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International Emissions Trading between Developing Countries: The Solution to the Other Half of the Climate Change Problem

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NOTE

NOTE: INTERNATIONAL EMISSIONS TRADING BETWEEN DEVELOPING COUNTRIES: THE SOLUTION TO THE OTHER HALF OF THE CLIMATE CHANGE PROBLEM

*Lee Hart**

I.	INTRODUCTION	80
II.	THE CURRENT STATE OF GLOBAL WARMING AND THE REACTIONS OF THE INTERNATIONAL COMMUNITY	82
	A. <i>The Science of Global Warming</i>	82
	B. <i>The Global Regulatory Regime: The International Response to Global Warming</i>	84
III.	THE ROLE OF DEVELOPING COUNTRIES IN THE CURRENT GLOBAL ENVIRONMENTAL REGIME	87
	A. <i>Mismatch of Incentives</i>	87
	B. <i>The Clean Development Mechanism</i>	88
IV.	EMISSIONS TRADING: A MARKET EXCLUSIVELY FOR DEVELOPING COUNTRIES	91
	A. <i>Emissions Trading: How Does it Work?</i>	91
	B. <i>The Economics: Why Emissions Trading Makes Sense</i>	92
	C. <i>Proposal: Emissions Trading for Developing Countries</i>	94
	D. <i>Political Advantages of an Emissions Trading Program for Developing Countries</i>	97
	E. <i>Carrots and Sticks: Acceptance of Emissions Trading by the Developing World</i>	99
	F. <i>Potential Weaknesses of an Emissions Trading Market Exclusively for Developing Countries</i>	100
V.	CONCLUSION	101

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I. INTRODUCTION

On February 2, 2007, the Intergovernmental Panel on Climate Change (IPCC) released the first part of its Fourth Assessment Report.¹ The report was entitled, "Climate Change 2007: The Physical Science Basis," and it stands as almost conclusive evidence that humans are having a concrete effect on their environment.² Global warming has its skeptics,³ including conservatives in the United States who, as recently as 2005, have stated that humans do not contribute to Earth's destruction.⁴ Slowly, however, most of those skeptics have grown to accept that the human effect on climate change and global warming are real and pressing, and they have become receptive to suggestions for reform.⁵

Because climate change is a global problem, any successful reform must embody a global solution.⁶ However, although no single country can make a difference on its own, participation and cooperation between many sovereign states with their own distinct socioeconomic, cultural, and environmental circumstances is difficult.⁷ The global discourse regarding

1. *IPCC 2007: Summary for Policymakers*, in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS. CONTRIBUTION OF WORKING GROUP, TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (S. Solomon et al. eds., 2007) [hereinafter IPCC Report], available at <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>.

2. *Id.* at 3. The Report states, "The understanding of anthropogenic warming and cooling influences on climate has improved since the [Third Assessment Report], leading to *very high confidence* that the global average net effect of human activities since 1750 has been one of warming . . ." *Id.*

3. See, e.g., Mark Shafer, *Seeking Better Science, Policy*, OKLAHOMAN, Mar. 31, 2007, at 15A; Wendy Blais, Letter to the Editor, *In a Lather Over Global Warming*, L.A. TIMES, Mar. 29, 2007, at A22 (suggesting that Republican congressional leaders still deny human effects on the Earth's climate); Madhav L. Khandekar et al., *The Global Warming Debate: A Review of the State of Science*, 162 PURE & APPLIED GEOPHYSICS 1557, 1581 (2005) (suggesting that recent warming is due primarily to urbanization and land-use change rather than to increased levels of carbon dioxide or other GHGs in the Earth's atmosphere).

4. Kirk W. Junker, *Ethical Emissions Trading and the Law*, 13 U. BALT. J. ENVTL. L. 149, 157 (2006).

5. *Id.*

6. Richard J. Ferris, Jr., *Reaching Out to the Rule of Law: China's Continuing Efforts to Develop an Effective Environmental Law Regime*, 11 WM. & MARY BILL RTS. J. 569, 574-75 (2003). The rapid growth of China occurring over the past ten to twenty years has caused serious global consequences, such as five to ten day old environmental mineral deposits detected by monitoring stations in Hawaii, deterioration of air quality in nearby countries such as Korea and Japan, and plums of dust from newly-created Chinese deserts blowing onto the American West Coast via the jet stream. *Id.*

7. FARHANA YAMIN & JOANNA DEPLEDGE, THE INTERNATIONAL CLIMATE CHANGE REGIME: A GUIDE TO RULES, INSTITUTIONS, AND PROCEDURES 1 (2004).

environmental improvement began in 1972 with the U.N. Conference on the Human Environment and was fueled over the next fifteen years by phenomena such as acid rain in many areas of Europe and North America, the discovery of the “hole” in the ozone layer over Antarctica, the Chernobyl nuclear disaster in the former Soviet Union, the Exxon Valdez oil spill off the coast of Alaska, and the extraordinary droughts and floods experienced both in Europe and in North America during the 1980s and 1990s.⁸

Notwithstanding these environmental calamities, there existed no overarching regulatory treaty or forum for the international community to address global warming until 1992, when 189 parties came together to sign the U.N. Framework Convention on Climate Change (FCCC).⁹ This treaty has been important for two major reasons. First, it solidified the distinction between developed and developing countries, a rift which has played an integral role in the development of international environmental negotiations.¹⁰ Secondly, and more importantly, the FCCC touched off the Conference of the Parties (COPs), which have served to elaborate on the FCCC’s requirements for all parties and to provide regulations for compliance with it.¹¹ Arguably the most important elaboration came in December of 1997, when at COP-3 the parties adopted the Kyoto Protocol in Japan.¹²

Though the global environmental regulatory process has brought forth novel ideas, proposals, and analysis to address global warming, the rapid growth of some developing countries has meant that existing regulations and treaties to deal with only half the problem. As it stands, only developed countries have true mandates to reduce their emissions,¹³ while developing countries are causing a significant portion of the world’s greenhouse gas emissions.¹⁴ Therefore, an international effort to address

8. *Id.* at 18.

9. *Id.* at 2.

10. *Id.* at 24.

11. *Id.*

12. YAMIN & DEPLEDGE, *supra* note 7, at 24.

13. *Id.* at 24-25, Box 2.1.; ASBJØRN TORVANGER, *The Requirement of Cost-effectiveness: Climate Change and the Notion of an Effective Abatement Policy*, in INTERNATIONAL POLITICS OF CLIMATE CHANGE, 193, 203 (Gunnar Fermann ed., 1997) (“Developing countries have even fewer commitments than industrialized countries, nor are they likely to get such commitments in the near future.”).

14. In 1994, Brazil, China, India, and the Russian Federation together contributed 32.1% of the world’s total GHG emissions. GEO Data Portal, The Environmental Database, *available at* <http://geodata.grid.unep.ch/results.php> (last visited Mar. 6, 2008). The only year thus far for which we have complete data is 1994, but given the rate of economic development in these countries relative to the rest of the world, it is safe to assume that today these countries emit the same portion

global warming will not be effective without the participation of the developing world.

This Note argues that the methods available for developing nations to participate in combating global warming are inadequate given the extent to which they contribute to the problem. From the standpoint of economics, global politics, and environmental realities, the most efficient, equitable, and effective way of incorporating developing nations into combating global warming would be to create an emissions trading market exclusively for developing countries in addition to the regulatory mechanisms currently in place. Emissions trading exists currently both domestically and internationally, but no market exists only for the use of developing nations.

Part II will discuss the current state of scientific knowledge behind global warming and will provide a history of the international response which has given rise to the current environmental regulatory regime. Part III will then explain the role of developing countries in the current regime and will highlight its shortcomings. Finally, Part IV will describe emissions trading in general, will propose an emissions trading market exclusively for developing countries, and will discuss the proposal's anticipated benefits and shortcomings.

II. THE CURRENT STATE OF GLOBAL WARMING AND THE REACTIONS OF THE INTERNATIONAL COMMUNITY

A. *The Science of Global Warming*

Though new scientific studies such as the IPCC's Fourth Assessment Report are making believers out of global warming skeptics daily, most scientists still recognize that some global warming is a natural occurrence on our planet.¹⁵ In brief, global warming results from the entrapment of heat radiated from the Earth.¹⁶ The mechanics of global warming as understood by current scientists are as follows. Energy radiates from the

or more of total GHGs emitted today. *Id.* China alone is on course to become the world's largest carbon emitter of GHGs, as it already emits 16.5% of the world's carbon dioxide emissions, which is the second largest only to the United States, which emits 23%. *Emma Graham-Harrison & Gerard Wynn, China Seen Topping U.S. Carbon Emissions in 2007*, REUTERS, Mar. 23, 2007, <http://www.reuters.com/article/environmentNews/idUSL2272661220070323>.

15. LYNNE M. JURGIELEWICZ, *GLOBAL ENVIRONMENTAL CHANGE AND INTERNATIONAL LAW* 3-4 (1996) (quoting Stephen H. Schnieder's statement calling the natural greenhouse effect "one of the 'most well-established theories in atmospheric science.'").

16. *Id.* at 3.

sun in the form of radiation with short wavelengths.¹⁷ The Earth's surface absorbs some of this energy and heats up and, in turn, reflects the remainder back into space.¹⁸

However, the Earth's surface acts like a prism. Because the Earth's temperature is lower than the sun's, the energy is reflected back out at a lower wavelength.¹⁹ While the so-called "greenhouse gasses" (GHSs) in the Earth's atmosphere are transparent to higher wavelength energy, they are opaque to lower wavelength energy.²⁰ In turn, the lower wavelength energy cannot escape through the Earth's atmosphere and becomes trapped between the Earth's atmosphere and surface, and because this energy causes heat, the natural effect of the process is to increase the temperature on the Earth's surface.²¹

This natural effect is exacerbated when the concentration of GHGs increases in the atmosphere, because the concentration of GHGs varies directly with the atmosphere's ability to trap heat.²² Human activity tends to increase the presence of the main GHGs, which are carbon dioxide (CO₂), methane (CH₄), nitrous Oxide (N₂O), tropospheric ozone (O₃), as well as chlorofluorocarbons (CFCs) and hydroflourocarbons (HCFCs) in the Earth's atmosphere.²³

The main human activities to be blamed for this increase are unfortunately important to every industrialized society on the globe, such as rice cultivation,²⁴ fossil fuel combustion for energy,²⁵ and even raising livestock.²⁶ Because these and other activities are so important to both developed and developing economies, the challenge for the global community has been how to create an international regulatory scheme

17. *Id.*

18. *Id.* at 3-4.

19. *Id.* at 4.

20. JURGIELEWICZ, *supra* note 15, at 4.

21. *Id.*

22. Deborah E. Cooper, *The Kyoto Protocol and China: Global Warming's Sleeping Giant*, 11 GEO. INT'L ENVTL. L. REV. 401, 402-03 (1999).

23. JURGIELEWICZ, *supra* note 15, at 4. *See also* Cooper, *supra* note 22, at 402 (citing carbon dioxide, methane, and nitrous oxides, among others, as the main GHGs naturally present in the Earth's atmosphere).

24. Cooper, *supra* note 22, at 402.

25. *Id.*

26. Brad Knickerbocker, *Humans' Beef with Livestock: A Warmer Planet*, CHRISTIAN SCI. MONITOR, Feb. 20, 2007, at 3 (stating that livestock are responsible for 18% of GHG emissions as measured in carbon dioxide equivalent, which amounts to 9% of all carbon dioxide emissions, 37% of all methane emissions, and 65% of all nitrous oxide emissions, totaling more GHG gas emissions than caused by transportation).

which forces countries to substitute less harmful economic substitutes while still allowing those countries to develop and to compete.

B. *The Global Regulatory Regime: The International Response to Global Warming*

The international community has been cognizant of global warming for some time now and has developed a more thorough and effective regulatory regime as time has worn on. The modern climate change regime began in 1988, when the U.N. Environment Program (UNEP) and World Meteorological Organization (WMO) banded together to create the IPCC, made of more than 2000 climate change experts and scientists from some fifty countries.²⁷ The IPCC has been the backbone of the international scientific climate change effort and has conducted the climate assessment studies which have informed the international climate change regime.²⁸

International regulation began in 1992 when the Intergovernmental Negotiating Committee presented FCCC for signatures at a U.N. conference in Rio de Janeiro.²⁹ Entering into force in 1994, the FCCC is a broad convention outlining general principles, goals, and broad obligations which were on the whole not specific enough.³⁰ However, as stated above, the FCCC was important for two reasons. First, the FCCC formalized the critical distinction between developed and developing countries. The FCCC created the categories of Annex I countries, comprised of Organisation for Economic Co-operation and Development (OECD) countries and economies in transition, Annex II countries, comprised of OECD countries only, and Non-Annex I countries, comprised of developing countries.³¹ Secondly, the FCCC served as the first rung in the ladder of international environmental negotiations.³²

To add strength and definition to the FCCC, the first Conference of the Parties (COP-1) met in 1995 in Berlin to “address additional commitments, financial mechanisms, technical support to developing countries, and administrative and procedural issues regarding climate change.”³³ COP-1 met under a veil of uncertainty surrounding the developing countries’ future obligations, and this uncertainty manifested

27. Cooper, *supra* note 22, at 402.

28. *Id.* at 403. To date, the IPCC reports have helped to instigate serious negotiations and have led to the binding emissions deductions required by the Kyoto Protocol. *Id.*

29. *Id.* at 408.

30. *Id.*

31. YAMIN & DEPLEDGE, *supra* note 7, at 24.

32. *Id.* See also *supra* notes 10-12 and accompanying text.

33. Cooper, *supra* note 22, at 411.

with China and India's strong opposition to most of the regulatory proposals discussed at COP-1.³⁴ The parties at COP-1 signed the Berlin Mandate, which also called on FCCC Annex I Parties (mainly developed countries) to establish specific, legally binding obligations and schedules to reduce emissions in meetings by a body known as the Ad Hoc Group on the Berlin Mandate (AGBM).³⁵

Partially in response to the IPCC's published statement that the "balance of evidence suggests that there is a discernible human influence on global climate," COP-2 met in 1996.³⁶ At COP-2, the parties considered the IPCC's Second Assessment Report³⁷ and confirmed that human activities were indeed changing the global environment.³⁸ Importantly, the parties came closer to an agreement between developed countries to promulgate international emissions reduction obligations.³⁹

However, while the consensus built among developed countries, the rift between the First World and the developing countries grew. After COP-2, the AGBM met four times to draw up a text for COP-3 in Kyoto, but the participants avoided the sensitive topic of binding emissions obligations for developing countries.⁴⁰

At COP-3 in Kyoto, Japan, the parties adopted the Kyoto Protocol,⁴¹ which has been called "one of the most innovative and ambitious international agreements ever reached."⁴² In sum, the Kyoto Protocol revised the commitments adopted by the FCCC to make them more specific and rigorous for Annex I countries, including stricter reporting and review procedures for Annex I countries, a compliance system to address cases of non-compliance, regular progress assessments.⁴³

34. *Id.*

35. *Id.*

36. *Id.* at 412.

37. See YAMIN & DEPLEDGE, *supra* note 7, at 24. Although the COP-2 did not formally adopt the IPCC's Second Assessment Report, the parties considered it throughout the meeting, and the reverence which they paid to the Report silenced most of the world's climate change critics. *Id.*

38. *Id.* at 24.

39. Cooper, *supra* note 22, at 412.

40. *Id.* at 413. In fact, since 1995, no major negotiating position has advocated for binding emissions reduction targets of developing countries. *Id.* The lack of participation by these countries was so pronounced that, in 1997 in a domestic speech, Bill Clinton called for "meaningful participation" by China and other developing countries and offered to expand American commitments to binding emissions limits. *Id.* See also Paoli Bettelli, et al., *Report of the Third Conference of the Parties to the United Nations Framework Convention on Climate Change: 1-11 December 1997*, EARTH NEGOTIATIONS BULL., <http://www.iisd.ca/vol12/enb1276e.html>.

41. Cooper, *supra* note 22, at 414.

42. YAMIN & DEPLEDGE, *supra* note 7, at 2.

43. *Id.* at 24-25, Box 2.1.

Importantly, however, the Kyoto Protocol imposes no obligations on non-Annex I, developing countries.⁴⁴

In addition, the Kyoto Protocol included three market-based “flexibility mechanisms” to help Annex I countries meet their emissions reduction obligations in a more cost-effective manner.⁴⁵ First, the Kyoto Protocol allows Annex I countries to participate in the Joint Implementation program by investing in other Annex I parties and then using those emission reduction units toward the investor country’s emissions reduction obligations.⁴⁶ Second, both Annex I and non-Annex I countries can participate in the Clean Development Mechanism (CDM), which is discussed at length below.⁴⁷ Third, the Kyoto protocol authorizes Annex I countries to participate in an emissions trading market and instructs the COP to develop the relevant guidelines.⁴⁸ Notice, though, that the Kyoto Protocol itself does not designate a venue for the market.⁴⁹

Although at the time the science, politics, and bargaining leverage may not have been conducive to requiring binding commitments from non-Annex I countries, the absence of these obligations allowed large and important developing nations to continue polluting, and they also caused political problems. This failure was a large reason for the Bush Administration’s rejection of the Kyoto Protocol.⁵⁰

44. *Id.* (noting emissions reduction requirements for Annex I parties but noting no binding emissions reduction requirements for non-Annex I parties).

45. Anita M. Halvorssen, *Sustainable Development and Smart Energy: The Kyoto Protocol and Developing Countries—The Clean Development Mechanism*, 16 COLO. J. INT’L ENVTL. L. & POL’Y. 353, 363 (2005).

46. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Conference of the Parties, 3d Sess. U.N. Doc. FCCC/CP.1/1997/7/7/Add.1 (1997) [hereinafter Kyoto Protocol]. See also Halvorssen, *supra* note 45, at 364.

47. Kyoto Protocol, *supra* note 46, art. 12.

48. *Id.* art. 17.

49. See *id.*; Emily Richman, Note: *Emissions Trading and the Development Critique: Exposing the Threat to Developing Countries*, 36 N.Y.U. J. INT’L L. & POL. 133, 148 (2003) (“The Kyoto Protocol, however, does not provide the exclusive venue for trading.”).

50. *Bush, Blair Agree to Seek Post-Kyoto Framework on Climate Change*, JAPAN POL’Y & POL., July 11, 2005 (“Bush, who has rejected the Kyoto Protocol . . . mainly because many major developing nations are now involved . . .”); Rachel L. Swarns, *Compromise Brings Accord on Renewable Energy Closer*, N.Y. TIMES, Sept. 3, 2002, at A1 (“Mr. Bush asserted in rejecting the Kyoto treaty that it was unfair that the accord did not bind developing nations, especially China and India, that are also major emitters of gases that trap heat in the atmosphere.”) The U.S. Senate also placed great emphasis on binding obligations of developing countries, intending to condition its ratification in part on the “meaningful participation” of developing countries. See S. Res. 98, 105th Cong. (1997).

Despite post-Kyoto global economic difficulties, the parties continued to negotiate.⁵¹ COP-4 met in Argentina and sought to fill some of the gaps left by the Kyoto Protocol, including creating rules for the three flexibility mechanisms, for use of carbon sinks to meet emissions targets, and for the compliance system.⁵² The negotiations slowed down in COP-5, and by COP-6 the parties agreed on so little that the meeting was regarded as a “spectacular failure.”⁵³

However, the Bush Administration’s rejection of Kyoto in March 2001 relit the fire driving global negotiations.⁵⁴ At COP-7, held in November 2001 in Marrakech, Morocco, the parties signed the Marrakech Accords, a series of 27 decisions which set out detailed rules, procedures, technical guidelines, and work programs to bring almost all the important aspects of the Kyoto Protocol and subsequent COP agreements into focus.⁵⁵ Although still evolving through subsequent COP meetings,⁵⁶ the Kyoto Protocol set ambitious emissions targets for Annex I countries of an overall decrease in GHG to 5% below 1990 levels by the commitment period of 2008-2012 and built a framework for the flexibility mechanisms.⁵⁷

However, the treaties in their final forms fail to include emissions reduction requirements for non-Annex I nations and provide few and insufficient ways for those countries to be involved. Given the environmental importance of many developing countries, this aspect of the treaties was a mistake.

III. THE ROLE OF DEVELOPING COUNTRIES IN THE CURRENT GLOBAL ENVIRONMENTAL REGIME

A. Mismatch of Incentives

Because the obligatory regulations and environmental programs bind Annex I nations and because the FCCC and subsequent agreements

51. YAMIN & DEPLEDGE, *supra* note 7, at 26. The post-Kyoto Era witnessed the fall of the Asian Tigers, the collapse of the Argentinean economy, and the decrease of aid by developed countries to the developing world, creating even stranger would-be bedfellows out of developed and developing nations. *Id.* The economic strain and lack of aid only exacerbated the divide felt between Annex I and non-Annex I countries. *Id.*

52. *Id.*

53. *Id.* at 27.

54. *Id.*

55. *Id.* at 28.

56. YAMIN & DEPLEDGE, *supra* note 7, at 27-28.

57. *Id.* at 25.

contemplate that industrialized countries will cover the additional cost of development of developing countries, the current regime imposes almost all the cost of climate change reform on developed countries.⁵⁸ Aside from the pure economic hardship, Gunnar Ferman has criticized this arrangement because it mismatches incentives.⁵⁹ Ferman observes that on average the North is in the best position to combat climate change because it is wealthier, has a higher industrial capacity, and is more technologically advanced.⁶⁰ However, Ferman points out that the South is more vulnerable to climate change because it is generally comprised of environments more susceptible to climate change, including most of the world's rain forests.⁶¹ Therefore, the incentives to act lie with the party most unable to act.

B. *The Clean Development Mechanism*

Both to address the imbalanced incentives and to aid developing nations to cleanly industrialize, the Kyoto Protocol and subsequent COP accords create the CDM program.⁶² Following a proposal by the United States which was endorsed by over 2000 economists, CDM encourages Annex I countries to invest in clean development in developing countries.⁶³ When an Annex I country invests in a project that helps to reduce emissions or helps to cleanly develop a non-Annex I country, that Annex I country can use the emissions reduction in the form of "emissions credits" to count against its own GHG emissions reduction obligations.⁶⁴ The parties intended for CDM to provide an incentive for Annex I countries to assist non-Annex I countries to cleanly industrialize in order to reduce current and future GHG emissions. CDM has worked in the sense that many Annex I countries have utilized the program. To date, Annex I countries have registered a total of 1033 CDM projects, and 76 proposed projects are awaiting registration approval.⁶⁵ The projects are in forty-one host countries and have been sponsored by seventeen countries, of which the United Kingdom has been by far the largest contributor.⁶⁶

58. TORVANGER, *supra* note 13, at 203.

59. GUNNER FERMAN, *Political Context of Climate Change, in INTERNATIONAL POLITICS OF CLIMATE CHANGE* 11, 33-34 (Gunnar Ferman ed., 1997).

60. *Id.* at 34.

61. *Id.* at 33.

62. *See* Kyoto Protocol, *supra* note 46, art. 12.

63. Jonathan Baert Wiener, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L.J. 677, 712 (1999).

64. Halvorssen, *supra* note 45, at 365-66.

65. CDM: CDM Statistics, <http://cdm.unfccc.int/Statistics/index.html> (last visited May 7, 2008).

66. CDM: Registration: Registered Projects by AI and NAI Investor Parties,

However, despite significant usage of the CDM program, it has its problems. The first is that the CDM process embodies high transaction costs. As early as the FCCC, the global community recognized that climate change policy must be cost-effective.⁶⁷ Transaction costs act as a drag on efficiency by making the transaction more expensive. Therefore, a transaction with lower transaction costs will be more efficient than the same transaction with higher transaction costs.

CDM increases transaction costs firstly because of its lengthy registration process.⁶⁸ For example, according to Mindy Nigoff, the registration costs are so high that an energy project in Brazil would be an ineffective tool to aid Canada in fulfilling its Kyoto obligations.⁶⁹ Even large scale projects earn a very small amount of emissions credits relative to the large amount of emissions reduction required of most Annex I countries.⁷⁰ In addition, registration of large scale projects can take roughly 23 months from submission of a plan to final approval by the CDM Executive Board.⁷¹ This lengthy and thorough registration process is necessary due to the multilateral nature of CDM and every party's incentive to free ride.⁷² It is therefore structural and cannot be significantly solved by simply changing the system.

In addition to the difficult registration process, it is not difficult to imagine how government corruption and self interest, language and cultural barriers, terrain issues, and unstable governments could increase transaction costs. In sum, any difficulties arising from the conference of two governments to create one project have the potential to raise the cost of the transaction significantly.

Second, CDM benefits countries who need the help the least. Countries with the most resources are most able to institute their emissions controls, regardless of whether they are Annex I or non-Annex I. CDM firstly benefits the Annex I country by providing it with credits to relieve it from

<http://cdm.unfccc.int/Statistics/Registration/RegisteredProjAnnex1PartiesPieChart.html> (last visited May 1, 2008). As of May 1, 2008, the UK has registered 372 CDM projects, which amounts to 36.8% of the total current projects. *Id.*

67. See United Nations Framework Convention on Climate Change, art. 3.3, May 9, 1992, 1771 U.N.T.S. 107 [hereinafter UNFCCC]. See also TORVANGER, *supra* note 13, at 193.

68. See Mindy G. Nigoff, *The Clean Development Mechanism: Does the Current Structure Facilitate Kyoto Protocol Compliance?*, 18 GEO. INT'L ENVTL. L. REV. 249, 265 (2006) (asserting that CDM's lengthy registration process defeats the effectiveness of the program).

69. *Id.*

70. See *id.* at 267. Nigoff demonstrates that the registration process for small-scale projects is so lengthy as to defeat the effectiveness of those projects as well. See *id.* at 268.

71. *Id.* at 267.

72. See FERMANN, *supra* note 59, at 31.

meeting its Kyoto obligations domestically. CDM next benefits large, non-Annex I countries almost entirely. India, China, Mexico, and Brazil alone host roughly 74.64% of the currently registered CDM projects, leaving all other non-Annex I countries without any benefit from this program.⁷³

As every economic mechanism effects the distribution of wealth, why should a development scheme not allocate needed wealth to poorer countries? Increasing resource allocation to poorer countries has the potential to encourage innovation and sustainable growth within small, poorer developing countries while providing the same benefit to larger developing countries who should be able to afford environmental reform on their own.

Finally, allowing developed countries to deal in the affairs of developing countries creates the risk that the developed countries will take advantage of the developing countries. The great potential for exploitation roots itself in the imbalance of bargaining power between developed and developing countries resulting from the vast disparity in resources between the two groups.⁷⁴ Successful international negotiation requires financial, technical, and human resources to develop, popularize, and consistently articulate a bargaining position.⁷⁵ While larger developing nations such as China, India, and Brazil may have the resources to effectively negotiate with developed, investing countries such as the United Kingdom, it is doubtful that a developing country such as Ecuador would have that capacity. This lack of resources translates into less bargaining power in CDM project negotiations and subsequently creates the potential for exploitation.

Admittedly, the vast majority of CDM projects take place in larger developing nations with more resources.⁷⁶ However, as state above, allocating wealth to smaller developing countries and creating sustainable development plans in them is an important goal as well. However, due to an imbalance in bargaining power, CDM leaves smaller developing countries open to exploitation.

In conclusion, the manner in which developing countries can participate in the current global climate change regime is inefficient

73. CDM: Registration Registered Project Activities, by Host Party, http://cdm.unfccc.int/Statistics/Registration/NumOf_RegisteredProjByHostPartiesPieChart.html (last visited May 1, 2008) [hereinafter CDM: Registration: by Host Party].

74. See Richman, *supra* note 49, at 155-57 (pointing out that African nations could not effectively stake out their position in international environmental negotiations because of lower resources than developed countries).

75. *Id.* at 156.

76. See CDM: Registration: by Host Party, *supra* note 73.

because of its high transaction costs, because it benefits wealthier countries rather than poorer countries, and because it leaves poorer developing countries vulnerable to exploitation. There is, however, a better way.

IV. EMISSIONS TRADING: A MARKET EXCLUSIVELY FOR DEVELOPING COUNTRIES

A. Emissions Trading: How Does it Work?

As one of the three “flexibility mechanisms” envisioned in the Kyoto Protocol,⁷⁷ emissions trading is a way for Annex I countries to efficiently satisfy their emissions reductions obligations. Emissions trading markets currently take a few forms around the world, including a domestic market for sulfur dioxide in the United States,⁷⁸ a very comprehensive international emissions trading agreement among the European Union,⁷⁹ and a very young program for trading among private entities in China.⁸⁰ Indeed, while the international emissions trading market available to all Annex I countries that the Kyoto Protocol envisions⁸¹ is certainly ambitious, the concept of a property-based market solution to emissions reduction is not new.

The Kyoto Protocol plans international emissions trading to work in the following way. Article 17 of the Kyoto Protocol binds the COP to promulgate the “principles, modalities, rules and guidelines, in particular

77. See Kyoto Protocol, *supra* note 46, art. 17.

78. David M. Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 289, 318 (1998). The 1990 amendments to the Clean Air Act created a market for transferable emissions allowances to reduce the sulfur dioxide emissions from large energy sources with the goal of quelling the acid rain problem. *Id.* at 317. This domestic program predated the Kyoto Protocol. Junker, *supra* note 4, at 153-54.

79. Junker, *supra* note 4, at 153. In 2005, the EU implemented an emissions trading program in order to facilitate compliance with the Kyoto Protocol. *Id.* The EU agreement covers twenty-five countries and has an overall emissions reduction goal of 8%. *Id.* at 159.

80. *Id.* at 158. China began its domestic emissions trading program in September 2000, by amending its Air Pollution Prevention and Control law. *Id.* The program aims to reduce sulfur dioxide emissions, setting a goal for China’s Tenth Five Year Plan at a 10% reduction from year 2000 levels in sulfur dioxide and a 20% reduction in highlighted “control zones” in eastern and southeastern China. *Id.* The program, however, is still young, with the first trading agreement between private factories in different cities only having been consummated in July 2003. *Id.*

81. See Kyoto Protocol, *supra* note 46, art. 17.

for verification, reporting and accountability for emissions trading.”⁸² It further states that only Annex B parties may participate in emissions trading for the purpose of fulfilling their emissions reduction obligations under Article 3.⁸³ While not Annex I countries per se, Annex B is largely composed of industrialized countries and includes a few Eastern European developing countries.⁸⁴

Like other emissions trading programs, the Kyoto Protocol’s program sets caps for each nation and encourages that nation to emit less than its cap.⁸⁵ Each nation then can turn the unused portion of its emissions cap into emissions credits, which essentially become property rights, accompanied by a prevailing market supply and demand.⁸⁶ Nations emitting below their caps may sell their credits on the open market to nations with higher-polluting industries at the going market rate.⁸⁷ Though not setting an exclusive venue for emissions trading (ostensibly leaving this duty to the COP),⁸⁸ the Kyoto Protocol and its governing regulations would serve to create the regulated market and the ephemeral rights out of a country’s unused emissions cap.

B. *The Economics: Why Emissions Trading Makes Sense*

Many scholars have written on the economic efficiency that characterizes emissions trading.⁸⁹ The main theory stems from the seminal economic idea articulated by Ronald Coase that the most efficient distribution of resources exists when parties can bargain for mutually

82. *Id.*

83. *Id.*

84. See Kyoto Protocol Background, http://unfccc.int/kyoto_protocol/background/items/3145.php (last visited Mar. 6, 2008). The countries included in Annex B of the Kyoto Protocol are the fifteen EU member states, Bulgaria, the Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland, the United States (although the United States has not ratified the Protocol), Canada, Hungary, Japan, Poland, Croatia, New Zealand, the Russian Federation, Ukraine, Norway, Australia, and Iceland. *Id.*

85. Junker, *supra* note 4, at 156.

86. *Id.* at 156-57.

87. *Id.* at 156.

88. Richman, *supra* note 49, at 148.

89. See generally Wiener, *supra* note 63. See also JOHN H. DALES, POLLUTION, PROPERTY & PRICES (1968) (discussing an approach involving tradeable emissions credits); W. David Montgomery, *Markets in Licenses and Efficient Pollution Control Programs*, 5 J. ECON. THEORY 395 (1972) (providing the theory behind establishment of a market in pollution licenses); Thomas H. Tietenberg, *Transferable Discharge Permits and the Control of Stationary Source Air Pollution: A Survey and Synthesis*, 56 LAND ECON. 391 (1980) (exploring the implementation of a program involving transferable discharge air permits for air pollution).

desired property without transaction costs in an open market.⁹⁰ Coase demonstrated that the party which purchases the right will be the party that values it most.⁹¹ A party values its right based on that party's cost of not having the right,⁹² which in our case would be the marginal cost of reducing GHG emissions. Therefore, the party that values the right the most will be the party with the highest marginal cost of GHG emissions reduction, and that cost will set the market rate.

A simple example may help. Two countries, A and B, have differing marginal costs of GHG emissions units.⁹³ Countries' marginal costs of GHG emissions reduction will differ for a variety of reasons, including age of existing industry, cleanliness of prevailing industry, level of growth, and size of aggregate national industry. For ease of example, assume that each country's marginal cost curve of emissions reduction is linear. A's marginal cost of eliminating one unit of GHG emission is \$5, and B's marginal cost of eliminating one unit is \$10. Now assume that together A and B need to abate 100 units of GHG emissions pursuant to the GHG emissions cap imposed by the prevailing international regulatory agreement. Assume also that at the outset each will abate 50 units. A's marginal cost of abating its GHG emissions share is \$2,500 and B's is \$5,000.

Now, if GHG emissions units are rights freely sold on an open market, B will recognize that it would benefit by paying A any amount less than \$5,000 for all of A's emissions units, and A would likely accept any price over \$2,500. Assuming B purchases all of A's emissions units for \$4,000, B satisfies its emissions obligations for \$4,000 rather than \$5,000. Moreover, A satisfies its obligations for \$1,000 rather than \$2,500.⁹⁴ This

90. See Ronald H. Coase, *The Problem of Social Cost*, 3 J. LAW & ECON. 1, 6-8 (1960) (initially using the example of meat versus crops, stating that in the event that a court needs to assign the right to produce between two feuding neighbors, the party to which the court assigns that right is irrelevant because the parties will negotiate for the efficient solution, "which maximizes the value of production," in the absence of transaction costs).

91. *Id.*

92. *Id.* Coase demonstrated that a party's decision whether to increase the size of a cattle herd should be based on the marginal cost of more cattle, that is, the cost of damage to a neighboring farmer caused by more cows, for example. The cattle raiser will increase the herd until the cost of adding cattle, that is the marginal cost of another cow, equals the benefit of adding that cow. *Id.* at 3.

93. Rather than analyzing each GHG separately, it is instructive for this example to visualize GHG emissions in quantifiable units. The cost of eliminating the next unit of GHG emissions is the marginal cost of eliminating that unit.

94. A has done so because it reduced its first 50 units of GHG emissions for \$2500 as planned. Because of B's purchase, A must abate another 50 units of GHG emissions, which will cost it another \$2500. Therefore, A made a profit of \$1500 because it sold its right to pollute (50

solution may be called “Pareto Superior:” all parties are better off, and no party is worse off.⁹⁵

This simple example carries more implications. Suppose A is a country with little industry and a low rate of growth, like Peru, for example. An emissions trading regime would assign Peru a certain cap on GHG emissions, and if Peru did not meet that cap because its industry was too small, then it would have left over credits. Peru could sell these credits to another country in dyer need of the right to pollute while it reforms its industry, for example, to China. This purchase would give China more time to develop cleaner industry and would provide China an incentive to do so by forcing it to internalize the external costs of its pollution. China might start investing in pollution reduction because the high cost of purchasing so many emissions credits could exceed China’s high cost of emissions reduction.

On the other side of the transaction, Peru would sell its credits at the market rate, somewhere near the marginal cost of emissions reduction of the cheapest country selling. In an ideal world, Peru could devote 100% of this revenue to investing in clean industry or some other beneficial social program to help its own development. As Peru develops industrially and socially, its development would be more environmentally friendly due to this investment. This transaction and result illustrates how emissions trading can benefit all parties economically and socially while simultaneously providing the correct levels of incentive to reduce GHG emissions. Emissions trading, done correctly, is sustainable development.

C. Proposal: Emissions Trading for Developing Countries

The key phrase is “done correctly.” Currently the developing world is largely left out of Kyoto’s emissions trading program,⁹⁶ so that any income potentially generated from the creation of the property right of the emissions credit does no good to poorer countries who need it the most. This Note proposes an emissions trading market for developing countries only. Such a program would allow the free market to address the development challenges of each developing country individually,

units) to B for \$4000. This profit partially pays for the original 50 units which A was going to abate anyway, making A’s overall satisfaction of its obligations cheaper than without the transaction.

95. JEFFREY L. HARRISON, *LAW AND ECONOMICS: CASES, MATERIALS, AND BEHAVIORAL PERSPECTIVES* 50 (2002) (“an allocation is Pareto superior if it leaves at least one person better off and no one is made worse off”). For a similar analysis of the same issue, see Driesen, *supra* note 78, at 312.

96. Kyoto Protocol, *supra* note 46, art. 17 (allowing only Annex B countries to participate in Kyoto’s emissions trading).

providing each with the efficient level of costs and incentives for development and emissions reduction.

The parties would have to structure this program with great care. Most importantly, the market created would have to minimize transaction costs as much as possible. As Coase points out, a market without transaction costs is not “a very realistic assumption.”⁹⁷ Parties have to discover who wishes to deal, to inform other parties what is offered, to conduct negotiations, to draw up the contract, and so on.⁹⁸ Transaction costs are important because they drive up the price of participating in the market.⁹⁹ Because countries will purchase emissions credits only until the point where the cost of the credit is less than or equal to the marginal cost of emissions reduction,¹⁰⁰ more expensive credits due to higher transaction costs makes it efficient for less countries to purchase emissions credits. Therefore, a lower market price due to lower transaction costs renders the cost of emissions reduction lower.

Transaction costs in today’s world of hi-tech communication could potentially be very low. The Internet could create a perfectly competitive market where buyers and sellers could post their demand for and supply of emissions credits, and see them instantaneously. Further, the participants could enter bids and, just as with current consumer bidding sites such as eBay, uBid, and Amazon.com, a competitive market price would quickly establish itself. Currently, at least one web site exists which provides some of these functions, including market prices for nitrous oxides and carbon dioxide credits.¹⁰¹

Additionally, accurate and persistent emissions monitoring is crucial to the efficient function of an emissions trading market. Failure to monitor emissions accurately would lend the program to free riding, a problem which has plagued many international agreements.¹⁰² Because governments have incentives to care about their own countries and ignore those costs to other countries, which they do not internalize, free riding has become somewhat of an institution in global environmental regulation.¹⁰³ Accurate and persistent monitoring will force countries to internalize all

97. Coase, *supra* note 90, at 15.

98. *See id.* at 15-16.

99. *Id.*

100. Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 *ECOLOGY L.Q.* 1, 7 (1991) (“A firm will control up to the point where the marginal cost of control just equals the fee.”).

101. *See* Emissions Trading Environmental Brokerage, CantorCO2e, <http://www.cantorco2e.com> (last visited June 4, 2008).

102. FERMANN, *supra* note 59, at 31.

103. *Id.*

the externalities of their GHG emissions. However, if the emissions trading program's administrative body fails to detect and record some quantity of GHG emissions, the emitter country will have less incentive to purchase emissions credits. Accordingly, the demand for emissions credits will decrease, the price per credit will drop, third party countries will experience the external costs of that GHG emission without any compensation, and overall pollution will be higher.

Moreover, the monitoring system would police the expenditure of the profit garnered from sale of emissions credits. Referring to the above example, Peru would not be free to spend its emissions credit income in any way it pleased. An executive board akin to the CDM Executive Board¹⁰⁴ would promulgate regulations for acceptable spending and would appoint commissions for regular audit and inspection. The income to poorer, developing countries would be used for investment in clean technologies and for social programs such as healthcare, education, and low-income housing. It is important not to impose Western ideals of social programs on developing countries around the globe,¹⁰⁵ so each country would submit to the executive board for approval a proposal defining the permissible uses of funds.

In addition to minimization of transaction costs and meticulous monitoring, this emissions trading program would impose an aggregate emissions cap significantly below the current level of aggregate developing country emissions.¹⁰⁶ At least one American domestic program failed to cap emissions to cause a large aggregate reduction,¹⁰⁷ which allowed businesses to drum up emissions credits simply through routine business decisions.¹⁰⁸ Additionally, failing to cap overall emissions at a substantial reduction would do little to further the goal of reducing GHG emissions. Rather, this proposal should follow the lead of the U.S. Acid Rain emissions trading program, created by amendments to the Clean Air Act in 1990.¹⁰⁹ This program capped emissions at a number representing a large reduction, and, as a result, companies have taken positive steps to

104. See COM: Executive Board, Background, available at <http://cdm.unfccc.int/EB/background.html> (last visited Mar. 10, 2008).

105. See Richman, *supra* note 49, at 154 (arguing that developed countries have created a system of economic dependence and dominance through organizations such as the World Bank and IMF whereby Western nations impose upon developing nations Western structures and values which may not properly fit the cultures and structures of those developing nations).

106. Junker, *supra* note 4, at 172.

107. Driesen, *supra* note 78, at 317.

108. *Id.* at 314.

109. *Id.* at 317.

reduce their sulfur dioxide control.¹¹⁰ This characteristic has contributed to the relative success of the program, which has encouraged industries to reduce their sulfur dioxide emissions while, at the same time, encouraging some emissions trading.¹¹¹

D. Political Advantages of an Emissions Trading Program for Developing Countries

A program such as the one proposed brings many advantages, not the least of which being the lower aggregate level of GHG emissions and the encouragement of sustainable growth, technological innovation, and social progress in poorer countries. However, given the political divide between Annex I and non-Annex I countries throughout the global environmental negotiations,¹¹² creating an emissions trading market exclusively for developing countries carries certain political benefits.

First, developing countries have formed a close and cohesive group called the G-77 that has served as their bargaining agent in environmental negotiations.¹¹³ The group has provided bargaining leverage to countries with less leverage due to the group's large size.¹¹⁴ The member countries have a vast diversity of interests. The group is composed of small island states that are most vulnerable to the rising waters caused by global warming, of oil exporting countries in South America and the Middle East who fear the impact of emissions controls, of very undeveloped countries without resources to negotiate and formulate a stance on their own, and by large developing countries with money and industry, but which, are experiencing certain growing pains.¹¹⁵ Despite their differences, however, the G-77 countries have in common the goals of tackling poverty, achieving sustainable economic development, and gaining power and

110. *Id.* Actual compliance with the program cost less than Congress anticipated, so companies have been able to reduce their sulfur dioxide emissions (the main causal agent of acid rain) without much trading. *Id.* Regardless, the low cap has forced businesses to act positively to lower their emissions. *Id.*

111. Junker, *supra* note 4, at 318.

112. *See, e.g., supra* text accompanying note 31.

113. YAMIN & DEPLEDGE, *supra* note 7, at 34-35.

114. *Id.* at 35. The G-77 "is the largest negotiating coalition in the U.N. system." *Id.* at 34. Though the name G-77 indicates a total membership of 77, the group currently has 130 members; the G-77 has retained its name for "historical significance" only. About the Group of 77, *available at* <http://www.g77.org/doc/> (last visited Mar. 10, 2008).

115. YAMIN & DEPLEDGE, *supra* note 7, at 35.

influence in a Western-dominated world.¹¹⁶ The G-77 is so strong that it has publicly split over issues only once.¹¹⁷

Though apparently cohesive, the G-77 has powerful and weaker players and, consequently, has its share of internal politics.¹¹⁸ For example, China,¹¹⁹ India, and Saudi Arabia are some of the most influential members, and have the power to sway G-77 positions one way or the other.¹²⁰ Though smaller countries may feel marginalized, they realize that it is in their best interest to agree with the group and to support its positions.¹²¹

An emissions trading market limited to developing countries would include almost exclusively G-77 member states. Some of the same things that make the G-77 strong would make the market strong. The member countries would share certain common goals of development and would see that trading effectively could facilitate those goals on all sides. Additionally, the bonds of trust and understanding formed by sitting on the same side of the bargaining table would prevail in emissions credit transactions, rather than the fear and suspicion of exploitation that would accompany an exchange with a developed country. Finally, the G-77 includes large members, such as China and India with quickly growing economies¹²² and high GHG emissions and smaller countries, such as Paraguay and Zimbabwe with slower economies¹²³ and lower GHG emissions.¹²⁴ A good supply and demand of GHG emissions credits would therefore exist, and the wealth would be distributed correctly: large, quickly developing countries would buy credits to continue their development while internalizing all of its environmental cost; and smaller developing countries would be the beneficiaries, and would have more

116. *Id.*

117. *Id.* Only seventy-two members of the G-77 joined the “Green Group,” a group advocating the Green Paper that became the basis for the Berlin Mandate, adopted by COP-1. *Id.*

118. *Id.* at 36.

119. China is not a full member of the G-77; it is an associate. *Id.* at 35. However, China works closely with the G-77 in climate change negotiations, so this Note makes no distinction between the two. *Id.* at 35.

120. YAMIN & DEPLEDGE, *supra* note 7, at 36.

121. *Id.*

122. Between 2000 and 2006, China’s GDP grew on an average 9.8% per year. ERS/USDA Data, International Macroeconomic Data Set, *available at* <http://www.ers.usda.gov/data/macro-economics/#HistoricalMacroTables> (last visited Mar. 10, 2008). India’s GDP grew on an average 6.86% during the same time period. *Id.*

123. Between 2001 and 2006, Paraguay experienced an average GDP increase of 2.18%. *Id.* During the same period, Zimbabwe actually experienced an average GDP decrease of 6.21%. *Id.*

124. In 1994, Paraguay emitted 1% of international GHG emissions, and Zimbabwe emitted just .12%. GEO Data Portal, *supra* note 14.

resources to invest in sustainable economic, social, and environmental growth.

E. Carrots and Sticks: Acceptance of Emissions Trading by the Developing World

While an emissions trading market for developing countries makes political and economic sense, global negotiations are characterized by political change and disparity of bargaining leverage. The prevailing question is then, why would the world and, especially, developing countries participate in such a program? The answer is that there are finally enough carrots and sticks outside of the benefits of the program to push developing countries to participate.

First, the primary part of the IPCC's Fourth Assessment Report was released in 2007 and finds global warming to be "unequivocal"¹²⁵ and that human activities contribute to the change.¹²⁶ Global warming has created a buzz recently, with Al Gore's Oscar-nominated film, *An Inconvenient Truth*, at the forefront of the media extravaganza, which includes frequent newspaper articles dealing global warming topics.¹²⁷ Global warming cannot be continuously ignored by large developing countries due to its prevalence on the international stage and the certainty with which it is occurring.

Second, emissions trading has become a familiar environmental option, with a wide base of academic scholarship¹²⁸ and currently existing pilot programs, both in developed and developing programs.¹²⁹ While some of its theoretical tenets are still questionable, the program has worked under certain circumstances, which may be isolated and reproduced on an international scale.¹³⁰

125. IPCC Report, *supra* note 1, at 5 ("Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.").

126. *Id.* at 3 ("The understanding of anthropogenic warming and cooling influences on climate has improved since the [Third Assessment Report] TAR, leading to *very high confidence* that the global average net effect of human activities since 1750 has been one of warming . . .").

127. See, e.g., Jim Yardley, *China Says Rich Countries Should Take Lead on Global Warming*, N.Y. TIMES, Feb. 7, 2007, at A1; Alan Murray, *How an Open Market Might Save the Planet*, WALL ST. J., Mar. 28, 2007, at A11; Elizabeth Rosenthal & Andrew Revkin, *Science Panel Says Global Warming is "Unequivocal,"* N.Y. TIMES, Feb. 3, 2007; Knickerbocker, *supra* note 26.

128. See generally Junker, *supra* note 4; TORVANGER, *supra* note 13, Richman, *supra* note 49; Wiener, *supra* note 63; Driesen, *supra* note 78.

129. See *supra* text accompanying notes 78-80.

130. See Driesen, *supra* note 78.

Finally, the Bush Administration's main reason for rejecting the Kyoto Protocol was the lack of binding emissions reduction obligations for developing countries.¹³¹ Binding developing nations to obligatory emissions reductions might help bring the United States back into multilateral emissions reductions talks, which is very important because the United States is still the world's largest GHG emitter.¹³²

F. Potential Weaknesses of an Emissions Trading Market Exclusively for Developing Countries

There are two pronounced weaknesses with the proposed scheme. The first is that, while certain GHG's can be reliably measured, others gasses are not easily quantified with precision.¹³³ Difficulty in measuring emissions would increase monitoring costs, which would make the system less efficient due to the increased incentive of free riding. However, science and technology are improving every day, and it is safe to assume that the market will encourage innovation in emissions monitoring technologies so that the market itself will become more efficient.

Second, some scholars have brought forth ethical concerns associated with creating a property "right to pollute."¹³⁴ The most compelling argument is that some pollution may cause serious harm, such as carcinogen emission.¹³⁵ This argument states that a country with a higher marginal cost of reduction may purchase credits on an open market, but it is unethical to do so if that country's pollution causes more detrimental health effects than the selling country's pollution.¹³⁶ This argument has some merit. The market takes into account relative marginal cost of reducing GHG emissions, but it ignores the human ramifications of allowing a particular country to pollute, which causes ethical concerns.

On a more philosophical level, some scholars have argued that creating a "right to pollute" is doctrinally weak and morally wrong.¹³⁷ This

131. See *supra* text accompanying note 50.

132. In 1994, the United States alone emitted fully 19.2% of the world's GHG emissions. GEO Data Portal, *supra* note 14.

133. David M. Driesen, *Choosing Environmental Instruments in a Transnational Context*, 27 *ECOLOGICAL Q.* 1, 9 (2000). See also Janey Cohen, *Emissions Trading System Under Development Would Cover Processing Industry at Minimum*, 22 *INT'L ENV'T REP. (BNA)* 257 (1999) (noting that Norway's emissions trading system excludes methane emissions because it would be difficult to accurately measure).

134. See generally Driesen, *supra* note 78, at 310.

135. *Id.*

136. *Id.*

137. See Junker, *supra* note 4, at 170.

argument posits that emissions trading is the wrong means to an end of emissions reduction.¹³⁸ Emissions trading creates the paradox of setting a goal of emissions reduction by creating a right to emit.¹³⁹ Additionally, for every right there is a corresponding duty to avoid, and if emissions reduction's goal is to further a right to a clean environment, its corresponding duty to pollute is at odds with emissions trading's fabricated property right to pollute.¹⁴⁰ This renders the right to pollute doctrinally questionable and inherently self-contradictory.

While this argument makes good points, the emissions credit is a legislatively-created property right, and legislation often modifies common law understandings to further a legislative purpose. Additionally, emissions trading is not so self-contradictory, because a country incurs the duty to avoid pollution only by selling its right to pollute. The net outcome of the scheme would be an aggregate reduction in GHG emissions, so morally its goals line up with the ethical value and right to a clean environment.

V. CONCLUSION

This Note endeavors to demonstrate that global warming is a serious threat to today's world that the international community has addressed over the last twenty years with varying success. However, as science and its corresponding certainty improve, new and better ways to reduce GHG emissions emerge. Importantly, the developing world cannot be left out of GHG emissions reform due to its current high level of emissions and to its future role in the industrial world.

An emissions trading market limited exclusively to developing countries and regulated by the international community is a market-based solution with many benefits. Such a program would allow developing countries to continue industrializing while forcing them to internalize the costs of their pollution. Those countries would then make the economically efficient determination of whether industrializing is worth the cost of GHG emission, because they would purchase emissions credits. The sellers of those credits would be poorer developing countries who would benefit tremendously from the profit made by those credit sales. This money could be used in industrial innovation to foster clean

138. *Id.* at 168-69.

139. *Id.* at 169.

140. *Id.* at 169-70.

development, and for social programs to educate and take care of their citizens.

Emissions trading for developing countries will not stop global warming by itself. However, the “other half” of the global warming problem—GHG emissions by developing countries—would finally be addressed in an efficient, fair, and equitable manner.