

Reducing Carbon Emissions Through Compensated Moratoria: Ecuador's Yasuní Initiative and Beyond

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Editors' Summary

A proposed alternative for reducing GHG emissions—paying developing countries to forego fossil fuel exploitation in tropical forests, or “compensated moratoria”—could serve an important role in future climate change regulation. Ecuador's proposal to impose a moratorium on oil exploration in the Amazon rainforest—the Yasuní-ITT Initiative—illustrates how compensated moratoria could help to improve the shortcomings of prevailing policy mechanisms for mitigating GHG emissions in developing countries. Compensated moratoria should receive serious consideration as a tool to both lower the growth of GHG emissions in developing countries and to facilitate future climate change negotiations between developed and developing countries.

For the near future, even as the severity of existing climate change impacts becomes painfully apparent, the prospects for meaningful climate change mitigation appear grim. The expiration of the Kyoto Protocol's binding emissions reductions targets in 2012 will leave a regulatory void. And political opposition to any carbon regulation in the United States will complicate the adoption of a global cap-and-trade or carbon tax regime for some time to come.¹ But recent negotiations have achieved some progress on regulatory mechanisms to mitigate greenhouse gas (GHG) emissions in developing countries, particularly through forest conservation.² Such measures do not require the same level of consensus as a comprehensive cap-and-trade program like Kyoto, and given the current policy gridlock, they deserve attention.³ This Article explores a relatively obscure, albeit straightforward, strategy for mitigating developing country emissions: paying national governments to impose moratoria on fossil fuel extraction in tropical rainforests and other sensitive environments.

Currently, Ecuador is negotiating with several countries to formalize a working model of such an agreement. The Yasuní Ishpingo Tambococha Tiputini Initiative (the Yasuní-ITT Initiative) calls for \$3.6 billion in compensation to forego oil exploitation in a sensitive area of rainforest, and according to Ecuadorian officials, several countries, mostly from the European Union, signaled their willingness to contribute substantial sums over a period of 13 years in order for an earlier version of the agreement to go

1. The Republican party's majority in the U.S. House of Representatives and almost equal footing in the U.S. Senate virtually assures the continued absence of federal carbon legislation in the United States, in light of the party's increasingly aggressive positions against any regulatory attempts to reduce carbon emissions. Indeed, many Democratic lawmakers have endorsed a “moderate” position in favor of freezing the U.S. Environmental Protection Agency's (EPA's) authority to regulate greenhouse gas (GHG) emissions from stationary sources for two years. See Jean Chemnick, *Sen. Inhofe Shapes Major GOP Bills to Fight EPA's Greenhouse Gas Regs.*, N.Y. TIMES (Jan. 28, 2011).
2. See Randal S. Abate, *REDD, White, and Blue: Is Proposed U.S. Climate Legislation Adequate to Promote a Global Carbon Credits System for Avoided Deforestation in a Post-Kyoto Regime?*, 19 TUL. J. INT'L. & COMP. L. 95 (2010).
3. Unfortunately, the urgency for action is difficult to overstate. In 2010, the atmospheric concentration of carbon dioxide (CO₂) increased by over 2 parts per million (ppm) to reach 389 ppm. By contrast, for most of human history, this measure hovered at 275 ppm. It began to change around 200 years ago, as now-developed countries began to industrialize by burning fossil fuels. Today, a broad scientific consensus advocates a rapid reduction of atmospheric CO₂ concentrations to 350 ppm, or around 450 ppm of CO₂ equivalent (CO₂eq), in order to avoid irreversible tipping points, such as the melting of the Greenland ice sheet. See, e.g., *A Safe Operating Space for Humanity*, NATURE 461, 472-75 (Sept. 24, 2009); Intergovernmental Panel on Climate Change (IPCC), Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Climate Change 2007: Mitigation 229 tbl. 3 (2007), available at <http://www.ipcc.ch/ipccreports/ar4-wg3.htm> (noting that 350 ppm CO₂ is consistent with 445 ppm CO₂eq). Yet, fossil fuel consumption, anthropogenic GHG emissions, and atmospheric CO₂ all continue to increase at an accelerated rate. Data available at <http://co2now.org/> (last visited May 28, 2011).

forward.⁴ The proposal has since gone back to the negotiation table, and its ultimate fate remains uncertain, but it nevertheless illustrates the potential benefits, and pitfalls, of paying developing countries to leave fossil fuel resources in the ground.

Market-based approaches, such as cap and trade and credit-based offset schemes, have dominated the climate change policy debate, but proposals such as the Yasuní-ITT Initiative will likely grow in importance as developing countries demand a greater emphasis on equity in mitigation strategies. As one observer has noted, “[t]he developed world is speaking the language of economics while the developing world speaks the language of justice.”⁵ To illustrate, consider the following two positions. On the one hand, the U.S. Senate refused to ratify the Kyoto Protocol in 1997 because “the exemption for Developing Country Parties is inconsistent with the need for global action on climate change and is environmentally flawed.”⁶ On the other hand, Bolivia recently demanded

full payment of the debt owed to [developing countries] by developed countries for threatening the integrity of the Earth’s climate system, for over-consuming a shared resource that belongs fairly and equally to all people, and for maintaining lifestyles that continue to threaten the lives and livelihoods of the poor majority of the planet’s population.⁷

From a political realist perspective, Bolivia’s demand may seem fatuous, but no more so than the idea that developing countries will dismiss the historic reality of climate change and agree to a regulatory regime that enacts significant costs across the board and largely preserves the status quo. From the perspective of economic theory, such a regime may promote some conventional notion of “efficiency,” but the “language of economics has obscured the distributional questions that lie at the heart of the climate-change debate.”⁸ Since the Industrial Revolution, the developing world’s contribution to climate change has grown. China now emits more GHGs than any other country. Still, industrialized countries remain the primary source of emissions:

The 80% of humanity who live in the developing world emit only 40% of atmospheric CO₂ [carbon dioxide]. The 20% who live in the developed world emit 60%. Simply put, if the developed world emitted CO₂ at the levels of

the developing world, we would not now be experiencing climate change.⁹

In recognition of this disproportional contribution of the developed countries to climate change, the United Nations Framework Convention on Climate Change (UNFCCC) adopts the principles of “common but differentiated responsibilities,”¹⁰ equity,¹¹ precaution,¹² and the right to sustainable development.¹³

These principles motivate the exclusion of developing countries from the Kyoto Protocol’s binding emissions targets, as well as the substantial transfer payments from developed to developing countries that fund “clean development” offset projects and programs to reduce emissions from deforestation and degradation (REDD). Similarly, they support calls for “compensated moratoria,” or payments to developing countries for imposing moratoria on fossil fuel exploitation. As described below, a compensated moratorium would give a developing country government sustainable development funding in exchange for the government’s pledge to forego extracting fossil fuels whose exploitation would likely occur in the absence of compensation and would threaten a sensitive environment, such as a tropical forest.

I. Compensated Moratoria: An Emerging Climate Change Policy?

A compensated moratoria policy may seem perverse, even extortionary, in its central feature of requesting payment to do nothing. But from a legal standpoint, there is no reason to suppose that the UNFCCC should support other “clean development” mechanisms and categorically exclude compensated moratoria. Moreover, from a policy perspective, paying countries *not* to take certain actions may prove to be a more cost-effective strategy for addressing developing countries demands for “climate change justice,” slowing emissions from fossil fuel consumption and, importantly, deforestation, and preserving important biological resources that climate change impacts may threaten.

Effective moratoria could take many forms, but for ease of exposition, in this Article they will refer to agreements with the following characteristics, designed to facilitate GHG emissions mitigation and promote sustainable development. First, the compensated moratorium delineates a fossil fuel or other natural resource that would likely, although not necessarily, be exploited in the absence of such an agreement. Second, the agreement targets fossil fuels whose extraction would threaten tropical forests or other biological resources of high ecological value. Third, it provides assurances that compensation payments will go

4. Roque Sevilla, *Cómo Transformar una Idea y un Ideal en una Iniciativa Práctica y Ejecutable*, in ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA 65-66 (Martínez & Acosta eds., 2010).

5. Amy Sinden, *Allocating the Costs of the Climate Crisis: Efficiency Versus Justice*, 85 WASH. L. REV. 293, 296 (May 2010).

6. S. Res. 98 (July 25, 1997), Byrd-Hagel Resolution (passed 95-0).

7. Government of Bolivia, Paper No. 8, Commitments for Annex I Parties Under Paragraph 1(b)(i) of the Bali Action Plan: Evaluating Developed Countries’ Historical Climate Debt to Developing Countries, Apr. 2009, 46-47.

8. See Sinden, *supra* note 5, at 297.

9. Graciela Chichilnisky, Foreword to JOSEPH H. VOGEL, *THE ECONOMICS OF THE YASUNÍ INITIATIVE: CLIMATE CHANGE AS IF THERMODYNAMICS MATTERED* xvi (2009).

10. UNFCCC, U.N. Doc. A/AC.237/18 (1992), reprinted in 31 I.L.M. 849 (1992), art. 3(1).

11. *Id.*

12. *Id.* art. 3(3).

13. *Id.* art. 3(4).

toward sustainable development objectives. Fourth, the agreement provides for prompt repayment of all compensation in the event that the moratorium is lifted, giving future host governments an incentive to leave the moratorium in place.

The first of these conditions resembles the “additionality” requirement for current carbon offset credit programs. Unlike GHG emissions, emissions reductions are not directly observable, but rather must be defined in reference to a hypothetical “business-as-usual” scenario. Projects that purport to offset emissions from some other source must therefore show that they achieve reductions that are additional to those that would have taken place in the absence of the project.¹⁴ For compensated moratoria, an “additionality” criterion has straightforward appeal—why pay a country to do what it would have done anyway? On the other hand, applying the criterion too rigidly creates a perverse incentive for countries to pursue more aggressive fossil fuel development strategies in order to demonstrate that exploitation of a given resource will indeed take place without some intervention. Indeed, as discussed below in Part III, an overemphasis on additionality has created an obstacle to sustainable development funding, even at the project level. For the national policies targeted by compensated moratoria, a less precise calculation of additionality may have to suffice, with historical, legal, and political conditions in the host country informing negotiations with contributors.¹⁵

Compared with the question of additionality, the rationale for targeting compensated moratoria to tropical forests is simple. According to the U.N. Intergovernmental Panel on Climate Change, reducing deforestation is the climate change mitigation option with the largest and most immediate carbon stock impact in the short term.¹⁶ Paying countries not to exploit fossil fuel resources in tropical forests thus offers the potential for double dividends that give compensated moratoria particular appeal as a GHG mitigation strategy. Similarly, the importance of these biological resources for maintaining clean water supplies,

preserving biological diversity, and protecting indigenous cultures, all support the use of compensated moratoria as an instrument of international environmental policy.

Compensated moratoria offer the potential for a triple dividend insofar as they finance sustainable development strategies. Observers have documented a “natural resources curse,” whereby the rapid influx of capital in resource-rich developing economies drives deindustrialization, corruption, and bad policy.¹⁷ Compensated moratoria can avoid this dilemma by targeting funding toward renewable energy projects, forest conservation, and other sustainable development objectives. Compensated moratoria may also operate through third-party intermediaries, such as the U.N., to reduce the potential for corruption. Compensation payments may be deposited in trust funds, which in turn finance sustainable development projects that are approved by a broad array of stakeholders. As detailed in Part II below, Ecuador’s Yasuní-ITT Initiative provides one example of such an arrangement.

Finally, compensated moratoria provide the benefit of a lasting investment to developed country contributors, provided that they take the form of conditional loans, with repayment triggered by lifting of the moratorium. Such conditionality gives future host governments an incentive to keep a moratorium in place, even if compensation payments have tapered off or ceased. Provisions for repayment of interest, or even tying repayment obligations to global carbon prices, could add pressure to maintain the moratorium. Giving contributors a property right in any fossil fuel resources that are eventually extracted could offer added assurance as well. Of course, future incentives will also depend upon the level of compensation paid by developed countries in the first place, and the value of the resources left in the ground.

To varying degrees, all of the above characteristics describe Ecuador’s proposed compensated moratorium: the Yasuní-ITT Initiative. The Yasuní-ITT Initiative would commit Ecuador to leave in place some 846 million barrels of heavy crude oil in the ITT oilfield, located within the Yasuní National Park, an area of “mega-diversity” and home to two tribal groups, the Tagaeri and Taromenane, which live in voluntary isolation.¹⁸ In exchange for not drilling, contributor governments to the Yasuní-ITT Initiative would compensate Ecuador for up to one-half of the estimated revenues that would result from oil exploitation, or \$3.6 billion over 13 years. This money would flow through a trust fund, the Yasuní Fund, administered by the U.N. Development Program (UNDP) and designated

14. See Robert Stavins, *A Meaningful U.S. Cap and Trade System to Address Climate Change*, 32 HARV. ENVTL. L. REV. 293, 322 (2008) (characterizing the “additionality problem” as the need to make “a comparison with an unobserved and fundamentally unobservable hypothetical (what would have happened had the credit not been generated)”).

15. A separate but related objection invokes fairness. Countries such as Costa Rica, which voluntarily imposed a moratorium on oil exploration in its territory in 2001, will attract less funding from a compensated moratoria mechanism precisely because they have already assumed the costs of conservation. See JOSEPH H. VOGEL, *THE ECONOMICS OF THE YASUNÍ INITIATIVE: CLIMATE CHANGE AS IF THERMODYNAMICS MATTERED* 23 (2009). No climate policy, however, can avoid issues of fairness altogether. Future REDD initiatives, for example, will likely compensate countries for their efforts on the basis of a national deforestation “baseline” that may favor countries that have protected their forest resources less. See Mark Schapiro, *Climate Change: Better REDD Than Dead*, MOTHER JONES (Nov.-Dec. 2009) (explaining that the Congo, Indonesia, and Papua New Guinea reportedly favor project-level deforestation credits because their baselines would be relatively high, while Brazil favors a national baseline approach because it has experienced relatively high rates of deforestation in recent years).

16. IPCC, *Reducing Emissions From Deforestation in Developing Countries*, http://unfccc.int/methods_and_science/lulucf/items/4123.php (last visited June 1, 2011).

17. See, e.g., Rick Van der Ploeg, *Natural Resources: Curse or Blessing?*, CESifo Working Paper Series No. 3125 (July 15, 2010), available at SSRN: <http://ssrn.com/abstract=1640462>.

18. In some respects, the Yasuní-ITT Initiative resembles “debt-for-nature swaps” that have induced many developing countries, including Ecuador, to set aside conservation easements in exchange for debt forgiveness. See Tracy C. Davis, *Breaking Ground Without Lifting a Shovel: Ecuador’s Plan to Leave Its Oil in the Ground*, 30 HOUSTON J. INT’L L. 243 (2008) (discussing the similarities and distinctions of the Yasuní-ITT Initiative and debt-for-nature swaps in Ecuador and other countries).

for renewable energy and other projects linked to sustainable development objectives.

II. The Yasuní-ITT Initiative

Billed as an “Initiative to Change History,”¹⁹ the government of Ecuador set out its plan to seek compensation for not drilling in the Yasuní National Park in 2007. In August 2010, Ecuador formalized a set of terms with the UNDP to govern the disbursement of funding received in connection with the Yasuní-ITT Initiative. Should it go forward, the Yasuní-ITT Initiative would be unprecedented and could potentially serve as a model for similar agreements. Proponents of the Yasuní-ITT Initiative have identified opportunities for other compensated moratoria in Bolivia, Brazil, Colombia, the Congo, the Dominican Republic, Indonesia, Madagascar, Malaysia, Papua New Guinea, Peru, the Philippines, and Venezuela.²⁰

A. History

Despite substantial international support, a battle has ensued over the Yasuní-ITT Initiative in Ecuador. The country’s president, Rafael Correa, has championed the cause of diversifying the country’s economy and moving to “more just and equitable paradigms of sustainable development.”²¹ Ecuador’s new Constitution, ratified in 2008, recognizes a right to a healthy environment and protections for indigenous groups, such as the Tagaeri and Taromenane.²² At the same time, President Correa’s government has sought increased petroleum infrastructure investment and opened up areas adjacent to the Yasuní National Park for new oil exploration.²³ The brief history that follows provides insight into these policy inconsistencies and generally informs the analysis of how compensated moratoria may align with broader development goals, particularly in developing countries with significant fossil fuel resources.

I. Ecuador’s Petro-Economy

Oil revenues have dominated the Ecuadorian economy for almost four decades. Efforts to extract oil from the Ecuadorian Amazon date back almost a century,²⁴ although Ecuador did not become a net oil exporter until 1972. In that year, a consortium formed by Texaco and Gulf Oil,

Inc., completed a pipeline from Ecuador’s Amazon region to the Pacific Coast.²⁵ In recent years, Ecuador’s oil reserves and production have declined,²⁶ but oil revenues remain important. In 2010, the petroleum sector accounted for about one-quarter of the nation’s gross domestic product, and more than one-half of its exports.²⁷ Between 2000 and 2007, oil revenues supplied an average 26% of the state budget.²⁸

Notably, the oil boom does not appear to have had an appreciable effect on the standard of living in Ecuador. Since the 1980s, average per capita annual growth has stagnated at around 0.7%, and recent data indicates that nearly one-half of Ecuadorians live in poverty, and 16% in extreme poverty.²⁹ Since 1980, Ecuador has fallen further behind the average among Latin American countries on the U.N. Human Development Index.³⁰ Moreover, the availability of cheap oil has led to a system of subsidies for internal oil and gas consumption whose cost has skyrocketed in recent years.³¹

As in many other countries, oil exploration has taken a heavy toll on the environment. A landmark lawsuit against Texaco (now Chevron) and its partners alleges that between 1972 and 1995, the consortium spilled 26 million gallons of crude oil and toxic wastewater into the Ecuadorian Amazon, impacting 2.5 million acres.³² By comparison, the *Exxon Valdez* oil spill is estimated to have spilled 11 million gallons. Recently, a court in Ecuador ordered Chevron to pay nearly \$9 billion in damages. The lawsuit, brought on behalf of more than 30,000 residents in the area of the spills, had sought more than \$113 billion.³³ Both

25. *Id.*

26. Average daily production of the state oil company Petroecuador has declined from 280,000 barrels in 1994 to 170,000 in 2007. *Id.* at 78.

27. Nathan Gill, *Ecuador First-Quarter GDP Expands 0.33% as Oil Revenue Slumps on “Boycott,”* BLOOMBERG.COM (June 30, 2010), <http://www.bloomberg.com/news/2010-06-30/ecuador-first-quarter-gdp-expands-0-33-as-oil-revenue-slumps-on-boycott.html> (last visited June 1, 2011); U.S. State Department, Bureau of Western Hemisphere Affairs, Background Note: Ecuador (May 24, 2010), available at <http://www.state.gov/r/pa/ei/bgn/35761.htm>.

28. Carlos Larrea, *Por qué el Ecuador Debe Mantener el Petróleo del ITT Bajo Tierra*, in ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA 78 (Martínez & Acosta eds., 2010).

29. *Id.* at 77 (citing 2006 statistics).

30. U.N. Development Program, International Human Development Indicators, Ecuador, <http://hdrstats.undp.org/en/countries/profiles/ECU.html> (showing that between 1980 and 2010, a composite index measuring Ecuadorians’ life expectancy, mean years of schooling, income per capita, inequality, poverty, gender inequality, household savings, and security improved from a weighted value of .576 to .695, while during the same time period, the average index value for Latin American countries rose from .578 to .706).

31. According to one study, between January 2005 and August 2008, the Ecuadorian government spent over \$10.8 billion to subsidize internal oil and gas products, 65% more than the total spending on both health and education. Gabriela Calderón, *El Subsidio a los Combustibles*, EL UNIVERSO (Mar. 4, 2009). In 2010, gasoline subsidies alone cost the state \$631 million. *Subsidios a Gasolinas Representó \$631 Millones*, EL UNIVERSO (Jan. 15, 2011).

32. Debra Abelowitz, *Discrimination and Cultural Genocide in the Oil Fields of Ecuador: The U.S. as a Forum for International Dispute*, 7 NEW ENG. INT’L & COMP. L. ANN. 145, 146 (2001). For an account of how oil development has affected indigenous populations in the Ecuadorian Amazon, see JOE KANE, SAVAGES (1996).

33. Simon Romero, *Ecuador Judge Orders Chevron to Pay \$9 Billion*, N.Y. TIMES (Feb. 14, 2011); see also *Chevron Acusa de Falsificar Firmas en Juicio* (Dec.

19. See Carlos Larrea, *Yasuní-ITT: An Initiative to Change History* (2010), available at http://yasuni-itt.gob.ec/wp-content/uploads/initiative_change_history_sep.pdf.

20. Yasuní-ITT Initiative, Frequently Asked Questions, <http://yasuni-itt.gob.ec/preguntas-y-respuestas/otras-propuestas-internacionales/>.

21. Yasuní-ITT Initiative Trust Fund Terms of Reference, ¶ 4 (July 28, 2010), available at <http://yasuni-itt.gob.ec/espanol/trust-fund-terms-of-reference/> [hereinafter Terms of Reference].

22. See Constitución Política de 2008, Sept. 2008, arts. 56-58.

23. See Sevilla, *supra* note 4, at 65-66.

24. Lucien J. Dhooze, *Aguinda v. ChevronTexaco: Discretionary Grounds for the Non-Recognition of Foreign Judgments for Environmental Injury in the United States*, 28 VA. ENVTL. L.J. 241, 244 (2010) (citing *Phoenix Can. Oil Co. v. Texaco, Inc.*, 658 F. Supp. 1061, 1064 (D. Del. 1987)).

sides plan to appeal. Thus far, litigation has been drawn out for almost two decades.³⁴ In the meantime, according to one epidemiological study, childhood leukemia rates in affected areas are three times the national average.³⁵

More recent oil exploration and development activities have taken their toll as well, albeit in less spectacular fashion. In 2001, a private consortium began construction of Ecuador's second pipeline from Amazon oil fields, the so-called Heavy Crude Pipeline (OCP). The pipeline's sponsors claim that after seven years of operations, the OCP serves as a model for the rest of Latin America.³⁶ But in February 2009, the OCP ruptured, spilling over one-half-million gallons of oil in the Santa Rosa River, deep within the Amazon.³⁷ And in 2008, Ecuador fined the oil consortium Repsol-YPF for failing to timely inform authorities of an oil spill in Block 16, an area on the edge of the Yasuní National Park.³⁸

2. The Pressure to Drill in Yasuní

The Yasuní National Park has not been immune from oil exploration and its impacts. In the early 1990s, Maxus Energy Corporation constructed an oil access route—the Vía Maxus—that extends 140 kilometers into the Yasuní National Park and Huaorani Ethnic Reserve. Although access control has helped to avoid the destructive settlement patterns that followed in the wake of previous roadbuilding projects in Huaorani territory, the road has nevertheless contributed to deforestation, habitat fragmentation, and overhunting of endangered species.³⁹ In 1996, the government sold exploration and drilling rights for Block 31, a relatively intact area of forest in the northwest of the Yasuní National Park. This set off a decades-long battle that recently culminated in the state-owned oil company, Petroamazonas, S.A., taking control of Block 31. Petroamazonas is currently seeking financial backing to drill in Block 31. Opponents to the drilling in Block 31 have pointed out that it would reduce the value of Ecuador's commitment not to exploit oil in the adjacent ITT oilfield, and even that drilling in Block 31 only makes sense

if the larger ITT reserves are available as well.⁴⁰ Nevertheless, exploitation of the Block 31 oil would not directly contravene the terms of the Yasuní-ITT Initiative, which are limited to the ITT field.

The ITT field lies in the easternmost portion of the Yasuní National Park. It contains an estimated 20% of Ecuador's proven oil reserves. Several companies have signaled their interest in drilling there. Shortly after Ecuador's government presented the Yasuní-ITT Initiative, the president of the country's largest state-owned oil company, Petroecuador, signed preliminary agreements with Chinese, Chilean, and Brazilian state-owned oil companies—Sinopec, Enap, and Petrobras, respectively—to develop the ITT field. The government repudiated the agreements, stating in a press release that they imply “no contractual commitment whatsoever.”⁴¹ Nevertheless, in presenting the Yasuní-ITT Initiative, the government has maintained that without sufficient compensation, “Plan B” is to develop the ITT field, with the “assistance of foreign state-owned oil companies.”⁴²

The development of both the Block 31 and ITT oil fields would cut into the heart of the Yasuní National Park, cause significant biodiversity losses, and threaten the survival of indigenous cultures.⁴³ Water pollution may represent the greatest direct environmental impact of drilling, because the production process for the relatively heavy petroleum of the ITT field would create four barrels of wastewater for every barrel of petroleum produced, much of which will inevitably end up in area rivers.⁴⁴ Oil exploration in these areas would also cause deforestation and habitat fragmentation, both directly and indirectly through colonization, and threaten the extinction of the Taromenane and Tagaeri cultures.⁴⁵

These threats have stimulated broad support for the Yasuní-ITT Initiative. The list of supporters includes several recipients of the Nobel Peace Prize, former heads of state representing a wide political spectrum, and international organizations, such as the European Union, the Organization of American States, and, rather curiously, the Organization of Petroleum Exporting Countries. The Yasuní-ITT Initiative has also attracted considerable attention from legal and policy commentators within Ecuador⁴⁶ and abroad.⁴⁷

21, 2010), available at <http://www.hoy.com.ec/noticias-ecuador/chevron-acusa-de-falsificar-firmas-en-juicio-448752.html>.

34. See Romero, *supra* note 33.

35. Anna Karin Hurtig & Miguel San Sebastian, *Incidence of Childhood Leukemia and Oil Exploitation in the Amazon Basin of Ecuador*, 10 INT'L J. OCC. & ENV. HEALTH 1021, 1023 (2004).

36. See official website, About the OCP, http://ocpecuador.com/index.php?option=com_content&view=article&id=17&Itemid=37&lang=es (last visited June 1, 2011).

37. OCP: Derrame en Santa Rosa Fue Causado por un Fenómeno Natural, HOY (Feb. 26, 2009), available at <http://www.hoy.com.ec/noticias-ecuador/ocp-derrame-en-santa-rosa-fue-causado-por-un-fenomeno-natural-335785.html>; see also Alonso Soto, *Ecuador Oil Spill Pollutes River in Amazon*, REUTERS (Feb. 26, 2009), available at <http://www.reuters.com/article/idUSN2629678120090227>.

38. Repsol, *Sancionada por Derrame*, HOY (Feb. 2, 2008), available at <http://www.hoy.com.ec/noticias-ecuador/repsol-sancionada-por-derrame-288124-288124.html>.

39. Alberto Acosta, *A Modo de Prólogo: ¿Basta a la Explotación de Petróleo en la Amazonía!*, in ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA 28 (Martínez & Acosta eds., 2010).

40. See Sevilla, *supra* note 4, at 67.

41. See Acosta, *supra* note 39, at 20 (author's translation).

42. *Id.*

43. Esperanza Martínez, *Proyecto ITT. Opción 1: Conservación de Crudo en el Suelo*, in ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA 144-45 (Martínez & Acosta eds., 2010).

44. *Id.* at 145.

45. *Id.*

46. See, e.g., ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA (Martínez & Acosta eds., 2010) (providing a compilation of nine articles and over two dozen editorials related to the Yasuní-ITT Initiative published in Ecuador between 2006 and 2010).

47. See, e.g., Eric Marx, *The Fight for Yasuní*, 330 SCI. 1170 (Nov. 26, 2010); Matt Finer et al., *Ecuador's Yasuní Biosphere Reserve: A Brief Modern History and Conservation Challenges*, 2009 ENVTL. RES. LETTERS 4 034005; Tracy C. Davis, *Breaking Ground Without Lifting a Shovel: Ecuador's Plan to Leave Its Oil in the Ground*, 30 HOUSTON J. INT'L. L. 243 (2008).

Despite this notoriety, however, the fate of the Yasuní-ITT Initiative remains uncertain. Several former Ecuadorian government officials have reported that an earlier version of the Yasuní-ITT Initiative was set to enter into force after Germany and several other countries pledged over \$1.7 billion in support.⁴⁸ But President Correa cancelled a planned signing ceremony in Copenhagen, later complaining that his negotiating team failed to adequately protect Ecuador's interests in the draft plans.⁴⁹ While Ecuadorian officials report that they still hope to receive significant contributions from Germany and other early supporters of the Yasuní-ITT Initiative, it is unclear whether these countries are inclined to invest according to the current terms of the Yasuní-ITT Initiative, as set out in the agreement with the UNDP.⁵⁰

B. *The Terms of the Yasuní-ITT Initiative*

The Terms of Reference⁵¹ governing the Yasuní-ITT Initiative Trust Fund, signed by Ecuadorian and UNDP officials in August 2010, outline the basics of Ecuador's proposal to contributor governments. The Terms of Reference establish the Yasuní ITT Trust Fund (Yasuní Fund) to be administered by the UNDP. This funding would come in exchange for "Ecuador's commitment to indefinitely refrain from extracting the 846 million barrels of heavy crude oil reserves in the ITT field, within the Yasuní National Park."⁵² The Ecuadorian government would use the Yasuní Fund to advance five separate objectives: prevention of deforestation, reforestation, renewable energy projects, social development programs within the area affected by the Yasuní ITT Initiative, and research and development related to biological resources in the area.⁵³ The specific allocation of funding for projects to advance these objectives is determined by a steering committee, which must comply with various reporting obligations designed to ensure transparency and project efficacy.⁵⁴ References to "capital fund" and "revenue fund" windows suggest that contributions may primarily fund renewable energy projects, including hydroelectric projects, whose revenues would then finance the other objectives of the Yasuní Fund, although the Terms of Reference leave the specific division between these funds uncertain.⁵⁵

The Terms of Reference give the Ecuadorian government substantial control over funding. They create a steering

committee, charged with approving specific spending programs, which would consist of six members, three of whom are designated "representatives of the Government."⁵⁶ Two representatives of donor governments and one civil society representative would also have votes on the steering committee. But in the absence of consensus, the government representatives would have authority to approve funding decisions without further support.⁵⁷ The Terms of Reference provide for all funding to flow through Ecuadorian government agencies, which may then collaborate with private nongovernmental organizations (NGOs) or firms.

The Terms of Reference build the financial architecture of the Yasuní-ITT Initiative around Yasuní Guarantee Certificates (CGYs) which "entitle the holders to be reimbursed by the Government the equivalent to the face value," if "the Government defaults on its commitment and decides to initiate oil prospecting in the Yasuní ITT oil fields."⁵⁸ They cite a goal of raising "a minimum amount of US\$ 3.6 billion in 13 years," and further specify that "contributions to the Yasuní Fund must reach a minimum threshold of US\$ 100 million by the end of 2011."⁵⁹ If this minimum threshold is not met, the government will withdraw from the Yasuní-ITT Initiative, refund donor contributions, and presumably take steps toward extracting the oil in the ITT field.

The Terms of Reference contemplate the use of CGYs in the global carbon market, although this would require significant reforms. Specifically, the Terms of Reference provide that CGYs will "include the metric tons of CO₂ avoided according to the price, at that date, of the European Union Allowances (EUAs) in the Leipzig Carbon Market."⁶⁰ The agreement goes on to explain that "if in the future the world carbon market accepts the CGYs as equivalents of Emission Permits, the Government will issue CGYs for sale to private and/or public entities in mitigating GHG emissions through avoidance of oil and gas extractions from megabiodiverse areas that are highly socially and environmentally sensitive."⁶¹

C. *A Model for Other Compensated Moratoria?*

The history of oil exploitation in Ecuador, and particularly in the Amazonia region surrounding the Yasuní National Park, suggests that in the absence of a moratorium strategy, development of the ITT oilfield may very well go forward. In this respect, the Yasuní-ITT Initiative satisfies a rough version of the "additionality" requirement that has been formulated for GHG offset credits. As indicated above, however, moratorium strategies necessarily depart from the economic logic that drives carbon offset schemes and other such policies, and the Yasuní-ITT Initiative illustrates this point. The "additionality" of the emissions reductions

48. See Sevilla, *supra* note 4, at 72.

49. See Acosta, *supra* note 39, at 28. See also Matt Finer & Pamela Martin, *The Current State of the Yasuní-ITT Initiative*, THEGLOBALIST.COM (June 25, 2010), available at <http://www.theglobalist.com/storyid.aspx?StoryId=8535>; Letter from President Correa to the German Bundestag, Oficio de la Presidencia, Feb. 4, 2010 (on file with the author).

50. See Finer & Martin, *supra* note 49.

51. Terms of Reference, *supra* note 21.

52. *Id.* ¶ 5.

53. *Id.* ¶ 8.

54. See *id.* ¶¶ 37, 38.

55. See Matt Finer & Pamela Martin, *A Look at Ecuador's Agreement to Leave 846 Million Barrels of Oil in the Ground*, MONGABAY.COM (Sept. 13, 2010), available at http://news.mongabay.com/2010/0913-yasuni_ITT_finer-martin.html.

56. Terms of Reference, *supra* note 21, ¶ 32.

57. *Id.* ¶ 36.

58. *Id.* ¶ 29.

59. *Id.* ¶ 30.

60. *Id.* ¶ 26.

61. *Id.*

caused by the Yasuní-ITT Initiative would be difficult to demonstrate. President Correa has intimated that the government will go forward with plans to develop the ITT oil fields if the Yasuní-ITT Initiative fails. But the government does not maintain this stance as an official position. Indeed, many of the Yasuní-ITT Initiative's architects and early supporters argue that Ecuador's new Constitution expressly prohibits opening up the Yasuní-protected area to oil exploration.⁶²

Moreover, measuring the carbon emissions avoided from leaving the ITT oil in the ground is problematic, since world oil markets could rely on alternative supplies and offset much of the Yasuní-ITT Initiative's effect on overall consumption, at least in the near future. Theoretically, the Yasuní-ITT Initiative could contribute to a decline in the world supply of petroleum, thereby driving up prices and thus lowering consumption and emissions. Burning the 846 million barrels of heavy crude oil in the ITT oilfield would produce 407 million tons of CO₂ emissions,⁶³ an amount that exceeds 15% of the total amount of carbon emissions for which credits have been issued under the Kyoto Protocol's Clean Development Mechanism (CDM).⁶⁴ But the Yasuní-ITT Initiative can only be projected to reduce global emissions by this amount if various assumptions regarding world oil supply and consumption are met.⁶⁵ These assumptions could fail to hold in any number of plausible scenarios. For example, the oil from the ITT field could be offset by increased shale oil production, causing a net increase in carbon emissions. This kind of uncertainty disqualifies the Yasuní-ITT Initiative under the Kyoto Protocol and most other rules from being a source of offset credits, notwithstanding the fact that the terms of the Yasuní-ITT Initiative refer to the possibility of generating such credits through the agreement.⁶⁶

The Yasuní-ITT Initiative's environmental benefits, however, would go beyond sequestering the carbon stored in the ITT oil field. The Yasuní-ITT Initiative would also reduce GHG emissions by protecting the carbon stored in 2.4 million acres of contiguous humid tropical rainforest. In doing so, it would secure one of the most biologically diverse areas left on the planet.⁶⁷ Indeed, the Yasuní

National Park's size and protected status allow it to sustain large-vertebrate species driven out of neighboring habitat, and its geography makes it well-suited to maintain rain-forest conditions in the face of climate change-induced drought that has already begun to transform large areas of the Amazon region into savannah.⁶⁸ Finally, oil exploration would threaten to exterminate the traditional culture of the Tagaeri and Taromenane.⁶⁹

The Terms of Reference of the Yasuní-ITT Initiative raise important questions regarding the rights of contributors in the event of default, how contributions to the Yasuní Fund would be used in Ecuador, and how the Yasuní-ITT Initiative might be integrated with other climate change regulation, such as offset credit programs and REDD. Language in the Terms of Reference appears to limit repayment, in the event that Ecuador's government decides to drill, to the "uncommitted balance of the capital fund window."⁷⁰ This appears to contradict other provisions in the Terms of Reference, which indicate that holders of CGYs are entitled to the face value of the certificates.

Similarly, the Terms of Reference do not make clear how much funding will be available for noncapital window projects from the outset of the Yasuní Fund's operation. Considering that any renewable energy projects will not generate revenues to feed back into the Yasuní Fund for several years, this could mean that the various other objectives cited in the Terms of Reference are relatively neglected. The Terms of Reference also leave the scope of renewable energy projects to be financed by the Yasuní Fund undefined, which casts significant uncertainty on the Yasuní-ITT Initiative's value as a GHG mitigation strategy. For example, several proposed hydroelectric facilities in Ecuador would convert large areas of rain forest into lakes, causing significant carbon emissions that would largely offset the gains of leaving the ITT field oil in the ground.⁷¹

Yasuní Fund contributions could generate offset credits by funding projects that can demonstrate additional emissions reductions through, for example, reforestation. Such linkages, however, would likely meet opposition from advocate groups, such as Oilwatch and Acción Ecológica, who have played a key role in mobilizing support for the Yasuní-ITT Initiative. Oilwatch, for example, maintains that "the strength of the Yasuní-ITT Initiative has always resided in maintaining it as a proposal outside the carbon market and REDD," programs which, according to the NGO, "neither

62. See, e.g., Acosta, *supra* note 39, at 240. In 2008, Ecuador amended its Constitution to prohibit oil drilling in protected areas. The executive, however, can sidestep this constitutional mandate by obtaining a congressional declaration that an exception would serve the national interest.

63. Fander Falconí, CON ECUADOR POR EL MUNDO: LA POLÍTICA INTERNACIONAL ECUATORIANA 165 (Quito, 2010).

64. Christina Voigt, *Is the Clean Development Mechanism Sustainable? Some Critical Aspects*, 8 SUSTAINABLE DEV. L. & POL'Y 15, 16 (2008). The total value of the global market in carbon emissions permits increased 1% in 2010 to \$120.9 billion. Global Carbon Market Value Edged Up in 2010, REUTERS (Jan. 6, 2011), available at <http://www.reuters.com/article/idUSTRE7053JC20110106>.

65. See Gerardo Honty, *La Iniciativa Yasuní-ITT y las Negociaciones Sobre el Cambio Climático*, in ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA (Martínez & Acosta eds., 2010).

66. Ecuador Yasuní—ITT Trust Fund: Terms of Reference, ¶ 26 (July 28, 2010), available at <http://www.pnud.org.ec/Noticias2010/EcuadorYasuni-ITTTrustFundTermsofReference.pdf>.

67. Margot S. Bass et al., *Global Conservation Significance of Ecuador's Yasuni National Park*, 5 PLoS ONE (2010), available at <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0008767>.

68. *Id.*

69. Esperanza Martínez, *Proyecto ITT. Opción 1: Conservación de Crudo en el Suelo*, in ITT-YASUNÍ: ENTRE EL PETRÓLEO Y LA VIDA (Martínez & Acosta eds., 2010). On May 10, 2006, the Inter-American Commission on Human Rights ordered Ecuador to adopt protective measures to safeguard the lives of the Taromenane and Tagaeri peoples after advocates brought a petition documenting killings of Taromenane by illegal loggers. See Inter-American Commission on Human Rights, *Medidas Cautelares Otorgadas por la CIDH Durante el Año 2006*, available at <http://www.cidh.org/medidas/2006.sp.htm>.

70. See Finer & Martin, *supra* note 49.

71. *Id.*

fulfill the expectations of indigenous organizations nor provide a real solution to the climate problem.”⁷²

These issues underscore the challenges of implementing a compensated moratorium policy. Commentators have warned of a worst-case scenario under which a lack of adequate specification allows Ecuador to use the Yasuní Fund to build hydroelectric facilities with huge carbon footprints, while the lack of adequate financial assurances results in exploitation of the ITT field anyway a few years down the road.⁷³ Despite this possibility, however, implementation of the Yasuní-ITT Initiative, even with significant imperfections or ambiguities, offers the potential for significant gains, as discussed further in Part IV.

III. Compensated Moratoria Compared to Existing Policy Instruments for Reducing GHG Emissions in the Developing World

Two policy instruments are at the forefront of the debate over reducing emissions in the developing world: the Kyoto Protocol’s CDM, and a renewed commitment to REDD and REDD+. The CDM has had limited success in actually ushering in “clean development,” in part because this objective does not align well with the incentives facing the private actors and organizations largely responsible for creating offset credits through the program. REDD appears more promising for achieving significant emissions reductions in the near future, however, important design elements, such as REDD’s relation to the global carbon market, have yet to be determined. This section argues that both the CDM and REDD leave significant gaps that compensated moratoria could help to fill.

A. The CDM of the Kyoto Protocol

The Kyoto Protocol to the UNFCCC has been criticized for failing to achieve greater emissions reductions at less cost, but it is also recognized as “the only game in town” in terms of a global effort needed to take meaningful action on climate change.⁷⁴ The Kyoto Protocol creates binding emissions targets for 35 Annex I industrialized countries, and establishes various market mechanisms to provide for flexibility in meeting those obligations. Annex I nations may meet their emissions reductions obligations by buying rights to pollute from other Annex I countries, by investing in reduction projects in other Annex I countries (“joint implementation”), and by purchasing offset credits generated in developing countries. This latter option is available by virtue of the CDM.⁷⁵

The CDM serves as the primary mechanism for fomenting climate change mitigation in the developing world.⁷⁶ The CDM operates on a project-level basis, allowing private firms to create offset credits known as Certified Emissions Reductions (CERs), so long as they meet certification requirements, which are governed by the CDM’s Executive Board. Unlike the emissions that they offset, emissions reductions are not directly observable, but rather must be defined in reference to a hypothetical “business-as-usual” scenario. Emissions reduction projects must therefore show that they are additional to the reductions that would take place in the hypothetical baseline scenario. The additionality requirement operates to exclude economically feasible projects under the rationale that they would go forward without carbon offset financing.⁷⁷

As of 2011, over one-half of CDM projects were located in China, followed by around 16% in India, 12% in South Korea, and 9% in Brazil.⁷⁸ As these numbers suggest, firms have concentrated offset projects in relatively well-off developing countries. This means that the poorest countries—arguably most in need of subsidies for a less carbon-intensive development path—have received little help from the CDM.⁷⁹

Under the Kyoto Protocol, CERs should advance “sustainable development,”⁸⁰ but critics charge that the “reality of CDM projects” is that they “have primarily focused on maximizing the generation of CERs instead.”⁸¹ For a variety of reasons, including the manner in which CER’s additionality is defined against a business-as-usual baseline, private investors seeking cheap, easily verifiable offset projects have not promoted projects that are likely to grow in scale and contribute meaningfully to a development path less dependent on carbon.⁸² An oft-cited example is the large share of CERs linked to disposal of a refrigerant byproduct, hydrofluorocarbon-23, a potent but relatively insignificant GHG, whose production appears to have increased to take advantage of CER sales.⁸³ In contrast, relatively few CDM projects promote alternatives to coal-fired electricity generation, one of the fastest growing sources of emissions in developing countries.⁸⁴

72. Oilwatch, Open Letter From the Oilwatch Network to German Parliamentarians (Sept. 20, 2010), available at <http://wrm.org.uy/bulletin/159/Ecuador.html>.

73. See *Finer & Martin*, *supra* note 49.

74. See *Stavins*, *supra* note 14, at 295.

75. See *Voigt*, *supra* note 64, at 18.

76. *Id.*

77. Steven Ferrey, *When 1 + 1 No Longer Equals 2: The New Math of Legal “Additionality” Controlling World and U.S. Global Warming Regulation*, 10 MINN. J. L. SCI. & TECH. 591, 594-95 (2008).

78. See UNFCCC Statistics, <http://cdm.unfccc.int/Statistics/index.html> (last visited Feb. 3, 2011).

79. See Ann E. Prouty, *The Clean Development Mechanism and Its Implications for Climate Justice*, 34 COLUM. J. ENVTL. L. 513 (2009).

80. Kyoto Protocol to the UNFCCC, U.N. Doc. FCCC/CP/1997/7/Add.1, Dec. 10, 1997 (1998), art. 12.2, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

81. See *Voigt*, *supra* note 64, at 18.

82. *Id.*

83. Steven Ferrey, *The Failure of International Global Warming Regulation to Promote Needed Renewable Energy*, 37 B.C. ENVTL. AFF. L. REV. 67, 95 (2010).

84. *Id.* at 97.

B. REDD

While afforestation and reforestation projects may generate emissions credits under the CDM, forest conservation projects are ineligible. The omission of forest conservation credits in the CDM reflects technical concerns bound up in the determination of a given project's additionality, and particularly, how to define a baseline against which to assess emissions "savings."⁸⁵ These concerns, however, have not stopped the creation of a booming, multibillion-dollar voluntary forest conservation offset market.⁸⁶

Since the Eleventh Conference of the Parties (COP 11) to the Kyoto Protocol in 2005, international climate change negotiations have formally included REDD measures.⁸⁷ More recent negotiations have established new sources of funding to compensate developing countries under REDD.⁸⁸ In particular, COP 15 in Copenhagen recognized the need for "scaled up, new and additional, predictable and adequate funding . . . to reduce emissions from deforestation and forest degradation," in developing countries, and the Copenhagen Accord specifically provides for a "collective commitment" among developed countries of \$30 billion for the period 2010-2012 toward that end.⁸⁹ This commitment was reaffirmed at COP 16 in Cancún. The form and disbursement of this and other REDD funding, however, remains uncertain and controversial. While most developing countries would prefer a transfer payment to help protect forests on a national scale, many developed country interests would like to integrate REDD into the carbon market and use forest conservation credits to offset emissions in the North.⁹⁰

IV. The Case for Compensated Moratoria as a Climate Change Mitigation Strategy

Compensated moratoria could pose several advantages to existing mechanisms for mitigating GHG emissions in developing countries. First, compensated moratoria may assign a more robust role to the state that enables scale and efficiency gains, and better protections for indigenous and other local inhabitants of the forest. Second, a compensated moratorium's conservation strategy of *not* exploiting a defined, discrete fossil fuel resource offers a measure of

simplicity and directly counters the incentives that extractive industries present to policymakers in developing countries. Third, compensated moratoria can establish funding for renewable energy projects and other sustainable development objectives that the CDM and the global carbon market have largely left by the wayside. Fourth, compensated moratoria leave open the possibility of private financing from the carbon market and associated benefits, including third-party certification, as they apply to the individual projects initiated under a sustainable development trust fund.

A. Increased Public-Sector Involvement

Formal international legal duties "are largely limited to states," and have little application to private actors and organizations.⁹¹ Yet, private actors take the leading role in programs such as the CDM, and exercise significant influence over the welfare of local people and their environment. Under the rules of the CDM, a Designated National Authority must approve payments for offset credits.⁹² Host governments, however, have little incentive to demand that projects contribute to national development objectives, since private firms may choose to operate in another country with fewer regulatory burdens.⁹³ The resulting lack of legal accountability for private actors has given rise to abuses.⁹⁴

Compensated moratoria would attach responsibility for achieving carbon reductions alongside the state's existing obligations under international law. As a result, local residents affected by moratoria and the projects they fund have well-defined avenues of redress, including before international human rights courts. For example, the Inter-American Human Rights Commission has already entered a protective order for the Taromenane and Tagaeri people, and it could provide further relief if the Yasuní-ITT Initiative were to finance harmful projects in their territory or otherwise cause a violation of their legally recognized rights.

In addition to providing protections to local people and their environment, greater involvement of national governments, stimulated by compensated moratoria agreements, could produce positive spillover effects. National governments with more of a stake in sustainable development funding have more incentive to respond to criticisms—from human rights violations to inefficient monitoring—that pose a threat to that funding. In the debate over how to spend the substantial money dedicated to REDD, most countries favor a national approach.⁹⁵ The reasons

85. See Rômulo Silveira da Rocha Sampaio, *Seeing the Forest for the Treaties: The Evolving Debates on Forest and Forestry Activities Under the Clean Development Mechanism Ten Years After the Kyoto Protocol*, 31 *FORDHAM INT'L L.J.* 634, 665-74 (2008) (outlining of the political, legal, and technical obstacles of including forestry conservation in the CDM.).

86. David Takacs, *Forest Carbon Offsets and International Law: A Deep Equity Analysis*, *GEO. INT'L L. REV.* 521, 525 (2010).

87. See Abate, *supra* note 2, at 99.

88. *Id.*

89. UNFCCC Conference of the Parties, Copenhagen, Denmark, Dec. 7-18, 2009, Copenhagen Accord, PP6, 8, 10, U.N. Doc. FCCC/CP/2009/11/Add.1 (Dec. 18, 2009).

90. See, e.g., John Vidal, *Does the Cancún Agreement Show Climate Leadership?*, *THE GUARDIAN*, Dec. 13, 2010, <http://www.guardian.co.uk/environment/2010/dec/13/climate-leadership-cancun/print> (last visited June 1, 2011).

91. See Takacs, *supra* note 86, at 567.

92. Arild Angelsen et al., Ctr. for Int'l Forestry Research, *What Is the Right Scale for REDD?*, in *MOVING AHEAD WITH REDD: ISSUES, OPTIONS, AND IMPLICATIONS* 31, 32-33 (Arild Angelsen ed., 2008), available at http://www.cifor.cgiar.org/publications/pdf_files/Books/BAngelsen0801.pdf.

93. See Takacs, *supra* note 86, at 568 (noting that among existing "forest carbon schemes, neither host country nor home country have much incentive or, in some cases, adequate power to perform international law duties").

94. See, e.g., Prouty, *supra* note 79.

95. See Angelsen, *supra* note 92, at 33.

include the ability to pursue broad and cost-effective policy reforms, consistency in monitoring, reporting, and verifying (MRV) of emissions reductions, avoidance of domestic “leakage” (whereby avoided activities, such as logging, simply transfer to a nearby area), and better integration of REDD projects with national development policies.⁹⁶ Empowering national governments to pursue a national forest conservation strategy can help to increase accountability.

Under the CDM and even voluntary markets, private firms are held accountable to some degree by institutions, such as the Executive Board, by third-party certification programs, and by reputational concerns. These factors may favor offset credits that can demonstrate local support and achievement of lasting sustainable development objectives, or at least disfavor offset credits from fraudulent projects. And this type of accountability can serve as an important complement to state regulation, especially in countries without strong records of democracy and human rights protection. Ultimately, however, governance and law enforcement capacity must grow, in no small part because of the significant role that illegal activity plays in deforestation and other sources of GHG emissions.⁹⁷ Compensated moratoria may facilitate that growth.

B. Money for Nothing? Recognizing the Opportunity Costs of Turning Down Dirty Industry

Researchers have documented a shift from poverty-driven to industry-driven deforestation in the world’s tropical forests.⁹⁸ Most developing countries have repealed policies that encourage colonization of forest lands for subsistence agriculture, and large-scale commercial farming, mining, and logging now account for most deforestation.⁹⁹ Again, much of this commercial activity occurs illegally without state approval but in many circumstances, such as that of oil exploration in the Ecuadorian Amazon, it goes on with state authorization and provides revenue for national governments. Compensated moratoria directly counter these incentives and have the advantage of simplicity.

In turn, the simplicity of compensated moratoria may help to garner public support. Environmental groups have criticized the CDM for running roughshod over the interests of indigenous peoples, labeling offset schemes

“CO₂ colonialism.”¹⁰⁰ These objections have led groups within Ecuador and other developing countries to oppose existing REDD programs. Yet, environmental and indigenous rights advocates in Ecuador and all over the world have strongly supported the Yasuní-ITT Initiative. Moreover, in polling, the Ecuadorian public has expressed support for the Yasuní-ITT Initiative, despite the government’s heavy reliance on oil revenues to fund popular social programs.¹⁰¹ More than traditional debt-for-nature swaps and other state-sponsored commitments to promote conservation and combat deforestation in countries such as Brazil, Indonesia, and Costa Rica, compensated moratoria can present development opportunities in stark terms, and in doing so, may serve an important educational role.

C. Linking Climate Change Mitigation and Sustainable Development

Effective action on climate must eventually address the rapid growth of emissions in the developing world, including in the booming coal-rich economies of China, India, and Indonesia. Near-term efforts should focus on the main sources of emissions in these countries: namely, deforestation and growing electric energy consumption. Yet, the CDM and the global carbon market have virtually ignored renewable energy,¹⁰² while combating deforestation has emerged relatively recently as a principle climate change strategy.¹⁰³ Compensated moratoria could help on both of these fronts.

Funding for renewable energy is sorely needed to keep emissions from electricity generators in check over the coming years.¹⁰⁴ Ironically, the CDM and other offset programs operate to exclude the most feasible renewable energy projects because they fail the test of “additionality.” In other words, the CDM “does not reward the obvious or cost-effective or best investments precisely because such investments are economically feasible anyway, and therefore not additional.”¹⁰⁵ As a result, the CDM has so far made “little contribution to the transition to sustainable, renewable technologies.”¹⁰⁶ In light of this deficiency, the Yasuní Fund’s orientation toward financing renewable energy projects, perhaps at the exclusion of forest conservation and other programs, makes sense, and other compensated moratoria might take a similar approach.

96. *Id.*

97. JADE SAUNDERS ET AL., PROFOREST, REDUCED EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION: LESSONS FROM A FOREST GOVERNANCE PERSPECTIVE 4 (2008), available at <http://www.proforest.net/publication-objects/REDD%20and%20Governance.pdf> (explaining that “in many countries where REDD is likely to be important illegal and uncontrolled forest exploitation is a major cause of forest loss and degradation. Unless these issues are addressed and governance capacity improved, it is unlikely that economic incentives alone will be successful.”).

98. See RHETT A. BUTLER & WILLIAM F. LAURANCE, NEW STRATEGIES FOR CONSERVING TROPICAL FORESTS, TRENDS IN ECOLOGY & EVOLUTION (2008); Thomas K. Rudel, Changing Agents of Deforestation: From State-Initiated to Enterprise Driven Processes, 1970-2000, 24 LAND USE POLICY 35-41 (2007).

99. *Id.*

100. See Takacs, *supra* note 86, at 567.

101. See Acosta, *supra* note 39, at 20.

102. See Ferrey, *supra* note 77, at 655.

103. See Abate, *supra* note 2, at 96-97.

104. According to one estimate, \$200 billion of investment over the next two decades would be needed to maintain carbon emissions from the energy sector at current levels. See Press Release, U.N. General Assembly, Private Finance Will Play Key Role in Massive Investment Needed to Shape Transitioning to Low-Carbon Economy, U.N. Doc. GA/10718 (June 9, 2008), available at <http://www.un.org/News/Press/docs/2008/ga10718.doc.htm>.

105. See Ferrey, *supra* note 77, at 654.

106. See Ferrey, *supra* note 83, at 86; see also LAMBER SCHNEIDER, ÖKO-INSTITUT, IS THE CDM FULFILLING ITS ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT OBJECTIVES? AN EVALUATION OF THE CDM AND OPTIONS FOR IMPROVEMENT 10, 47 (2007).

In the nearer term, halting or at least slowing deforestation in developing countries may offer the least painful and most effective means of reducing global carbon emissions. Estimates of deforestation's contribution to annual global carbon emissions run as high as 18%.¹⁰⁷ Recent negotiations have arguably advanced more to address this gap than any other climate policy issue in recent years, but many important specifics of the program remain undefined. Many commentators expect a post-2012 REDD regime to offer compensation for countries lowering deforestation rates below a national historical baseline.¹⁰⁸ But considerable enthusiasm also exists for the integration of project-level deforestation offset credits into the broader carbon market. Compensated moratoria, particularly those linked to a well-designed sustainable development trust fund, could be one successful hybrid structure that accommodates both these approaches. Such funds would give states latitude to pursue broad planning and conservation objectives, including a national forest management plan that qualifies for additional REDD funding. At the same time, the funds could potentially generate additional revenue through the sale of offset credits.

Finally, sustainable development cannot ignore the need for climate change adaptation, an objective that the targeting of moratoria may advance. The preservation of the Yasuní National Park serves important adaptation goals. In 2005, an Amazonian drought was termed a "one in a century event," but a more severe drought in 2010 has stimulated concern that the rainforest may be more vulnerable to rising global temperatures than previously predicted.¹⁰⁹ Climate models predict under most scenarios that the Yasuní National Park and surrounding area will remain unaffected from an increase in drought conditions forecast in the eastern Amazon. Biologists have noted that the proximity of the park to the Andes may allow for upland migration patterns with sufficient availability of protected area corridors, thus making it a potential climate change refuge for Amazonian species.¹¹⁰ Alternatively, sustainable development trust funds may serve climate change adaptation by financing programs to relocate climate change refugees, protect urban areas from flooding, respond to droughts, and increase awareness of both the need to take steps to mitigate GHG emissions and to prepare for more extreme climate change impacts.

D. Markets as a Means and Not an End

The enthusiasm for market-driven solutions to climate change is hard to overstate.¹¹¹ As a result, the CDM and similar programs will likely continue to expand and eventually formalize the use of offset credits from deforestation reduction projects, which are currently restricted to the voluntary market.¹¹² Many environmental and indigenous groups are opposed to allowing firms in industrialized countries to rely on offsets to continue with what they view as business as usual.¹¹³ In addition to concerns regarding the overall level of emissions reductions that might be achieved, the plight of many local communities living in the vicinity of carbon offset projects has galvanized advocacy groups. Indeed, stories of indigenous groups exiled from ancestral forest lands¹¹⁴ have fed claims of "CO₂ colonialism," and suggested an intractable equity dilemma in large-scale reliance on offsets.

Compensated moratoria do not eliminate this problem. However, they may help to subordinate the financial interests driving the creation of offset credits to sustain-

111. Proponents of the carbon market argue that "few environmental problems appear so well suited to trading as global climate change" because emissions have the same effect in the atmosphere, regardless of the location of the source or what time of year they are released. David Harrison Jr. et al., *Using Emissions Trading to Combat Climate Change: Programs and Key Issues*, 38 ELR 10367, 10372 (June 2008). Notably, the use of market mechanisms for addressing has many detractors, particularly with respect to cap and trade. See, e.g., Ferrey, *supra* note 77, at 649 (noting that the U.S. sulfur dioxide (SO₂) cap-and-trade program, a classic success story, involved allowance trading between just 111 discrete power-generation facilities concentrated in the Midwest, and that the success of the SO₂ regulation does not appear to have resulted from trading, which mostly occurred between power plants owned by the same company, but rather from the availability of cheap, low-sulfur coal). A GHG cap-and-trade program would entail enormous complexity. A comprehensive "upstream" cap-and-trade program for GHG emissions would involve around 2,000 entities within the United States alone. See Stavins, *supra* note 14, at 313. If regulation instead applies to "downstream" emissions sources, their number multiplies exponentially, making gaps in coverage difficult to avoid. In Europe, the European Union Emissions Trading System accounts for only 45% of emissions sources. *Id.*

112. A booming voluntary carbon market has emerged in trading centers, such as the Chicago Climate Exchange. See Howard Kenison & Jonathan P. Scoll, *Carbon Offsets From Soils and Forests—A Primer for Colorado Lawyers*, 38 COLO. LAW. 63 (Nov. 2009). If at some point after the 2012 elections the U.S. Congress succeeds in passing comprehensive climate change legislation, it will likely include provisions for using forest conservation offset credits. See Abate, *supra* note 2, at 99, arguing that the success of the EU carbon market, and the preliminary promise of voluntary carbon markets using avoided deforestation credits, offer hope that an international carbon market bolstered by the authorized use of avoided deforestation credits and the full participation of the United States could evolve in the wake of Copenhagen.

113. Groups including Earthjustice and Greenpeace criticized proposed cap-and-trade legislation in the United States on this ground. See, e.g., GREENPEACE, *THE ECONOMICS OF 2 DEGREES CELSIUS AND REDD* (May 2009), available at <http://www.greenpeace.org/raw/content/usa/press-center/reports4/the-economics-of-2-c-and-redd.pdf>.

114. See, e.g., Mark Schapiro, *GM's Money Trees*, MOTHER JONES (Nov.-Dec. 2009), available at <http://motherjones.com/environment/2009/11/gms-money-trees> (describing how an offset project to protect some 50,000 acres of tropical forest in the Cachoeira reserve in the Brazilian state of Paraná, made possible by an \$18 million grant from U.S.-based corporations General Motors, Chevron, and American Electric Power to The Nature Conservancy, has forced several residents to leave the reserve area and led to the creation of a "Green Police" that prevents basic subsistence activities); see Prouty, *supra* note 79 (describing leasing arrangement of Norwegian tree plantation owners in Uganda).

107. NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* xxv (2006), available at <http://siteresources.worldbank.org/INT/INDONESIA/Resources/226271-1170911056314/3428109-1174614780539/SternReviewEng.pdf>.

108. See SAUNDERS ET AL., *supra* note 97, at 6.

109. Richard Black, Amazon Drought "Severe" in 2010, Raising Warming Fears, BBC NEWS (Feb. 3, 2011), available at <http://www.bbc.co.uk/news/science-environment-12356835>.

110. Bass et al., *supra* note 67; see also Timothy J. Killeen & Luis A. Solórzano, *Conservation Strategies to Mitigate Impacts From Climate Change in Amazonia*, 363 PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B: BIOLOGICAL SCIENCES 1881-88 (2008).

able development objectives. Moreover, private firms may still play an important role in helping to improve governance and to build the capacity to generate viable offset credits that meet regulatory standards, such as those of the CDM's Executive Board. In this respect, independent certification programs, such as The Gold Standard, could play a particularly helpful role. The Gold Standard, one of the most prominent offset certification programs, requires a project to demonstrate how it will contribute to sustainable development on the basis of various criteria.¹¹⁵ Thus, for a fund like the Yasuní Fund to finance offset projects certified under The Gold Standard, public officials would have to identify sustainable development policies and methodologies for assessing alternatives, e.g., environmental impact assessments, which could improve governance in other areas.

V. Conclusion: Reframing the Debate

Averting the worst of climate change will require much greater action and much larger transfers of resources from the developed to the developing world than most, if any, developed countries have shown an inclination to support. This stance appears increasingly reckless, as new data reveal that prior estimates of climate change risk were likely too conservative.¹¹⁶ The IPCC's latest report indicates that humanity faces a nontrivial likelihood of a six-

degree Celsius average temperature rise, or in other words, "a planet Earth reconfigured as science fiction."¹¹⁷ Even the most economically orthodox assessment of the developed countries' self-interest would appear to support vastly more spending on an insurance policy against such an outcome. And basic concepts of fairness counsel the same. As one recent analysis maintains, approaching the problem of climate change from virtually any set of principles—whether from tort, property, or tax—yields the conclusion that for "the developed countries [to] each contribute 1% of their gross domestic product to adaptation and mitigation efforts in the developing world is quite reasonable, perhaps even a bargain."¹¹⁸

In recent years, spending on climate change mitigation from the private and public sector has continued to grow to significant levels.¹¹⁹ This spending growth will likely continue, even in the absence of a comprehensive cap-and-trade regime, as the impacts of climate change become more difficult to ignore. Thus, an objection to compensation moratoria on the grounds that they are simply too expensive should be carefully assessed, and reassessed frequently. The developing world cannot afford to pursue a less carbon-intensive development strategy without substantial support from the developed countries. Compensated moratoria bring this reality into focus, an important contribution in itself to the climate change debate.

115. The Gold Standard: Requirements 39-40 (effective June 2009), *available at* <http://www.cdmgoldstandard.org>.

116. See, e.g., Black, *supra* note 109.

117. Martin L. Weitzman, *A Review of The Stern Review on the Economics of Climate Change*, 45 J. ECON. LITERATURE 703, 716 (2008).

118. See Sinden, *supra* note 5, at 296.

119. See REUTERS, *supra* note 64.