infrastructure makes global climate protection objectives **much harder to achieve**, and should therefore be handled with care and, in many cases, reduced or avoided. The focus on fossil fuels supply in climate policy has high-profile proponents. U.S. President Obama has said he would only approve the Keystone XL pipeline, connecting Canadian oil sands with U.S. refineries and ports, if it "does not significantly exacerbate the problem of carbon pollution" (The White House 2013). OECD Secretary General Ángel Gurría has emphasized the challenge posed by decades of investment in fossil fuel supply and the "carbon entanglement" it creates, as governments depend on the profits they accrue (Gurría 2013). The intersection of climate policy and fossil fuel production is also the subject of a growing body of economic and policy research. Studies have examined, for example, the extent to which achieving climate protection objectives would dramatically curtail fossil fuel profits, or "rents" (Bauer et al. 2013), and render a significant fraction of coal and unconventional oil reserves and resources "unburnable" (McGlade and Ekins 2015). Researchers and financial advisory institutions have highlighted the risk that climate and broader environmental concerns might lead to the premature retirement of fossil fuel reserves and supply infrastructures – and thus result in "stranded assets" and associated financial losses for investors and governments (Leaton et al. 2013; HSBC 2013; HSBC 2012; Caldecott et al. 2013; Hsueh and Lewis 2013; Clark 2015). At the same time, it is clear that fossil fuel producers – and the political and economic interests tied to them – can pose formidable obstacles to climate action. With these considerations in mind, several economists have proposed supply-side approaches to climate policy (Sinn 2008; Collier and Venables 2014; Harstad 2012; Faehn et al. forthcoming). Climate activists are increasingly targeting the supply side of the fossil fuel economy as well, rallying opposition to new fossil fuel supply infrastructure – from Keystone XL, to coal terminals and gas pipelines – and the development of new resources, from exploratory oil drilling in the Arctic to new coal mines in Australia. Many are also pushing for divestment of major institutions from fossil fuel holdings (Ansar et al. 2013). Yet despite the increased attention, supply-side climate policies have yet to take hold in most of the world, and there is still limited understanding of whether and how effectively they might complement or replace more traditional "demand-side" policies. This working paper explores the reasons why supply-side policies have not been pursued and why they deserve more attention. We discuss different types of supply-side policies, and examine some prominent examples. We then present new approaches for assessing them alongside demand-side policies, illustrating how supply-side measures offer the potential to increase the environmental and costeffectiveness of climate action. We conclude with suggestions for how to advance the consideration, analysis and integration of supply-side approaches. 2. WHY THE ROAD IS LESS TAKEN Climate policy is built on interventions that address the demand for, and only indirectly the supply of, fossil fuels: cap-and-trade systems, carbon taxes, renewable energy incentives, emissions performance standards, and energy efficiency programmes. As noted in the introduction, demand-side policies have a strong theoretical basis, and in many cases they have, even under limited application, substantially reduced greenhouse gas (GHG) emissions. By contrast, supply-side policies are far less widespread. The lack of focus on the supply side can be explained by at least three factors: 1) the greater political attractiveness of demand as compared with supply measures; 2) standard GHG accounting rules that undervalue supplyside relative to demand-side measures; and 3) common perceptions of the nature of fuel markets. We explore each of these here in turn. First, promoting the growth of solutions and the industries that support them – i.e. new lowcarbon investments – is inherently attractive to politicians and community leaders, in part because it draws relatively little political opposition. By contrast, directly addressing fossil fuel production, by taxing or reducing such activities, could be expected to engender strong opposition from powerful coal, oil and gas interests. However, using only demand-side policy focus may lead to unintended negative effects that partially erode the expected benefits, particularly in the absence of widespread carbon constraints

internationally. For example, as carbon pricing or regulation reduces domestic demand for fossil fuels, producers may find new markets (without such constraints) internationally, as producers of coal from the Powder River Basin in the U.S. have sought amid a declining domestic market. 1 The expectation of future carbon pricing might even encourage producers to **accelerate production** in the near term, as suggested by Sinn's "green paradox," described further in Box 1 (Sinn 2008). Box 1: The green paradox Arguably, no individual or concept has done more to promote the idea of supply-side climate policy – at least in economist circles – than Hans-Werner Sinn and his notion of a Green Paradox. Sinn (2008) holds that owners of fossil fuel resources will accelerate production when faced with the likelihood of increasingly stringent climate policies such as carbon prices or constraints. He argues that leakage – both international and, in particular, inter-temporal – will undermine climate policy effectiveness. Fossil fuel resource owners, seeing that climate policies and support for fossil fuel alternatives will erode their future profits, will maximize profits by **speeding up production** (and induce **greater demand**) in the near term. As a result, he argues, most demand-side climate policies have the effect of **accelerating**, rather than slowing, as intended, the production and consumption of fossil fuels. He argues that only internationally administered, binding emissions commitments by a majority of emitters/producers – a declining permit system similar to that envisioned in the Kyoto Protocol – offers an effective approach to climate policy. However, other economists have questioned the presence and relevance of a green paradox for climate policy (van der Ploeg and Withagen 2012; Cairns 2014; Edenhofer and Kalkuhl 2011). Hoel (2013) finds that supply-side climate policies would avoid a green paradox, i.e. an increase in near-term emissions, to the extent that they are aimed at higher-cost reserves. Second, the way that nations account for their carbon emissions – on a territorial basis – strongly discourages supply-side measures, at times with perverse effects. Territorial GHG emissions accounting, as established by the United Nations Framework Convention on Climate Change (UNFCCC) and followed by all countries and most other jurisdictional entities, effectively places the onus on those who consume fossil fuels, and not on those who supply it. A nation that taxes coal exports but not domestic consumption, for example, might reduce coal consumption and emissions in other countries but, by indirectly encouraging domestic consumption, increase its own (Richter et al. 2015). Even though these and other supply-side policies could make important contributions to climate protection, because of how emissions are accounted, political leaders have lessincentive to implement them. Not only would resulting reductions in global emissions not be reflected in national emissions accounts – in some cases they might even make it more difficult to reach national emissions targets. Box 2 explains in further detail how the standard, territorial accounting framework can create an unintended barrier to reducing emissions through supply-side measures. Third, common perceptions about the nature of fossil fuel markets and of the climate problem can reinforce the focus on demand-side policies. It is more common to hear that the problem is that "we use too much" fossil fuel than that "we produce too much", perhaps owing to a presumption that if "we don't produce it, someone else will" – i.e. that restricting coal, oil or gas production would only result in shifting where, and not how much, fossil fuel is ultimately produced, an outcome known as "leakage". To be sure, some market leakage would reduce the effectiveness of supply-constraining policies, but leakage also affects demand-constraining policies, as we examine further in the section on assessing policies. Arguably if demand-side policies were ambitious enough, and applied widely enough – for example, if binding, deep mitigation commitments covering the majority of global emissions were in place – they would suffice to achieve the 2°C target. Yet the reality is that such policies, as envisioned in the Kyoto Protocol, have not materialized. As the urgency of the climate problem has grown, so has the need for a broader range of solutions. To that end, supply-side policies could offer several benefits.

Negative Evidence – Trade Disadvantage

Carbon tariffs, which would be incorporated with any domestic carbon price, collapse trade and the WTO, the economy, and

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(Tabitha, "Thinking Toward the Future: U.S. Carbon Pricing Strategies ", SSRN, 10/29/15, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2756190)

Perhaps the least understood area of carbon pricing is the relationship this might have to competitiveness and trade. To understand this issue requires a brief discussion of boarder adjustments. Border adjustments are the proposed taxes on imports that would be required to assure that all goods in the U.S., whether imported or made at home, are all taxed in a similar way. Without border adjustments, domestic U.S. producers would be unable to compete with foreign imports of similar goods, however, it is **currently illegal** to add such adjustments. As a result, boarder adjustments need to be well understood when planning a price on carbon because the U.S. is a member of the international financial system. Subsequently, we have treaties, preferential trade agreements and international legal obligations to uphold. And while some efforts have been made to adapt international border adjustment policies, no such policy currently exists and **all legal arguments to the contrary are theoretical**.2 If the U.S. Congress agrees to impose a carbon pricing plan and then charges such costs to foreign importers, this would raise several issues. First, it would be considered **unilateral protectionism** and a **direct violation** of World Trade Organization (WTO) rules. In the past, such behavior led to the **trade wars** that prompted the Great

Depression. Bear in mind that governments, in their wisdom, impose all sorts of taxes on domestic producers as well as regulations (for reasons of health, safety, working conditions, etc.) that are effectively equivalent to a tax (because they add to production costs). All put domestic producers at a disadvantage relative to foreigners. That would certainly be true of a carbon tax or fee. But WTO rules recognize no right to offset the disadvantage for domestic producers by allowing imposition of a tariff or some equivalent measure. In the eyes of the WTO, that would simply amount to unilateral protectionism. Such a blatant violation would undermine the Bretton Woods system, which was created to our advantage and greatly serves American interests by reducing trade inefficiency and promoting **trade liberalization**. It is true, of course, that WTO rules do allow for some unilateral protectionist measures, but only in very limited circumstances defined by so-called "safeguard' provisions. Even if a claim could be made that all American exports were now differentiated goods based on either health and safety purposes or technological standards (i.e. labelling, technological advancement), the U.S. cannot initiate such a standard. Unilateral measures are authorized under the escape clause or in response to dumping or illegal export subsidies. The **WTO** is also authorized, under the dispute resolution procedures, to act if a foreign country is found in violation of the rules, but refuses to change policy. In such instances, the measures are allowed only in response to actions initiated elsewhere. The rules do not recognize a right to "level the playing field" in response to an initiative originating at home. Regardless, the U.S. would likely be challenged at the very least, which could be another cost to consider on the policy implementation side. To think this through, let's consider the example of the EU ban on Genetically Modified Organism (GMO) imports. Initially, EU reps argued that such crops were differentiated goods (on the basis of health risks) and therefore allowable by trade. The U.S. et al challenged the ban in the WTO system by claiming that it was an illegal nontariff barrier that served to protect domestic farmers in the EU. When brought before the WTO, the case was ruled in favor of the U.S. et al because the EU objections to the goods were not based on science and found to be discriminatory. Thinking about this example, there are many parallels between the cases. Both policies would be unfair to developing or smaller states that cannot afford such a system or do not have the capacity to administer such a program at home. Like the GMO case, the U.S. Carbon Fee would create another source of conflict in the WTO and in global trade negotiations. These similarities suggest that boarder adjustments for a U.S. carbon tax will need careful consideration. Likewise, a boarder related adjustment for carbon fees might also be a violation of our **many international trade agreements**. The GMO case is clearly an issue in the current Transatlantic Trade and Investment Partnership (TTIP) negotiations between the EU and U.S. (Harvey 2015)3 . Considering the existing disagreements over environmental issues with the Trans-Pacific Partnership (TPP), it is unlikely that Asia would be willing to accept such a policy either. Finally, if China, or whoever might be our largest trading partner at the time, does not add the "carbon fee" it could lead to other issues. At worst, it could lead to a **trade war** with our largest trading partner. At best, the U.S. would be forced to **roll back** the carbon tax in all exporting sectors, thereby undermining the carbon tax policy. Most likely, the U.S. should expect to see **retaliatory fees** added to its exports **while the case is being worked out** (the EU case has been going on since 1994). As a result, related domestic industries would be unable to compete on world markets. The impact on U.S. competitiveness could be **dramatic**. For these reasons alone, a better understanding of boarder related impacts seem necessary. How this will impact U.S. competitiveness is also yet to be fully understood, but should be considered when deciding on a final policy proposal.

Negative Evidence – Politics Disadvantage

Pushing significant domestic climate policy requires PC

Sensiba 11-6-2020, MA @ American Military U, analyst @ Clean Technica (Jennifer, "Don't Encourage Biden To Waste Political Capital," Clean Technica, https://cleantechnica.com/2020/11/06/dont-encourage-biden-to-waste-political-capital/)

If we want clean energy to succeed in the upcoming Biden administration, we have to (a) be realistic, and (b) fight like hell to **keep him focused on it as much as possible**. **Political capital is scarce**, and the threats to our future from climate change are real, so allowing the **various** Democratic lobbies to suck all of the oxygen out of the room is not an option. Here's a quick rundown of the problem and some ideas on what we can do to help clean energy win. **It's All About Political Capital** In short, political capital is a way to think about political power in democratic countries. Yes, winning elections does give some political power, but you can't effectively use it unless you have coalitions, alliances, trust, goodwill, and influence. Your earned trust and connections are like money (capital). You can work hard to earn it and build it up, but it's easy to spend it and even waste it, just like money. If you get power from an election and then quickly spend all of the political capital impressing loyalists, you'll get to the point where you can't win future elections (Trump is a great example of this), can't get votes together for legislation, and can't get people to help you in a variety of other ways. At worst, a political leader who has run completely out of political capital might not even be able to get normal citizens to follow laws. As the consent of the governed is withdrawn, you see protests, riots, violence, terrorism, and even war. For better or worse, Biden won't start out with much **p**olitical **c**apital to

begin with. After a narrowly won election, not taking the Senate (because many voters rejected Trump but voted for Republicans further down the ballot), and then extended accusations of cheating, it's not going to be easy to get things done. Earning More Political Capital Is Essential To get more political capital, Biden will need to find ways to heal the rifts after the election. This is true after any election, but the job is going to be that much harder in 2021. While there's a segment of the population that will never accept a president of the opposite party, there are still plenty of reasonable people who will need to be won over (at least a little). If we want Biden to succeed, we need to **not take part in divisive politics**. Don't rub Trump fans' faces in it, as tempting as that can be. Be nice to people on social media, even if they're hurt or feeling pain over the loss of an election. Try to understand that people have whipped up many people into fear of a Democratic president, and cut them some slack. Do anything you can to discourage "sore winners" next year. Don't Encourage The Don Quixotes To Waste It On The Impossible There are things that simply aren't possible with a Democratic president and a Republican Senate. No matter how badly people might want an expansive Green New Deal, gun control, high taxes on the rich, and other such things, it's just not going to happen. Like Don Quixote, a fictional senile old man who tried to fight imaginary monsters (who were, in reality, windmills), there are people in the Democratic Party who would gladly waste what little political capital is available on their quixotic quests. If it's not going to happen, it's not harmless to try anyway, or even to make a bunch of noise about it. Everything has a cost, and the **cost of pushing these policies** is that policies you **could get passed** into law **don't happen**. Executive Power Is Expensive While Trump abused executive power frequently, don't be tempted by calls for Biden to take revenge and do the same thing. The short term gains may be enticing, but the longer term costs are much bigger than they might appear to be at first. Trump found out the hard way that pushing for things like the border wall, fights against LGBT rights, and attempts to prop up the failing coal industry alienates reasonable people. It's easy to say "Trump did it! We can too!", but don't forget that was part of his undoing. The worst thing a President Biden could do is use unconstitutional executive orders for something divisive like gun control. Yes, Trump actually did this, because he thought it would make him look good after the Las Vegas shooting, but it divided his own supporters. Loyalists made excuses or claimed it was part of some elaborate game to "beat the libs," while people who really believed in gun rights deeply lost trust in Trump. Make no mistake, a Democratic president doing this would quickly earn the hostilities of both camps and suffer a deeper cost than Trump did. That's just one example. There are many other little regulatory things a President Biden could do to put the screws to Republicans, but in most cases it simply isn't worth it when we need real legislation to get the job done. Focus On The Possible! The best way to make actual progress on clean energy is to look for ways to find **common ground** with part of the Republican Party. Libertarian-leaning Republicans are big on free markets, and don't like things like tariffs and subsidies. One way to put renewable energy on better footing would be to cut fossil fuel subsidies, and that's something you'd find Republican supporters for. Tariffs that drive up the cost of solar panels are another target that you'd find Republican allies against. Another possible source of Republican support comes from Republicans concerned with national preparedness and energy security. American cars (e.g., Tesla vehicles, the Nissan LEAF, the Chevy Bolt, the Ford Mustang Mach-E) that run on American fuel (electricity) would have been a Republican dream in 2005, and definitely could be today. Add in that you can generate the fuel at home, store it safely, and enable broad swaths of the public's homes and most key facilities to run uninterrupted when the power goes out, and you have an emergency preparedness winner. Solar roofs and Powerwalls are also great for preppers and homesteaders, many of whom are Republicans. I'm sure with some creativity we can come up with many other ways to make real progress on renewable energy, but it's going to take **goodwill**, trust, and lots of healing to get there. Be sure to be part of that solution.

Republicans would condition support for the plan on scrapping regulations.

Majkut 20, PhD, MA, director of climate policy at the Niskanen Center. (Joseph, 6-30-2020, "Responses to the carbon pricing section of the House Select Committee on the Climate Crisis Democratic Staff Report", *Niskanen Center*, https://www.niskanencenter.org/responses-to-the-carbon-pricing-section-the-house-select-committee-on-the-climate-crisis-democratic-staff-report/)

Swapping a carbon tax for **regulations** has, for a **decade** or more, been seen as a way to **win Republican support** for a **carbon tax**. As my colleague Jerry Taylor argues, it provides a **model** for conservatives and Republicans to **fully participate** in the climate debate. Republicans, **wary** **of expanding the administrative state,** might favor a policy that encourages the private sector to decide how to decarbonize its operations cost-effectively, and business will support the policy stability instead of the uncertainty that **comes with regulations**. While there is a strong case that pricing can replace most regulatory efforts at lower cost (not to mention subsidies), most recent legislation has not nullified Clean Air Act authority or offered liability relief for fossil producers. Instead, they have proposed moratoria on the implementation of new rules for a decade or more. After those windows, Congress could extend or revise the moratoria based on how effectively pricing mechanisms are reducing emissions.

Negative Evidence – Incentives Counterplan

Incentives are a better way to promote renewable energy than mandates

Arth 14 - J.D. Candidate 2015, Notre Dame Law School (Matthew, "The Carrot Follows the Stick: Why Incentives-based Policies are the Long-term Answer to Organic Growth in Renewable Energy Resource," 40 J. Legis. 324)

The primary drawback of renewables is, of course, the cost. 9 Renewable energy generation, in all its forms, is based on relatively young technology, especially in comparison to the mature technology utilized in non-renewable sources. 10 This means that significant research and development continues to be necessary to develop renewable energy sources, and further that developers of these sources have not had the time to grow the economies of scale necessary for equivalent cost savings to non-renewable sources. 11 This culminates in a higher cost to utilities companies to use renewable sources over non-renewables. No economically-focused energy provider will choose a more

costly energy source over a less costly one, even with the obvious benefits, because these benefits accrue to society at large (i.e. the stakeholder), not the provider or its owners (the stockholder). 12 Thus, in order to promote the most efficient outcome and ensure [*326] that the provider shoulders the costs of bringing such benefits to society, one returns full-circle back to the inquiry of the donkey's master and the inevitable choice between carrot or stick. 13

Given renewables' lack of cost competitiveness, 14 in order to encourage their increased development and adoption, governments have taken it upon themselves to either mandate their use or give companies, and other involved parties, incentives to continue to make the investments necessary to bring the technology to market, both through research and development for future production methods and continued current production of renewable energy. 15 Mandates in the form of Renewable Energy Portfolio Standards ("RPS") are one of the most common means utilized in the United States to promote renewable energy. 16 A Renewable Energy Portfolio Standard is legislation that dictates to utilities providers an amount of power that they must generate from renewable sources. 17 The law may state this standard in a variety of ways, but it is predominantly either a defined percentage of the total energy produced or a required annual number of kilowatt hours generated. 18 Twenty-nine states, as well as the District of Columbia and Puerto Rico, currently have such renewable energy portfolio standards in place. 19 In addition, eight other states have voluntary renewable energy portfolio goals. 20 The position of the states in adopting such measures rather than the federal government is a textbook case of the "federalist laboratory" of the American division of powers in action and has provided a wide variety of examples to analyze. 21

However, the federal government has become involved in renewable energy development as well, perhaps most prominently with the enactment of the Public Utility Regulatory Policies Act ("PURPA") of 1979. 22 The PURPA legislation, [*327] which will be examined later in this paper, has continued in one form or another up to the present time. It was initially passed as a statutory regime in the wake of the oil embargo of the 1970's and was specifically intended to foster increased domestic energy production, including through renewable sources. 23 Amendments to include a federal renewable energy portfolio standard within PURPA have been brought forward on multiple occasions, but to date none have been successfully enacted. 24

On March 28th, 2013, The Wall Street Journal published an article predicting the demise of many of these state Renewable Energy Portfolio Standards. 25 The article claimed that, "This year, legislators in at least 14 of those
26
[29] states have introduced bills that would water down or repeal those renewable-energy mandates..." Legislators, like Ohio Senator Bill Seitz, were quoted as being mainly concerned with the costs of energy production, and thus introduced bills to effectuate the goal that electricity be provided at the lowest possible cost to their constituents. 27 Given the current state of the American economy and the lingering repercussions of the global financial crisis, politicians' fixation on cost containment in all aspects of governance, energy production included, is not surprising. 28 However, to be "penny wise and pound foolish" is hardly an ideal strategy even in the best of times, and the ultimate fate of these bills demonstrated the nation's aversion to such short-term thinking.

By the time most of these states' legislative sessions had closed several months later, not a single bill either eliminating or even minimizing these Renewable Energy Portfolio Standards had passed into law. 29 USA Today subsequently published a response article positing two primary reasons that these efforts to rollback Renewable Energy Portfolio Standards in the states had failed. 30 First, once utilities companies have made the substantial investments required of them to meet such regulations, they are understandably hesitant to change course and undo these investments. 31 As the USA Today reported, "Enacting energy standards requires cooperation from a broad array of interest groups - environmentalists, [*328] utilities, manufacturers, farmers and others. Once they are in place, those stakeholders are reluctant to scrap them." 32 Secondly, investments in renewable energy are seen both as fostering innovation within the states that support them and as significant job creators. 33 Renewable energy investments have not drastically affected the majority of American consumers' monthly electric bills though, with most states seeing less than a 5% increase in their consumers' bills due to such investments. 34 Given the relatively minimal cost burden to consumers, politicians rightly realized the net positive results which renewable energy portfolio standards generated for their constituents.

A plethora of authorities have observed the states' successes and taken up the call for more renewable energy generation mandates, often particularly advocating for the institution of a national, federally mandated Renewable Energy Portfolio Standard. 35 However, while RPSs have played a fundamental role in jumpstarting renewable energy resource development throughout the United States, 36 this mandated approach is not likely to be the best means to continue to accelerate such developments.

Mandates, like the Renewable Energy Portfolio Standards that the states have so successfully enacted, function best in early-stage scenarios when an industry is just getting off the ground. 37 Those mandates ensure a market for the costly renewable energy produced and force utilities to develop the systems to integrate the usage into the grid. 38 However, markets will expand much more quickly and costs will fall, including both the costs to produce and the costs to consume, if the forces of capitalism are harnessed and the proverbial **carrot** is allowed to do its work **rather** than the constant goading of the stick. 39 Utilities providers can be [*329] forced to slowly purchase more and more of their energy needs from renewable sources, but growth achieved in this manner will be **sluggish, halting, and only ever the minimum amount** called for by the latest legislation. With a sufficiently balanced regulatory environment, achieving exponential rather than incremental growth is possible. For these reasons, this Note argues that an **incentives-based approach**, consisting of tax credits for renewable energy providers, research and development funding, and a varied market basket of other stimuli, better supports a long term-focused, high- growth future for renewable energy development.

This Note will first evaluate the experiences of several influential states with their implementation of individual Renewable Energy Portfolio Standard legislation. I will then briefly outline previous attempts to institute an RPS at a national level, before examining the barriers to further development of renewable energy resources. The Note will conclude by presenting a variety of incentives-based alternatives to RPSs which would be **superior options** to either complement or replace previous command-and-control style mandates.

Incentives are more likely to be modeled---cheapening fossil fuels without economic harm is the only way to achieve global emissions reductions

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The international community has established a goal of limiting the increase in average global temperature to 2 degrees Celsius, believing that warming above this threshold poses unacceptable risks of climate-related catastrophe. Achieving this goal requires reductions in global CO2 emissions on the order of 50% by 2050, according to the IPCC. With emissions still increasing rapidly in the developing world, developed nations are typically expected to make substantially sharper cuts. According to the Obama White House, the U.S. government's official goal for 2050 is an 80% emissions reduction. Annual U.S. emissions represent less than one-fifth of the global total, however, and our share shrinks every year, so even a zeroing out of our emissions would achieve little without dramatic changes in global behavior.

The effectiveness of a carbon tax, as a matter of environmental policy, would therefore depend not only on how it would directly alter the trajectory of American emissions, but also on its ability to affect global emissions by driving globally applicable technological innovation or by influencing the behavior of foreign governments. **On each of these dimensions, the carbon tax fails**. It would not, at the levels contemplated, come close to achieving America's own targeted reductions. On the global stage, it would not make an already-implausible international agreement more likely, and, if anything, it would **hinder** those prospects. In the absence of such an agreement, the only route to lower global emissions **runs through technological innovation that makes low-carbon fuels cheaper than conventional ones**, but a carbon tax is poorly tailored to achieve that objective as well. For those serious about climate change, a carbon tax is not the answer.

To their credit, carbon-tax supporters rarely claim that their proposals have the potential to deliver on U.S. emissions goals. The models for tax proposals frequently indicate reductions in the range of 15% to 30% by 2050, as compared to the official 80% target or the more moderate 50% goal sometimes advanced by researchers. Indeed, carbon-tax proponents tend not to link their proposals to any estimate of reduced warming, because the reductions amount to rounding errors. One might think this prima facie failure would represent a fatal flaw, but such naïveté only flags one as an easy mark; the shells are just beginning their delicate dance.

Placing domestic emissions to the side, the pro-tax case quickly shifts to the international scene, where U.S. "leadership" in the form of a unilateral domestic carbon tax is described as necessary for and perhaps even the lynchpin of global action. As a preliminary matter, conceding in advance and then arriving at the table without any bargaining chips is a **very poor negotiating strategy**. To the extent such an agreement could move forward, moreover, it makes little sense to suggest that our weak domestic action would serve as the basis for a strong global agreement.

The larger problem, of course, is that **under no theory of negotiation** will developing countries accept costly policies that would slow their economic growth and hinder their populations' climb out of crushing poverty. Rapid electrification is a critical economic and social priority for these countries, and rightly so. A 2012 study from the World Resources Institute, for instance, identified 1,200 new coal power plants on drawing boards worldwide with more than three-quarters of that capacity in China and India. Just last month those two countries issued a joint communiqué demanding more action and financial support from developed nations but made no emissions-related commitments of their own.

Developing countries will pursue pollution reduction and invest in alternative energy technologies where it is in their interest to do so, and they may even sign on to politically attractive and non-enforceable agreements. But there is neither evidence nor logical reason to suggest that the United States can alter other countries' rational negotiating positions by displaying "leadership." If one truly believed a domestic carbon tax could serve as an instrument for fostering a global deal, its implementation should be suspended pending execution of a deal that met the desired parameters. Establishing those parameters would no doubt be difficult, but laying them out would be a valuable exercise in itself. No such proposals are forthcoming.

Negative Evidence – Geo-Engineering Counterplan

Geo-engineering is preferable to emissions reductions

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http://keith.seas.harvard.edu/papers/174.Keith.MacMartin.ATemporaryModerateandResponsiveScenarioforSolarGeoengineering.pdf)

As these examples illustrate, judgements about whether the use of SRM can be justified are determined by policy assumptions about how it will be used at least as strongly as they are determined by scientific analysis. We articulate a scenario in sufficient detail to allow

quantitative analysis of its physical and social implications, but we do not attempt to describe a political scenario that might result in this physical scenario being implemented. We do not claim that this scenario is likely or optimal, only that it is less suboptimal than the scenarios used most commonly. We adopt the central planner framing common in economic models that underlie much climate policy analysis and assume that decisions about implementation of SRM are made to maximize some measure of global welfare4 . In practice, the nexus of decisions about SRM will involve nation states which are influenced by many factors, not least public and private transnational organizations, each of which have complex internal politics. Moreover, decisions about SRM take place in an environment in which decision makers face multiple issues and make decisions under substantial uncertainty. In this environment, the worst-case outcomes might include gross misuses of SRM or even war5 . Although we think it is unrealistic, we adopt the central planner framing for three reasons. First, because it is a common benchmark for climate policy analysis, it is a useful framework in which to compare SRM with other response options such as emissions mitigation and adaptation. Second, there is simply no tractable way to analyse the full decision problem, and our goal is not analysis but rather the construction of a scenario that is useful for further analysis including exploration of the political and institutional implications. Third, and finally, we hope that articulating an outcome that is closer to the social planner's optimum will aid the development of policy that might nudge the world towards a better outcome. Our objective is to provide a scenario for implementation of SRM that is **specific enough** to be **assessed** and **critiqued** yet general enough to be **used for a wide variety of science and policy analysis**. We define the scenario in the next section while deferring the considerations that motivate our choice of scenario to the section following that. Next we explore a specific choice of scenario including technological details as a worked example. The final section provides a concluding summary. Our scenario combines three elements: a specific method of altering solar forcing, an initial trajectory for SRM radiative forcing over time, and a plan for altering the trajectory based on new information. We aim to provide a scenario that is articulated in sufficient detail to allow quantitative evaluation of risk and efficacy. Further, our scenario is chosen to meet the following criteria: (i) it is temporary in that **the end point is zero SRM**; (ii) it is moderate in that it does not offset all of the global mean temperature change due to increased greenhouse gases; and (iii) it is **responsive** in that it explicitly recognizes that the amount of SRM will be adjusted in light of new information. We elaborate the motivation behind each criterion in 'Guiding principles' below. We link the amount of SRM to the amount of mitigation, in that slower growth in greenhouse gas forcing means a slower growth in SRM, but we do not make the converse linkage. We suggest that the risks and benefits of SRM be evaluated by comparing scenarios with and without SRM that use the same radiative forcing trajectory, although we recognize that the choice to use SRM may itself influence the amount of mitigation in one direction or the other. The scenario is defined as follows: Radiative forcing trajectory. Beginning in 2020, adjust the global SRM radiative forcing so as to halve the rate of growth of net nonSRM anthropogenic radiative forcing. The top panel of Fig. 1 provides an example for a specific radiative forcing scenario. Technology. Use stratospheric aerosol SRM with as even as possible a global distribution of radiative forcing. As a possible example (elaborated in the section 'A specific example'), one might begin using direct injection of SO2 gas and transition to H2SO4 vapour (to improve aerosol size distribution) by 2030. One might begin efforts to develop — and where appropriate test — more advanced scatterers that **offer lower ozone impact**, **lower overall health impact** or **less diffuse light scattering** with the intention of transitioning to advanced particles by **2050**. Responsiveness. Adjust the amount of forcing relative to the initial trajectory defined above based on any evidence that the effects of using SRM differ from expectations in ways that affect the assessment of benefits or harms. Examples include evidence that the effect on depletion of ozone is significantly larger than expected, evidence that the regional climate response (temperature, precipitation and so on) to forcing differs from model-based predictions, or evidence of unexpected impacts of climate change such as larger than expected rates of Arctic methane release. Monitoring. Observe the climate system as required to allow **policy-relevant improvements** in prior estimates of the efficacy, benefits and harms of SRM. Examples include (i) current weather and climate observation systems, (ii) new global observation systems focused on the stratosphere and upper troposphere to improve measurement of atmospheric chemistry and aerosols, including instruments such as high-spectral resolution limb-sounders and new lidar instruments, and (iii) a systematic programme of in situ stratospheric observations. For any stabilizing emissions pathway for greenhouse gases, the above scenario leads to a **finite time deployment of SRM**. This scenario is illustrated in Fig. 1 for an RCP4.5 emissions profile, with the corresponding global mean temperature and its rate of change predicted using MAGICC6 . Note that the amount of SRM used under this scenario depends on the evolution of all other anthropogenic forcings, but it does not depend on climate sensitivity. Further, while Fig. 1 maintains half the growth rate indefinitely, we explicitly include in our definition of this scenario the assumption that the amount of SRM would be adjusted in one direction or the other as time went on, based on what was learned about the impacts and risks either of uncompensated climate change or from SRM. While this analysis is driven by a fixed emissions trajectory, the intensity of efforts to restrain emissions — and thus the emissions trajectory — will also respond to new information.

Negative Evidence – Neoliberalism Kritik

The aff is neoliberal enframing of ecology – market discourse and carbon pricing cause economic inequality and ensure biosphere collapse – only democratic alternatives to neoliberalism preserve the intrinsic value of nature

Monbiot 12

(George Monbiot, columnist for the Guardian, MA in zoology, "The Great Impostors," August 6th, 2012, http://www.monbiot.com/2012/08/06/the-great-impostors/)

Jean Jacques Rousseau would recognise this moment. Now it is not the land his impostors are enclosing, but the rest of the natural world. In many countries, especially the United Kingdom, nature is being valued and commodified so that it can be exchanged for cash.

The effort began in earnest under the last government. At a cost of £100,000(2), it commissioned a research company to produce a total annual price for England's ecosystems. After taking the money, the company reported – with a certain understatement – that this exercise was "theoretically challenging to complete, and considered by some not to be a theoretically sound endeavour."(3) Some of the services provided by England's ecosystems, it pointed out, "**may** in fact **be infinite in value**."

This rare flash of common sense did nothing to discourage the current government from seeking first to put a price on nature, then to create a market in its disposal. The UK now has a Natural Capital Committee, an Ecosystem Markets Task Force and an inspiring new lexicon. We don't call it nature any more: now the proper term is **"natural capital"**. Natural processes have become "ecosystem services", as they exist only to serve us. Hills, forests and river catchments are now "green infrastructure"(4), while biodiversity and habitats are "asset classes" within an "ecosystem market"(5). All of them will be assigned a price, all of them will become exchangeable.

The argument in favour of this approach is coherent and plausible. Business currently treats the natural world as if it is worth nothing. Pricing nature and incorporating that price into the cost of goods and services creates an economic incentive for its protection. It certainly appeals to both business and the self-hating state. The Ecosystem Markets Task Force speaks of "substantial potential growth in nature-related markets – in the order of billions of pounds globally."(6)

Commodification, economic growth, financial abstractions, corporate power: **aren't these the processes driving the environmental crisis**? Now we are told that to save the biosphere we need more of them. Payments for ecosystem services look to me like the prelude to **the greatest privatisation** since Rousseau's encloser first made an exclusive claim to the land. The government has already begun describing land owners as the "providers" of ecosystem services, as if they had created the rain and the hills and the rivers and the wildlife that inhabits them(7). They are to be paid for these services, either by the government or by "users". It sounds like the plan for the NHS.

Land ownership since the time of the first impostor has involved the gradual accumulation of exclusive rights, which were seized from commoners. Payments for ecosystem services **extend this encroachment** by appointing the landlord as the owner and instigator of the wildlife, the water flow, the carbon cycle, the natural processes previously deemed to belong to everyone and no one.

But it doesn't end there. Once a resource has been commodified, speculators and traders step in. The Ecosystem Markets Task Force now talks of "harnessing City financial expertise to assess the ways that these blended revenue streams and securitizations enhance the ROI of an environmental bond"(8). This gives you an idea of how far this process has gone – and of the gobbledegook it has begun to generate.

Already the government is developing the market for trading wildlife, by experimenting with what it calls biodiversity offsets(9). If a quarry company wants to destroy a rare meadow, for example, it can buy absolution by paying someone to create another somewhere else. The government warns that these offsets should be used only to compensate for "genuinely unavoidable damage" and "must not become a licence to destroy"(10); but once the principle is established and the market is functioning, for how long do you reckon that line will hold? Nature, under this system, will become as fungible as everything else. Like other aspects of neoliberalism, the commodification of nature **forestalls democratic choice**. No longer will we be able to argue that an ecosystem or a landscape should be protected because it affords us wonder and delight. We'll be told that its intrinsic value has **already been calculated** and, doubtless, that it it turns out to be worth less than the other uses to which the land could be put. The market has spoken: end of debate. All those messy, subjective matters, the motivating forces of democracy, will be resolved in a column of figures. Governments won't need to regulate, the market will make the decisions that politicians have ducked. But trade is a fickle master, and unresponsive to anyone except those with the money. The costing and sale of nature represents another transfer of power to corporations and the very rich.

It diminishes us, it diminishes nature. By turning the natural world into a subsidiary of the corporate economy, it reasserts the biblical doctrine of dominion. It slices the biosphere into **component commodities**: already the government's task force is talking of "unbundling" ecosystem services(11), a term borrowed from previous privatisations. This might make financial sense; **it makes no ecological sense**. The more we learn about the natural world, the more we discover that its functions **cannot be safely disaggregated**.

Rarely will the money to be made by protecting nature match the money to be made by destroying it. Nature offers low rates of return by comparison to other investments. If we allow the discussion to shift from values to value – from love to greed – **we cede the natural world to the forces wrecking it**. Pull up the stakes, fill in the ditch, we're being conned again.

“Green growth” and “climate investment” discourse reproduces neoliberal overconsumption – the aff prioritization of maintaining growth ensures ecological overshoot – only radical de-growth resolves extinction

Bliss 14

(Sam Bliss, *Grist* fellow, “No, economic growth and climate stability do not go hand-in-hand,” *Grist*, September 30, 2014, http://grist.org/politics/no-economic-growth-and-climate-stability-do-not-go-hand-in-hand/)

But this growth-oriented thinking doesn’t actually create a road map for saving the climate, and even the New Climate Economy writers acknowledge it:

The question the project has sought to explore is not “how can greenhouse gas emissions be reduced?” … but “how can economic decision-makers achieve their principal goals while also reducing their impact on the climate?

So, basically, the report is about how **green investment** and policy **can stimulate economic growth**, not stop global warming:

On their own, these measures would not be sufficient to achieve the full range of emissions reductions likely to be needed by 2030 to prevent dangerous climate change.

But now, thanks to the misunderstanding of a few wishful thinkers (notably New York Times columnist Paul Krugman), seemingly everyone at the recent U.N. Climate Summit took for granted that **growth and climate action** necessarily **go hand-in-hand**. Even the usually sane Guardian bought into the irrational exuberance, broadcasting, “The world can still act in time to stave off the worst effects of climate change, and enjoy the fruits of continued economic growth.” One pundit goes so far as to credit Wall Street for enabling the transition to a green economy and climate-stable future, telling “hippies” to back off and let the oligarchs handle the business of saving humanity.

But growth-glorifying free-marketism has **a dreadful track record** for reducing emissions. Never mind that Elon Musk’s low-carbon brainchildren are crushing it on the stock exchange, gross domestic product — the thing that’s getting bigger when we talk about growth — is a terrible barometer of prosperity.

So, yes, pouring a ton of money into solar and wind and other clean energy would create economic growth in the short term. **But even** so-called **“green growth” comes at a cost**, notes Richard Heinberg of the (aggravatingly hyphenless) Post Carbon Institute:

The rapid build-out of renewables constitutes an enormous infrastructure project that will itself consume significant amounts of fossil-fuel energy. … **The faster we push the transition, the more fossil fuels we’ll use for that purpose**, and this could lead to the extraction of more tar sands, fracked tight oil and shale gas, deepwater oil, and Arctic oil.

It’s not underinvestment in cleantech that’s changing the climate; it’s carbon emissions. Duh.

So, the bigger question — the one that the NCE report strategically skirts — is this: Can we grow economically while we achieve climate stability? This question has been the focus of researchers experimenting with ways to stay within the global carbon budget, defined as the total fossil fuels we can burn and still maintain a 50-50 chance of limiting warming to 2 degrees Celsius.

Kevin Anderson of the Tyndall Center for Climate Change Research at the U.K.’s University of East Anglia estimates that staying under the arbitrarily agreed-upon 2-degree ceiling in a way that allots poor countries their fair share of the carbon budget (a big share, since their historical emissions are relatively tiny) would require rich countries to reduce emissions by **10 percent per year**. No countries are **even setting targets** consistent with such steep reductions, much less actually decreasing carbon emissions at that rate (or at all, from a consumption perspective).

As for pulling off that sort of emissions downsizing with economic growth intact, look at recent history: These days, we’re not bringing down global carbon emissions at all while the economy’s growing. Since 1995, global energy-related carbon emissions have decreased just one year, 2009, which also happens to mark **the only year** in that stretch **when global GDP decreased**. Coincidence?

Anderson is not alone in concluding that preventing calamitous climate ruin will require wealthy countries to **downsize their economies** (Grist’s own David Roberts summarizes the reasoning of Anderson and Alice Bows in this post). Here’s researcher Samuel Alexander, who studies sustainable societies at the University of Melbourne in Australia, from a blog post:

The unpalatable truth is that, for developed nations, continued economic growth as conventionally measured is incompatible with climate stability. Indeed, a safe climate requires that we now need a phase of planned economic contraction, or **“degrowth.”**

… This does not simply mean producing and consuming more efficiently and shifting to renewable energy, necessary though these changes are. It also requires that we produce and consume less – a conclusion that few dare to utter. Fortunately, the extent of wasteful overconsumption in the developed nations means that **degrowth can** actually **be in our own interests**, if we manage the transition wisely.

If that leaves your head spinning, not to worry, I’ll write more about degrowth and what that could look like in the future. But first, back to that pesky NCE study. Why all the confusion? Remember that the NCE report is about climate action not climate protection. That is, the report looks at economic benefits of climate-friendly investments, not at the economic realities of fixing the climate.

Lord Stern, the big-name economist on the study’s commission, already knows that the necessary deep emissions cuts can’t be made while growing the economy. In his well-known Stern Review on the Economics of Climate Change from 2006, the limit for carbon reductions in the company of growth was set at 3 to 4 percent a year. He also acknowledges that, historically, emissions decreases of larger than 1 percent per year have coincided with periods of upheaval or recession — when, by definition, there is a negative growth rate.

Maybe Stern found some new hopeful evidence to contradict his previous findings. Or maybe the numbers in this latest report have been thoroughly massaged to make them more palatable to politicians and businessfolk.

All signs point to the latter. Perhaps the real message of the NCE report is: You can act on climate and still get elected!

Looking a little deeper, even the NCE report hints that a green-painted version of business as usual won’t cut it:

The Organisation for Economic Co-operation and Development (OECD) has projected that if current trends continue, as the global population grows from 7 billion in 2010 to more than 9 billion in 2050, per capita consumption will more than triple, from about US$6,600 to US$19,700 per year, and global GDP will nearly quadruple, requiring 80% more energy. Sustaining growth at that scale will only be possible with radically new business models, products and means of production.

The call for radical change is promising. Now we just need to **switch the priority from sustaining growth to sustaining the stable climate**.

Otherwise, a century from now, our fancy new low-carbon economy will be up to its transit-hub high-rises in simmering acidic seawater.