
**STANDING BEHIND BEASTLY EMISSIONS:
THE U.S. SUBSIDIZATION OF ANIMAL
AGRICULTURE VIOLATES THE
UNITED NATIONS FRAMEWORK
CONVENTION ON CLIMATE CHANGE**

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I. INTRODUCTION

The build-up of greenhouse gases released by human activities has already warmed the Earth's atmosphere, melted glaciers, intensified extreme weather events, increased the geographic range of deadly diseases, and caused mass mortality events in ecosystems worldwide.¹ However, predictions for the future are even bleaker.²

1. See Rafael Coma et al., *Global Warming-Enhanced Stratification and Mass Mortality Events in the Mediterranean*, 106 PROC. NAT'L ACAD. SCI. 6176, 6176 (2008) (illustrating the consequences of rising temperatures on marine ecosystems and the link between above-average water temperatures and the two largest mass mortality events in the Mediterranean); see also U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, *Current Evidence of Climate Change*, http://unfccc.int/essential_background/feeling_the_heat/items/2904.php (last visited Oct. 10, 2011) [hereinafter UNFCCC Current Evidence] (highlighting specific instances of glacier melts in Greenland and Antarctica, droughts in Africa and floods in Europe, Africa, and Asia associated with climate change); see also U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, *Future Effects*, http://unfccc.int/essential_background/feeling_the_heat/items/2905.php (last visited Oct. 10, 2011) [hereinafter UNFCCC Future Effects] (predicting the expansion of regions acutely impacted by climate change, including shifting crop growth, and an increase in the range of diseases such as malaria).

2. See UNFCCC Future Effects, *supra* note 1 (projecting more than a doubling of the observed warming, and implying that the resulting climate change

Scientists predict that by 2030, 20 million people in Bangladesh alone will be displaced by land succumbing to rising sea levels.³ The Nobel Prize winning group, Intergovernmental Panel on Climate Change (“IPCC”), predicts that by 2080, 33% of the world’s coastal wetlands will become open water.⁴ The IPCC also estimates that melting glaciers will raise global sea levels by up to two feet in the next century, consuming an area equal to the size of Massachusetts and Delaware combined.⁵ An increase in global temperatures by a mere 1.5 to 2.5°C could result in the extinction of 30% of all plant and animal species, and the IPCC projects increases in the range of 1.1 to 6.4°C in the next 100 years.⁶ Extreme weather events ranging from heat waves to hurricanes are predicted to become more frequent and more intense.⁷

Taking into account catastrophic forecasts and acknowledging the gravity of climate change, nations worldwide ratified the United Nations Framework Convention on Climate Change (“UNFCCC”), which was adopted as an international legal framework for

related impacts will be more severe than those that have occurred to date).

3. See Emily Wax, *In Flood-Prone Bangladesh, a Future That Floats*, WASH. POST (Sept. 27, 2007), <http://www.washingtonpost.com/wp-dyn/content/article/2007/09/26/AR2007092602582.html> (reporting on the predicted 20 million Bengali “climate refugees” resulting from sea level rise and the opportunities for large boats as a potential solution).

4. See ENVTL. PROT. AGENCY, *Coastal Zones and Sea Level Rise*, <http://www.epa.gov/climatechange/effects/coastal/index.html> (last visited Oct. 10, 2011) [hereinafter EPA *Coastal Zones*] (reporting that the IPCC found that increases in atmospheric temperatures will melt glaciers, resulting in vast quantities of water being released into the oceans); see also Press Release, Nobelprize.org, The Nobel Peace Prize for 2007 (Oct. 12, 2007) [hereinafter Nobel Prize], available at http://www.nobelprize.org/nobel_prizes/peace/laureates/2007/press.html (crediting the award of a split Nobel Prize to IPCC due to the organization’s work in measuring the consequences of climate change).

5. See EPA *Coastal Zones*, *supra* note 4 (revealing that rising sea levels will swallow approximately 10,000 square miles of land nationwide).

6. See *Findings of the IPCC Fourth Assessment Report: Climate Change Impacts*, UNION OF CONCERNED SCIENTISTS (May 17, 2007), http://www.ucsusa.org/assets/documents/global_warming/ucs-ipcc-wg2-72pi-2007.pdf (summarizing the predicted impacts of climate change from the Fourth IPCC climate assessment, which incorporated input from 3,700 experts from 130 countries).

7. See *id.* at 3 (expounding that weather events including heat waves, droughts, floods, and hurricanes are predicted to occur with greater frequency and intensity as climate change worsens).

responding to the threat of climate change.⁸ It calls on parties to strive to stabilize atmospheric greenhouse gas concentrations to prevent dangerous anthropogenic⁹ interference with the climate system.¹⁰ It also asks parties to reflect on whether their domestic policies promote emissions, and encourages international cooperation on measures to combat climate change.¹¹ Because the UNFCCC charges parties with reducing their anthropogenic sources of greenhouse gas emissions, the emissions generated by the agricultural sector, particularly those by animal agriculture, fall within the purview of the UNFCCC's commands.¹² Thus, the United States should not continue to ignore the contribution of animal agriculture to domestic greenhouse gas emissions, and it should revisit its agricultural subsidies with a view to discouraging emissions.¹³ This is particularly true in light of the fact that animal agriculture is responsible for approximately 30% of the nation's

8. See United Nations Framework Convention on Climate Change art. 2, May 9, 1992, 1771 U.N.T.S. 107, available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> [hereinafter UNFCCC] (laying out the objective of the UNFCCC as the stabilization of greenhouse gas concentration in the atmosphere); *id.* pmb1. (expressing collective concern that the increasing atmospheric concentrations of greenhouse gases will enhance the warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind); see also CONTRIBUTION OF WORKING GRP. III TO THE SECOND ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 1995: ECONOMIC AND SOCIAL DIMENSIONS OF CLIMATE CHANGE 69 (James P. Bruce et al. eds., 1995) [hereinafter CLIMATE CHANGE 1995] (highlighting the importance under the established framework of negotiations between countries to develop an international response to climate change).

9. "Anthropogenic" means "of, relating to, or resulting from the influence of human beings on nature." Anthropogenic, MERRIAM-WEBSTER DICTIONARY, <http://www.merriam-webster.com/dictionary/anthropogenic> (last visited Oct. 10, 2011) [hereinafter Anthropogenic].

10. See UNFCCC, *supra* note 8, art. 2 (outlining the objective of the UNFCCC as the stabilization of greenhouse gas concentrations in the atmosphere in order to reduce the impact on ecosystems, food production, and economic development).

11. See CLIMATE CHANGE 1995, *supra* note 8, at 70 (analyzing the coordination among "economic and administrative instruments" and the support for scientific research on climate change that the UNFCCC requires).

12. See UNFCCC, *supra* note 8, art. 4(1)(c) (naming the agricultural sector as a relevant sector for anthropogenic emissions reductions); see also discussion *infra* Part II.A (elaborating on the binding nature of the UNFCCC commitments).

13. See discussion *infra* Parts III-IV (arguing that, because subsidization of animal agriculture and the associated increase in greenhouse gas emissions is in contravention of UNFCCC commitments, the United States should reconsider its agricultural policies).

emissions of methane, a gas that has at least twenty-one times the global warming potential of carbon dioxide.¹⁴ With the latest climate conference culminating in an agreement that allows parties to continue to avoid legally binding emissions reductions until 2020,¹⁵ it is crucial that the United States reflect on and ameliorate policies in its agricultural sector.¹⁶

This Comment argues that U.S. subsidization of animal agriculture violates Article 4 of the UNFCCC by promoting greenhouse gas emissions in contravention of its obligation to mitigate emissions. Part II explores the history and implications of the UNFCCC, as well

14. See CLIMATE CHANGE 1995, *supra* note 8, at 73 (underscoring that climate change measures should include the phasing out of distortionary policies, such as subsidies, that directly or indirectly increase greenhouse gas emissions); see also ENVTL. PROT. AGENCY, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009*, ES-5, 2-13 (Apr. 15, 2011) http://epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Complete_Report.pdf [hereinafter GHG Inventory] (reporting on the greenhouse gas emissions of various sources from the U.S. indicating agriculture contributes 196.8 of 686.3 Tg of CO₂ equivalent methane, or 29%).

15. See Durban Platform for Enhanced Action, Dec. 10, 2011, Draft Decision - /CP.17, available at http://unfccc.int/files/meetings/durban_nov_2011/decisions/application/pdf/cop17_durbanplatform.pdf [hereinafter Durban Platform]; see also Fiona Harvey & John Vidal, *Global Climate Change Treaty In Sight After Durban Breakthrough*, GUARDIAN.CO.UK (Dec. 11, 2011), <http://www.guardian.co.uk/environment/2011/dec/11/global-climate-change-treaty-durban> (explaining that the terms of a legally binding agreement for UNFCCC parties to reduce their carbon emissions need to be agreed to by 2015, and that the terms will come into effect in 2020).

16. See U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, *Kyoto Protocol*, (last visited Oct. 10, 2011), http://unfccc.int/kyoto_protocol/items/2830.php [hereinafter Info. on Kyoto Protocol] (providing background information about the Kyoto Protocol, including discussion of a 5% reduction in greenhouse gas emissions that the thirty-seven nations and the EU are bound to reach under the Protocol by the end of 2012); see also *Cancún Agreement Rescues UN Credibility But Falls Short of Saving Planet*, GUARDIAN (Dec. 12, 2010), <http://www.guardian.co.uk/environment/2010/dec/12/cancun-agreement-rescues-un-credibility> [hereinafter *Cancún Agreement*] (explaining that key countries such as Japan and Russia are unlikely to sign further binding emissions agreements without the U.S.'s commitment); see also Diva Rodriguez, *Has COP16 put too Much Pressure on COP17?*, CLIMATE ACTION (Dec. 13, 2010), http://www.climateactionprogramme.org/news/has_cop16_put_too_much_pressure_on_cop17/ (explaining that, although the Cancún Convention failed to resolve the future of the Kyoto Protocol, it restored some faith in the United Nations ("U.N.") as a forum for dealing with climate change by pushing resolution of the issue onto the next COP).

as the significance of the Kyoto Protocol.¹⁷ Part II additionally discusses the role of animal agriculture in global warming and the ways in which animal agriculture is currently subsidized both directly and indirectly.¹⁸ Part III argues that U.S. subsidies on animal agriculture violate UNFCCC Article 4 pursuant to a textual analysis of the Convention, as well as by analogy with domestic law.¹⁹ Lastly, Part IV proposes a number of potential solutions that would bring the United States into compliance with the UNFCCC.²⁰

II. BACKGROUND

Before it is possible to establish that the United States is in violation of the UNFCCC due to subsidizing animal agriculture, it is necessary to properly contextualize the issue. Subsection A of this Part will explain the legal framework involved, and will also introduce the Clean Air Act,²¹ a U.S. law to which the UNFCCC is compared in Part III.²² Subsection B will describe the relationship between animal agriculture and global climate change, and establish the scientific basis for animal agriculture's considerable climate changing effect.²³ Lastly, Subsection C will connect the earlier two sections by explaining the economic mechanisms that incentivize overproduction of animal food commodities, and, consequently, the

17. See discussion *infra* Part II.A.1–2 (introducing the commitments of the UNFCCC, the Kyoto Protocol, and subsequent agreements).

18. See discussion *infra* Part II.B-C (describing the role of animal agriculture in climate change, as well as the role of agricultural subsidies in promoting animal agriculture).

19. See discussion *infra* Part III.A (showing that UNFCCC Article 4 requires the United States to reassess agricultural subsidies given their tendency to increase emissions).

20. See discussion *infra* Part IV (outlining potential solutions to the UNFCCC violations stemming from agricultural subsidies).

21. See *generally* Clean Air Act (Air Pollution Prevention and Control Act) §§ 101-618, 42 U.S.C. §§ 7401-7671q (2006) (establishing a framework for the reduction of air pollution in the United States).

22. See discussion *infra* Part II.A.1–3 (framing the argument that subsidies on animal agriculture frustrate the aims of the UNFCCC by introducing the requirements of the UNFCCC); see also discussion *infra* Part II.A.4 (introducing the Clean Air Act so that a meaningful analogy can be drawn with the UNFCCC to propel the argument that the UNFCCC is binding).

23. See discussion *infra* Part II.B (delineating the multiple ways that animal agriculture creates greenhouse gas emissions and explaining why the impact of its emissions are so high relative to other sectors).

emission of greenhouse gases that constitutes the violative behavior.²⁴

A. THE INTERNATIONAL LEGAL REGIME FOR REGULATING CLIMATE CHANGE

By the early 1990s, scientists had concluded that emissions of greenhouse gases such as carbon dioxide, methane, and nitrous oxide were causing a gradual warming of the Earth's atmosphere and that this phenomenon would have vast implications for the environment and humankind.²⁵ In recognition of this, the UNFCCC was adopted and entered into force in March 1994.²⁶ The objective of the UNFCCC is to stabilize greenhouse gas emissions at a level that will prevent adverse environmental changes by curbing emissions from anthropogenic sources.²⁷

The core of the UNFCCC lies in Article 4, which consists of the "commitments" of the convention.²⁸ While Article 4 uses binding language,²⁹ the UNFCCC is often referred to as a "non-binding"

24. See discussion *infra* Part II.C (showing that economic incentives, such as subsidies, encourage production of subsidized goods, and that subsidies on animal agriculture thereby encourage greenhouse gas emissions).

25. See Clare Breidenich et al., *The Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 92 AM. J. INT'L L. 315, 316 (1998) (reporting that by 1990 the IPCC was certain that greenhouse gas emissions resulting from human activities were causing warming of the Earth's atmosphere and predicting temperatures to increase one degree Celsius if greenhouse gases continued to be emitted in the same manner); see also ENVTL PROT. AGENCY, *Climate Change: Basic Information*, <http://epa.gov/climatechange/basicinfo.html> (last updated Apr. 14, 2011) [hereinafter EPA, *Climate Change: Basic Information*] (outlining various causes and consequences of global warming, including sea level rise and the shifting of previously predictable events such as migration patterns and blooming schedules).

26. U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, *Status of Ratification of the Convention*, http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php (last visited Oct. 10, 2011) [hereinafter Convention Ratification Status] (indicating the agreement came into force in 1994 upon the deposit of the 50th ratification instrument, and that there are currently 195 parties to the convention).

27. See UNFCCC, *supra* note 8, art. 2 (elucidating the aim of the UNFCCC as the stabilization of the concentration of greenhouse gases in the atmosphere without certain adverse impacts).

28. See *generally id.* art. 4 (enumerating the actions to which all parties to the UNFCCC commit).

29. See *id.* (binding the parties to the UNFCCC to develop inventories, adopt

convention.³⁰ This is because the UNFCCC does not concretely state a level by which parties must reduce their greenhouse gas emissions and there is no real enforcement mechanism for redressing violations.³¹ Instead, the most ardent requirement of the UNFCCC is that states adopt national policies to mitigate climate change with the “aim” of returning to 1990 emissions levels by 2000.³² Nevertheless, the UNFCCC requires parties to, at a minimum, assess policies that encourage emissions.³³

1. UNFCCC Article 4: Commitments

The heart of the UNFCC is in Article 4, which contains the commitments. The commitments that are particularly relevant to this discussion require that parties (1) implement measures to mitigate climate change by addressing anthropogenic sources of emissions,³⁴ (2) promote practices and processes that reduce or prevent emissions, including from the agricultural sector,³⁵ (3) promote sustainable

policies to mitigate climate change, coordinate with other parties to meet the goals of the Convention, provide financial resources to developing nations, provide assistance in response to the impacts of climate change, and take steps to promote environmentally responsible technologies, among other requirements).

30. See, e.g., Tushar Mathur, *UNFCCC Meets on Climate Change*, TALKING ABOUT GREEN (Dec. 4, 2008), <http://talkingaboutgreen.com/unfccc-meets-on-climate-change> (mentioning that, because the UNFCCC is a non-binding agreement, parties have since aimed towards establishing mandatory emissions limits). Interpreting the UNFCCC as binding is also consistent with readings by many scholars. See, e.g., Breidenich et al., *supra* note 25, at 317 (explaining that, under Article 4(1), parties are “obligated” to undertake measures to mitigate climate change and that Article 4(2) “requires” industrialized country parties to adopt policies that limit emissions of greenhouse gases).

31. See UNFCCC, *supra* note 8, art. 14 (instructing that parties shall seek settlement of any dispute relating to the UNFCCC through negotiation).

32. See *id.* art. 4(2)(a)-(b) (declaring that UNFCCC parties commit to returning to 1990-levels of carbon dioxide and other greenhouse gas emissions by 2000 and periodically report on the measures that they are taking to reach that goal).

33. See, e.g., CLIMATE CHANGE 1995, *supra* note 8, at 70 (asserting that the UNFCCC requires developed parties to review their policies to assess whether they encourage increased emissions and coordinate with other parties to meet the goals of the UNFCCC).

34. See UNFCCC, *supra* note 8, art. 4(1)(b) (requiring the regular publishing and taking inventory of sources and sinks of greenhouse gas emissions).

35. See *id.* art. 4(1)(c) (compelling states to “promote and cooperate” in reducing and preventing emissions of greenhouse gases from the “energy, transport, industry, agriculture forestry and waste management sectors”).

management of sinks and reservoirs,³⁶ (4) take climate change considerations into account in relevant social, economic, and environmental policies,³⁷ (5) adopt policies to mitigate climate change by limiting emissions of greenhouse gases and by protecting sinks and reservoirs with the aim of returning to 1990 emissions levels by 2000,³⁸ and (6) identify and review domestic policies which encourage increased emissions of greenhouse gases.³⁹

Relevant to interpreting the scope of these commitments are the principles delineated in Article 3, which instruct that parties “shall be guided by” certain considerations in implementing UNFCCC commitments.⁴⁰ Particularly illustrative is the principle that measures adopted by the parties should promote sustainable economic growth for all parties to the convention, particularly for developing countries.⁴¹

2. *Kyoto Protocol and Subsequent Developments*

The Kyoto Protocol is a supplement to the UNFCCC that set

36. *See id.* art. 4(1)(d) (requiring states to maintain and enhance, where available, greenhouse gas sinks); *see also id.* art. 1 (defining a “sink” as “any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere” and a “reservoir” as “a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored”).

37. *See Id.* art. 4(1)(f) (mandating that parties consider climate change when implementing “social, economic and environmental policies” while minimizing the impact on the economy, public health and the environment).

38. *See id.* art. 4(2)(a)-(b) (setting a goal of reaching 1990 levels of emission by 2000 while providing regular reports on the steps taken to make that progress); *see also* U.N. Framework Convention on Climate Change, Subsidiary Body for Implementation, National Greenhouse Gas Inventory Data for the Period 1990-2006, U.N. Doc. FCCC/SBt/2008/12 (Nov. 17, 2008) [hereinafter Nat'l Greenhouse Data] (showing that the United States increased its greenhouse gas emissions by 14.4% between 1990 and 2006 while countries such as the United Kingdom and Germany decreased their emissions by 15.1% and 18.2% respectively).

39. *See* UNFCCC, *supra* note 8, art. 4(2)(d)(ii) (requiring an assessment of the incremental greenhouse gas emissions resulting from policies and activities).

40. *See id.* art. 3 (including in the guiding principles factors such as consideration of the economic well-being of developing nation parties and promotion of an open and supportive international economic system).

41. *See id.* art. 3(5) (emphasizing that policies implemented by developed country parties should encourage the sustainable economic growth of developing nation parties).

binding emissions targets for the European Union and 37 other industrialized countries.⁴² Under the Kyoto Protocol, developed nation parties are required to reduce their greenhouse gas emissions to an average of 5.2% below 1990 levels by 2012.⁴³ Among potential methods of reducing emissions, the Protocol proposes phasing out economic incentives and subsidies that encourage greenhouse gas emissions.⁴⁴ One of the most significant facts about the Kyoto Protocol is that the United States never ratified it.⁴⁵ The United States is currently the only industrialized nation to refuse to sign the Kyoto Protocol,⁴⁶ and its refusal to do so is attributed to concerns about

42. See Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 162, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf> [hereinafter Kyoto Protocol] (establishing a series of requirements for Annex I states to reach the objectives of the UNFCCC); see also Info. on Kyoto Protocol, *supra* note 16 (explaining that the Kyoto Protocol, which entered into force on February 16, 2005, was enacted to help achieve the objective of the UNFCCC by establishing mandatory emissions reductions targets); see also discussion *infra* Part III.A (discussing the importance of the Kyoto Protocol in analyzing UNFCCC obligations). “Annex I” Parties include the industrialized countries that were members of the Organization for Economic Co-operation and Development (OECD) in 1992. Conversely, non-Annex I parties are mostly developing countries. See *Parties and Observers*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/parties_and_observers/items?2704txt.php (last visited Oct. 10, 2011) [hereinafter UNFCCC Parties and Observers] (providing the respective definitions for “Annex I,” “Annex II,” and “Non-Annex I,” and highlighting that Non-Annex I countries are generally those developing countries which are especially vulnerable to the adverse effects of climate change).

43. See Info. on Kyoto Protocol, *supra* note 16 (summarizing the requirements of the Annex I countries to reduce their greenhouse gas emissions by 2020) While the average reduction goal under the Kyoto Protocol is 5.2%, individual emissions targets vary. Had the United States adopted the Kyoto Protocol, it would have been bound to a 7% reduction while the U.K. is bound to an 8% reduction. Some countries are allowed to increase emissions by up to 8%. See Kyoto Protocol, *supra* note 15, Annex B.

44. See Kyoto Protocol, *supra* note 42, art. 2 (asserting that states are required to “implement and/or further elaborate” ways in which they are able to eliminate policies that encourage emissions and are counter to the UNFCCC).

45. See *Status of Ratification of the Kyoto Protocol*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613txt.php (last visited Oct. 10, 2011) [hereinafter Kyoto Ratification Status] (listing the Protocol’s current signatories, indicating the United States has signed, but not ratified the Protocol); see also *infra* notes 48-49 and accompanying text (discussing the political reasons for the U.S. failure to ratify the Kyoto Protocol).

46. See *U.N. Climate Talks and Power Politics: It’s Not About the*

competition with non-bound countries such as China and India.⁴⁷ The United States fears that countries such as China and India, which were not classified as Annex I developed countries at the adoption of the UNFCCC but have since become primary emitters of greenhouse gases, would gain an unfair advantage in the global market due to their Kyoto Protocol exemptions.⁴⁸ Because it refuses to ratify the treaty, the United States will not face any penalties for failure to meet what would have been its 7% Kyoto Protocol emissions reduction goal.⁴⁹

To date, the most tangible reduction commitment made by the United States is contained in the Copenhagen Accord, a non-binding agreement containing voluntary pledges to reduce emissions from heavy-emitting developed and developing nations.⁵⁰ More recently,

Temperature: Hearing Before the Subcomm. on Oversight and Investigation of the H. Comm. On Foreign Affairs, 112th Cong. 13 (2011) (Statement of Todd Stern, Special Envoy for Climate Change) [hereinafter Climate Change Hearing] (indicating that the United States signed the Kyoto Protocol in 1998, but in 2001 announced that the US would not ratify the protocol).

47. See David E. Sanger, *Bush Will Continue to Oppose Kyoto Pact on Global Warming*, N.Y. TIMES June 12, 2001, <http://www.nytimes.com/2001/06/12/world/bush-will-continue-to-oppose-kyoto-pact-on-global-warming.html?pagewanted=all&src=pm> (reporting on President Bush's refusal to ratify the Protocol because of the treatment of two of the largest CO₂ emitters, China and India); see also Rod McGuirk, *Australia Signs Kyoto Protocol; U.S. Now Only Holdout* NAT'L GEOGRAPHIC NEWS Dec. 3, 2007, <http://news.nationalgeographic.com/new/pf/83432535.html> (reporting that, after Australia ratified the Kyoto Protocol, the United States became the sole industrialized nation to refuse to ratify it).

48. See Sanger, *supra* note 47 (explaining that the U.S. wished to avoid undertaking emissions reduction commitments which might put it at a disadvantage in the global market); see also Tom Levitt, *Carbon Emissions: The World in 2010*, THE ECOLOGIST (Dec. 23, 2009), http://www.theecologist.org/News/news_analysis/383922/carbon_emissions_the_world_in_2010.html (noting that China's gross domestic product increased by 250% between 1992 and 2006, that its CO₂ emissions correspondingly rose by over 120%, and that, by 2020, non-Annex I countries, such as China, India and Brazil, are expected to account for the majority of global emissions).

49. See *Frequently Asked Questions*, PBL NETHERLANDS ENVTL. ASSESSMENT AGENCY, <http://www.pbl.nl/en/dossiers/climatechange/faqs#vraag8> (last visited Oct. 10, 2011) [hereinafter PBL] (showing that U.S. emissions have increased by 13% since 1990, and, thus, that the United States did not meet its UNFCCC target).

50. See U.N. Framework Convention on Climate Change, Conference of the Parties, Copenhagen Accord, U.N. Doc. FCCC/CP/2009/C.7 [hereinafter Copenhagen Accord] (requiring parties to submit greenhouse gas emissions targets by Jan. 31, 2010); see also Alex Carr, *UN Climate Conference (COP 16) Wrap up and What to Watch in 2011*, ENVTL. LEADER (Dec. 20, 2010),

the UNFCCC Conference of the Parties produced the Cancún Agreements,⁵¹ which, although binding, sidestepped the reissuance of a new set of emissions targets.⁵² In late 2011, facing the imminent expiry of the Kyoto Protocol, the U.N. Conference of the Parties produced the Durban Platform, which, while binding on the United States, again defers the commitment to binding emissions targets to a later date.⁵³

3. Principles of Treaty Interpretation

The Vienna Convention on the Law of Treaties (“Vienna Convention”) is the result of a decades-long effort by the U.N. to codify customary international law on the law of treaties.⁵⁴ Although

<http://www.environmentalleader.com/2010/12/20/un-climate-conference-cop-16-wrap-up-and-what-to-watch-in-2011/> (summarizing the key points from the Copenhagen Accord, such as a pledge by the United States to reduce emissions by 17% from 2005 levels by 2020 and the development of provisions for the monitoring, reporting, and verification of the voluntary pledges, and inferring that the United States would prefer to adopt a new protocol that would bind China and India rather than extend the Kyoto Protocol, which leaves these countries exempt); Cheryl Pellerin, *Copenhagen Accord Politically Significant but Not Legally Binding*, AMERICA.GOV (Dec. 22, 2009), http://www.america.gov/st/energy_english/%202009/December/200912221317261cniirellep0.1802179.html (elucidating that the Copenhagen Accord resulted from informal negotiations between the United States, France, Germany, the United Kingdom, Mexico and twenty other nations and was thus not adopted as an official outcome of COP 15).

51. Cancun Agreements, Dec. 11, 2010, Decision -/CP.16, available at http://www.unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf.

52. See Lucia Green-Weiskel, *Climate Clash in Cancún*, THE NATION (Dec. 16, 2010), <http://www.thenation.com/print/article/157156/climate-clash-canc%C3%BA>n (discussing that, although the parties agreed to a \$100 million fund to help developing countries adapt to climate change, the parties skirted the pressing matter of renewing reduction commitments).

53. See Durban Platform, *supra* note 15, ¶¶ 2–4 (agreeing to “launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties,” to establish this legal instrument by 2015, and to have them come into effect from 2020); see also Harvey & Vidal, *supra* note 15 (reporting that the Durban Platform is an agreement to work on a new climate deal which will be binding on both developed and developing state parties, and unlike the Kyoto Protocol, was signed by the United States).

54. See Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331 (entered into force Jan. 27, 1980) [hereinafter Vienna Convention]

the United States is not formally a party to the Vienna Convention,⁵⁵ the United States considers it to be an embodiment of customary international law,⁵⁶ thereby making the Vienna Convention an appropriate guide for U.S. treaty interpretation.⁵⁷ Article 31 of the Vienna Convention contains the general rule of interpretation, instructing that a treaty is to be interpreted in accordance with the ordinary meaning of the treaty's terms in its context and in light of its object and purpose.⁵⁸ It goes on to define "context" as including a treaty's text, preambles and annexes, and any instruments made by one or more parties in connection with the conclusion of the treaty and is accepted by the other parties as an instrument related to the treaty.⁵⁹ Context can also include any subsequent agreement between the parties regarding the interpretation or application of the treaty, and any application of the treaty that reflects the consensus of the

(providing the international legal framework governing treaties between states); see also Karl Zemanek, *Vienna Convention on the Law of Treaties Vienna, 23 May 1969*, U.N. (2008) <http://untreaty.un.org/cod/avl/ha/vclt/vclt.html> (explaining the impetus for codifying customary international law, and the near unanimous agreement that the treaty is an accurate codification of customary international law).

55. See *UNTC*, http://treaties.un.org/Pages/ViewDetailsIII.aspx?&src=TREATY&mtdsg_no=XXIII~1&chapter=23&Temp=mtdsg3&lang=en, (last updated Oct. 22, 2011) [hereinafter *UNTC*] (listing the United States as having signed the treaty on Apr. 24, 1970, but never having ratified the agreement).

56. See U.S. DEP'T OF STATE, *Vienna Convention on the Law of Treaties*, <http://www.state.gov/s/l/treaty/faqs/70139.html> (last visited Oct. 10, 2011) [hereinafter *STATE DEP'T*] (considering "many provisions of the Vienna Convention on the Law of Treaties to constitute customary international law on the law of treaties.").

57. See MARK E. VILLIGER, *COMMENTARY ON THE 1969 VIENNA CONVENTION ON THE LAW OF TREATIES* 439–40, 448 (2009) (explaining that since 1969, there has been a growing consensus that Articles 31 and 32 are reflective of customary law); see also Evan Criddle, *The Vienna Convention on the Law of Treaties in U.S. Treaty Interpretation*, 44 VA. J. INT'L L. 431 (2004) (underscoring that, although the United States has not officially ratified the Vienna Convention, it can be used to analyze U.S. treaty obligations because it is a codification of customary international law); see also Zemanek, *supra* note 54, at 3 (noting that even the International Court of Justice refers to the Vienna Convention without examining whether a litigant is a party to it).

58. See Vienna Convention, *supra* note 54, art. 31(1) (establishing a "good faith" basis for interpreting the terms of a treaty according to the words' ordinary meaning and by the context of the treaty).

59. See *id.* art. 31(2)(b) (construing context broadly by including "any instrument" in connection with the treaty and "accepted by the other parties as an instrument related to the treaty").

parties.⁶⁰ Article 32 of the Vienna Convention allows for recourse to “supplementary means of interpretation” in order to further support the meaning drawn out by interpretation of a treaty under the Article 31 framework. “Supplementary means of interpretation” include agreements and practices among a subgroup of treaty parties that would not fall within the purview of Article 31, such as the Kyoto Protocol. Analysis of the terms and context of the UNFCCC in accordance with these principles will help elucidate the proper interpretation of the Article 4 Commitments in Part III.A.⁶¹

4. *The Clean Air Act*

Following the publication of Rachel Carson’s groundbreaking book *Silent Spring* in 1962,⁶² there was a new sense of urgency for dealing with increasingly evident environmental ills caused by human activity.⁶³ In the wake of this growing environmental cognizance, the social climate was ripe for the passage of sweeping environmental statutes.⁶⁴ In 1970, Congress enacted the first iteration

60. *See id.* art. 31(3)(a)-(b). Treaty interpretation through the lens of Article 31 is appropriate only where all parties to a treaty accept the interpretation of treaty terms contained within qualifying “context.” *See* VILLIGER, *supra* note 57, at 429–30. Thus, any elucidation of the meaning of the UNFCCC by the Kyoto Protocol, which the United States did not ratify, is appropriately viewed only through the framework of Article 32, which allows for supplementary means of treaty interpretation. *Id.*

61. *See* discussion *infra* Part III.A (applying the Vienna Convention principles to deduce that the UNFCCC is a binding instrument).

62. RACHEL CARSON, *SILENT SPRING* (1962).

63. *See* Jack Lewis, *The Birth of EPA*, ENVTL. PROT. AGENCY J. (Nov. 1985), <http://www.epa.gov/history/topics/epa/15c.html> (last updated June 8, 2011) (explaining that Rachel Carson’s book, which documented the toll of pesticide use on bird populations, received nationwide attention and, consequently, paved the way for environmental reforms in the following decade).

64. *See, e.g.*, National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4347 (2006) (promoting the minimization of impacts on the environment); 42 U.S.C. §§ 6901–6908a (2006) (intending to control the disposal of hazardous wastes); Endangered Species Act, 16 U.S.C. §§ 1531–1544 (2006) (establishing the policy of Federal actions minimizing their impact on endangered species); 33 U.S.C. §§ 1251–1281a (2006) (attempting to “restore and maintain . . . [the] integrity of the Nation’s waters”); *see also* Lewis, *supra* note 63 (explaining that President Richard Nixon signed the National Environmental Policy Act on January 1, 1970 to mark the beginning of an “environmental decade,” which would see a host of revolutionary environmental legislation).

of the Clean Air Act (“CAA”), which was most recently amended in 1990.⁶⁵ The Clean Air Act was enacted to protect the public health by limiting the quality and amount of pollutant that individuals and companies are allowed to release into the air.⁶⁶

The CAA shares not only the UNFCCC’s goal of protecting human health and welfare through environmental regulation, but also is structured similarly to the UNFCCC.⁶⁷ For example, the structure of the CAA is such that the enacting authority, the federal government, does not develop or enforce mandatory air quality standards.⁶⁸ Under the framework of the CAA, the Environmental Protection Agency is responsible for establishing national air quality standards, non-enforceable guidelines that reflect the levels at which there is no known or anticipated adverse effect on the public health or welfare from a given pollutant.⁶⁹ Another similarity between the

65. See 42 U.S.C. §§ 7401-7671q (controlling the emissions of pollutants into the atmosphere); see also ENVTL. PROT. AGENCY, *AIR Trends 1995 Summary: Background*, <http://epa.gov/airtrends/aqtrnd95/backgrnd.html> (last visited Oct. 10, 2011) [hereinafter *AIR Trends*] (acknowledging that air pollution causes health problems ranging from eye irritation to premature death, has profound impacts on the environment, and that the Clean Air Act was intended to combat these problems).

66. See § 7401(b)(1) (declaring that the purpose of the CAA is to promote the public health and welfare by enhancing the quality of the nation’s air); see also *AIR Trends*, *supra* note 65 (noting that the CAA mandated the establishment and enforcement of two types of air quality standards by the EPA to limit the air pollution which could be emitted from “stationary sources” such as factories and power plants).

67. See *infra* notes 68-71 and accompanying text (discussing the impetus, purpose, and scope of the Clean Air Act).

68. Compare § 7401(b)(1) (declaring that the CAA’s purpose is to “protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare”), with UNFCCC, *supra* note 8, art. 1(1) (aiming similarly to mitigate climate change enough to prevent any “deleterious effects on . . . human health or welfare.”).

69. See § 7409(a)(1)(A) (requiring that the EPA Administrator establish a “national primary ambient air quality standard” and a “national secondary ambient air quality standard” for each regulated air pollutant). National primary air quality standards are set at the level necessary to protect the public health with an adequate margin of safety. See *id.* § 7409(b)(1). National secondary air quality standards are those levels requisite to protect public welfare. See *id.* § 7409(b)(2). These standards do not consider technological or economic feasibility, and therefore represent a goal rather than a mandate. See *Whitman v. Am. Trucking Ass’n, Inc.*, 531 U.S. 457, 471 (2001) (holding that the CAA unambiguously bars cost considerations in the setting of the air quality standards).

UNFCCC and the CAA is that both defer the development and execution of plans designed to achieve ambitious environmental standards to subsidiary parties.⁷⁰ Overall, like the CAA, the UNFCCC provides a framework for addressing an environmental problem, but it does not create precise, enforceable standards.⁷¹

The considerable structural and substantive similarities between the CAA and the UNFCCC help drive the argument that the UNFCCC is an instrument that creates non-discretionary obligations on the United States.⁷²

B. THE ROLE OF ANIMAL AGRICULTURE IN GLOBAL WARMING

After accounting for indirect emissions, estimates suggest that agriculture is responsible for approximately 32% of global greenhouse gas emissions.⁷³ A very significant share of this is

70. See § 7410(a)(1) (designating the responsibility of adopting plans for the implementation, maintenance, and enforcement of air quality standards to the states); see also UNFCCC, *supra* note 8, art. 10 (establishing a subsidiary body for implementation of the UNFCCC); *Union Elec. Co. v. Env'tl. Prot. Agency*, 427 U.S. 246, 250 (1976) (relating that each state is given wide discretion in formulating its plan, and the EPA Administrator must approve a state-proposed plan if it meets certain minimum criteria).

71. See UNFCCC, *supra* note 8, art. 4(2)(a)-(b) (commanding parties to aim for 1990 level emissions by 2000, but not entailing any repercussions for failure to do so); see also *Union Elec. Co.*, 427 U.S. at 259 (explaining that “the Administrator must approve a plan that provides for attainment of the primary standards in three years even if attainment does not appear feasible,” thus signaling that even state plans that are unambiguously inadequate to achieve the national air quality standards will nevertheless be approved). An additional domestic environmental statute that is enforceable but that does not create concrete standards is the Resource Conservation and Recovery Act (RCRA). 42 U.S.C. §§ 6901-6992k (2006). Section 6902(b) states “Congress hereby declares it to be the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible.” *Id.* § 6902(b).

72. See discussion *infra* Part III.D (reasoning that mandated compliance with the CAA shows by analogy that the UNFCCC should similarly be enforced within the U.S.).

73. See JESSICA BELLARBY ET AL., GREENPEACE, COOL FARMING: CLIMATE IMPACTS OF AGRICULTURE AND MIGRATION POTENTIAL 5 (2008), available at <http://www.greenpeace.org/usa/Global/usa/report/2009/4/cool-farming-climate-impacts.pdf> (noting that indirect sources of greenhouse gas emissions from animal agriculture includes farm machinery, transportation, agrochemicals, and deforestation); see also U.N. Food & Agric. Org., *Livestock a major threat to environment* (Nov. 29, 2006), <http://www.fao.org/newsroom/en/news/2006/1000448/index.html> (highlighting

attributable to animal agriculture.⁷⁴ On its own, animal agriculture is responsible for approximately 18%⁷⁵ of global greenhouse gas emissions, making it a larger contributor than the entire transportation sector.⁷⁶ These figures comport with findings that the livestock sector expands over a staggering 40-50% of the Earth's surface, and close to 50% of the continental United States.⁷⁷

the significant, and growing impact of agriculture, specifically livestock, to climate change inducing emissions).

74. See BELLARBY ET AL., *supra* note 73, at 8 (indicating that animal farming is associated with 60% of global methane emissions, the largest single contributor).

75. Although animal agriculture comprised only 9% of carbon dioxide emissions, the 18% figure is expressed in "carbon dioxide equivalent." See KEITH PAUSTIAN ET AL., *AGRICULTURE'S ROLE IN GREENHOUSE GAS MITIGATION*, PEW CTR. ON GLOBAL CLIMATE CHANGE 3 (2006). Because carbon dioxide, methane, and nitrous oxide have different "global warming potentials" ("GWP"), or warming effect on a per mass basis, carbon dioxide is assigned a value of 1, and the relative effect of other greenhouse gases are expressed relative to that value. Methane has a GWP of 21 (making it 21 times more potent than carbon dioxide) and nitrous oxide has a GWP of 310. See *id.* (explaining the concept of GWP and the relative GWPs of the three main greenhouse gases).

76. See CLAUDIA COPELAND, CONG. RESEARCH SERV., RL 32948, *AIR QUALITY ISSUES AND ANIMAL AGRICULTURE: A PRIMER* 41 (2010) (highlighting the split of agricultural sector greenhouse gas emissions between animal and agricultural activity); see also HENNING STEINFELD ET AL., U.N. FOOD & AGRIC. ORG., *LIVESTOCK'S LONG SHADOW: ENVIRONMENTAL ISSUES AND OPTIONS* 112 (2006) (elucidating that, after accounting for the greenhouse gases emitted by enteric fermentation, manure management, fertilizer production, biomass burning, operation of farm machinery, and irrigation, animal agriculture accounts for 18% of total greenhouse gas emissions in carbon dioxide equivalent); see also *Livestock a major threat to environment*, *supra* note 73 (summarizing findings by the United Nations Food and Agriculture Organization that animal agriculture is not only a chief contributor of greenhouse gas emissions, but also its rapid growth makes it an especially potent source); see also *World GHG Emissions Flow Chart*, WORLD RES. INST., <http://cait.wri.org/figures.php?page=World-FlowChart&view=100> (last visited Oct. 26, 2011) [hereinafter WRI] (quantifying the input and output of greenhouse gasses in the world, including 13.5% from transportation).

77. See BELLARBY ET AL., *supra* note 73, at 5 (emphasizing the large contributions of the agricultural sector to greenhouse gas emissions and the potential for the agricultural sector to become a greenhouse gas sink if different practices were adopted widely. See generally PETE SMITH ET AL., *Agriculture*, in *CLIMATE CHANGE 2007: MITIGATION* (Kristin Rypdal & Mukiri wa Githendu eds., 2007) (quantifying the coverage of agricultural lands at 40-50% of the earth and highlighting management practices that would allow for an overall reduced impact of agricultural emissions); UNITED STATES DEP'T OF AGRIC., *Land Use, Value, and Management*, <http://www.ers.usda.gov/Briefing/LandUse/> (last visited Oct. 26, 2011) [hereinafter USDA] (indicating that 46% of the surface of the United States is covered by agricultural lands and that the Federal Government is often used to

Greenhouse gas emissions from the agricultural sector have been increasing annually, largely driven by increased methane and nitrous oxide emissions—the principal byproducts of animal agriculture.⁷⁸ In fact, livestock production is responsible for more than 30% of the United States' emissions of methane, a gas that has 21 times the global warming potential of carbon dioxide.⁷⁹

With the global demand for meat and dairy set to double by 2050, the climate change implications are daunting.⁸⁰ In spite of these dangers, the animal agriculture sector enjoys widespread exemptions from federal and state environmental laws,⁸¹ even with government acknowledgement that methane and nitrous oxide threaten public health and welfare.⁸² To date, regulatory efforts concerning the mitigation of greenhouse gas emissions have largely ignored the agricultural sector; instead they have focused on the industrial and transportation sectors.⁸³ In light of the significant role of animal

resolve conflicts with other potential land uses).

78. See STEINFELD ET AL., *supra* note 76, at 499 (suggesting that the disproportionate increase of methane and nitrous oxide relative to other greenhouse gases points to animal agriculture as the chief source of increasing emissions); *id.* at 503 (indicating that N₂O and CH₄ are the main non-CO₂ greenhouse gas emissions from agriculture).

79. See Copeland, *supra* note 76, at 22 (breaking down the contribution of different sectors to domestic methane emissions, including 34.2% from agriculture); *supra* note 77 and accompanying text (discussing the concept of “global warming potential” and the significantly higher warming potential of methane relative to carbon dioxide).

80. See FOOD ETHICS COUNCIL, MEAT CONSUMPTION: TRENDS AND ENVIRONMENTAL IMPLICATIONS 2 (2001) [hereinafter FEC] (citing U.N. statistics that estimate that a growing population and rising global incomes will double the 2000-level meat demand by 2050).

81. See Copeland, *supra* note 76, at 7 (noting that the Clean Water Act exempts most agricultural operations); see also *id.* at 19 (discussing that in December 2008, the EPA finalized an exemption of animal agriculture operations from mandatory reporting requirements for releases of hazardous substances into the air from animal wastes).

82. See *id.* at 23 (reporting that the EPA Administrator found current concentrations of methane and nitrous oxide, along with the other greenhouse gasses, to threaten public health and welfare). Where programs aimed at encouraging more environmentally sound farming practices do exist, participation is only voluntary. See RENÉE JOHNSON, CONG. RESEARCH SERV., RL 33898, CLIMATE CHANGE: THE ROLE OF THE U.S. AGRICULTURE SECTOR AND CONGRESSIONAL ACTION 16 (2009) (detailing some of the new voluntary environmental measures enacted in the 2008 Farm Bill, discussed in Part II.C.1).

83. See STEINFELD ET AL., *supra* note 76, at 238 (revealing that country

agriculture in greenhouse gas emissions, the increasing demand for animal food products, and the current lack of regulatory oversight, it follows that the animal agriculture sector provides one of the most promising opportunities for U.S. emissions reductions.⁸⁴

C. U.S. AGRICULTURAL SUBSIDIES AND THEIR ROLE IN PROMOTING GREENHOUSE GAS EMISSIONS

Agricultural subsidies⁸⁵ promote increased production of animal food products in various ways.⁸⁶ First, they may offer direct price support or production incentives.⁸⁷ Second, they reduce operational costs by decreasing the price of necessary resources, allowing otherwise unprofitable farms to stay in business.⁸⁸ Subsidized crop insurance and other safety nets create incentives for farmers to expand production.⁸⁹ Last, the externalization of the environmental

emissions reports submitted to the UNFCCC show that mitigation efforts focus on non-agricultural sectors); *see also* JOHNSON, *supra* note 82, at 25 (reiterating that current legislative proposals have not encompassed the agricultural sector).

84. *See* ECON. RESEARCH SERV., *Global Climate Change*, U.S. DEP'T AGRIC., (last updated June 2, 2011), <http://www.ers.usda.gov/briefing/globalclimate/> [hereinafter ERS] (recognizing that agriculture "has a potential role to play in reducing the atmospheric concentration of carbon dioxide").

85. "Agricultural subsidies" for the purposes of this comment refers to direct subsidies on meat and dairy, as well as those on grains or water that reduce the costs of animal production. *Cf. Subsidy*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/subsidy?show=0&t=1319679427> (last visited Oct. 26, 2011) (defining a subsidy as "a grant by a government to a private person or company to assist an enterprise deemed advantageous to the public").

86. *See* DENNIS OLSON, INST. FOR AGRIC. AND TRADE POLICY TRADE AND GLOBAL GOVERNANCE PROGRAM, *BELOW-COST FEED CROP: AN INDIRECT SUBSIDY FOR INDUSTRY*, (2006), *available at* http://www.iatp.org/files/258_2_88122_0.pdf (arguing that subsidies on animal agriculture have led to overproduction, low prices for commodities, and growing market concentration); *see also* STEINFELD ET AL., *supra* note 76, at 227 (suggesting the possibility of a causal link between government subsidies on animal agriculture and natural resource degradation).

87. *See* discussion *infra* Part II.C.1 (discussing various ways that livestock and dairy production is directly subsidized).

88. *See, e.g.,* OLSON, *supra* note 86, at 1 (discussing the indirect subsidy bestowed upon industrial animal producers by agricultural subsidies which reduce the price of animal feed).

89. *See* C. Edwin Young et al., *Production and Price Impacts of U.S. Crop Insurance Programs*, 83 AM. J. OF AGRIC. ECON. 1196, 1197-98 (2001) (explaining

costs of animal agriculture provides an additional subsidy.⁹⁰ Critics of farm support programs assert that subsidies distort production and encourage concentration of production, comparatively harming smaller producers and farmers in foreign nations.⁹¹ These distortionary subsidies largely exist because of the immense political power wielded by the agricultural sector.⁹²

that there is an incentive for farmers to expand production after obtaining crop insurance).

90. The “externalities” of animal agriculture are the costs of its impacts which are external to the producers or markets for animal food products which are borne by society at large. Animal agriculture causes degradation of natural resources such as water, soil, and air and to wildlife biodiversity and human health, but these costs are not reflected in market prices. Instead, the costs of removing microbial pathogens, pesticides, or nitrates which leech from animal wastes into the water supply are subsidized by society’s utility bills, taxes, and health care expenses. A conservative figure for livestock’s externalized cost on the public is \$713.6-\$738.7 million a year. *See generally* Erin M. Tegtmeier & Michael D. Duffy, *External Costs of Agricultural Production in the United States*, 2 INT’L J. OF AGRIC. SUSTAINABILITY 1 (2004) (exploring the economic and environmental costs of agricultural subsidies). Many environmental costs of animal agriculture are externalized because individual economic decisions usually only consider private costs and benefits. *See* STEINFELD ET AL., *supra* note 76, at 223 (asserting that there is a market failure in agriculture where producers act solely in their self-interest).

91. *See* DENNIS A. SHIELDS, CONG. RESEARCH SERV., RL 41317, FARM SAFETY NET PROGRAMS: ISSUES FOR THE NEXT FARM BILL 18 (2010) (discussing the unintended consequences of U.S. agricultural subsidies on farmers in developing nations because the costs of production are distorted by the subsidy).

92. *See, e.g.*, RALPH M. CHITE & DENNIS A. SHIELDS, CONG. RESEARCH SERV., RL 34036, DAIRY POLICY AND THE 2008 FARM BILL 9 (2009) [hereinafter 2008 FARM BILL] (showing that the shift to mandated product price support for dairy was facilitated by the largest dairy trade association, the National Milk Producers Federation); *see also* SHIELDS, *supra* note 91, at 18 (stating that policymakers representing dairy, along with other major commodities, have shaped subsidy programs from their inception); *see also* Jesse Ratcliffe, Comment, *A Small Step Forward: Environmental Protection Provisions in the 2002 Farm Bill*, 30 ECOLOGY L. Q. 637 (2003) (2003) (observing that the Farm Security and Rural Investment Act of 2002 is one of many sequential federal laws that protect American farmers at the expense of the environment); *see also* Daniel A. Sumner, *The Concise Encyclopedia of Economics: Agricultural Subsidies Program*, LIBRARY OF ECON. AND LIBERTY (2008), available at <http://www.econlib.org/library/enc/agriculturalsubsidyprograms.html> (explaining that vegetables receive minimal government support relative to “grains, oilseeds, cotton, sugar and dairy products”).

1. Direct Subsidies and Farm Safety Nets

Currently, the federal mechanism for regulating agriculture is the Food, Conservation and Energy Act of 2008 (“2008 Farm Bill”).⁹³ The 2008 Farm Bill provides direct support to the animal agriculture industry through price support measures, commodity programs, risk management programs, and disaster assistance programs.⁹⁴

The dairy industry, for instance, received direct payments totaling \$994 million in 2009.⁹⁵ The dairy industry also benefits from government-backed price support, which protects farmers from decreases in revenue caused by seasonal fluctuations in supply and demand that otherwise can put farmers out of business.⁹⁶ In addition to price support, incentive programs provide bonus payments to U.S. dairy exporters, and conversely, assess taxes on all imported dairy products.⁹⁷ Critics of these programs contend that they are simply taxpayer-financed income transfers to agricultural producers.⁹⁸ Even dairy groups have expressed concern that dairy price support programs ultimately hurt the dairy industry.⁹⁹

93. Food, Conservation, and Energy Act of 2008, Pub. L. No. 110–246, 122 Stat. 1651 (2008) [hereinafter 2008 Act].

94. See SHIELDS, *supra* note 91, at 1-2 (outlining the three basic parts of the farm safety net framework in the 2008 act: commodity programs, risk management programs, and supplemental disaster assistance).

95. See *id.* at 9. The United States has notified the WTO that the aggregate measure of its support for the dairy price support program is more than \$4.8 billion annually. These programs are classified “amber box” by the WTO, representing the most trade-distorting category of subsidies. See 2008 FARM BILL, *supra* note 92, at 10; United States Dairy Program Subsidies, EWG Farm Subsidy Database, <http://farm.ewg.org/progdetail.php?fips=00000&progcode=dairy&page=conc&yr=2009®ionname=theUnitedStates> (last visited Oct. 28, 2011) [hereinafter EWG Farm Subsidy] (indicating the top twenty percent of applicants received nearly sixty percent of the dairy subsidies in 2009).

96. See 2008 FARM BILL, *supra* note 92, at 7-9 (explaining that the USDA removed 115 million pounds of nonfat dry milk from the market in 2008 to insulate declining milk prices).

97. See *id.* at 13-15 (noting that, while the Dairy Export Incentive Program was developed to offset foreign dairy subsidies, it later became a market development measure, and that dairy importers currently pay 7.5¢ per unit).

98. See SHIELDS, *supra* note 91, at 5-6 (summarizing critics’ concerns over the burden on taxpayers as well as the potential to inflate agricultural land prices); see also Chris Edwards, *Ten Reasons to Cut Farm Subsidies*, CATO INST. (June 28, 2007), http://www.cato.org/pub_display.php?pub_id=8459 (echoing the sentiment that farm subsidies merely transfer the earnings of taxpaying families to farms).

99. See 2008 FARM BILL, *supra* note 92, at 10 (stating that some producers

Farmers also benefit from safety net provisions such as subsidized crop insurance. Federal crop insurance is an important farm risk management tool with exceedingly vast reach.¹⁰⁰ Crop insurance programs have expanded in recent years¹⁰¹ despite assertions that government subsidization of crop insurance encourages the expansion of crop production onto sensitive lands.¹⁰² Livestock specific programs indemnify ranchers for livestock mortalities caused by disaster and assist ranchers who graze livestock on drought-affected land.¹⁰³ Other programs reimburse livestock producers for feed losses caused by natural disasters.¹⁰⁴ In yet another program, the “Milk Income Loss Contract,”¹⁰⁵ some farmers

argue that price support artificially stimulates milk production, causing persistent surpluses and depressed prices).

100. See SHIELDS, *supra* note 91, at 9 (noting the program’s widespread popularity due to it covering a “substantial portion of the farmer’s crop insurance premium” paid by the federal government).

101. See *id.* at 9 (noting the growing importance in federal crop insurance subsidies); see also *id.* at 13 (listing insurance programs new to the 2008 Farm Bill, covering drought and disaster damages); Young et al., *supra* note 89, at 1197 (relaying that in 1999 and 2000, insurance premium subsidies increased, which reduced farmers’ costs for catastrophic damage insurance coverage).

102. See *id.* at 10 (summarizing the concerns raised by critics who claim that subsidization through insurance distorts the crop market, encouraging the production of crops in sensitive marginal lands).

103. See, e.g., UNITED STATES DEP’T OF AGRIC., FARM SERV. AGENCY, *Fact Sheet, Livestock Indemnity Program*, (Feb. 2011), http://www.fsa.usda.gov/Internet/FSA_File/lip09.pdf [hereinafter LIP Fact Sheet] (explaining the eligibility, scope and coverage of the Livestock Indemnity Program, including annual coverage of \$100,000); UNITED STATES DEP’T OF AGRIC., FARM SERV. AGENCY, *Fact Sheet, Livestock Forage Disaster Program*, (Feb. 2011), http://www.fsa.usda.gov/Internet/FSA_File/lfp_2011_pfs.pdf [hereinafter LFDP Fact Sheet] (summarizing the provisions of the Livestock Forage Disaster Program, including the per head recovery rate based on animal type and size); see RALPH M. CHITE & DENNIS A. SHIELDS, CONG. RESEARCH SERV., RL 21212, AGRICULTURAL DISASTER ASSISTANCE 4, 5 (2010) [hereinafter Agric. Disaster Assistance] (elaborating on the coverage of additional insurance programs, such as the “Livestock Indemnity Program” and the “Livestock Forage Disaster Program,” which subsidize livestock producers).

104. See Agric. Disaster Assistance, *supra* note 103, at 6 (discussing the insulation of farmers from the impact of variations in feed grain yield through the “Livestock Compensation Program” which paid producers of livestock in disaster areas).

105. See generally *Fact Sheet, Milk Income Loss Contract (MILC) Program*, UNITED STATES DEP’T OF AGRIC., FARM SERV. AGENCY, (Apr. 2011), http://www.fsa.usda.gov/Internet/FSA_File/milc2011.pdf [hereinafter MILC Fact

are eligible for federal payments whenever the market price for milk falls below a certain rate.¹⁰⁶ Some legislators fear that this sort of program results in overly generous payouts to producers because compensation is triggered at levels of revenue loss that can be explained by normal variation in crop yields.¹⁰⁷

Other safety nets include disaster assistance programs, under which farmers can receive “catastrophic coverage” without paying a premium, and indemnity payments guaranteed by crop insurance.¹⁰⁸ Producers in natural disaster areas can receive supplemental payments for crop losses and obtain emergency disaster loans at below-market interest rates.¹⁰⁹ In addition to these subsidies, other programs encourage the production of animal food products.¹¹⁰ In sum, these subsidies have fostered the long-term decline in the price of grains, which has, in turn, helped keep the price of animal

Sheet] (detailing the provisions of the MILC program, which compensates milk producers when milk prices fall).

106. See 2008 FARM BILL, *supra* note 92, at 3 (explaining that, from Oct. 1 2008 to Aug. 1, 2012, farmers are eligible to receive 45% of the difference in the market rate of milk and the prices established by the statute).

107. See Agric. Disaster Assistance, *supra* note 103, at 8-9 (summarizing the concerns of critics relating to the low trigger for the assistance, which could be triggered by typical yield changes from year to year and result in windfalls to the farmers).

108. See UNITED STATES DEP’T OF AGRIC., FARM SERV. AGENCY, *Fact Sheet, Noninsured Crop Disaster Assistance Program for 2009 and Subsequent Years*, (Mar. 2009), http://www.fsa.usda.gov/Internet/FSA_File/nap09.pdf [hereinafter NAP Fact Sheet] (describing the disaster crop loss coverage provided to crops that would not otherwise qualify for federally subsidized insurance); Agric. Disaster Assistance, *supra* note 103, at 2 (revealing that these premiums are fully subsidized, and noting that this provision is triggered by a loss in actual or planned crop acreage).

109. See Agric. Disaster Assistance, *supra* note 103, at 3, 8 (explaining that producers may be eligible for low-interest emergency disaster loans for up to 100% of actual production).

110. See Michael Moss, *While Warning About Fat, U.S. Pushes Cheese Sales*, N.Y. TIMES (Nov. 6, 2010), http://www.nytimes.com/2010/11/07/us/07fat.html?_r=1&pagewanted (noting that the USDA launched an anti-obesity campaign discouraging the overconsumption of fatty foods while investing \$140 million per year into promoting cheese consumption, despite government data showing that cheese is a major contributor to the high fat content of the average American diet); see also *Who We Are – Cattlemen’s Beef Board*, <http://www.beefboard.org/about/whoweare.asp> (last visited Oct. 28, 2011) [hereinafter Cattlemen’s Beef Board] (describing the involvement of the USDA in the Cattlemen’s Beef Board, which was created to stimulate the sale of beef).

products artificially low, stimulating animal product consumption and production.¹¹¹

2. Indirect Subsidies

In 2009, the federal government allocated nearly \$4 billion to corn producers,¹¹² \$1.72 billion to soybean producers,¹¹³ and \$270 million to sorghum producers.¹¹⁴ Because a majority of these grains are used as feed for livestock, these commodity support programs indirectly subsidize animal agriculture.¹¹⁵ Financially, it is industrial factory farms that benefit the most from indirect subsidies because they receive a reduction of around 15% on their most significant operating cost—feed.¹¹⁶ Given that feed accounts for 50-65% of these farms' operating costs, this price reduction translates to a savings of \$3.6 billion a year.¹¹⁷

Another major operational cost in animal production is water; this too is a resource that is heavily subsidized for the animal agriculture sector.¹¹⁸ Any subsidy that artificially decreases the price of animal

111. See STEINFELD ET AL., *supra* note 76, at 12 (explaining the effect of a steady decrease in grain prices since the 1950s as an increase in livestock production and an associated increase in demand for feed).

112. See *United States Corn Subsidies*, ENVIRONMENTAL WORKING GROUP, <http://farm.ewg.org/progdetail.php?fips=00000&progcode=corn> (last visited Oct. 28, 2011) [hereinafter US Corn Subsidies] (indicating that the \$3.78 billion in corn subsidies was nearly evenly split between direct payments and insurance premium subsidies).

113. See *United States Sorghum Subsidies*, ENVIRONMENTAL WORKING GROUP, <http://farm.ewg.org/progdetail.php?fips=00000&progcode=sorghum> (last visited Oct. 28, 2011) [hereinafter US Sorghum Subsidies] (reporting a split more heavily weighted towards insurance premium subsidies over direct payments).

114. See *United States Soybean Subsidies*, ENVIRONMENTAL WORKING GROUP, <http://farm.ewg.org/progdetail.php?fips=00000&progcode=soybean> (last visited Oct. 28, 2011) [hereinafter US Soybean Subsidies] (relaying the split to favor direct payments more heavily than crop insurance subsidies).

115. See OLSON, *supra* note 86, at 1 (stating that 60% of the corn and 47% of the soy grown in the United States is used for animal feed).

116. See *id.* at 1-2 (highlighting the findings of the USDA which assert that feed accounts for 60-64% of poultry and egg operating costs, 17% for beef, and 47% for hogs).

117. See *id.* at 1 (criticizing the extent of discount conferred upon industrial animal producers by federal subsidy programs, and noting the 7-10% potential increase in price of animal produce if farmers were paid a fair amount for feed crops).

118. See STEINFELD ET AL., *supra* note 76, at 245 (highlighting that farmers

food products is significant because meat consumption has been shown to be “elastic,”¹¹⁹ meaning that its consumption falls with increasing prices.¹²⁰ Thus, the fact that the real price of livestock has fallen in the modern era helps explain the corresponding increase in consumption.¹²¹

3. *Economic State of the Agricultural Sector*

While subsidies are presumed to be necessary to the operation of the agricultural sector,¹²² economic analyses suggest that farmers would not be subjected to serious additional losses as a result of subsidy reform.¹²³ Rather, these studies reveal that the industry

receive a subsidy from the under-pricing of water, with rates as low as .03% of the household consumer price); *see also* Tegtmeier & Duffy, *supra* note 95, at 5-6 (exploring the cost of externalization of water degradation from livestock production, including treatment of pathogens, nitrates, and pesticides in public water supplies, which is estimated to cost \$118.6 million).

119. “Elasticity” is defined as “the responsiveness of a dependent economic variable to changes in influencing factors.” Elasticity, MERRIAM-WEBSTER DICTIONARY, <http://www.merriam-webster.com/dictionary/elasticity> (last visited Oct. 10, 2011) [hereinafter Elasticity].

120. *See* Craig A. Gallet, *Meat Meets Meta: A Quantitative Review of the Price Elasticity of Meat*, 92 AMER. J. AGRIC. ECON. 258, 260, 268 (2010) (finding, via a meta-analysis, that meat consumption is “elastic,” with a median elasticity of -.869 for beef, such that its consumption would be expected to decrease with increases in price); *cf.* Timothy Searchinger et al., *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change*, 319 SCIENCE 1238, 1238 (2008) (remarking that increases in corn price produced by biofuel demands had the effect of depressing demand for meat).

121. *See* STEINFELD ET AL., *supra* note 76, at 231-32 (suggesting that the removal of price distortions on resources used in animal agriculture would curb overall consumption); *see also* Mark Bittman, *Rethinking the Meat Guzzler*, N.Y. TIMES (Jan. 27, 2008), <http://www.nytimes.com/2008/01/27/weekinreview/27/bittman.html> (describing the growing global demand for meat as production costs decrease and global average incomes increase).

122. *See* Elizabeth Becker, *Raising Farm Subsidies, U.S. Widens International Rift*, N.Y. TIMES, June 15, 2002, <http://www.nytimes.com/2002/06/15/international/europe/15FARM.html> (acknowledging the viewpoint that farm subsidies are necessary to keep U.S. agriculture competitive globally, despite the opposition of various foreign governments).

123. *See, e.g.*, Edwards, *supra* note 98 (arguing that countries that repealed agricultural subsidies, such as New Zealand, consequently had stronger agricultural sectors, thus deducing that the United States could benefit from New Zealand’s model); *See generally*, David Harris & Allan Rae, *Agricultural Policy Reform and Industry Adjustment in Australia and New Zealand*, AGECON SEARCH, (June 6, 2004), <http://ageconsearch.umn.edu/bitstream/15762/1/cp04ha01.pdf>

already operates at a loss, and subsidies merely allow an unsustainable system to continue operating.¹²⁴ The production of U.S. upland cotton¹²⁵ is a good example. It would not be profitable to produce cotton in the United States without subsidies.¹²⁶ However, due to generous subsidies, the United States remains the leading exporter of cotton.¹²⁷

The impact of biofuel subsidies on land usage demonstrates that an increase in the demand for a product leads to an increase in its production.¹²⁸ The federal government funneled close to \$6 billion to biofuel producers in 2009 in an effort to promote corn-based ethanol.¹²⁹ This led to a 30% increase in the demand for corn, culminating in the expansion of corn production into non-traditional crop areas.¹³⁰

III. ANALYSIS

As described in Part II.A, the UNFCCC mandates that its parties

(highlighting the reforms made to agricultural policy in Australia and New Zealand towards free trade and the remaining programs available to assist farmers in adjusting to those changes).

124. See OLSON, *supra* note 86, at 3 (opposing agricultural subsidies because farmer incomes have declined by 16.5% despite the tripling of government subsidy payments between 1996-2001).

125. Upland Cotton, MERRIAM-WEBSTER DICTIONARY, <http://www.merriam-webster.com/dictionary/upland%20cotton> (last visited Oct. 28, 2011) (defining upland cotton as “a widely cultivated American cotton plant . . . having short- to medium-staple fibers”).

126. Joseph Stiglitz, *The Tyranny of King Cotton*, GUARDIAN (Oct. 24, 2006), <http://www.guardian.co.uk/commentisfree/2006/oct/24/stig/> (concluding that the \$3-\$4 billion in cotton subsidies provided to the cotton industry are keeping the industry afloat).

127. See *id.* (using cotton subsidies to show that subsidies in developed countries harm developing countries by increasing overall output and lowering overall prices).

128. See SHIELDS, *supra* note 91, at 19 (indicating that the nearly \$6 billion in subsidies paid to corn producers for the promotion of biofuel manufacture in 2009 increased the land area used for corn production).

129. *Id.*

130. *Id.* This example merely serves to highlight that subsidization leads to overproduction, not to argue that biofuels are deleterious to the environment. See generally U.S. DEP'T OF AGRIC., ECON. RESEARCH SERV., EIB BULL. NO. 79, THE ETHANOL DECADE: AN EXPANSION OF U.S. CORN PRODUCTION, 2000-09 (2011) (discussing how corn-based ethanol production affected land-use decisions made by farmers).

reflect on policies that may be encouraging emissions, as well as “aim” to mitigate climate change by implementing a range of domestic measures.¹³¹ An examination of the core commitments enumerated in Article 4 of the UNFCCC, keeping in mind Article 3’s guiding principles, demonstrates that the UNFCCC is a binding convention that can be breached even though it lacks both concrete emissions targets and enforcement mechanisms.¹³² Domestic environmental statutes also demonstrate, by analogy, that it is not unprecedented or uncommon to have binding laws that lack exact commitment levels and defer enforcement to other authorities.¹³³

A. EXAMINATION OF THE UNFCCC REVEALS THAT ITS ARTICLE 4 COMMITMENTS ARE BINDING

As discussed in Part II.A.3, the Vienna Convention is widely acknowledged as applicable to treaty interpretation for the United States despite lack of ratification by the United States.¹³⁴ The Vienna Convention does not require that the text of a treaty be unclear or in dispute for external contextual materials to be rendered appropriate for interpretation.¹³⁵

131. See UNFCCC, *supra* note 8, art. 4(2)(a)-(b) (requiring parties to adopt national policies designed to mitigate climate change to reduce greenhouse gas emissions to 1990 levels).

132. See Vienna Convention, *supra* note 54, arts. 31, 32 (outlining the requirements for authentic treaty interpretation and supplementary means of interpretation, respectively); see also discussion *infra* Part III.A (showing that the language and context of the UNFCCC indicate the binding nature of the Convention).

133. See discussion *infra* Part III.D (comparing the UNFCCC to the Clean Air Act).

134. See Vienna Convention, *supra* note 54; see also Criddle, *supra* note 60, at 435 (explaining that the Convention has served as an authoritative guide to treaty law for the executive and legislative branches despite its non-ratified status). *But see id.* at 447, 449 (noting that although U.S. courts regularly apply Articles 31 through 33 of the Vienna Convention, “the Supreme Court has never relied upon the Vienna Convention as an authoritative source of law.”).

135. See Criddle, *supra* note 57, at 440 (pointing to the low threshold for triggering Article 32 analysis utilizing a treaty’s ancillary materials); see also *id.* (asserting that the committee charged with drafting the Vienna Convention itself considered a treaty’s contextual analysis “accumulative, not consecutive,” thus highlighting that outside materials can be analyzed in tandem with the text itself, and not exclusively after dispute about the meaning of the text arises).

Before addressing the substantive violations of the UNFCCC commitments that derive from the U.S. subsidization of animal agriculture, it is necessary to establish that the UNFCCC is a binding treaty that can be violated. A textual analysis of the UNFCCC reveals both explicit and implicit evidence of the convention's binding nature. Most saliently, Article 4 is titled "Commitments."¹³⁶ The fact that all of the actions delineated in Article 4 fall under this title is the first indication that parties are committed to undertake the actions outlined therein.¹³⁷

In addition, Article 4(1) begins with the command that all parties "shall" engage in the enumerated list of activities in an effort to mitigate climate change.¹³⁸ Given the lofty objective of the UNFCCC, to stabilize greenhouse gas emissions at a level that will not cause dangerous interference with the climate, it is unlikely that the UNFCCC was intended to be powerless.¹³⁹

Further evidence that the UNFCCC is binding is the fixed goal for parties to reduce their emissions.¹⁴⁰ It would be curious indeed to set a target date for actions that were neither required nor expected to take place.¹⁴¹ Additionally, the designation of 1990 emissions levels

136. UNFCCC, *supra* note 8, art. 4.

137. See Commitment, MERRIAM-WEBSTER DICTIONARY, <http://www.merriam-webster.com/dictionary/commitment> (last visited Oct. 6, 2011) (defining "commitment" as "an agreement or pledge to do something in the future," or "the state or instance of being obligated").

138. See UNFCCC, *supra* note 8, art. 4(1); see also *Alabama v. Bozeman*, 533 U.S. 146, 146 (2001) (recognizing that "shall" is the language of command); Shall, BLACK'S LAW DICTIONARY 1499 (9th ed. 2009) (defining "shall" as "[h]as a duty to; more broadly, is required to" and adding that "[t]his is the mandatory sense that drafters typically intend and that courts typically uphold."); Shall, MERRIAM-WEBSTER DICTIONARY, <http://www.merriam-webster.com/dictionary/shall> (last visited Oct. 6, 2011) (indicating that "shall" expresses mandatory action when used in laws or directives).

139. See UNFCCC, *supra* note 8, art. 2 (endeavoring to stabilize atmospheric concentrations of greenhouse gases in recognition of the fact that a failure to do so will cause "dangerous anthropogenic interference with the climate system"). The objective outlined in Article 2 of the UNFCCC is relevant to this analysis because the first general rule of treaty interpretation in the Vienna Convention explains that the textual meaning is to be construed "in the light of its object and purpose." See Vienna Convention, *supra* note 54, art. 31(1).

140. See UNFCCC, *supra* note 8, art. 4(2)(a)-(b) (instructing that parties are to aim to return to 1990 level greenhouse gas emissions by 2000).

141. Cf. *Hallstrom v. Tillamook County*, 493 U.S. 20 (1989) (finding the explicit articulation of a deadline as dispositive as to whether compliance was

as the standard for reduction by 2000 does not comport with the idea that compliance with the UNFCCC is optional.¹⁴² Thus, although the emissions reduction requirement defined in the UNFCCC is loose, this imprecision is not a valid justification for disregarding the UNFCCC's mandates entirely.¹⁴³

Less overt yet nevertheless telling evidence that the UNFCCC is binding lies in Article 4(2)(g) of the UNFCCC.¹⁴⁴ According to this provision, any non-Annex I party may elect to be bound to reducing its emissions to its 1990 level.¹⁴⁵ That the UNFCCC gives non-bound countries the discretion to bind themselves to the UNFCCC commitments is significant for a few reasons. First, by allowing non-Annex I parties to opt into the obligations enshrined in Article 4(2)(a)-(b), the text implies that Annex I parties are bound to the provision by default.¹⁴⁶ Second, by explicitly using the word "bound," it verifies that Annex I parties are, in fact, under an obligation to adhere to Article 4 commitments, as are those non-Annex I countries that choose to bind themselves.¹⁴⁷ Third, it showcases the relative weight of the UNFCCC mandates on developing countries versus Annex I developed countries, and thereby reveals that U.S. compliance with the UNFCCC is subject to the utmost scrutiny because the United States is an Annex I country.¹⁴⁸

required).

142. See UNFCCC, *supra* note 8, art. 4(2)(a)-(b); see also discussion *infra* Part III.D (demonstrating that imprecise requirements in U.S. environmental statutes have not rendered them optional).

143. See *infra* notes 196-223 and accompanying text (showing that having an exact standard is not required to uphold environmental statutes within the United States).

144. UNFCCC, *supra* note 8, art. 4(2)(g).

145. *Id.*

146. See *id.* Annex I countries, which are the subjects of the commitments housed in Article 4(2) of the UNFCCC, are not offered the choice of binding themselves to those commitments because they must comply with the terms already. Non-Annex I countries, however, are not automatically bound to Article 4(2), and therefore may elect to undertake those additional obligations. By reserving this discretion exclusively to non-Annex I nations, the UNFCCC text shows that Annex I countries are by default bound to its terms.

147. See *id.*; see also Bind, MERRIAM-WEBSTER, <http://merriam-webster.com/dictionary/bind> (last visited Oct. 6, 2011) (defining the verb "bind" as "to put under an obligation," or "to constrain with legal authority.").

148. See UNFCCC, *supra* note 8, art. 4(2)(g); see also *id.* art. 4(2)(a) (affirming

Similarly, Article 4(6) affords a certain degree of flexibility in the implementation of Article 4 commitments to parties whose countries are undergoing a transition to a market economy.¹⁴⁹ By giving leniency concerning implementation exclusively to countries undergoing an economic transformation, Article 4(6) shows that developed country parties, such as the United States, are required to strictly abide by the UNFCCC commitments.¹⁵⁰ It would not be necessary to allow “flexibility” for any party if the entire treaty were in fact non-binding.¹⁵¹

A final provision that demonstrates that the UNFCCC is binding is Article 25, which allows for “withdrawal” from the UNFCCC subject to a few conditions.¹⁵² Withdrawal from a treaty that does not demand or expect compliance is unnecessary and therefore would not be anticipated by UNFCCC drafters intending a non-binding body of commitments. Taken together, these articles of the UNFCCC make clear that Article 4 commitments are binding and possible to violate.

B. SUBSIDIES ON ANIMAL AGRICULTURE VIOLATE UNFCCC ARTICLE 4(1)

1. UNFCCC Article 4(1)(b) Violation

The first UNFCCC article subject to U.S. violation due to agricultural subsidies is Article 4(1)(b), which requires that parties implement and regularly update programs containing measures to mitigate climate change by addressing anthropogenic emissions of greenhouse gases.¹⁵³ The ordinary meaning of the text of Article

that the UNFCCC Annex I countries must take the lead in reducing emissions and acting in accordance with UNFCCC objectives).

149. *See id.* art. 4(6).

150. *See id.*

151. *Cf. supra* note 146 (explaining the implications of explicitly distinguishing between the obligations of types of parties).

152. *See* UNFCCC, *supra* note 8, art. 25.

153. Article 4(1)(b) indicates that it requires compliance by using the word “shall.” *Compare* UNFCCC, *supra* note 8, art. 4(1)(b) (directing that parties

4(1)(b) indicates that parties must implement or update national programs containing measures to mitigate man-made sources of greenhouse gas emissions.¹⁵⁴

Because the 2008 Farm Bill, which governs the allocation of agricultural subsidies, is a national program containing measures intended to mitigate climate change, the United States is required to update the program in light of evidence which unambiguously demonstrates the extent of animal agriculture's contribution to total greenhouse gas emissions.¹⁵⁵

The Kyoto Protocol demonstrates its awareness that mitigation measures required under the UNFCCC will need to include reductions in the animal agriculture sector, where it suggests reducing methane emissions by improving waste management.¹⁵⁶ Especially noteworthy, though, is Article 2(1)(a)(v) of the Kyoto Protocol, which urges parties to phase out any fiscal incentive or subsidy that has the effect of increasing greenhouse gas emissions.¹⁵⁷

“shall” perform various duties where commitments are intended to be binding), *with id.* art. 15(1) (granting discretionary authority to propose amendments by using the word “may”), *and id.* art. 17(1) (imparting further discretionary authority to create protocols to the UNFCCC by using the word “may”), *and id.* art. 25(1) (using the word “may” to give parties discretion to withdraw from the UNFCCC). *See supra* note 138 and accompanying text (contrasting this mandatory language with language that points to discretionary authority).

154. *See UNFCCC, supra* note 8, art. 4(1)(b) (explicitly ordering parties to “[f]ormulate, implement, publish and regularly update national . . . programmes containing measures to mitigate climate change by addressing anthropogenic emissions . . . ”); *see also supra* note 153 and accompanying text (explaining the significance of the use of the word “shall”).

155. *See UNFCCC, supra* note 8, art. 4(1)(b) (instructing that parties must regularly update national programs containing measures to combat climate change by addressing anthropogenic sources of greenhouse gas emissions); *see also* RENÉE JOHNSON, CONG. RESEARCH SERV., RL 34696, THE 2008 FARM BILL: MAJOR PROVISIONS AND LEGISLATIVE ACTION 155 (2008) (showing that the “Global Climate Change Prevention Act of 1990” was extended through fiscal year 2012 by the 2008 Farm Bill); *see also* discussion *supra* Part II.B (summarizing the environmental tolls of animal agriculture).

156. *See* Kyoto Protocol, *supra* note 42, art. 2(1)(a)(viii) (explicitly referencing “waste management” as an area through which methane emissions could be reduced); *see also* SMITH ET AL., *supra* note 83, at 506, 510 (explaining the relationship between animal waste and emissions, and how manure management can be improved to address emissions).

157. *See* Kyoto Protocol, *supra* note 42, art. 2(1)(a)(v) (promoting the reduction or removal of “fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors . . . ” to lower parties’ emissions levels).

These excerpts explicitly reveal the UNFCCC parties' sensitivity to the potential need for the repeal or reassessment of distortionary agricultural subsidies that inadvertently encourage greenhouse gas emissions. While these specific provisions of the Kyoto Protocol are, of course, not enforceable against the United States, they do support the interpretation that, at a minimum, UNFCCC Article 4(1)(b) requires that the United States reevaluate and update its emission-encouraging agricultural policies¹⁵⁸

The fact that the Farm Bill has repeatedly been extended and that there are no signs of its imminent revision give rise to an Article 4(1)(b) violation.¹⁵⁹ Serious revision of the economic policies incentivizing climate change within the Farm Bill is necessary to overcome the Article 4(1)(b) violation.¹⁶⁰

2. UNFCCC Article 4(1)(c) Violation

Another article that shows the United States' reluctance to abide by the UNFCCC is Article 4(1)(c).¹⁶¹ Under this article, parties are required to promote the development of practices and processes that reduce or prevent emissions of greenhouse gases in all relevant areas,

158. See discussion *supra* Part II.B (revealing the toll animal agriculture exacts on the environment).

159. See discussion *supra* Part II.C (linking certain agricultural subsidies to increased demand for emission-heavy animal food commodities). Additionally, Article 4(2)(d) and Article 4(2)(e) together require that parties to the UNFCCC review domestic policies and practices that encourage anthropogenic emissions of greenhouse gases at regular intervals until the objective of the Convention is met. See UNFCCC, *supra* note 8, art. 4(2)(d)-(e). This provision unequivocally reiterates the mandatory nature of reassessing domestic policies that directly or indirectly contribute to increased greenhouse gas emissions. This too shows that compliance with the UNFCCC was not intended to be optional because the provision creates an ongoing obligation that cannot be abandoned until the goal is attained. See *id.*

160. See discussion *infra* Part IV.A (discussing in more detail the potential courses of action the United States could take to address the current UNFCCC violations).

161. See UNFCCC, *supra* note 8, art. 4(1)(c) (calling for parties to "[p]romote . . . practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases," including in the agricultural sector).

including agriculture.¹⁶² It is worth mentioning that the obligation enumerated here is an affirmative one, and it, therefore, is not facially at odds with the United States' laissez-faire stance concerning current agricultural subsidization.¹⁶³

Nevertheless, this Article remains significant. It explicitly references emissions from the agricultural sector, dispelling any doubt that the agricultural sector is within the domain of the UNFCCC's control.¹⁶⁴ Under this article, the United States is clearly required to "promote" the development of practices and processes that reduce or prevent emissions of greenhouse gases in agriculture.¹⁶⁵ What is unclear from the UNFCCC language alone, however, is the extent to which parties are required to "promote" emissions-reducing practices and processes in agriculture, and whether a mandate to "promote" certain practices or processes encompasses its implementation. The concrete mandate of this provision is ambiguous because it simultaneously uses mandatory language and the broadly defined word "promote" as the operative verb. Because mere "promotion" of processes or practices to reduce or prevent greenhouse gases may not necessitate implementation, and thereby lead to an interpretation that nearly nullifies the intent of provision, supplementary means of interpretation are warranted for UNFCCC Article 4(1)(c). While subsidies may not represent a failure to *promote* practices or processes that reduce emissions, they do represent an unambiguous failure to implement appropriate

162. *Id.*

163. An affirmative duty is "[a] duty to take a positive step to do something," and can thus only be violated by an agent's failure to do something. Duty, BLACK'S LAW DICTIONARY 580 (9th ed. 2009). Thus, considering only the plain meaning of Article 4(1)(c), the U.S. must fail to take *any* measures to promote practices and processes designed to control greenhouse gas emissions to fail in the duty outlined in the Article. See UNFCCC, *supra* note 8, art. 4(1)(c). Although the continued promotion of animal agriculture cannot be violative of this article when the word "promote" is taken at face value, the Kyoto Protocol identifies a way to refine its meaning and thereby highlights how agricultural subsidies are generally problematic. See Kyoto Protocol, *supra* note 42, art. 2(1)(a)(v)-(vi); see also UNFCCC, *supra* note 8, art. 4(1)(c).

164. See UNFCCC, *supra* note 8, art. 4(1)(c) (stating that parties shall promote the development of practices and processes that reduce greenhouse gas emissions "in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors").

165. UNFCCC, *supra* note 8, art. 4(1)(c).

reforms within the agricultural sector.¹⁶⁶

3. UNFCCC Article 4(1)(d) Violation

An additional UNFCCC article that points to the problematic nature of U.S. agricultural subsidies is Article 4(1)(d).¹⁶⁷ Under this article, the United States is required to preserve greenhouse gas sinks and reservoirs such as forests.¹⁶⁸ Therefore, by actively encouraging the expansion of agricultural lands through subsidized crop insurance and other federal agricultural incentives, and consequently encouraging the destruction of greenhouse gas sinks and reservoirs,¹⁶⁹ the United States is in violation of Article (4)(1)(d).¹⁷⁰

4. UNFCCC Article 4(1)(f) Violation

Article 4(1)(f) instructs parties to take climate change considerations into account in relevant social, economic and environmental policies and actions.¹⁷¹ The plain language of this article suggests that the United States is violating the UNFCCC.¹⁷²

166. See UNFCCC, *supra* note 8, art. 4(1)(c); see also discussion *supra* Part II.B (reminding that most attempts to control greenhouse gas emissions overlook the agricultural sector).

167. See UNFCCC, *supra* note 8, art. 4(1)(d).

168. See *id.* art. 4(1)(d) (indicating that parties are required to “promote sustainable management . . . of sinks and reservoirs of all greenhouse gases...”); see also *supra* note 38 and accompanying text (elaborating on the role of greenhouse gas sinks and reservoirs in curbing climate change).

169. See UNFCCC, *supra* note 8, art. 4(1)(d) (requiring parties to promote sinks and reservoirs, indicating that destruction of sinks and reservoirs is a violation).

170. See UNFCCC, *supra* note 8, art. 4(1)(d). The United States is encouraging the destruction of sinks and reservoirs by significantly financing animal production operations that require vast amounts of land and encroach upon forests and other greenhouse gas sinks. See STEINFELD ET AL., *supra* note 76, at 32 (explaining that the advent of grain-feeding livestock in North America “has greatly increased the arable land requirements of livestock production...to about 34% of total arable land today.”); see also *supra* notes 128-130 and accompanying text (illustrating that increased corn demand leads to expanding agricultural land areas).

171. See UNFCCC, *supra* note 8, art. 4(1)(f).

172. Because Article 4(1)(f) asks that parties “[t]ake climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions . . . with a view to minimizing

Given that the Farm Bill subsidizes an industry that contributes so significantly to climate change,¹⁷³ it cannot be said that the Farm Bill seriously takes climate change considerations into account.

The continued subsidization of animal agriculture violates an additional dimension of Article 4(1)(f) that mandates parties to employ appropriate means to minimize adverse effects on the economy.¹⁷⁴ Language elsewhere in the UNFCCC demonstrates that “economy” does not refer solely to domestic economies, but rather refers to the global economy.¹⁷⁵ The UNFCCC repeatedly stresses the importance of the consideration, by developed countries, of the economic impact of their policies on developing nation parties to the UNFCCC.¹⁷⁶ This is particularly apparent in Article 3(5) of the UNFCCC, which stipulates that parties to the Convention must try to promote an international economic system that promotes economic growth for developing country parties.¹⁷⁷ This shows that the United States is violating UNFCCC Article 4(1)(f) in two ways: first, by failing to take established climate change considerations into account

adverse effects on the economy, on public health and on the quality of the environment . . . ,” the refusal of the U.S. government to revise the 2008 Farm Bill with environmental considerations in mind is a facial violation of the UNFCCC. *See id.*; *see also* discussion *supra* Parts II.B, II.C (expanding on the Farm Bill’s promotion of greenhouse gas emissions, and highlighting that the Farm Bill is a relevant economic policy pursuant to UNFCCC Article 4(1)(f)).

173. *See* discussion *supra* Parts II.B, II.C. Moreover, the U.S. government acknowledges the extent of greenhouse gas emissions from agriculture and yet continues to grant various allowances for pollution. *See* SMITH ET AL., *supra* note 77, at 503 (revealing that the Intergovernmental Panel on Climate Change (“IPCC”) gives estimates of animal agriculture’s contribution to methane and nitrous oxide emissions at 47% and 58%, respectively); *see also* ENVTL. PROT. AGENCY, *Methane: Sources and Emissions*, <http://www.epa.gov/methane/sources.html> (last updated Apr. 18, 2011) (demonstrating that the EPA is aware that livestock production is a significant source of methane emissions); *supra* note 86 and accompanying text (showing that the government continues to grant various exemptions from environmental requirements in spite of its awareness of animal agriculture’s noxious climate-warming effect).

174. *See* UNFCCC, *supra* note 8, art. 4(1)(f) (asking parties to “[t]ake climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions . . .”).

175. *See, e.g., id.* pmbl., arts. 3(2), 3(5), 4(7), 4(9).

176. *Id.*

177. *See id.* art. 3(5) (stipulating additionally that parties’ measures to combat climate change “should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade”).

in existing economic policies, such as the Farm Bill, and second, by neglecting the economic consequences of U.S. agricultural subsidies on developing nation parties to the UNFCCC.¹⁷⁸

While a full analysis of the international trade implications of U.S. agricultural subsidies is outside the scope of this Comment, this point bears some elaboration because the duty of Annex I countries to foster the economic growth of developing country parties is reiterated repeatedly in both the UNFCCC and the Kyoto Protocol.¹⁷⁹ Developing countries object to the heavy subsidization of the U.S. agricultural sector because the inundation of artificially low-priced agricultural goods produced in the United States into world markets prevents developing countries from being competitive.¹⁸⁰ The World Trade Organization (WTO) echoes these concerns about U.S. agricultural subsidies.¹⁸¹ Recently, Brazil challenged U.S. cotton subsidies in the WTO, where the subsidies were denounced for distorting trade and unfairly impinging on Brazil's cotton exports.¹⁸² The United States paid Brazil \$147.3 million in fines in lieu of

178. See *supra* notes 85-92 and accompanying text (showing the various ways that the U.S. continues to subsidize the animal agriculture industry); see also *supra* note 127 and accompanying text (discussing the trade implications of cotton subsidies).

179. See, Kyoto Protocol, *supra* note 42, art. 2(3) (requiring that parties included in Annex I strive to implement policies in a way that will minimize adverse economic effects on developing country parties); UNFCCC, *supra* note 8, pmb1. (affirming that the parties' responses to climate change should take into account developing countries' need to achieve sustained economic growth and to eradicate poverty).

180. See Gumisai Mutume, *Mounting Opposition to Northern Farm Subsidies*, 17 AFR. RECOVERY 18 (2003), available at <http://www.un.org/ecosocdev/geninfo/afrec/vol17no1/171agri4.htm> (reporting that U.S. cotton subsidies have threatened the continued existence of communities in countries like Burkina Faso, where communities depend on cotton trade for survival and producers are increasingly unable to compete with the cheap cotton produced in the United States); see also Becker, *supra* note 122 (summarizing the dispute between developing countries and the United States with regard to agricultural subsidies in the aftermath of the extension of the Farm Bill in 2002).

181. See 2008 FARM BILL, *supra* note 92, at 10 (explaining that the WTO has classified U.S. dairy subsidies as "amber box" because they belong to the most trade-distorting category of domestic subsidies).

182. See WORLD TRADE ORG., *Dispute Settlement: Dispute DS267, United States – Subsidies on Upland Cotton*, http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds267_e.htm (last visited Oct. 9, 2011) (detailing the dispute surrounding the subsidization of U.S. upland cotton, which constituted significant price suppression and "serious prejudice to the interests of Brazil").

repealing the cotton subsidies.¹⁸³ Evidence suggests that all major subsidized crops in the United States are potentially vulnerable to dispute settlement challenges pursuant to the WTO agreements.¹⁸⁴ This demonstrates that, like cotton subsidies, U.S. subsidies on animal agriculture do not foster the economic growth of developing countries; therefore these subsidies are contrary to UNFCCC Article 4(1)(f).¹⁸⁵

C. SUBSIDIES ON ANIMAL AGRICULTURE VIOLATE UNFCCC ARTICLE 4(2)(A)-(B)

What is likely the most demanding, and certainly most widely recognized, formal requirement of the UNFCCC is housed in Article 4(2)(b), which requires the United States and other Annex I countries to aim to reach 1990 emissions levels by 2000.¹⁸⁶ The ordinary meaning of the text suggests that, despite the lack of concrete binding emissions levels, signatories are required to aim to meet their respective 1990 emissions levels.¹⁸⁷ The broad and lofty goals of the

183. See Sewell Chan, *U.S. and Brazil Reach Agreement on Cotton Dispute*, N.Y. TIMES (Apr. 7, 2010), available at <http://proquest.umi.com/pqdlink?index=0&sid=5&srchmode=1&vinst=PROD&fmt=3&sta> (discussing how an agreement was reached after Brazil planned to impose \$830 million in WTO-authorized sanctions on the U.S.);

see also Mark Drajem, *Brazil, U.S. Agree to Avoid Tariffs in Dispute on Cotton Trade*, Kirk Says, BLOOMBERG (Apr. 6, 2010), <http://www.bloomberg.com/news/print/201004-06/u-s-to-suspend-export-credit-program-in-bid-to-end-brazil-trade-dispute-html> (reporting the outcome of the Brazil-U.S. WTO dispute, and showcasing that there is a growing need for Congressional review of farm subsidies).

184. See SHIELDS, *supra* note 91, at 21 (warning that other agricultural subsidies are likely as susceptible to WTO challenges as were the cotton subsidies). See generally RANDY SCHNEPF & JASPER WOMACH, CONG. RESEARCH SERV., RL 33697, POTENTIAL CHALLENGES TO U.S. FARM SUBSIDIES IN THE WTO (2007) (discussing the vulnerability of U.S. agricultural programs to WTO settlement challenges).

185. See 2008 FARM BILL, *supra* note 92, at 10 (explaining that the WTO considers some of the U.S. animal agriculture related subsidies to be of the most trade-distorting variety).

186. See *id.* art. 4(2)(b).

187. The use of the word “shall” in Article 4(2)(a)-(b) conveys that the commands contained in those provisions are not intended to be voluntary. See *id.*, art. 4(2)(a)-(b) (prefacing the obligation to aim to reduce emissions to 1990 levels with the word “shall”); see also *supra* note 153 and accompanying text

UNFCCC signatories similarly highlight that the continued promotion of a practice that contributes to 18% of global greenhouse gas emissions vis-à-vis agricultural subsidies is far from consistent with the UNFCCC mandates.¹⁸⁸

As shown above, there are numerous indicators within the text of the UNFCCC to suggest that the UNFCCC envisioned for its parties to be bound to Article 4, however imprecise the standard.¹⁸⁹ Language from the Kyoto Protocol further reinforces that UNFCCC drafters anticipated that mitigation measures would be focused on reforms of relevant economic policies, including the removal of subsidies that inadvertently encourage emissions.¹⁹⁰ It also suggests that the drafters expected that the policies and practices of the agricultural sector, in particular, would ultimately need to be ameliorated.¹⁹¹

D. ENFORCEABILITY OF THE CLEAN AIR ACT SHOWS THAT
INTERPRETING THE UNFCCC AS BINDING AS IT APPLIES TO THE
UNITED STATES IS CONSISTENT WITH U.S. STATUTORY
INTERPRETATION

Though an interpretation of the UNFCCC that rests a violation on a failure to *aim* to meet a standard may seem dubious, such an interpretation is not incongruous with existing law, and is instead supported by analogous domestic environmental statutes.¹⁹² A salient example of such a statute is the Clean Air Act (CAA).¹⁹³

(contrasting the mandatory and permissive language used within different articles of the UNFCCC).

188. See UNFCCC, *supra* note 8, art. 2 (calling for the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”); see also discussion *supra* Parts II.B, II.C (showing the effect of animal agriculture on emissions and the effect of agricultural subsidies on promoting animal agriculture).

189. See discussion *supra* Part III.A (pointing to various provisions within the UNFCCC which indicate that it was intended to be a binding instrument).

190. Kyoto Protocol, *supra* note 42, arts. 2(1)(a)(iii), 2(1)(a)(v)-(vi).

191. See *id.* (encouraging, explicitly, that parties reduce or remove subsidies and encourage reforms in the agricultural sector).

192. See discussion *infra* Part III.D (demonstrating the structural similarity of the UNFCCC to a binding U.S. environmental statute).

193. See 42 U.S.C. §§ 7401-7671q (2006); see also discussion *supra* Part II.A.4 (introducing the objective of the CAA, as well as its structural similarities to the

Like the UNFCCC, the CAA suffers from the fact that the statute itself does not create precise, enforceable air quality standards.¹⁹⁴ In fact, the CAA was challenged on the basis of lacking an “intelligible principle” to guide the EPA’s exercise of authority in setting the national air quality standards.¹⁹⁵ However, the Supreme Court recognized that it had previously never required that statutes quantify exactly how much harm is too much, and thus upheld the CAA.¹⁹⁶ It follows from this decision that, in the context of determining U.S. treaty obligations under the UNFCCC, the integrity of the Convention should not be undermined by its failure to provide a “determinate criterion” for what level of greenhouse gas emissions is appropriate.¹⁹⁷

In another case, the Supreme Court held that the EPA was required to continue to regulate carbon dioxide emissions even where its emissions-regulating authority overlapped with that of another executive agency.¹⁹⁸ Thus, even when another authority lawfully executed one of the EPA’s Clean Air Act duties, the EPA was still not entitled to forgo its responsibilities.¹⁹⁹ Likewise, the UNFCCC cannot continue to go unenforced even if an ancillary instrument, like the Kyoto Protocol, appears to be filling the regulatory void left by the UNFCCC.²⁰⁰

UNFCCC, which supports drawing an analogy to the UNFCCC).

194. *See* § 7407(a) (explaining that the CAA is implemented by individual states, which develop their own plans for meeting national air quality goals).

195. *See* *Whitman v. Am. Trucking Ass’n., Inc.*, 531 U.S. 457, 472 (2001) (describing the procedural history of the case to frame the ultimate reversal of the Court of Appeals’ decision that the CAA lacked an “intelligible principle” and thus violated the Constitution’s non-delegation doctrine).

196. *See id.* at 475-76 (holding that there was no unconstitutional delegation of legislative power to the EPA despite the breadth of the CAA and its minimal guidance on setting national air standards).

197. *See id.* (citing *Am. Trucking Ass’n., Inc. v. U.S. Evtl. Prot. Agency*, 175 F.3d 1027, 1034 (1999)) (overturning the Court of Appeals’ decision because a precise standard or a “determinate criterion” is not necessary to make the CAA enforceable).

198. *See* *Massachusetts v. Evtl. Prot. Agency*, 549 U.S. 497, 531-32 (2007) (holding that, although the Department of Transportation had authority to regulate carbon dioxide emissions from motor vehicles, the EPA was also required to regulate carbon dioxide emissions because the EPA’s statutory obligation to promote public health is wholly independent of the Department of Transportation’s mandate to promote energy efficiency).

199. *Id.*

200. *Cf. id.* at 531-32 (suggesting that one authority’s original responsibility

That the CAA is enforceable despite its structural similarity to the UNFCCC is visible from the countless and frequent cases against violators of the CAA.²⁰¹ Especially worthy of note is that, although the enforcement authority of the CAA is almost entirely transferred to the states,²⁰² the cases are often brought jointly by local governments and the Federal government. Also noteworthy is that the EPA's disapproval of deficient state implementation plans has been upheld.²⁰³ This means that the EPA has authority to sanction states for inadequate adherence to the CAA even if the EPA is not able to directly enforce compliance with the national air quality standards.²⁰⁴

Given the UNFCCC's similarity to established and potent domestic law, it follows that the UNFCCC must be binding and that U.S. economic policies promoting greenhouse gas emissions are violative of it.²⁰⁵ By analogy, the CAA suggests that, while UNFCCC parties cannot be sanctioned for failure to reduce their emissions to 1990-levels, parties can be sanctioned for their failure to try.²⁰⁶

continues, even where another authority possesses and acts on overlapping authority).

201. See ENVTL. PROT. AGENCY, *Compliance and Enforcement*, <http://cfpub.epa.gov/compliance/newsroom/> (last updated Oct. 9, 2011) (displaying the last 100 cases of successful enforcement of CAA claims since April 19, 2011).

202. See § 7407(a) (relinquishing enforcement authority to the states, thereby paralleling the structure of the UNFCCC); see also, e.g., ENVTL. PROT. AGENCY, *Cement Manufacturer to Pay \$1.4 Million for Clean Air Act Violations*, (Feb. 10, 2011),

<http://yosemite.epa.gov/opa/admpress.nsf/ab2d81eb0%2088f4a7e85257359003f5339/268868a4634671da85257833006c3b41> (showing that the EPA, the Department of Justice, and Ohio state authorities jointly secured a \$1.4 million settlement with a cement manufacturer and these proceeds are to be distributed to the U.S. government, the State of Ohio, and Ohio's affected counties).

203. See *Virginia v. Browner*, 80 F.3d 869, 880 (4th Cir. 1996) (upholding the EPA's disapproval of Virginia's state implementation plan for failing to comply with the CAA where it did not incorporate certain required provisions).

204. See *id.* (underscoring that the federal government retains authority to induce state action through sanctions).

205. See discussion *supra* Parts II.B, II.C (elaborating on the tendency of agricultural subsidies to increase demand for production of subsidized commodities, and discussing how the production of animal food commodities contributes to greenhouse gas emissions, and how increasing demand exacerbates the environmental consequences).

206. See *generally id.* (showing that under the CAA, noncompliance can be sanctioned by the EPA, the central authority, even though that authority is unable to enforce specific air quality standards).

IV. RECOMMENDATIONS

A. THE IDEAL SOLUTION: ELIMINATION OF AGRICULTURAL SUBSIDIES

The elimination of subsidies that currently incentivize the overproduction of animal food commodities is the ideal solution to the UNFCCC violations discussed herein. This is because the United States cannot continue to encourage practices that are demonstrably contributing to global climate change while also being in compliance with the Convention.²⁰⁷ Due to the unpopularity of advocating for a decrease in consumption of animal food products despite the clear link between their production and greenhouse gas emissions, scholars often advance suggestions that would mitigate emissions by improving technologies or intensifying production.²⁰⁸

While mitigation efforts from improved technologies or improved feed-to-product ratios are potentially preferable to present policies, they are likely to prove insufficient.²⁰⁹ Even if technologies are improved such that production causes fewer greenhouse gas emissions per unit of animal food product, the emissions will increase due to the predicted doubling of production of animal food products by 2050.²¹⁰

207. See discussion *supra* Parts III.B, III.C (finding that U.S. agricultural subsidies violate the UNFCCC because the subsidies promote greenhouse gas emissions).

208. See, e.g., SMITH ET AL., *supra* note 77, at 510 (explaining how dietary additives aimed at suppressing methane production, selective breeding, and improved feed practices could help reduce emissions associated with livestock production); Jennifer A. Burney et al., *Greenhouse Gas Mitigation By Agricultural Intensification*, 107 PROC. NAT'L ACAD. SCI. 12052, 12055 (2010) (asserting that "intensification," or the increase of productivity of current agricultural lands, releases fewer greenhouse gases than would producing the same amount of agricultural products more conventionally on greater land areas).

209. See P. Gerber et al., *Policy Options in Addressing Livestock's Contribution to Climate Change*, 4 ANIMAL 393 (2010) (arguing that mitigating technologies can play a crucial role in addressing climate change, but asserting that the greater challenge will be addressing livestock emissions in countries not obligated to abide by the UNFCCC).

210. STEINFELD ET AL., *supra* note 76, at 275. See generally Burney et al., *supra* note 209 (establishing that the intensification of agriculture does not offset the greenhouse gases emitted by bringing new cropland into use).

Another potential solution is to tie subsidies to environmental incentives, such as shifting subsidies on conventionally produced corn or soy to organic products.²¹¹ However, these programs also create problems, including the creation of incentives for more farmers, across the globe, to increase production using subsidized technology, resulting in greater net global emissions.²¹² Tax incentives for reduced emissions are likewise problematic because they potentially pose problems from an international trade standpoint.²¹³

Other widely touted measures include emissions cap and trade systems, which assign emissions quota to producers but allow them to buy others' surpluses to lawfully exceed their quotas.²¹⁴ Thus, with a trading system, total emissions may only decrease modestly because producers can simply buy permission to emit in excess of their purported limits.²¹⁵

Any mechanism that would effectively mitigate emissions must impose accurate costs on production so that environmental costs are not unjustly borne by society.²¹⁶ Removal of subsidies is the most effective way to ensure environmental costs are no longer externalized; this is because other means may inadvertently increase

211. See Annise Maguire, *Shifting the Paradigm: Broadening Our Understanding of Agriculture and Its Impact on Climate Change*, 33 ENVIRONS ENVTL. L. & POL'Y J. 275, 306-12 (2010) (recognizing, however, that shifting subsidies to organic farming would be a less comprehensive solution compared with other measures, such as all-inclusive legislation regulating agriculture).

212. See Henning Steinfeld & Pierre Geber, *Livestock Production and the Global Environment: Consume Less or Produce Better?*, 107 PROC. NAT'L ACAD. SCI. 18237-8 (2010) (discussing the potential for advanced technology to increase the efficiency of animal agriculture in developing nations where the demand for animal products is increasing).

213. See General Agreement on Tariffs and Trade 1994, April 15, 1994, 1867 U.N.T.S. 187, 190 (establishing the principle of "national treatment," that imported and locally-produced goods should be treated equally); see also Gerber et al., *supra* note 210, at 397, 403 (explaining that trade law requires that all 'like' products be taxed at the same rate, regardless of production method).

214. See Gerber et al., *supra* note 210, at 398-99 (noting that, because farmers who sell offsets receive higher profits, these programs create "an incentive for more farmers to increase production using the subsidized . . . technology.").

215. See *id.* at 398.

216. See *supra* note 90 and accompanying text (elaborating on the problems of externalization of the costs of environmental degradation associated with animal agriculture).

emissions or are simply not aggressive enough.²¹⁷ Further, because removing subsidies is feasible, the United States should strive to eliminate its subsidies on animal agriculture to the fullest extent possible.²¹⁸

The example of New Zealand illustrates that elimination of agricultural subsidies is not only possible, but that it can promote a healthy and strong agricultural industry.²¹⁹ New Zealand has the lowest rate of agricultural support as a share of gross domestic product of any OECD country.²²⁰ In spite of this, New Zealand's agricultural sector has enjoyed great sustainability in its agricultural sector.²²¹

B. STRENGTHEN THE UNFCCC WITH AN ENFORCEMENT MECHANISM AND GREATER BREADTH OF CONTROL

A second possible remedy for the U.S. violation of the UNFCCC is to amend the UNFCCC in several ways; however it would be undeniably difficult to convince all of the nearly 200 parties to agree to any substantive amendments.²²² Because the current reporting requirement of the UNFCCC has proven to be ineffective at pushing parties to reduce greenhouse gas emissions from animal agriculture, the UNFCCC should establish an enforcement authority that can impose economic sanctions rather than merely encourage voluntary

217. See *supra* note 215 and accompanying text (explaining the deficiencies of a cap and trade system for incentivizing greenhouse gas mitigation where farmers trade credits to worse greenhouse gas emitters).

218. See discussion *supra* Part II.C (describing the role of agricultural subsidies in promoting greenhouse gas emissions); see also Stiglitz, *supra* note 126 (discussing the harmful effects of subsidies on U.S. farmers and consumers, and arguing that the U.S. would serve its own interests by eliminating subsidies). Cf. Gerber et al., *supra* note 210, at 400 (using New Zealand as an example of a country that has successfully eliminated most agricultural subsidies).

219. See Gerber et al., *supra* note 210, at 400 (examining the success of a nearly subsidy free emissions trading program for New Zealand's livestock farmers).

220. See ORG. FOR ECON. COOPERATION & DEV., AGRICULTURAL POLICIES IN OECD COUNTRIES: MONITORING AND EVALUATION 2007 195-196 (2007) (reporting that, from 2004 to 2006, New Zealand had a .3% support rate for agriculture, significantly lower than that of the U.S.).

221. *Id.* at 195, 200.

222. See Sanger, *supra* note 47, at 1 (noting the challenges of negotiating environmental standards between nations).

negotiations.²²³ Additionally, because economists are able to roughly quantify the cost per cubic ton of carbon dioxide, nations exceeding their quotas should be charged for their overage plus penalties.²²⁴

While the UNFCCC and the Kyoto Protocol currently make wide allowances for non-Annex I countries with respect to greenhouse gas emissions, there needs to be acknowledgement that in the near future, non-Annex I countries will be responsible for the majority of global greenhouse gas emissions.²²⁵ Because all parties that are major contributors to greenhouse gas emissions should be subject to the UNFCCC's regulations, the definition of "Annex I" should be revised.²²⁶ Finally, because the Kyoto Protocol will expire in 2012, the UNFCCC should be amended to require that each of its parties adopt the successor agreement to the Kyoto Protocol.²²⁷ This would ensure that stubborn parties, like the United States, could be compelled to undertake binding obligations even if such commitments are politically unpopular.²²⁸

V. CONCLUSION

As a signatory to the United Nations Framework Convention on Climate Change, the United States is obligated to abide by the commitments contained therein.²²⁹ Central to the UNFCCC is the goal of stabilizing greenhouse gas emissions from human-caused sources so that dangerous changes in climate, resulting from the

223. See UNFCCC, *supra* note 8, art. 4(1)(a) (requiring that parties make available inventories of national anthropogenic emissions "of all greenhouse gases not controlled by the Montreal Protocol..."); see also *id.* art. 14 (calling for negotiation between convention parties in the event of a dispute about the UNFCCC's terms or application).

224. See Tegtmeir & Duffy, *supra* note 90, at 10 (noting that the market price per cubic ton of carbon dioxide equivalents was \$0.98 in 2003, based on the Chicago Climate Exchange).

225. See *supra* note 48 and accompanying text (discussing the increasing significance of emissions by China, India, and Brazil).

226. See UNFCCC, *supra* note 8, at 4(1) (explaining the relative responsibilities of Annex I and non-Annex I parties).

227. See discussion *supra* Part II.A.2 (illustrating the significance of the imminent expiry of the Kyoto Protocol).

228. See discussion *supra* Part II.A.2 (demonstrating the original reasons why the United States refused to be bound to the Kyoto Protocol).

229. See discussion *supra* Part III.A (explaining that the UNFCCC language is binding, and therefore that the United States is bound to the commitments set forth in Article 4).

buildup of atmosphere-warming gases, can be avoided.²³⁰ However, the United States currently disregards the UNFCCC's mandates to review domestic policies that encourage emissions and to attempt to reduce national gas emissions to 1990 levels.²³¹ Of particular concern is the fact that the United States continues to subsidize animal agriculture, even in the face of evidence that subsidies encourage greenhouse gas emissions.²³² By offering high levels of farmer income support, safety nets, and reduced-price resources for the production of animal food products, the United States encourages the expansion and overproduction of animal food products, thus contributing to climate change in disregard of the UNFCCC.²³³

The United States faces a fresh opportunity to take meaningful steps to reduce its culpability in climate change by binding itself to concrete emissions targets upon the expiry of the Kyoto Protocol.²³⁴ If it chooses to do so, the United States can amend the policies of its agricultural sector, which presents tremendous room for progress, and bring itself into compliance with the UNFCCC while restoring its credibility as a leader in climate change mitigation.²³⁵ Finally, as one of the world's top greenhouse gas emitters, the United States needs to comply with the UNFCCC in order to help avoid the harsh consequences of accelerated global warming.

230. See UNFCCC, *supra* note 8, art. 2 (expressing that the objective of the UNFCCC is to thwart possible adverse consequences from human-induced climate change).

231. See *id.* arts. 4(1)-(2); see also discussion *supra* Part II.C (linking the subsidization of animal agriculture to an increase in demand for practices that encourage greenhouse gas emissions).

232. See discussion *supra* Parts II.B, II.C (providing background information on the role of animal agriculture in global warming and the economic mechanisms which incentivize production in animal agriculture).

233. See *id.*

234. See discussion *supra* Part II.A.2 (explaining that the upcoming expiration of the Kyoto Protocol will undo internationally binding emissions limits unless the Kyoto Protocol is extended or a new agreement is reached).

235. See CNN Wire Staff, *Obama Says Laws Must be Updated After Oil Disaster*, CNN (June 10, 2010), <http://edition.cnn.com/2010/politics/06/10/obama.gulf.spill/index.html> (showing that Obama believes the United States needs to prove that it is a leader in innovative sustainability initiatives and improved pollution laws); see also discussion *supra* Parts III.B, III.C (discussing the nature of U.S. UNFCCC violations).