Fordham International Law Journal

Volume 31, *Issue* 3 2007 *Article* 2

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

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Abstract

This Article focuses on the evolving debates concerning jointly implemented forest and forestry activities. More specifically, this Article focuses on forest and forestry activities under the Clean Development Mechanism ("CDM"). The 1997 Kyoto Protocol to the United Nations Framework Convention on Climate Change ("Kyoto Protocol") effectively created the project-based flexibility mechanisms that would allow for joint implementation of policies and measures under the climate change legal regime. Article 6 envisioned joint implementation (between developed countries and economies in transition), and Article 12 envisioned the CDM (between developed and developing countries). The overall objective of this Article is to identify the current political, policy, legal, and technical challenges inherent in forest and forestry activities under the CDM; provide an assessment of likely trends for upcoming commitment periods; and, finally, propose viable solutions for overcoming future obstacles that currently prevent further developments in this area of the CDM. This Article is divided into four sections. The first section will explain how forest and forestry practices were introduced into the climate change legal regime; the science supporting such inclusion; and the different definitions, legal standings, and possible approaches to dealing with the issues envisioned by the UNFCCC, the Kyoto Protocol, and the decisions of the Conferences of the Parties and Meetings of the Parties. The second section distills the legal and institutional framework specific to forest and forestry activities under the CDM from the more complex and comprehensive climate change legal regime. The third section identifies the current challenges facing forest and forestry activities under the CDM. The fourth section provides possible solutions for overcoming those challenges in view of upcoming commitment periods.

ARTICLES

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

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INTRODUCTION

The direct and formal relationship between unsustainable forestry practices and global climate change goes back at least to the late 1970s. Since the Declaration of the World Climate Conference in 1979, the international community has acknowledged that deforestation and changes in land use, such as agricultural and pastoral practices, are contributing to the increased amount of carbon dioxide ("CO_2") in the atmosphere.[1] In 1989, the Noordwijk Declaration on Atmospheric Pollution and Climatic Change recognized a growing international preoccupation with the alteration of the composition of the Earth's atmosphere due to anthropogenic activities;[2] stressed the importance of sustainable forestry, reforestation, afforestation, and conservation activi-

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1. *See* World Climate Conference, Geneva, Switz., Feb. 12-23, 1979, *Declaration of the World Climate Conference*, at 2, U.N. Doc IOC/SAB-IV/INF.3 ("[W]e can say with some confidence that the burning of fossil fuels, deforestation, and changes of land use have increased the amount of carbon dioxide in the atmosphere by about 15 percent during the last century and it is at present increasing by about 0.4 percent per year.").

2. *See* The Ministerial Conference on Atmospheric Pollution and Climatic Change, Noordwijk, Neth., Nov. 7, 1989, *The Noordwijk Declaration on Atmospheric Pollution and Climatic Change*, ¶¶ 1-3, *reprinted in Selected International Legal Materials on Global Warming and Climate Change*, 5 AM. U. J. INT'L L. & POL'Y 513, 592-601 (1990).

ties;[3] and called for a global increase in net forest growth of 12,000,000 hectares per year in the beginning of the twenty-first century.[4] Shortly after the first assessment report of the Intergovernmental Panel on Climate Change ("IPCC"), the Second World Climate Conference, held in Geneva from October 29th to November 7th, 1990, called upon the international community to take measures to increase "sinks" of greenhouse gases.[5]

This was the situation with respect to forests and forestry leading up to the 1992 United Nations Framework Convention on Climate Change ("UNFCCC"), which is the formal and fundamental pillar of the current climate change legal regime. In addition to general norms and principles, the UNFCCC laid the ground for developed countries, based on the principle of common but differentiated responsibility, to adopt in the 1997 Kyoto Protocol, binding commitments envisioning reductions and limitations on the emission of greenhouse gases. To mitigate the adverse impacts of commitments to limiting and reducing emissions, the UNFCCC allowed the parties to implement policies and measures domestically and/or jointly.

This Article focuses on the evolving debates concerning jointly implemented forest and forestry activities. More specifically, this Article focuses on forest and forestry activities under the Clean Development Mechanism ("CDM"). The 1997 Kyoto Protocol to the UNFCCC ("Kyoto Protocol") effectively created the project-based flexibility mechanisms that would allow for joint implementation of policies and measures under the climate change legal regime. Article 6 envisioned joint implementation (between developed countries and economies in transition), and Article 12 envisioned the CDM (between developed and developing countries). The overall objective of this Article is to identify the current political, policy, legal, and technical challenges inherent in forest and forestry activities under the CDM; provide an assessment of likely trends for upcoming commitment periods; and, finally, propose viable solutions for overcoming future obstacles that currently prevent further developments in this area of the CDM.

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3. *See id.* ¶ 9.

4. *See id.* ¶ 21.

5. *See* Climate Change Fact Sheet 221, http://unfccc.int/resource/ccsites/senegal/fact/fs221.htm (last visited Oct. 14, 2007).

This Article is divided into four sections. The first section will explain how forest and forestry practices were introduced into the climate change legal regime; the science supporting such inclusion; and the different definitions, legal standings, and possible approaches to dealing with the issues envisioned by the UNFCCC, the Kyoto Protocol, and the decisions of the Conferences of the Parties and Meetings of the Parties. The second section distills the legal and institutional framework specific to forest and forestry activities under the CDM from the more complex and comprehensive climate change legal regime. The third section identifies the current challenges facing forest and forestry activities under the CDM. The fourth section provides possible solutions for overcoming those challenges in view of upcoming commitment periods.

I. *THE INTRODUCTION OF FOREST AND FORESTRY ACTIVITIES INTO THE CLIMATE CHANGE LEGAL REGIME*

The UNFCCC, the formal and fundamental multilateral international agreement in the climate change legal regime, was adopted in New York on May 9th, 1992, and fully launched during the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, often called "The Earth Summit."[6] The UNFCCC expressly recognizes the role and importance of "sinks" and "reservoirs" of greenhouse gases in mitigating global warming.[7]

According to the UNFCCC's handbook, "[a] sink is a process, activity or mechanism that removes [greenhouse gases] from the atmosphere; a reservoir is part of the climate system that enables a [greenhouse gas] to be stored."[8] The characterization of forestry and forest activities as types of sinks and reservoirs of CO_2 was established by scientific studies[9] that, in turn,

6. *See* CLIMATE CHANGE SECRETARIAT, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE ("UNFCCC"), UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE HANDBOOK 19 (2006), *available at* http://unfccc.int/resource/docs/publications/handbook.pdf [hereinafter UNFCCC HANDBOOK].

7. *See* United Nations Framework Convention on Climate Change, pmbl., May 9, 1992, 1771 U.N.T.S. 107 [hereinafter UNFCCC].

8. UNFCCC HANDBOOK, *supra* note 6, at 24.

9. *See* SEBASTIAN OBERTHÜR & HERMANN E. OTT, THE KYOTO PROTOCOL: INTERNATIONAL CLIMATE POLICY FOR THE 21ST CENTURY 9, 131-32 (1999) (describing the science underpinning the relationship between forests and CO_2 in the atmosphere).

inspired the climate change legal regime.[10] Although the UNFCCC makes some general references to promoting the enhancement of forests, sinks, and reservoirs of greenhouse gases,[11] the term "forestry" appears only once in the UNFCCC,[12] and no legal definition is provided.[13]

A. *The Science Linking Forest and Forestry Activities to the Climate Change Legal Regime: "Sinks," "Reservoirs" and "Sources" of CO_2*

Of the six greenhouse gases recognized by the climate change legal regime,[14] CO_2 is the most important.[15] Indeed, CO_2 is the parameter for measuring other greenhouse gas emissions.[16] The relationship between forests and CO_2 in the atmosphere is characterized by forests' ability to absorb CO_2, store CO_2, and offset other greenhouse gas emissions.[17]

Growing forests and plants, through photosynthesis, have enormous carbon sequestration capabilities. Long established old-growth and mature forests can store significant amounts of carbon for long periods of time.[18] Nonetheless, when disturbed,

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10. *See* UNFCCC, *supra* note 7, art. 4(1)(d) (setting forth biomass, forests, oceans, and other terrestrial, coastal, and marine ecosystems as examples of sinks and reservoirs of greenhouse gases).

11. *See, e.g., id.*

12. *See id.* art. 4(1)(c).

13. *See* Imke Sagemüller, *Forest Sinks Under the United Nations Framework Convention on Climate Change and the Kyoto Protocol: Opportunity or Risk for Biodiversity?*, 31 COLUM. J. ENVTL. L. 189, 201 (2006) (explaining that "[a]s a framework convention, the UNFCCC includes only few broad references to the removal of [greenhouse gases] by sinks").

14. *See* Kyoto Protocol to the United Nations Framework Convention on Climate Change, Annex A, Dec. 10, 1997, 37 I.L.M. 22 [hereinafter Kyoto Protocol] (listing carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6) as greenhouse gases).

15. *See* S. Brown et al., *Issues and Challenges for Forest-Based Carbon-Offset Projects: A Case Study of the Noel Kempff Climate Action Project in Bolivia*, 5 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 99, 99 (2000).

16. *See* Kyoto Protocol, *supra* note 14, art. 5(3); DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 599 (2d ed. 2002) ("Not all greenhouse gases are created equal; different gases have different 'global warming potentials' ("GWPs"). The technical definition of global warming potentials is the cumulative radiative forcing between the present and some chosen time horizon caused by a unit mass of gas emitted now, expressed relative to that for some reference gas, typically CO_2.").

17. *See* Pedro Moura Costa & Charlie Wilson, *An Equivalence Factor Between CO_2 Avoided Emissions and Sequestration—Description and Applications in Forestry*, 5 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 51, 51 (2000).

18. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE ("IPCC"), IPCC SPECIAL

forests no longer play a role in mitigating global warming; rather, they become part of the problem because they turn into a considerable source of CO_2.[19] Forests will act as sources of CO_2 when the ecosystem's capacity to uptake carbon is limited; when the rate of photosynthesis no longer rises with the concentration of CO_2; or when anthropogenic or natural factors cause ecosystem degradation.[20] According to the UNFCCC, a "source" is "any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere."[21]

In a reflection of this common scientific understanding, the UNFCCC embraced the role of forest conservation practices and called upon all parties to promote, and cooperate in the enhancement of sinks and reservoirs[22] while respecting the principle of common but differentiated responsibility.[23]

B. *The Legal Status of Forests and Forestry Activities in the Climate Change Legal Regime*

The definitions relevant to the legal status of forests and forestry that gave legal support for activities under the climate change legal regime experienced two distinct phases. The first

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REPORT: LAND USE, LAND-USE CHANGE, AND FORESTRY ("LULUCF")—SUMMARY FOR POLICYMAKERS 4 (2000), *available at* http://www.ipcc.ch/pub/srlulucf-e.pdf [hereinafter IPCC SPECIAL REPORT ON LULUCF] ("Newly planted or regenerating forests, in the absence of major disturbances, will continue to uptake carbon for 20 to 50 years or more after establishment, depending on species and site conditions, though quantitative projections beyond a few decades are uncertain."); Hawk Jia, *Old-Growth Forests are "Key Carbon Sinks"*, SCIDEV.NET, Dec. 1, 2006, http://www.scidev.net/content/news/eng/old-growth-forests-are-key-carbon-sinks.cfm (citing a recent study showing that a 400-year-old forest in southern China soaks up carbon significantly faster than expected).

19. *See* KENNETH L. ROSENBAUM ET AL., FOOD & AGRICULTURE ORGANIZATION OF THE U.N., CLIMATE CHANGE AND THE FOREST FACTORS: POSSIBLE NATIONAL AND SUBNATIONAL LEGISLATION 2 (2004), *available at* ftp://ftp.fao.org/docrep/fao/007/y5647e/y5647e00.pdf ("Actively growing trees and other plants capture CO_2 from the atmosphere, combine it with water through photosynthesis and create sugars and more stable carbohydrates. They may store a significant part of the carbon absorbed for appreciable lengths of time, from years to millennia . . . . Eventually, when plants and animals die, CO_2 returns to the atmosphere. When wood products and other organic materials burn or decompose, they also release CO_2.").

20. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 4.

21. UNFCCC, *supra* note 7, art. 1(9).

22. *See id.* art. 4(1)(d).

23. *See id.* art. 3(1). *See generally* PHILIPE SANDS, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 285-89 (2d ed. 2003) (discussing, in detail, the principle of common but differentiated responsibility).

phase was characterized by the generic concepts of sink, reservoir, and source provided by the UNFCCC. The second phase is characterized by the more precise and specific notions of these terms provided by the Kyoto Protocol and subsequent Conferences and Meetings of the Parties.[24]

1. The Legal Status of Forests and Forestry Activities under the UNFCCC

The UNFCCC's broad definitions for the terms sink,[25] reservoir,[26] and source[27] subsumed the concepts of forest and forestry; and as a result, they supported forestry project activities during the Activities Implemented Jointly ("AIJ") Pilot Phase.[28] The primary concern during the negotiations at the first session of the Conference of the Parties ("COP-1") in 1995 and the two subsequent sessions of the Conference of the Parties in 1996 and 1997 ("COP-2" and "COP-3," respectively) was defining quantified emissions reductions and limitations for developed countries.[29] Forest and forestry activities were primarily a cost-effective way to make emissions reductions and limitations commit-

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24. For a discussion of the importance of developing clear definitions for terms such as "forests," "afforestation," "reforestation," and "deforestation," see Robert T. Watson & David J. Verardo, *Preface* to IPCC SPECIAL REPORT ON LULUCF, *supra* note 18.

25. *See* UNFCCC, *supra* note 7, art. 1(8) ("'Sink' means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.").

26. *See id.* art. 1(7) ("'Reservoir' means a component or components of the climate system where a greenhouse gas or a precursor of greenhouse gas is stored.").

27. *See id.* art. 1(9) ("'Source' means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.").

28. *See* Conference of the Parties to the Kyoto Protocol, Berlin, F.R.G., Mar. 28-Apr. 7, 1995, *Report of the Conference of the Parties on its First Session—Part Two: Action Taken by the Conference of the Parties at its First Session*, Decision 5/CP.1, ¶ 1(b), U.N. Doc FCCC/CP/1995/7/Add.1 (June 6, 1995) [hereinafter *COP-1 Report—Part Two*] ("[A]ctivities implemented jointly should be compatible with and supportive of national environment and development priorities and strategies, contribute to cost-effectiveness in achieving global benefits and could be conducted in a comprehensive manner covering all relevant sources, sinks and reservoirs of greenhouse gases . . . .").

29. *See* Dean Anderson, *Rapporteur's Report of Workshop Presentations and Discussions*, *in* THE EMERGING INTERNATIONAL REGIME FOR CLIMATE CHANGE: STRUCTURES AND OPTIONS AFTER BERLIN 7, 7 (Michael Grubb & Dean Anderson eds., 1995) (stating that the Berlin Mandate, which refers to the outcome of the first session of the Conference of the Parties, "calls for a process to begin to strengthen commitments beyond 2000. This process should lead the industrialized world to 'elaborate policies and measures,' and to 'set quantified limitation and reduction objectives within specified time-frames, such as 2005, 2010 and 2020, for their anthropogenic emissions.' Negotiations are to be completed by early 1997 in order that the results can be adopted at 'COP-3' . . . . The

ments feasible in the short term;[30] and as a result, they became an important negotiating tool for the imposition of cap commitments upon developed countries.[31]

It was only during the fourth session of the Conference of the Parties ("COP-4"), which occurred almost seven years after the UNFCCC was promulgated, that a more specific legal regime for land-use, land-use change, and forestry ("LULUCF") began to emerge.[32]

Legally, though, at least until the Kyoto Protocol, Article 4(1)(d) of the UNFCCC provided the formal connection between forests and forestry and sinks and reservoirs. This provision called on all Parties to promote the enhancement of sinks and reservoirs of greenhouse gases, including forests.

On the one hand, such broad definitions allowed the legal status of forestry and forests to be easily inferred. Forests could be equated to sinks and reservoirs. On the other hand, because forests can also emit CO_2 when disturbed, they could also be deemed sources of greenhouse gases under the UNFCCC.[33]

For practical purposes, this means that whenever the climate change legal regime refers to enhancement, promotion, and sustainable management of sinks and reservoirs, and calls for action to address anthropogenic emissions by sources, it is including forests and forestry activities.[34] This is important because the broadness of the definitions relating to forests and for-

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expectation is that a protocol or other legal agreement will be negotiated at COP-3 defining emission constraints for Annex 1 Parties potentially up to the year 2020.").

30. *See* Joel N. Swisher, *Joint Implementation Under the U.N. Framework Convention on Climate Change: Technical and Institutional Challenges*, 2 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 57, 60 (1997) (noting that "there are low-cost opportunities for carbon storage in the forestry sector").

31. *See id.* at 58 (stating that "to expect Annex I countries to implement too large a share of the emission reductions could be physically or technically infeasible and would likely be inefficient").

32. *See* Conference of the Parties to the Kyoto Protocol, Buenos Aires, Arg., Nov. 2-14, 1998, *Report of the Conference of the Parties on its Fourth Session—Part Two: Action Taken by the Conference of the Parties at its Fourth Session*, Decision 9/CP.4, U.N. Doc FCCC/CP/1998/16/Add.1 (Jan. 25, 1999) (addressing LULUCF specifically).

33. *See* UNFCCC, *supra* note 7, art. 1(9) ("'Source' means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere."); Lavanya Rajamani, *Re-Negotiating Kyoto: A Review of the Sixth Conference of the Parties to the Framework Convention on Climate Change*, COLO. J. INT'L ENVTL. L. & POL'Y, 2000 Yearbook, at 201, 207 ("Forests can be sources, sinks, or reservoirs of [greenhouse gases].").

34. *See generally* OBERTHÜR & OTT, *supra* note 9, at 131-32 (discussing the term

estry in the period leading up to the Kyoto Protocol was conducive to there being no limitation on the activities that could be implemented under the AIJ Pilot Phase.[35] For this reason, forest and forestry project activities during the AIJ Pilot Phase included afforestation, reforestation, conservation practices, and sustainable forest management.[36]

2. The Legal Status of Forests and Forestry Activities under the Kyoto Protocol and Subsequent Sessions of the Conference and Meeting of the Parties

After the Kyoto Protocol expressly embraced forest and forestry practices and narrowed the UNFCCC's broad definitions of sinks, reservoirs, and sources of CO_2,[37] negotiators faced the need to create a specific legal regime that could reconcile the interests of parties supporting such activities with the interests of parties opposing them.[38] With the scientific support provided by the IPCC[39] and the Food and Agriculture Organization ("FAO"),[40] and the technical expertise of the Subsidiary Body for Scientific and Technological Advice ("SBSTA"),[41] negotiators

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"sink" and highlighting that "[i]n general, forests have the highest sink potential, depending, however, on age and condition of the forest").

35. *See COP-1 Report—Part Two, supra* note 28, Decision 5/CP.1, ¶ 1(b) (deciding that activities implemented jointly "could be conducted in a comprehensive manner covering all relevant sources, sinks and reservoirs of greenhouse gases").

36. *See* Conference of the Parties to the Kyoto Protocol, Geneva, Switz., Jul. 8-19, 1996, *Review of the Implementation of the Convention and of Decisions of the First Session of the Conference of the Parties—Activities Implemented Jointly: Annual Review of Progress Under the Pilot Phase*, ¶ 13, U.N. Doc FCCC/CP/1996/14 (June 4, 1996) (reporting that there are five ongoing projects in forest preservation, restoration, or reforestation and four in afforestation).

37. *See* Kyoto Protocol, *supra* note 14, art. 3(3)-(4).

38. *See* FARHANA YAMIN & JOANNA DEPLEDGE, THE INTERNATIONAL CLIMATE CHANGE REGIME: A GUIDE TO RULES, INSTITUTIONS AND PROCEDURES 123 (2004) ("The technical complexity, and high political stakes, of sinks issues contributed significantly to the breakdown of negotiations at The Hague at COP-6 part I.").

39. *See* Conference of the Parties to the Kyoto Protocol, The Hague, Neth., Nov. 13-25, 2000, *Report of the Conference of the Parties on the First Part of its Sixth Session—Part Two: Action Taken by the Conference of the Parties at the First Part of its Sixth Session*, Decision 1/CP.6 Annex, Note by the President of the Conference of the Parties at its sixth session, dated 23 November 2000, Box C, U.N. Doc FCCC/CP/2000/5/Add.2 (Apr. 4, 2001) ("Parties decide that for defining afforestation, reforestation and deforestation [forestry activities] the set of IPCC definitions shall be applied.").

40. *See id.* ("Parties agree that for the implementation of Article 3.3 [of the Kyoto Protocol], "forest" is defined in accordance with the Food and Agriculture Organization ("FAO") definition.").

41. *See* Michael Grubb, *The Outcome of the Berlin Conference*, *in* THE EMERGING INTER-

began shaping a more specific legal regime for addressing LULUCF.[42]

The idea behind the more specific legal regime was to make the UNFCCC's ultimate objective feasible by allowing developed countries to offset part of their emissions commitments through the joint implementation of project-based practices under flexibility mechanisms[43] and the promotion and enhancement of sinks and reservoirs of greenhouse gases domestically.[44]

Articles 3(3) and 3(4) of the Kyoto Protocol mark the beginning of a specific regulatory regime aimed at dealing with LULUCF activities. The first decision to advance the mandate established by the aforementioned provisions was Decision 9/CP.4 of COP-4 in 1999. At first, the Parties opted for limiting LULUCF activities to afforestation, reforestation, and deforestation practices[45] while providing enough flexibility to allow for the inclusion of additional activities.[46]

NATIONAL REGIME FOR CLIMATE CHANGE: STRUCTURES AND OPTIONS AFTER BERLIN, *supra* note 30, at 1, 2 (explaining that the Subsidiary Body for Scientific and Technological Advice ("SBSTA") is "the main interlocutor between the scientific world and the [UNFCCC] process" and noting that the SBSTA is different from the IPCC).

42. *See* OBERTHÜR & OTT, *supra* note 9, at 132 (suggesting that the issue of sinks was problematic in that there was little information available for the purposes of making a decision).

43. *See* Anita M. Halvorssen, *The Kyoto Protocol and Developing Countries—The Clean Development Mechanism*, 16 COLO. J. INT'L ENVTL. L. & POL'Y 353, 363 (2005) ("The Kyoto Protocol introduced three market-based, flexible mechanisms that enable Annex I Parties to meet part of their emission reduction commitments in a more cost effective manner. These mechanisms, also referred to as Kyoto Mechanisms, include emissions trading, joint implementation, and . . . clean development mechanism ("CDM"). The idea behind these mechanisms is that the cost of limiting emissions will differ from one region to another, yet the benefit for the atmosphere is the same, regardless of where the action is taken.").

44. *See* Mathew Vespa, *Climate Change 2001: Kyoto at Bonn and Marrakech*, 29 ECOLOGY L.Q. 395, 409 (2002) (distinguishing domestic application of LULUCF from LULUCF in the CDM).

45. *See* Kyoto Protocol, *supra* note 14, art. 3(3) ("The net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation . . . ."). Deforestation, when characterized as a LULUCF activity, refers to the practice of preventing or reducing deforestation. It also means, for developed countries only, accountability for CO_2 emissions as a result of deforestation practices domestically. *See* Pedro Moura-Costa & Marc D. Stuart, *Forestry-Based Greenhouse Gas Mitigation: A Short Story of Market Evolution*, 77 COMMONWEALTH FORESTRY REV. 191, 192 (1998).

46. *See* Kyoto Protocol, *supra* note 14, art. 3(4) ("The Conference of the Parties serving as the Meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emis-

Afforestation and reforestation are both defined as the human-induced conversion of non-forested areas into forested land,[47] but they differ slightly: the definition of afforrestation presupposes that the converted area has not been forested for at least fifty years,[48] while reforestation is limited to the conversion of non-forested areas that were not forested on December 31, 1989.[49]

Amidst intense political debate over conflicting interests,[50] the Parties agreed upon additional activities at the seventh session of the Conference of the Parties ("COP-7") in Marrakesh.[51] Revegetation, forest management, cropland management, and grazing land management were added as domestically conducted activities but excluded as jointly implemented activities.[52]

The definitions of activities under the newly established LULUCF legal regime, although broad in nature,[53] were useful operational guidance on handling this form of accountability under the UNFCCC. Decision 16/CMP.1 of COP/MOP-1 provided definitions for the terms "forest," "afforestation," "reforestation," "deforestation," "revegetation," "forest management," "cropland management," and "grazing land management."[54]

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sions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I . . . .").

47. *See* Conference of the Parties to the Kyoto Protocol, Marrakesh, Morocco, Oct. 29-Nov. 10, 2001, *Report of the Conference of the Parties on its Seventh Session—Part Two: Action Taken by the Conference of the Parties (Volume I)*, Decision 11/CP.7 Annex, ¶ 1(b)-(c), U.N. Doc FCCC/CP/2001/13/Add.1 (Jan. 21, 2002) [hereinafter *COP-7 Report—Part Two (Volume I)*].

48. *See id.* ¶ 1(b).

49. *See id.* ¶ 1(c).

50. *See* Rajamani, *supra* note 33, at 223 ("At COP-6, the Umbrella Group argued in favor of including additional activities in the first commitment period. However, the [Alliance of Small Island States ("AOSIS")] and the [European Union ("EU")] opposed it.").

51. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7.

52. *See* Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol, Montreal, Can., Nov. 28-Dec. 10, 2005, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session—Part Two: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties at its First Session*, Decision 16/CMP.1 Annex, ¶ 6, U.N. Doc FCCC/KP/CMP/2005/8/Add.3 (Mar. 30, 2006) [hereinafter *COP/MOP-1 Report—Part Two*].

53. *See* Sagemüller, *supra* note 13, at 203 (describing the definition of deforestation in the Marrakesh Accords as broad).

54. *See COP/MOP-1 Report—Part Two*, *supra* note 52, Decision 16/CMP.1 Annex, ¶ 1.

C. *The Two Different Approaches to Accounting for Forests and Forestry Activities*

Since developed countries were concerned that relying solely on domestic measures to comply with greenhouse gas emission reduction commitments could damage their national economies, the Kyoto Protocol envisioned accountability through market-based flexibility mechanisms: emissions trading, joint implementation, and the CDM.[55] As a result, countries could pursue two possible approaches. Countries could account for LULUCF domestically and/or participate in afforestation and reforestation activities abroad.

1. Accounting for LULUCF Domestically

For some countries, accounting for LULUCF domestically could offset up to ten percent of national gross emissions. For others, due to demographics and land-use patterns, sequestration potentials from enhancement of sinks are limited.[56] As a consequence, at the Kyoto Protocol negotiations, accounting for LULUCF activities was a contentious issue that divided the Parties considerably and impaired the Parties' progress towards a common and satisfactory agreement.[57]

Through Decision 11/CP.7 of COP-7, the Parties addressed some of their previous concerns and requested that the SBSTA and IPCC develop, and elaborate on, guidelines, monitoring, and reporting methodologies.[58] Following the Parties' request, the IPCC issued the following reports: *Good Practice Guidance for Land Use, Land-Use Change and Forestry*[59] and *Definitions and Meth-*

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55. *See generally* Tim Jackson et al., *The Language of Flexibility: Operational forms of Joint Implementation, in* FLEXIBILITY IN CLIMATE POLICY: MAKING THE KYOTO MECHANISMS WORK 16, 22-26 (Tim Jackson et al. eds., 2001) (discussing the flexibility mechanisms of the Kyoto Protocol).

56. *See* G. CORNELIS VAN KOOTEN, CLIMATE CHANGE ECONOMICS: WHY INTERNATIONAL ACCORDS FAIL 74 (2004) ("Canada can claim 12 Mt C per year, the Russian Federation 33 Mt C, Japan 13 Mt C, and other countries much lesser amounts—Germany 1.24 Mt C, Ukraine 1.11 Mt C, and remaining countries less than 1.0 Mt C. Japan expects to use forestry activities to meet a significant proportion of its [Kyoto Protocol] obligation, while Canada can use forest management alone to achieve about one-fifth of its emissions reduction targets.").

57. *See* MICHAEL GRUBB ET AL., THE KYOTO PROTOCOL: A GUIDE AND ASSESSMENT 79 (1999).

58. *See COP-7 Report—Part Two (Volume I), supra* note 47, Decision 11/CP.7, ¶¶ 2-3.

59. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GOOD PRACTICE GUIDANCE FOR LAND USE, LAND-USE CHANGE AND FORESTRY (Jim Penman et al. eds., 2003), *available*

odological Options to Inventory Emissions from Direct Human-Induced Degradation of Forests and Devegetation of Other Vegetation Types.[60] The IPCC's work and the SBSTA's advice were based on the general principles governing accountability for LULUCF activities undertaken domestically by Annex I countries.[61]

Under this framework regulatory regime, which governs LULUCF accountability for the first commitment period,[62] a selected domestic forestry activity can result in the augmentation or the diminution of an Annex I Party's assigned amount.[63] The result depends on whether the practice constitutes a net sink or a net source of greenhouse gases.[64] Practices that are net sinks of greenhouse gases will increase the assigned amount, while practices that are net sources of greenhouse gases will decrease the assigned amount.[65] Accountable forestry activities include afforestation, reforestation, deforestation, revegetation, forest, cropland, and grazing land management.[66]

"Credits," which are awarded for any domestic improvement using one or more of the above-mentioned forestry activities, increase a Party's assigned amount for the first commitment period.[67] This is only true, though, if the party makes a timely formal identification of the activities in its annual report[68] and the party demonstrates that the chosen activities have occurred since 1990 and are human-induced.[69] On the other hand, whenever verifiable human-induced changes in land use and forestry result

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at http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm [hereinafter GOOD PRACTICE GUIDANCE FOR LULUCF].

60. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, DEFINITIONS AND METHODOLOGICAL OPTIONS TO INVENTORY EMISSIONS FROM DIRECT HUMAN-INDUCED DEGRADATION OF FORESTS AND DEVEGETATION OF OTHER VEGETATION TYPES (Jim Penman et al. eds., 2003), *available at* http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/degradation.htm.

61. *See COP/MOP-1 Report—Part Two, supra* note 52, Decision 16/CMP.1 Annex, ¶ 17.

62. *See* Kyoto Protocol, *supra* note 14, art. 3(7) (establishing the first commitment period from 2008-2012, within which Annex I Parties will have to meet their quantified limitation and reduction objectives set forth in Annex B to the Kyoto Protocol).

63. *See COP/MOP-1 Report—Part Two, supra* note 52, Decision 16/CMP.1 Annex, ¶ 17.

64. *See id.*

65. *See id.*

66. *See id.* ¶ 6.

67. *See id.* ¶ 17.

68. *See id.* ¶ 7.

69. *See id.* ¶ 8.

in a net emission of greenhouse gas, an Annex I Party's assigned amount is decreased.[70]

Greenhouse gas estimates of anthropogenic emissions by sources and removals by sinks are based on the annual national inventories and communications mandated by the UNFCCC[71] and the national estimation systems the Kyoto Protocol requires of Annex I Parties.[72] The information provided is used to establish assigned amounts.[73] Limitations, measured in metric tons of CO_2 per year, are imposed on the augmentation and diminution of each Annex I Party's assigned amount for domestic LULUCF activities.[74]

2. Accounting for Forestry Activities under Project-Based Flexibility Mechanisms in the Kyoto Protocol

Annex I Parties can claim credits against their assigned amounts for forestry project activities implemented jointly with another Annex I Party (joint implementation)[75] or with a non-Annex I Party (CDM).[76] The origin of joint projects can be traced back to the text of the UNFCCC,[77] which contemplates the possibility of Annex I Parties implementing policies and

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70. *See id.* ¶ 17; *see also* VAN KOOTEN, *supra* note 56, at 74 ("Afforestation and reforestation result in a credit, while deforestation (human-induced conversion of forestland to non-forest use) results in a debit. Since most countries have not embarked on large-scale afforestation and/or reforestation projects in the past decade, harvesting trees during the five-year commitment period (2008-12) will cause them to have a debit on the ARD account . . . . If there is no ARD debit, then a country cannot claim the credit.").

71. *See* Halvorssen, *supra* note 43, at 360 ("[T]he UNFCCC required all Parties to develop inventories of anthropogenic emissions and measures to mitigate climate change. Furthermore, the UNFCCC also obligated all Parties to produce a report on action they have taken to implement the UNFCCC, called 'national communications.' To fulfill their reporting obligations, Annex I Parties were given six months from the entry into force of the UNFCCC to submit their reports, while non-Annex I Parties (developing countries) were given three years and the least developed States were not given a deadline.").

72. *See* Kyoto Protocol, *supra* note 14, art. 5(1).

73. *See COP/MOP-1 Report—Part Two*, *supra* note 52, Decision 16/CMP.1 Annex, ¶ 20.

74. *See id.* Decision 16/CMP.1 Appendix.

75. *See* Kyoto Protocol, *supra* note 14, art. 6.

76. *See id.* art. 12.

77. *See* Mark C. Trexler & Laura H. Kosloff, *The 1997 Kyoto Protocol: What Does it Mean For Project-Based Climate Change Mitigation?*, 3 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 1, 2-3 (1998).

measures jointly.[78]

On the road to Kyoto, and during the negotiations of the Kyoto Protocol at COP-3, flexibility was a highly contentious issue among the Parties. The JUSSCANNZ countries[79] envisioned the opportunity to invest in projects abroad as a cheap way to mitigate their commitments (especially those related to forest and forestry activities)[80] and as the only feasible way to achieve them without hurting their economies. The G-77[81] (plus China) and the European Union ("EU") saw it as a loophole. Developing countries referred to joint implementation as "eco-colonialism."[82] Opponents saw forest and forestry projects abroad as allowing Annex I countries to invest in developing countries without having to take stronger domestic mitigation measures.[83]

The controversy has become moot due to COP-7's express embracement of forestry activities.[84] The conflicts were partially resolved by the parties' agreement to limit forestry activities to

78. *See* UNFCCC, *supra* note 7, art. 4(2)(a) ("These [Annex I Parties] may implement such policies and measures [limiting anthropogenic greenhouse gas emissions] jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph.").

79. The JUSSCANNZ parties—Japan, the United States, Switzerland, Canada, Australia, Norway, and New Zealand—are a group of countries that tended to counterbalance the EU on the one hand and the G-77 on the other, although Norway, and Switzerland in particular, frequently stood somewhat apart from JUSSCANNZ positions. *See* GRUBB ET AL., *supra* note 57, at xxxi.

80. *See* XVIII Session of the Intergovernmental Panel on Climate Change, Wembley, U.K., Sept. 24-29, 2001, *Summary for Policymakers to Climate Change 2001: Synthesis Report of the IPCC Third Assessment Report*, at 15 (Oct. 1, 2001) [hereinafter *Synthesis Report of the IPCC Third Assessment Report*] ("Costs estimates reported to date for biological mitigation vary significantly from US$0.1 to about US$20 per t C in several tropical countries and from US$20 to US$100 per t C in non-tropical countries.").

81. The G-77 is a large coalition representing the interests of developing countries. *See* Michael Richards, A Review of the Effectiveness of Developing Country Participation in the Climate Change Convention Negotiations 15 (December 2001) (unpublished working paper), *available at* http://www.odi.org.uk/iedg/participation_in_negotiations/climate_change.pdf. Since it is composed of countries that are also, in some cases, members of organizations such as Organization of Petroleum Exporting Countries ("OPEC") and Alliance of Small Island States ("AOSIS"), the G-77 represents countries that have very different interests. *See id.*

82. *See* Moura-Costa & Stuart, *supra* note 45, at 196-97.

83. *See* GRUBB ET AL., *supra* note 57, at 87 (describing some Annex I countries' desire to obtain international flexibility and thus lessen domestic pressures against emissions reductions).

84. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, ¶ 13 ("The eligibility of land use, land-use change and forestry project activities under Article 12 is limited to afforestation and reforestation.").

afforestation and reforestation projects;[85] exclude nuclear activities;[86] and require that project-based activities be supplemental to domestic measures and policies.[87]

II. *FOREST AND FORESTRY ACTIVITIES UNDER THE CDM: THE LEGAL AND INSTITUTIONAL FRAMEWORKS*

This Section examines the legal and institutional frameworks regarding forest and forestry activities under the CDM and considers how they were influenced by the conflicting interests surrounding them; the evolution of scientific and technological knowledge; and the experiences had during the AIJ Pilot Phase.

A. *The Evolution of the Legal Framework*

The legal framework for forest and forestry activities under the CDM is a product of a broader regulatory regime for joint implementation flexibility mechanisms. Articles 4(2)(a), 4(2)(b), 4(2)(d), and 3(3) of the UNFCCC are the main pillars of the joint implementation regulatory regime.[88] The first action in this regard was taken in 1995 at COP-1, when the parties agreed upon the AIJ Pilot Phase.[89] Shortly after, the Kyoto Protocol not only embraced the concept of joint implementation among Annex I Parties,[90] but extended it to non-Annex I countries through the CDM.[91]

1. The AIJ Pilot Phase

The UNFCCC's broad provisions authorizing joint imple-

85. *See* Conference of the Parties to the Kyoto Protocol, Milan, Italy, Dec. 1-12, 2003, *Report of the Conference of the Parties on its Ninth Session—Part Two: Action Taken by the Conference of the Parties at its Ninth Session*, Decision 19/CP.9, U.N. Doc FCCC/CP/2003/6/Add.2 (Mar. 30, 2004) [hereinafter *COP-9 Report—Part Two*].

86. *See* Jason Schwartz, Note, *"Whose Woods These Are I Think I Know": How Kyoto May Change Who Controls Biodiversity*, 14 N.Y.U. ENVTL. L.J. 421, 457 (2006) (suggesting that the EU accepted the inclusion of forestry in the CDM as a tradeoff for the exclusion of nuclear power projects).

87. *See COP-9 Report—Part Two*, *supra* note 85, Decision 19/CP.9.

88. *See* Naoki Matsuo, *CDM in the Kyoto Negotiations: How CDM Has Worked as a Bridge Between Developed and Developing Worlds?*, 8 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 191, 192 (2003).

89. *See COP-1 Report—Part Two*, *supra* note 28, ¶ 1(a).

90. *See* Kyoto Protocol, *supra* note 14, art. 6.

91. *See id.* art. 12.

mentation of policies and measures[92] were made operational through the AIJ Pilot Phase. Decision 5/CP.1 of COP-1 in 1995 expressly recognized Article 4(2)(d)'s mandate, imposing upon the Conference of the Parties the duty to regulate joint implementation of policies and measures aimed at curbing anthropogenic emission of greenhouse gases. To accommodate developing countries' concerns, activities undertaken pursuant to the AIJ Pilot Phase did not provide credits against developed countries' assigned amounts, which at that time had not yet been agreed upon. The AIJ Pilot Phase was voluntary in nature.

Moreover, the AIJ Pilot Phase embraced non-Annex I countries' participation through the hosting of project-based activities. This experimental period also covered, at least generically, all relevant sources, sinks, and reservoirs of greenhouse gases, which allowed for the ample use of forest and forestry activities. The fact is that "[t]he importance of information, training, appropriate capacity and institutions for the development of CDM projects is underlined by experience from the [AIJ Pilot Phase]."[93]

The AIJ Pilot Phase yielded information regarding geographical trends and potential social and environmental benefits related to forest and forestry activities, which provided substantial background for future negotiations.[94] These elements were all crucial during the discussions over flexibility mechanisms at COP-3 and beyond, when negotiators faced conflicting pressures on the issue of whether to include forest and forestry activities in the CDM.[95]

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92. *See* UNFCCC, *supra* note 7, arts. 3(3), 4(2)(a), 4(2)(b), 4(2)(d).

93. *See* Alex Michaelowa, *CDM Host Country Institution Building*, 8 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 201, 202 (2003).

94. *See* Eleventh Session of the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation, Bonn, F.R.G., Oct. 25-Nov. 5, 1999, *Activities Implemented Jointly Under the Pilot Phase: Issues to be Addressed in the Review of the Pilot Phase, Including the Third Synthesis Report on Activities Implemented Jointly—Note by the Secretariat*, ¶¶ 6-21, U.N. Doc FCCC/SB/1999/5 (Sept. 15, 1999) [hereinafter *1999 SBSTA & SBI Report*] (presenting data on geographical distribution of projects, environmental, and socio-economic impacts).

95. *See id.* ¶¶ 17-19 (providing an "[a]ssessment of environmental benefits related to the mitigation of climate change that would not have occurred in the absence of [Activities Implemented Jointly ("AIJ")], covering all relevant sources, sinks and reservoirs of greenhouse gases and the methods used to measure, monitor and independently verify these emissions, including by type of project, and other environmental benefits").

a. A Brief Assessment of the Main Reports Regarding the AIJ Pilot Phase and its Positive Outcomes

Through the reporting requirements of the AIJ Pilot Phase, the SBSTA was able to produce annual synthesis reports before recommending a comprehensive review of the AIJ Pilot Phase, which was completed and sent to the fifth session of the Conference of the Parties ("COP-5") in 1999.[96] Specifically, with regard to forest and forestry activities, those annual synthesis reports[97] and the final review of the AIJ Pilot Phase[98] provided useful data on important geographical trends; technical challenges (monitoring and reporting); social and environmental benefits and impacts; possible global benefits (in comparison with other types of activities); and effects on national economies (helping developing countries achieve sustainable development and developed countries achieve their commitments under the climate change regime).[99] The figures below, excerpted from SBSTA synthesis reports on the AIJ Pilot Phase, illustrate some of what was learned about the above-mentioned issues during this experimental period.

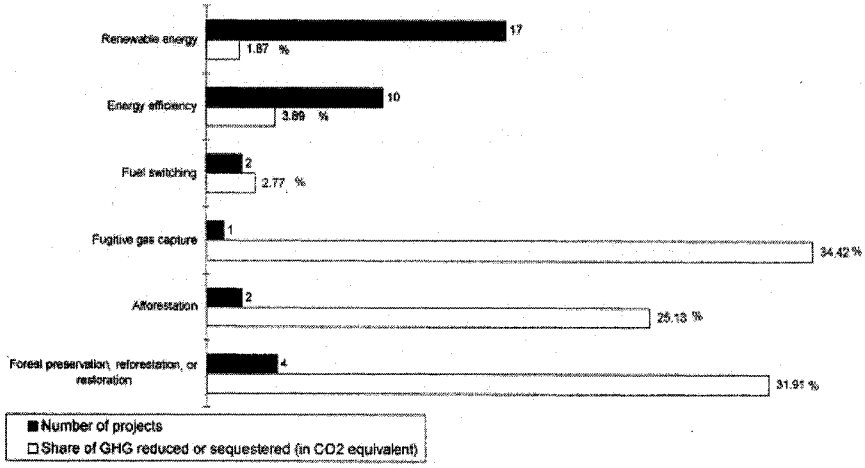
96. *See* Conference of the Parties to the Kyoto Protocol, Bonn, F.R.G., Oct. 25–Nov. 5, 1999, *Report of the Conference of the Parties on its Fifth Session—Part Two: Action Taken by the Conference of the Parties at its Fifth Session,* Decision 13/CP.5, pmbl., U.N. Doc FCCC/CP/1999/6/Add.1 (Feb. 2, 2000) (taking note of the SBSTA and SBI's comprehensive review of the AIJ pilot phase and third synthesis report on activities implemented jointly).

97. *See, e.g., 1999 SBSTA & SBI Report, supra* note 94, ¶¶ 36-69.

98. *See id.* ¶¶ 5-35.

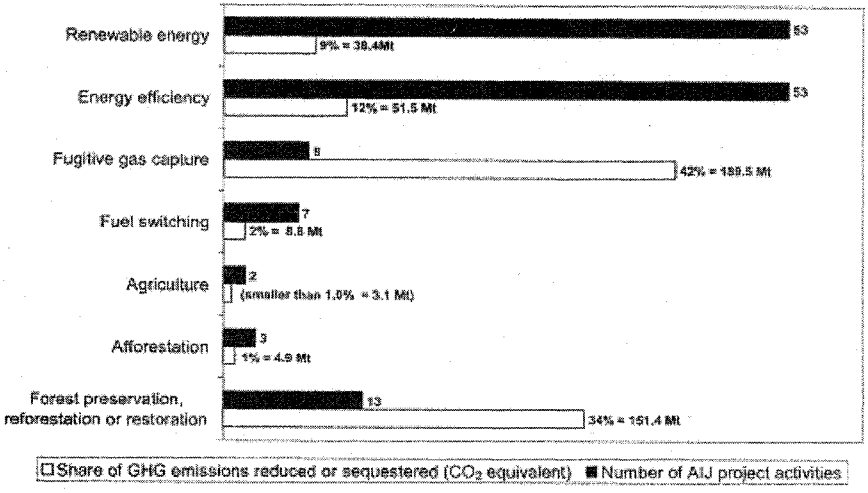
99. *See id.* ¶¶ 5-69.

Figure 1



Source: *1997 SBSTA Report.*[100]

Figure 2



Source: *2001 SBSTA Report.*[101]

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100. Seventh Session of the Subsidiary Body for Scientific and Technological Advice, Bonn, F.R.G., October 20–29, 1997, *Activities Implemented Jointly Under the Pilot Phase: Synthesis Report on Activities Implemented Jointly—Note by the Secretariat,* ¶ 18 fig.1, U.N. Doc FCCC/SBSTA/1997/12 (Oct. 7, 1997) [hereinafter *1997 SBSTA Report*].

101. Fifteenth Session of the Subsidiary Body for Scientific and Technological Advice, Marrakesh, Morocco, Oct. 29-Nov. 9, 2001, *Activities Implemented Jointly Under the Pilot Phase: Fifth Synthesis Report on Activities Implemented Jointly Under the Pilot Phase—Note by the Secretariat,* Annex fig.4, U.N. Doc FCCC/SBSTA/2001/7 (Sept. 12, 2001) [hereinafter *2001 SBSTA Report*].

Figure 1 shows that while forest conservation and forestry activities represented only six of the thirty-nine projects in 1997 (roughly fifteen percent of the total), they accounted for fifty-seven percent of the final mitigation impact. Figure 2 shows that although they represented fifteen of the 139 projects (roughly ten percent of the total), forest conservation and forestry activities accounted for thirty-five percent of the abatement impact in 2001. The data demonstrates that although they represent a smaller portion of the total number of projects, the CO_2 storage and sequestration potentials of forest and forestry activities is significantly higher in comparison with other types of projects.

In its first synthesis report, the SBSTA highlighted that "most data on the costs and the amount of [greenhouse gases] abated are only estimates and are, therefore, not a suitable basis for analysis."[102] When the report was released, the Parties were in the final preparations for the Kyoto negotiations. The IPCC had not yet published its special report on LULUCF, which occurred in 2000.[103] The first specific decision on forestry activities in the CDM was only agreed upon in 2003, at COP-9,[104] the same year in which the IPCC's report on good practice guidance for LULUCF was released.[105] This sequence of events explains the correlation between the growing consensus on the challenges of forest and forestry project activities and their decrease (with respect to other types of projects considered much simpler) in terms of quantity of projects and share of greenhouse gas abatement impact.

As to the geographical distribution of forest conservation and forestry projects and their environmental and socio-economic impacts, the 1999 subsidiary bodies' report on the issues to be addressed in the review of the AIJ Pilot Phase proved a useful source of information for a more comprehensive assessment of the AIJ Pilot Phase. With regard to the socio-economic aspects of projects undertaken during the AIJ Pilot Phase, the subsidiary bodies verified an increase in capacity-building through enhancement of procedural and institutional experience, and the Parties reported "active involvement of local com-

102. *See 1997 SBSTA Report*, *supra* note 100, ¶ 6(c).

103. *See* IPCC SPECIAL ON REPORT ON LULUCF, *supra* note 18.

104. *See COP-9 Report—Part Two*, *supra* note 85, Decision 19/CP.9.

105. *See* GOOD PRACTICE GUIDANCE FOR LULUCF, *supra* note 59.

munities, increased public awareness, and the maintenance of natural heritage and historical sites."[106]

The report also highlighted how host Parties, mostly developing countries, were able to attract financial resources and direct them towards national development goals. Despite the subsidiary bodies' statement that socio-economic and environmental factors were not sufficiently addressed, particularly with respect to forest and forestry activities, the Parties reported "fostering biodiversity, improving water and air quality and reducing erosion of hydrological resources" as environmental benefits.[107]

In the AIJ Pilot Phase review report, some Parties linked their development goals to forestry and land-use.[108] Indeed, Figure 3 demonstrates that those Parties, although not identified in the report, are most likely developing countries in Latin America. Figure 3 shows that most of the forest preservation and reforestation projects, and roughly half of the afforestation activities, were taking place in Latin America and the Caribbean region. This is not surprising given that a large percentage of the remaining tropical forests in the world are concentrated in Latin America.[109]

One can get a better sense of the region's potential for these types of projects by noting that the data presented does not include information regarding Brazil,[110] which contains a considerable portion of the world's remaining tropical forests.[111] In addition to the resources availability element, the costs of forest and forestry greenhouse gas abatement practices are considerably lower in developing countries,[112] which contributed to Latin America's share of the market in hosting preservation, reforestation, and afforestation project activities.

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106. *See 1999 SBSTA & SBI Report*, *supra* note 94, ¶ 57.

107. *See id.*

108. *See id.* ¶ 15.

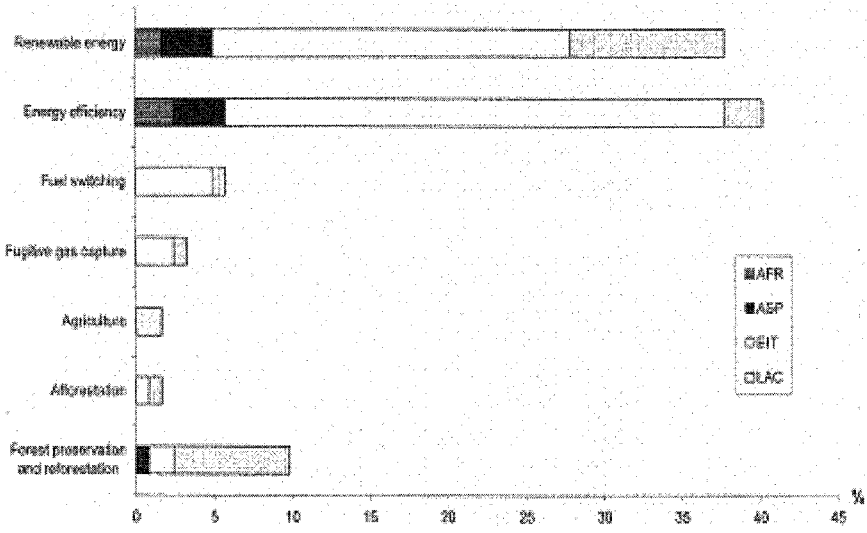
109. *See* Food and Agriculture Org. of the U.N. [FAO], *Global Forest Resources Assessment 2005: Progress Towards Sustainable Forest Management*, 15 (FAO Forestry Paper 147, 2006), *available at* ftp://ftp.fao.org/docrep/fao/008/A0400E/A0400E00.pdf [hereinafter *Global Forest Resources Assessment 2005*].

110. *See 1999 SBSTA & SBI Report*, *supra* note 94, ¶ 44 n.21 (listing Belize, Bolivia, Costa Rica, Ecuador, Honduras, Guatemala, Mexico, Nicaragua, and Panama as hosting projects in Latin America).

111. *See Global Forest Resources Assessment 2005*, *supra* note 109, at 15.

112. *See Synthesis Report of the IPCC Third Assessment Report*, *supra* note 80, at 15.

Figure 3



Source: *1999 SBSTA & SBI Report* (AFR: Africa; ASP: Asia and Pacific Region; EIT: Economies in Transition; LAC: Latin America and Caribbean).[113]

b. The Main Challenges Encountered During the AIJ Pilot Phase

The AIJ Pilot Phase review report summarized the major problems encountered by the Parties during the implementation of activities. Highlighting common problems during the AIJ Pilot Phase was a useful tool for improving the flexibility mechanisms of the Kyoto Protocol, particularly with respect to the CDM.[114] The following are some of the general obstacles encountered during all types of projects under the AIJ Pilot Phase:

> (a) differences in the investment climate; (b) cultural differences; (c) insufficient infrastructure; (d) institutional capacity; (e) relative absence of investment companies; (f) lack of policy on AIJ and of a clear and transparent set of operational rules on the part of the host country; (g) lack of awareness in the private sector in host countries on opportunities represented by AIJ; (h) variations in the degree of knowledge and acceptance of AIJ by local stakeholders; (i) lack of capacity to produce comprehensive AIJ project proposals; (j) existing preferences, driven by established business partnerships, stra-

113. *1999 SBSTA & SBI Report*, *supra* note 94, ¶ 45 fig.3.

114. *See* Michaelowa, *supra* note 93, at 202.

> tegic considerations and political priorities for investors for particular areas; (k) differences in [greenhouse gas] reduction costs and in transaction costs due to, *inter alia*, some of the above points; and (l) current exclusion of crediting for [greenhouse gas] reductions or removals by sinks.[115]

Other general obstacles included "high transaction costs"[116] and "the uncertainty regarding two major interlinked methodological issues, the identification of the project baseline and additionality."[117]

It is worth noting that the AIJ Pilot Phase was characterized by a lack of strong oversight, which can be traced to a weak regulatory regime. Therefore, even though the data presented were useful to negotiators in developing the regulatory framework for afforestation and reforestation practices in the CDM, and helpful in indicating trends and potentials, the results lacked accuracy. Nonetheless, the AIJ Pilot Phase was crucial in that it called attention to the technical, scientific, and socio-economic challenges related to forest and forestry activities, which inevitably represented one of the most important factors in the development of a stronger and tighter regulatory regime aimed at dealing with forest and forestry activities in the CDM.[118]

2. The CDM of the Kyoto Protocol

After the COP-3 negotiations, project-based joint implementation under the UNFCCC ended up, via the Kyoto Protocol, divided into joint implementation and the CDM. It is worth noting that the final language of Article 12 of the Kyoto Protocol (which addresses the CDM) provided the CDM with a threefold objective.[119] The CDM's purpose is to: (1) assist non-Annex I Parties in achieving sustainable development; (2) contribute to the UNFCCC's overall objective; and (3) help developed countries achieve their quantified emissions limitation and reduction commitments.[120]

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115. *1999 SBSTA & SBI Report*, *supra* note 94, ¶ 8.

116. *See id.* ¶ 22.

117. *See id.*

118. *See generally* Moura-Costa & Stuart, *supra* note 45, at 5-7 (following the development of AIJ programs through the difficult early phases to the eventual creation of the CDM).

119. *See* Kyoto Protocol, *supra* note 14, art. 12(2).

120. *See id.*

3. The Controversy Regarding Whether Forests and Forestry Activities Were Meant to be Included in the CDM

Prior to the negotiations at COP-3, the Parties had before them the 1997 SBSTA synthesis report on the AIJ Pilot Phase.[121] This report, which was noted in Decision 10/CP.3 of COP-3,[122] indicated the existence of six ongoing forestry preservation and afforestation activities and the ample participation of developing countries as project hosts.[123]

Opponents of the inclusion of sinks in the CDM[124] argued that Article 12 did not provide legal support for such inclusion. They argued that while Article 6 (regarding joint implementation) clearly mentions sinks, Article 12 does not. In addition, the opposition argued that because sink projects could not be accurately measured, they did not meet Article 12(5)(b)'s requirement that certification under the CDM be on the basis of "[r]eal, measurable, and long-term benefits related to the mitigation of climate change . . . ."[125]

Indeed, whereas Article 6 refers expressly to projects providing enhancement of removals by sinks, Article 12 addresses project activities generally and without further specification.[126] However, a closer analysis shows that the climate change regime did not provide for the exclusion of sink projects in the CDM.[127] First, the CDM originated in the UNFCCC's joint implementation provisions, and under the AIJ Pilot Phase, Annex I and non-Annex I Parties utilized forest and forestry activities amply. Sec-

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121. *See 1997 SBSTA Report*, *supra* note 100.

122. *See* Conference of the Parties to the Kyoto Protocol, Kyoto, Japan, Dec. 1-11, 1997, *Report of the Conference of the Parties on its Third Session—Part Two: Action Taken by the Conference of the Parties at its Third Session*, Decision 10/CP.3, pmbl., U.N. Doc FCCC/CP/1997/7/Add.1 (Mar. 25, 1998).

123. *See 1997 SBSTA Report*, *supra* note 100, ¶ 6.

124. The EU was the main opponent of the inclusion of forestry in the CDM, while the Umbrella Group (United States, Japan, Canada, Australia, New Zealand, and Iceland) was the main proponent. *See* Pedro Moura-Costa, Carbon Trading and Investment in Clean Energy Products 4 (2001) (unpublished manuscript), *available at* http://www.ecosecurities.com/Assets/3157/Pubs_Carbon%20trading%20and%20investiment%20in%20clean%20energy%20projects.pdf.

125. GRUBB ET AL., *supra* note 57, at 241.

126. *Compare* Kyoto Protocol, *supra* note 14, art. 6(1) (referring specifically to enhancement of removals by sinks of greenhouse gases), *with* Kyoto Protocol, *supra* note 14, art. 12(5) (referring to "emission reductions" generally).

127. *See* HUNTER ET AL., *supra* note 16, at 645 ("Both the Framework Convention and the Kyoto Protocol clearly contemplate that sinks such as forests would be within the ambit of the climate regime.").

ond, Article 12 does not identify any specific type of project, such as renewable energy or energy efficiency.[128] It is limited to setting forth the CDM's objectives[129] and general information regarding the CDM's operation.[130] The omission, then, represents a mere inaccuracy in the Kyoto Protocol's written language. Moreover, contrary to the position of those subscribing to the impossibility of measuring and monitoring forestry projects, currently approved monitoring methodologies by the CDM's Executive Board demonstrate that forestry activities can be monitored and measured, albeit with more difficulty.

Common ground was possible, at least in part, because of the leverage exerted by countries pushing for the inclusion of forestry activities (the Umbrella Group),[131] particularly the United States, Japan, Canada, and Australia.[132] Considering that the United States and other Umbrella Group countries account for over half of the world's emissions, their engagement was crucial to the Kyoto Protocol's success. Another important aspect was the EU's refusal to accept the inclusion of nuclear projects in the CDM. In order to avoid any attempt by the United States, or China and India, to push the debate on the inclusion of nuclear energy projects forward, the EU showed some flexibility and ended up accepting forestry activities in the CDM.[133] The controversy was finally settled at COP-7, where negotiators agreed to include forestry in the CDM but limited it to afforestation and reforestation activities.[134]

4. The Seventh, Ninth and Tenth Sessions of the Conference of the Parties

Although no consensus was reached at the sixth session of

128. *See* Kyoto Protocol, *supra* note 14, art. 12(5) (referring to "emission reductions" generally).

129. *See, e.g., id.* art. 12(2) (stating that one of the CDM's purposes is to assist Parties not included in Annex I in achieving sustainable development).

130. *See, e.g., id.* art. 12(4) (subjecting the CDM to the control of the Conference of the Parties serving as the Meeting of the Partes and the supervision of an executive board).

131. *See A Brief Analysis of COP-6 Part II*, EARTH NEGOTIATIONS BULL., Jul. 30, 2001, at 13, *availables at* http://www.iisd.ca/download/pdf/enb12176e.pdf.

132. *See* Schwartz, *supra* note 86, at 456.

133. *See id.* at 457.

134. *See COP-7 Report—Part Two (Volume I), supra* note 47, Decision 11/CP.7, ¶ 2(e).

the Conference of the Parties ("COP-6") and COP-6 "bis" on the issue of LULUCF generally,[135] progress made during those two meetings allowed for the inclusion of forestry activities in the CDM at COP-7 in Marrakesh in 2001. The outcome of this meeting was called the "Marrakesh Accords."[136] Through the annex to the decision on LULUCF, the Parties finally agreed on the inclusion of forestry projects in the CDM. Their inclusion, however, was limited in the following ways: (1) forestry in the CDM was limited to afforestation and reforestation activities;[137] (2) total additions to a Party's assigned amount were limited to one percent of base year emissions times five;[138] and (3) a regulatory regime for future commitment periods would be decided upon during the negotiations on the second commitment period.[139]

Broadly speaking, the EU's main interests prevailed over the Umbrella Group's main interests, at least for the first commitment period. The EU succeeded in banning nuclear projects in the CDM;[140] limiting forestry activities to afforestation and reforestation;[141] and limiting the amount accountable against an Annex I Party's assigned amount.[142] In practice, since the EU Emissions Trading Scheme ("ETS") excluded carbon credits originating from LULUCF activities,[143] and European countries (and their private entities) represent the vast majority of Annex I buyers (taking into account that the United States has not yet ratified the Kyoto Protocol),[144] the inclusion of forestry in the CDM did not significantly affect the EU's interests for the first commitment period. Still, the Umbrella Group did manage to insert

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135. *See A Brief Analysis of COP-6 Part II*, *supra* note 131, at 13 ("The collapse of The Hague negotiations was attributed by many observers to disagreement over LULUCF issues: 'It was sinks that sunk The Hague.'").

136. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7, ¶ 1.

137. *See id.* ¶ 13(e).

138. *See id.* Decision 11/CP.7 Annex, ¶ 14.

139. *See id.* ¶ 15.

140. *See* Conference of the Parties to the Kyoto Protocol, Marrakesh, Morocco, Oct. 29-Nov. 10, 2001, *Report of the Conference of the Parties on its Seventh Session—Part Two: Action Taken by the Conference of the Parties (Volume II)*, Decision 17/CP.7, pmbl., U.N. Doc FCCC/CP/2001/13/Add.2 (Jan. 21, 2002) [hereinafter *COP-7 Report—Part Two (Volume II)*].

141. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7 Annex, ¶ 13.

142. *See id.* ¶ 11.

143. *See* Council Directive No. 2004/101/EC, art. 1, 2004 O.J. L 338, at 18, 21.

144. *See* UNFCCC, *supra* note 7, Annex I.

sinks in the CDM and left open the debate for future commitment periods.

Once forestry made it into the CDM and the Parties had established flexibility for the future and general eligibility and offsetting limitations, an operational regulatory regime was needed. Despite no progress at the eighth session of the Conference of the Parties ("COP-8") in 2002, the Parties would agree upon a thorough regulatory regime for forestry in the CDM at the ninth session of the Conference of the Parties ("COP-9") in 2003.[145] Decision 19/CP.9 set up modalities and procedures for afforestation and reforestation activities under the CDM.[146] Decision 19/CP.9 was also important because it affirmed the principles of Decision 11/CP.7 of COP-7 on LULUCF[147] and envisioned a more flexible regulatory regime for small-scale forestry projects in the CDM,[148] which would follow a model that the Parties had already implemented at COP-8 for CDM activities such as renewable energy and energy efficiency.[149]

The legal framework for forestry under the CDM in the first commitment period was completed when the Parties, at the tenth session of the Conference of the Parties ("COP-10") in 2004, agreed upon Decision 14/CP.10, which set forth simplified modalities and procedures for small-scale afforestation and reforestation activities under the CDM.[150] This regulatory regime was implemented at the first Meeting of the Parties in 2005, right after the Kyoto Protocol had entered into force.[151] Table 1 pro-

145. *See COP-9 Report—Part Two*, *supra* note 85, Decision 19/CP.9.

146. *See id.*

147. *See id.* pmbl.

148. *See id.* ¶¶ 3-6.

149. *See* Conference of the Parties to the Kyoto Protocol, New Delhi, India, Oct. 23-Nov. 1, 2002, *Report of the Conference of the Parties on its Eighth Session—Part Two: Action Taken by the Conference of the Parties at its Eighth Session*, Decision 21/CP.8 Annex II, U.N. Doc FCCC/CP/2002/7/Add.3 (Mar. 28, 2003).

150. *See* Conference of the Parties to the Kyoto Protocol, Buenos Aires, Arg., Dec. 6-18, 2004, *Report of the Conference of the Parties on its Tenth Session—Part Two: Action Taken by the Conference of the Parties at its Tenth Session*, Decision 14/CP.10, U.N. Doc FCCC/CP/2004/10/Add.2 (Apr. 19, 2005).

151. *See* Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol, Montreal, Can., Nov. 28-Dec. 10, 2005, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session—Part One: Proceedings*, ¶ 8, U.N. Doc FCCC/KP/CMP/2005/8 (Mar. 30, 2006) ("The President said that there had been many remarkable achievements on the path from Kyoto to Montreal, including the steadfast efforts by many countries to promote the ratification of the Protocol, the completion of the Marrakesh Accords, and the prompt start of the

vides a chronological overview of the general and specific legal provisions applicable to forestry project activities under the CDM.

Table 1

Provision	Subject	Status	Adoption
Arts. 4.2(a)(b)(d) & 3.3 / UNFCCC	JI under the Convention	General	1992 UNFCCC
Dec. 5/CP.1	AIJ Pilot Phase	General	1995 COP-1
Arts. 3.3, 3.4 & 12 / Kyoto Protocol	LULUCF Activities & the CDM	General / Specific	1997 Kyoto Protocol
Decs. 7 & 9/ CP.4	CDM & LULUCF Work Programme	General	1998 COP-4
Decs. 11, 15 & 17/CP.7	LULUCF Activities & the CDM	Specific	2001 COP-7
Dec. 21/CP.8	CDM	Specific	2002 COP-8
Dec. 19/CP.9	A/R in the CDM	Specific	2003 COP-9
Decs. 13 & 14/ CP.10	Reporting A/R in the CDM & Simplified A/R Activities in the CDM	Specific	2004 COP-10
Decs. 2, 3, 4, 5, 6, 16 & 17/ CMP.1	Adopting draft decisions recommended by previous COPs	Specific / General	2005 MOP-1

B. *The Institutional Framework*

The UNFCCC launched a comprehensive institutional framework for implementing measures and polices; developing guidelines and methodologies; and coordinating and translating

clean development mechanism. National efforts to implement the provisions of the Protocol were now well under way.").

scientific work into norms and decisions[152] aimed at achieving the UNFCCC's ultimate objective: stabilize "greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system . . . ."[153] Accordingly, the institutions dealing with forestry in the CDM are the product of a broader framework, one that relies not only upon the supreme bodies of the UNFCCC and the Kyoto Protocol, but also upon more specific institutions unique to the control and management of afforestation and reforestation projects in the CDM. The following two sections break down the CDM's institutional framework with respect to forestry.

1. The Conference of the Parties and Meeting of the Parties

With primary decision-making power, the Conference of the Parties is the highest body in the institutional hierarchy and the organ from which the regulatory scheme emerges.[154] Therefore, the decisions on forestry in the CDM[155] derive their legal force from the powers conferred to the Conference of the Parties by the UNFCCC. The Kyoto Protocol set forth the CDM's specific institutional framework[156] and granted the Conference of the Parties the function of serving as the Meeting of the Parties to the Kyoto Protocol.[157]

2. The SBSTA and the CDM Executive Board

The SBSTA is the advisory body that links available scientific information to the climate change regime's decision-making process.[158] It is different from the IPCC and was not designed to replace it.[159] Article 15 of the Kyoto Protocol states that the sub-

152. *See* UNFCCC HANDBOOK, *supra* note 6, at 27-43.

153. UNFCCC, *supra* note 7, art. 2.

154. *See* HUNTER ET AL., *supra* note 16, at 233 ("Much like a corporate body of directors, the conferences of the parties ("CoPs") are the primary policy-making organs of most global environmental treaty regimes. The CoPs usually occur once every one or two years and conduct the major business of monitoring, updating, revising, and enforcing the conventions.").

155. *See* UNFCCC, *supra* note 7, art. 7.

156. *See* Kyoto Protocol, *supra* note 14, art. 12.

157. *See id.* art. 13(1).

158. *See COP-1 Report—Part Two*, *supra* note 28, Decision 6/CP.1 (characterizing the SBSTA as "the link between the scientific, technical and technological assessments and the information provided by competent international bodies, and the policy-oriented needs of the Conference of the Parties").

159. *See* Grubb, *supra* note 41, at 2.

sidiary bodies created under the UNFCCC remain in charge of providing scientific and technological advice and assistance to the Conference of the Parties and the Meeting of the Parties.[160] The SBSTA takes into account the work of other international institutions, such as the IPCC; provides guidance on scientific, technical, and technological matters; and recommends decisions to the Conference of the Parties and the Meeting of the Parties.[161]

Another important organ in the CDM forestry institutional framework is the CDM Executive Board. Featured in Article 12(4) of the Kyoto Protocol, the Executive Board was promulgated to oversee CDM activities under the guidance and authority of the Conference of the Parties and the Meeting of the Parties.[162] Through Decision 17/CP.7, the Conference of the Parties expanded the Executive Board's supervisory role by granting it decision-making power over the approval of designated operational entities ("DOEs");[163] the final work on new methodologies;[164] baseline and monitoring methodologies;[165] and issuance

160. *See* Kyoto Protocol, *supra* note 14, art. 15(1).

161. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7, ¶ 2. The SBSTA's eighth session report is a good example of its work. In this report, the SBSTA offered an interpretation of Article 3.3 of the Kyoto Protocol; requested that the IPCC prepare a report regarding LULUCF; invited the Parties to submit data relating to the implementation of Article 3.3 of the Kyoto Protocol and modalities, rules, and guidelines regarding additional human-induced activities under Article 3.4 of the Kyoto Protocol; called for a workshop of experts; and requested that the secretariat liaise with the secretariat of the Convention on Biological Diversity, the secretariat of the Convention to Combat Desertification, the International Forum on Forests, the FAO, and any other international organizations that might have relevant information. *See* Eighth Session of the Subsidiary Body for Scientific and Technological Advice, Bonn, F.R.G., June 2–12, 1998, *Report of the Subsidiary Body for Scientific and Technological Advice on its Eighth Session*, ¶ 45, U.N. Doc FCCC/SBSTA/1998/6 (Aug. 12, 1998), *available at* http://unfccc.int/resource/docs/1998/sbsta/06.pdf.

162. *See COP-7 Report—Part Two (Volume II)*, *supra* note 140, Decision 17/CP.7 Annex, ¶ 5.

163. *See id.* ¶ 5(f); Wolfram Kägi & Dieter Schöne, *Forestry Projects Under the CDM: Procedures, Experiences and Lessons Learned* 9 (U.N. Food and Agriculture Organization, Forests and Climate Change Working Paper No. 3, 2005) ("DOEs are accredited by the Executive Board and perform two functions: validating CDM projects, and verifying and certifying emissions reductions from projects. A designated operational entity shall not perform validation or verification and certification on the same CDM [afforestation/reforestation] project activity.").

164. *See COP-7 Report—Part Two (Volume II)*, *supra* note 140, Decision 17/CP.7 Annex, ¶ 5(d).

165. *See id.*

of certified emission reductions ("CERs").[166] In sum, the Executive Board is the administrative body in charge of handling projects undertaken pursuant to the CDM and all related matters.[167]

3. DOEs and the Afforestation and Reforestation Working Group

The CDM Executive Board can accredit DOEs and recommend them to the Conference of the Parties and Meeting of the Parties for final designation.[168] The idea behind DOEs is to preserve the Executive Board's oversight and decision-making role over proposed new methodologies while delegating validation, verification, and certification processes to a specialized outside corporation that is presumably more efficient at accomplishing the tasks.[169] If the Executive Board had to operate the technical field work associated with validation, verification, and certification for each proposed project, the financial and human resources necessary would make the process unfeasible.[170]

In addition, by working with different and independent DOEs in the validation, verification, and certification stages, the Executive Board's institutional framework is constantly being crosschecked, diminishing the likelihood of imprecise CERs. This third-party audit scheme is particularly important in light of how non-Annex I countries do not have emissions limitation commitments.[171] The downside is that such a comprehensive process adds bureaucracy and complexity, requiring a high level of multidisciplinary expertise. This, in turn, reduces participation by developing countries' stakeholders, despite the thorough

166. *See id.* ¶¶ 64-66.

167. *See* Michaelowa, *supra* note 93, at 203.

168. *See COP-7 Report—Part Two (Volume II)*, *supra* note 140, Decision 17/CP.7 Annex, ¶ 5(f).

169. *See* CLIMATE CHANGE SECRETARIAT, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE: THE FIRST TEN YEARS 87 (2004), *available at* http://unfccc.int/resource/docs/publications/first_ten_years_en.pdf.

170. *See* Moura-Costa & Stuart, *supra* note 45, at 199 ("It became obvious that third-party certification was instrumental in the validation and credibility of these new transactions.").

171. *See id.* at 196 (noting the danger that developing countries would transfer their inexpensive greenhouse gas reduction opportunities to industrialized countries because, in light of the fact that developing countries did not have emission commitments, the commodity was valueless).

capacity-building scheme envisioned by the climate change regime.[172]

Finally, since there is a wide range of scientific, technical, and technological expertise needed for different projects under the CDM, the Conference of the Parties conferred upon the Executive Board the authority to "establish committees, panels or working groups to assist it in the performance of its functions."[173]

At its fourteenth meeting, the Executive Board agreed to establish an Afforestation and Reforestation Working Group ("A&R WG") for forestry-related projects.[174] The A&R WG is responsible for commenting on proposed baseline and monitoring methodologies for forestry projects, preparing draft reformatted versions of those approved by the Executive Board, and recommending available options for expanding the applicability of approved afforestation and reforestation methodologies.[175] In this sense, the A&G WG works closely and in consonance with the Methodologies Panel, which, as agreed upon at the Executive Board's third meeting,[176] is designed to provide the Executive Board with recommendations on proposed new methodologies and baseline and monitoring plans, including those designed for afforestation and reforestation projects.[177]

4. Multilateral Investment Institutions

Multilateral investors are an important element of the CDM forestry institutional framework and the growth of carbon markets worldwide. The greenhouse gas tradable permit trading mechanism, coordinated by the United Nations Conference on Trade and Development, and the greenhouse gas emissions trad-

172. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 2/CP.7 (addressing capacity-building in developing countries).

173. *See COP-7 Report—Part Two (Volume II)*, *supra* note 140, Decision 17/CP.7 Annex, ¶ 18.

174. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., June 12-14, 2004, *Executive Board of the Clean Development Mechanism Fourteenth Meeting Report*, ¶ 13, U.N. Doc CDM-EB-14 (June 14, 2004).

175. *See* Kägi & Schöne, *supra* note 163, at 9-10.

176. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., Apr. 9-10, 2002, *Executive Board of the Clean Development Mechanism Third Meeting Report*, ¶ 48, U.N. Doc CDM-EB-03 (Apr. 17, 2002).

177. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., June 9-10, 2002, *Executive Board of the Clean Development Mechanism Fourth Meeting Report*, ¶ 11, U.N. Doc CDM-EB-04 (June 10, 2002).

ing program, proposed by the International Petroleum Exchange, are examples of noteworthy carbon market initiatives that could be attractive to investors and project developers in the post-Kyoto period.[178] These early, innovative attempts were followed by the creation of the International Emissions Trading Association, the Emissions Market Association, the Chicago Climate Exchange, and country-level emission trading systems in countries such as the United Kingdom and Denmark.[179]

In 2003, the World Bank launched the BioCarbon Fund, which is described as a public/private initiative aiming at delivering "cost-effective emission reductions, while promoting biodiversity conservation and poverty alleviation."[180] The BioCarbon fund was inspired by the World Bank's Prototype Carbon Fund, which was established in 1999 to promote renewable energy and energy efficiency projects under the CDM.[181] While there are general carbon investment funds currently available worldwide,[182] the BioCarbon Fund is the main multilateral investment institution for the purposes of the CDM forestry institutional framework because it involves public and private investors and is particularly sensitive to social and environmental benefits.[183]

C. *Provisions for Domestic Legal and Institutional Frameworks*

One of the core principles of the CDM is that participation is voluntary and dependent upon prior approval.[184] Furthermore, in accomplishing one of the CDM's objectives—assisting

178. *See* Moura-Costa & Stuart, *supra* note 45, at 178.

179. *See* Moura-Costa, *supra* note 124, at 7.

180. Carbon Finance at the World Bank: BioCarbon Fund, http://carbonfinance.org/Router.cfm?Page=BioCF&ItemID=9708&FID=9708 (last visited Oct. 13, 2007).

181. *See* Lauren Kelly & Jeffery Jordan, World Bank, *The Prototype Carbon Fund—Addressing Challenges of Globalization: An Independent Evaluation of the World Bank's Approach to Global Problems*, 2004, *available at* http://lnweb18.worldbank.org/oed/oeddoclib/nsf/24cc3bb1f94ae11c85256808006a0046/0e908333fedb369485256f690069ccd5/$FILE/gppp_carbon_wp.pdf.

182. The European Carbon Fund is one example. *See* European Carbon Fund, About ECF, http://www.europeancarbonfund.com/about_ecf.php (last visited Nov. 15, 2007).

183. *See* Carbon Finance at the World Bank: BioCarbon Fund, *supra* note 180 (describing the BioCarbon Fund as a public/private initiative aimed at delivering cost-effective emission reductions while promoting biodiversity conservation and poverty alleviation).

184. *See* Kyoto Protocol, *supra* note 14, art. 12(5)(a).

developing countries in achieving sustainable development—the Conference of the Parties requires project developers to obtain confirmation from the host country that a proposed project activity meets its sustainable development goals.[185] The procedural participation requirement imposed on non-Annex I Parties wishing to participate in the CDM and, therefore, externalize to project developers voluntariness and compliance with sustainable development goals, is the establishment of a designated national authority ("DNA").[186] This provision allows for the development of national legal and institutional frameworks by non-Annex I countries desiring to participate in the CDM.

III. *CURRENT OBSTACLES TO, AND IMPACTS OF, FORESTRY ACTIVITIES UNDER THE CDM*

In light of its controversial nature, forestry activities under the CDM have been conducive to many assessments (both positive and negative) regarding the impacts resulting from their implementation. Moreover, the expansion of permitted forestry activities beyond afforestation and reforestation projects is facing political, legal, and technical obstacles.

A. *Political and Legal Obstacles*

G.J.H. van Hoof has pointed out that "[i]f delay in, or failure of ratification are the result of unwillingness on the part of the States concerned, the problem, of course, is first of all of a political nature."[187] The United States' refusal to ratify the Kyoto Protocol, the EU's decision to reject CDM forestry projects, and the limitation of forestry to afforestation and reforestation activities, form the core obstacles examined in this section.

1. The United States' Refusal to Ratify the Kyoto Protocol

In 1998, the U.S. Senate passed Senate Resolution 98, which "urged the President not to agree to a treaty that did not include binding commitments for developing countries, or that would

185. *See COP-7 Report—Part Two (Volume II), supra* note 140, Decision 17/CP.7 Annex, ¶ 40(a).

186. *See id.* ¶ 29.

187. *See* G.J.H. VAN HOOF, RETHINKING THE SOURCES OF INTERNATIONAL LAW 122 (1983).

cause harm to the U.S. economy."[188] In March of 2001, the Bush Administration announced the rejection of the Kyoto Protocol,[189] shortly after the United States experienced the tragedies of September 11, 2001. Although it is not clear whether the terrorist attacks influenced U.S. policies with regard to the climate change legal regime, some have suggested that the lack of stronger involvement in the Kyoto Protocol over the past years indicates that the tragedy may have shifted the United States' focus.[190]

For what it represents economically and politically, the United States is a major player in any international negotiation. Therefore, U.S. resistance to accepting the Kyoto Protocol constitutes a significant political obstacle to the development of forestry activities within the climate change legal regime, because the country was among those pushing forward the inclusion of such activities in the CDM legal framework.[191] By ratifying the Kyoto Protocol, the United States could play a much greater role in pushing negotiations towards expanding eligible activities for future commitment periods and stimulating the market for forestry CERs.

2. The EU's Refusal to Accept Forestry Activities under the CDM

On January 1, 2005, the EU's ETS became the world's largest domestic greenhouse gas emissions trading scheme.[192] The market for CERs created by the ETS significantly increased the demand for activities undertaken pursuant to the CDM. This was not the case for afforestation and reforestation, as the EU's provision authorizing the use of CERs expressly excluded their

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188. *See* JOHN R. JUSTUS & SUSAN R. FLETCHER, CONG. RESEARCH SERV., CRS ISSUE BRIEF FOR CONGRESS: GLOBAL CLIMATE CHANGE 10 (2004).

189. *See id.* at 11.

190. *See* Todd M. Lopez, Note, *A Look at Climate Change and the Evolution of the Kyoto Protocol*, 43 NAT. RESOURCES J. 285, 306 (2003).

191. *See* OBERTHÜR & OTT, *supra* note 9, at 132-33; Michaelowa, *supra* note 92, at 201 ("[G]iven the absence of the US and the weakening of industrialised country emission targets through higher allowances for sinks, the demand for emission reductions abroad will be much lower than originally anticipated.").

192. *See* Marjan Peeters, The Enforcement of Greenhouse Gas Emissions Trading in Europe—Reliability Ensured? 3 (Oct. 16, 2006) (paper presented at the Fourth World Conservation Union ("IUCN") Colloquium on Environment Enforcement and Compliance, on file with the author).

use with regard to LULUCF activities.[193] Since most of the countries with established commitments under the Kyoto Protocol are members of the EU,[194] the policy of excluding CERs from forestry project activities is a major obstacle for the enhancement of a stronger market in this area, which inevitably hampers the development of new forestry-based greenhouse gas mitigation projects within the CDM.[195]

3. The CDM's Limitation to Afforestation and Reforestation Activities

One of the major obstacles to the expansion of LULUCF projects in the CDM for the first commitment period is the limitation of activities to anthropogenic afforestation and reforestation practices. A preoccupation with ensuring the effectiveness of such a limitation compelled climate change negotiators to include it in at least three different decisions prior to the first Meeting of the Parties.[196] Moreover, "[t]he literature regarding forestry as a climate change mitigation strategy suggests that efforts to constrain project-based forestry interventions to reforestation and afforestation projects is technically inappropriate."[197]

B. *Technical Challenges*

According to the FAO, the forestry sector is "technically especially challenging in terms of CDM project formulation . . . ."[198] The first substantial decision addressing accountability for domestic action on LULUCF came during COP-7. The Parties requested that the SBSTA develop definitions and modalities for including afforestation and reforestation while taking into

193. *See* Council Directive No. 2004/101/EC, art. 1, 2004 O.J. L 338, at 18, 21 ("All [Certified Emission Reductions ("CERs")] and [Emission Reduction Units ("ERUs")] that are issued and may be used in accordance with the UNFCCC and the Kyoto Protocol and subsequent decisions adopted thereunder may be used in the Community scheme . . . except for CERs and EURs from land use, land use change and forestry activities.").

194. *See* UNFCCC, *supra* note 7, Annex I.

195. *See* Moura-Costa & Stuart, *supra* note 45, at 197 (observing that uncertainty regarding the potential value of forestry projects greatly reduces the level of investment in these projects).

196. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7 Annex, ¶ 13; *COP-7 Report—Part Two (Volume II)*, *supra* note 140, Decision 17/CP.7, ¶ 7(a); *COP-9 Report—Part Two*, *supra* note 85, Decision 19/CP.9, pmbl.

197. Trexler & Kosloff, *supra* note 77, at 29.

198. Kägi & Schöne, *supra* note 163, at 1.

account the issues of non-permanence, additionality, and leakage.[199] These technical concerns stemmed from problems the IPCC reported in its 2000 special report on LULUCF.[200] Furthermore, Decision 19/CP.9's requirement that non-Annex I countries opt for a definition of forest based on pre-established parameters[201] represented an additional technical challenge.[202]

1. Additionality

Article 12 of the Kyoto Protocol establishes that emissions reductions from CDM projects must be "additional to any that would occur in the absence of the certified project activity."[203] The rationale behind additionality lies in the fact that "if the developing nation would have undertaken the same emissions reduction projects even in the absence of Annex I investment, the world could have enjoyed the same emissions reductions without the CDM and without giving Annex I countries credits that let them emit more."[204]

Aiming to assist forestry project developers, the A&R WG revised a tool for demonstration and assessment of additionality.[205] Although not mandatory, the Executive Board adopted it at its twenty-first meeting as a highly recommended guideline,[206] which shows that considerable progress was made over the past decade and a half. More recently, the CDM Executive Board, at its thirty-fifth meeting, updated and revised the first version of the aforementioned guidelines and adopted its second ver-

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199. *See COP-7 Report—Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7, ¶ 2(e).

200. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 5 (bringing technical challenges related to LULUCF to the attention of policymakers).

201. *See COP-9 Report—Part Two*, *supra* note 85, Decision 19/CP.9 Annex, ¶¶ 7-9.

202. *See* Till Neeff et al., *Choosing a Forest Definition for the Clean Development Mechanism* 1 (FAO, Forests and Climate Change, Working Paper No. 4, 2006), *available at* http://www.fao.org/forestry/webview/media?mediaId=11280&langId=1 (suggesting that choosing a definition for forest can be a difficult process).

203. *See* Kyoto Protocol, *supra* note 14, art. 12(5)(c).

204. *See* Schwartz, *supra* note 86, at 426.

205. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., Sept. 28-30, 2005, *Executive Board of the Clean Development Mechanism Twenty First Meeting Report Annex 16: Tool for the Demonstration and Assessment of Additionality in A/R CDM Project Activities*, at 8, U.N. Doc CDM-EB-21 (Sept. 30, 2005).

206. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., Sept. 28-30, 2005, *Executive Board of the Clean Development Mechanism Twenty First Meeting Report*, ¶¶ 17, 44, U.N. Doc CDM-EB-21 (Sept. 30, 2005); Kāgi & Schöne, *supra* note 163, at 5.

sion.[207]

Verifying whether a project activity meets the additionality requirement is crucial in a baseline-credit emissions trading scheme such as the CDM.[208] It often presents a technical challenge, especially in the forestry field,[209] because of the strict criteria applicable in identifying whether a projected scenario would occur in the absence of a CDM project-activity. Therefore, additionality is a necessary technical burden that needs to be properly addressed on a project-by-project basis.[210]

2. Domestic Definitions of Forest

In its 2000 special report on LULUCF, the IPCC highlighted that a successful forestry carbon offset program would necessarily depend on clear definitions of forest and forestry activities. Countries have defined the term forest in varying ways using different criteria, such as legal, administrative, or cultural considerations.[211] Nonetheless, for the successful implementation of LULUCF activities it is crucial to harmonize the definitions for the purposes of the climate change legal regime.[212] In an attempt to harmonize domestic definitions, the annex to Decision 19/CP.9 imposed the requirement that countries define forests prior to participating in the CDM. This provision allowed the Parties some flexibility in defining forests. The Parties could opt for minimum tree crown cover, land area, and tree height in values varying from 10 percent to 30 percent, 0.05 to 1 hectare, and 2 to 5 meters, respectively.[213] The idea behind this was to provide the Parties with the ability to adjust their domestic definition according to their individual natural and geographic realities. An international uniform definition would not be able to

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207. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., Oct. 15-19, 2007, *Executive Board of the Clean Development Mechanism Thirty Fifth Meeting Report Annex 17: Tool for the Demonstration and Assessment of Additionality in A/R CDM Project Activities (Version 02)*, U.N. Doc CDM-EB-35 (Oct. 19, 2007).

208. *See* Dennis Hirsch et al., *Emissions Trading—Practical Aspects*, *in* GLOBAL CLIMATE CHANGE AND U.S. LAW 628 (Michael B. Gerrard ed., 2007) (differentiating a baseline-credit from a cap-and-trade emissions trading program).

209. *See* GRUBB ET AL., *supra* note 57, at 192 ("[T]he question of 'additionality' under the CDM—and possibly sinks—is so complex that it cannot be assumed that all emission reductions under these mechanisms will be real and additional.").

210. *See* Kãgi & Schöne, *supra* note 163, at 5.

211. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, ¶ 16.

212. *See* Watson & Verardo, *supra* note 24.

213. *See COP-9 Report – Part Two*, *supra* note 85, Decision 19/CP.9 Annex, ¶ 8.

encompass the enormous variety of ecosystems around the world, and would inevitably end up favoring some countries to the detriment of others.[214]

Soon after it was adopted, though, the definition requirement became another technical challenge to forestry activities in the CDM. In 2006, the FAO issued a working paper that specifically addressed the issue of choosing a forest definition for the CDM. Based on criteria that would better serve the interests of a non-Annex I Party participating in the CDM, it set forth a ten-step procedure aimed at helping a country choose the best parameters for defining forests.[215] The proper selection of parameters directly affects the question of which areas will be eligible for afforestation and reforestation projects, and although it presents another technical challenge to participants and developers, it reflects the evolution of the topic.

3. Defining Baseline and Monitoring Methodologies

Baseline scenarios and monitoring methodologies are complex by nature,[216] but they are more difficult in the ambit of afforestation and reforestation activities than they are in the ambit of renewable energy and energy efficiency projects.[217] The credibility of the CERs from afforestation and reforestation projects is constantly threatened due to anthropogenic and naturally-occurring phenomena that can disturb the project.[218] As a result, as of the writing of this Article, there are ten approved baseline and monitoring methodologies for afforestation and reforestation projects,[219] whereas there are more than sixty for energy efficiency and renewable energy activities.[220] The complexity of defining a baseline-scenario is reflected by the comprehensive and technically challenging voluntary guideline provided by the

214. *See* Neeff et al., *supra* note 202, at 5-6 (discussing the array of definitions countries use for forests).

215. *See id.* 6-7.

216. *See* Swisher, *supra* note 30, at 72 ("Long-term monitoring of forestry and land-use projects can also be complex.").

217. *See id.* at 63 ("In the case of power supply projects, the baseline can be relatively clearly determined from the carbon content of the fossil fuel replaced.").

218. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 10.

219. *See* CDM: Afforestation/Reforestation Methodologies, http://cdm.unfccc.int/methodologies/ARmethodologies/approved_ar.html (last visited Oct. 22, 2007).

220. *See* Methodologies for CDM Project Activities, http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html (last visited Dec. 11, 2007).

CDM Executive Board at its thirty-fifth meeting entitled *Combined Tool to Identify the Baseline Scenario and Demonstrate Additionality in A/R CDM Project Activities (Version 01).*[221] Thus, although it is a major technical challenge, the regulatory development of standards for determining baselines and monitoring methodologies represents a remarkable evolution in the CDM forestry legal framework.

4. Non-Permanence/Reversibility and Leakage

Two additional technical challenges typical to forestry project activities are permanence[222] and leakage.[223] According to the IPCC's 2000 special report on LULUCF, project developers failed to address non-permanence[224] and leakage.[225] Almost five years later, at COP-9 in Milan, the forestry legal framework evolved by expressly incorporating leakage, as long as it can be measured and attributable to the forestry project activity.[226] As to the reversibility issue, also at COP-9, the Parties adopted one of the IPCC's recommendations and imposed a minimum crediting period of twenty years (with the possibility of being renewed twice) and a maximum crediting period of thirty years (without the option to renew).[227]

Different from other types of CDM activities, credits ("CERs") from afforestation and reforestation projects enjoy a limited lifetime and are divided into "temporary" ("tCER") and "long-term" ("lCER"), due to the ephemeral nature of terrestrial carbon sinks.[228] The difference between them being that a tCER

221. *See* Meeting of the Executive Board of the Clean Development Mechanism, Bonn, F.R.G., Oct. 15-19, 2007, *Executive Board of the Clean Development Mechanism Thirty Fifth Meeting Report Annex 19: Combined Tool to Identify the Baseline Scenario and Demonstrate Additionality in A/R CDM Project Activities (Version 01)*, U.N. Doc CDM-EB-35 (Oct. 19, 2007).

222. The term permanence refers to "[t]he longevity of a carbon pool." IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 21.

223. The term leakage is defined as "the increase in greenhouse gas emissions by sources which occurs outside the boundary of an afforestation or reforestation project activity under the CDM which is measurable and attributable to the afforestation or reforestation project activity." *COP-9 Report – Part Two*, *supra* note 85, Decision 19/CP.9 Annex, ¶ 1(e).

224. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 9.

225. *See id.* at 14.

226. *See COP-9 Report – Part Two*, *supra* note 85, Decision 19/CP.9 Annex, ¶ 1(e).

227. *See id.* Decision 19/CP.9 Annex, ¶ 23.

228. *See id.* ¶ 16.

"expires at the end of the commitment period following the one during which it was issued" and a lCER "expires at the end of crediting period of the afforestation or reforestation project activity under the CDM for which it was issued.[229] Upon expiration, tCERs and lCERs have to be replaced by new CERs. Therefore, the risk of non-permanence was resolved by this economic model with the downside being a complex system of oversight.[230]

C. *Environmental Impacts*

According to the IPCC's 2000 special report on LULUCF, forestry projects in the CDM "aiming to mitigate climate change may provide socio-economic and environmental benefits primarily within project boundaries, although they may also pose risks of negative impacts."[231] These impacts can be environmental, socio-economic, and cultural in nature.

1. Conversion of Forested Areas into Plantations, Grazing Land and Agricultural Land

The expansion of allowable forestry activities could encourage the replacement of mature forests by fast-growing tree plantations, which have higher rates of carbon sequestration.[232] Although limited to afforestation and reforestation projects, the risks are diminished because of the definitions these activities are given by the climate change regime.[233] The rationale for establishing a historical baseline is to avoid deforestation of mature forests for subsequent re-growth for CDM carbon credit purposes.[234]

On the other hand, if the CDM legal framework is properly

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229. *Id.*

230. *See* VAN KOOTEN, *supra* note 56, at 92-96 (presenting three alternative economic models to address the issue of non-permanence).

231. IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 15.

232. *See* Janine Bloomfield & Holly L. Pearson, *Land use, Land-use Change, Forestry, and Agricultural Activities in the Clean Development Mechanism: Estimates of Greenhouse Gas Offset Potential*, 5 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 9, 12 (2000).

233. *See COP-7 Report – Part Two (Volume I)*, *supra* note 47, Decision 11/CP.7 Annex, ¶ 1(b)-(c) (defining both afforestation and reforestation as the human-induced conversion of non-forested areas into forested areas, but presupposing that the converted land had not been forested for at least fifty years and presupposing that reforestation involves the conversion of those areas that were not forested on December 31, 1989).

234. *See* Bloomfield & Pearson, *supra* note 232, at 12.

used (which appears to be the case),[235] it can provide the means for avoiding harmful conversions. One possibility for subsequent commitment periods would be the inclusion of accountability for the carbon emissions associated with deforestation practices before any forested land is replaced with, and/or converted into, fast-growing tree plantations.[236] Another possibility is allowing for forest preservation and conservation projects under the CDM.[237] Mature forests do not have the same sequestration potentials, but they have great carbon storage potentials.[238] Credits, therefore, could be conferred upon carbon storage in the form of "avoided emissions." In this case, though, some degree of flexibility with respect to the "human-induced" criterion would have to be provided.[239]

In any event, preserving the role of the CDM Executive Board and strengthening the CDM forestry legal framework are necessary requirements for expanding the list of permissible LULUCF activities in future commitment periods.

2. Biodiversity

The impacts on biodiversity have the potential to be catastrophic. However, if the climate change regime allows for forest conservation projects, biodiversity stands to benefit considerably.[240] Therefore, rather than representing an obstacle that needs overcoming, the climate change legal regime can be seen as an important tool that is available to different stakeholders involved in biodiversity conservation.

3. Natural Ecosystems

CDM forestry project activities also have the potential to impact natural ecosystems, both positively and negatively. The in-

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235. *See* Kãgi & Schöne, *supra* note 163, at 11-13 (outlining the demanding procedure for the approval of new methodologies under the CDM).

236. *See* Bloomfield & Pearson, *supra* note 232, at 12.

237. *See* Trexler & Kosloff, *supra* note 77, at 29 (arguing against limiting forestry projects to afforestation and reforestation activities).

238. *See* Bloomfield & Pearson, *supra* note 232, at 12.

239. *See* GRUBB ET AL., *supra* note 57, at 79 (implying that some Parties at the Kyoto Protocol negotiations did not want to confer credits for activities that were naturally occurring).

240. *See* Moura-Costa & Stuart, *supra* note 45, at 235 (arguing that if investment in forest management regimes continues, a huge infusion of new capital in the forestry sector will result, benefiting the conservation of biodiversity).

troduction of alien species,[241] increases in erosion processes,[242] and adverse impacts on water supplies are among the potential threats posed by forestry projects to natural ecosystems.[243] An SBSTA synthesis report on projects undertaken in the AIJ Pilot Phase identified positive impacts on natural ecosystems, such as improvements in water quality and reductions in the erosion of hydrological resources.[244] It is worth noting that the same provisions in the climate change legal regime designed to protect biodiversity are extended to the protection of natural ecosystems.[245]

4. Leakage

In addition to constituting a technical challenge for the implementation of forestry projects, leakage has the potential to adversely impact the environment.[246] Consider the hypothetical where a reforestation project is undertaken in a degraded piece of pasture land. If the conversion of the pasture land into forested area leads to the practice of deforestation elsewhere for the creation of new grazing land, the deforested area faces significant environmental impacts.

D. *Socio-Economic Impacts*

An analysis of the socio-economic impacts is required whenever the host country or the project participants deem them relevant.[247] For the purposes of this Section, socio-economic im-

241. *See* Schwartz, *supra* note 86, at 423 n.6 (noting the fierce debate over allowing invasive species (also known as alien, exotic, or non-indigenous species) to be used in CDM reforestation projects).

242. *See* Robert J. Zomer et al., *Carbon, Land and Water: A Global Analysis of the Hydrologic Dimensions of Climate Change Mitigation through Afforestation/Reforestation* 3 (International Water Management Institute, Research Report No. 101, 2006).

243. *See id.* at 3-5.

244. *See 1997 SBSTA Report*, *supra* note 100, ¶ 28.

245. *See* Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol, Montreal, Can., Nov. 28-Dec. 10, 2005, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session – Part Two: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties at its First Session*, Decision 5/CMP.1 Annex, ¶ 12(c), U.N. Doc FCCC/KP/CMP/2005/8/Add.1 (Mar. 30, 2006) [hereinafter *COP/MOP-1 Report—Part Two*].

246. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 11. *But see* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, at 11 (listing the demonstration effect of new management approaches and technology adoption as positive leakage).

247. *See COP/MOP-1 Report – Part Two*, *supra* note 245, Decision 5/CMP.1 Annex, ¶ 12(c).

pacts of forestry projects are examined in light of capacity-building related to employment opportunities and/or job losses, international trade, financial return to local entities, and public and private forestry subsidies.

1. Capacity-building and the Transfer of Sound Technology

Due to the complexities of the CDM with respect to forestry,[248] the consequent demand for highly qualified technical personnel, and the implementation of new technologies, forestry projects in developing countries could lead to job losses or increased employment opportunities for personnel from developed countries.[249] However, the involvement of local communities is essentially a requirement for the achievement of the desired positive effects in these types of project activities.[250] Consequently, based on information from the AIJ Pilot Phase, forestry activities will significantly increase capacity-building and employment opportunities in developing countries, as well as benefit local communities through the transfer of new sound technologies.[251]

2. International Trade

Presumably, only "[p]rojects affecting the supply of timber products or consumption of energy services, for example, can affect price signals for the rest of the market, potentially counteracting a portion of the calculated benefits of the original project."[252] Although non-permanence may be an issue,[253] for-

248. *See* Bloomfield & Pearson, *supra* note 232, at 21 ("Land-use decisions are complex, however, and are based on many conflicting economic, social, political, and environmental factors in addition to the amount of carbon that could be credited for a particular project.").

249. *See* Michaelowa, *supra* note 93, at 206 ("A possible barrier to CDM projects can be a requirement that projects shall not lead to job losses. Any modern technology will displace workers due to its more efficient character. However, often more jobs are created through the development effects induced by the use of the new technology. Thus a rigid job loss criterion only looking at the project itself is likely to prevent most CDM projects.").

250. *See* Janine Bloomfield et al., *Land-Use Change and Forestry in the Kyoto Protocol*, 5 MITIGATION ADAPTATION STRATEGIES FOR GLOBAL CHANGE 3, 6 (2000) ("[F]or projects to be conceived of, designed, and successfully implemented, stakeholder support, both by project funders and by the host countries and local communities, is crucial.").

251. *See 1997 SBSTA Report*, *supra* note 100, ¶ 28 (reproducing socio-economic benefits reported by the Parties).

252. *See* Trexler & Kosloff, *supra* note 77, at 39.

estry projects generate timber products that did not exist in the first place. This means that currently allowed afforestation and reforestation activities will have little or no effect on international trade—including the existing timber market.[254] Nonetheless, harmonized policies and actions between the climate change regime and other international forest forums are strongly recommended outcomes for the upcoming discussions regarding whether or not to allow for other LULUCF activities, such as forest conservation and management.[255]

3. Local Participation and Financial Return to Local Stakeholders

Any potential interference with the needs of local stakeholders caused by a CDM forestry activity must not only be properly assessed,[256] but generate enough income to offset eventual losses. Even before tighter regulations on modalities and procedures for forestry projects in the CDM were promulgated at COP-9 in 2004,[257] the IPCC had indicated that enabling local stakeholders to share the financial benefits of CDM forestry activities was a necessary social condition.[258] A significant regulatory step towards the implementation of a framework that could effectively embrace profitability for local participants was the

253. *See COP-9 Report – Part Two*, *supra* note 85, Decision 19/CP.9, pmbl. (recognizing the problem of non-permanence).

254. *See* Karen Alvarenga & Amber Moreen, *Positive Incentives to Reduce Emissions from Deforestation*, EARTH NEGOTIATIONS BULL. ON THE SIDE, May 9, 2007, at 4 (2007), http://www.iisd.ca/climate/sb26/enbots/pdf/enbots1221e.pdf (reporting that Brazil had "accounted for the production of timber in a sustainable way to meet demand for such products").

255. One writer, however, is skeptical that harmonized policies and actions are possible, at least with respect to CDM projects involving genetically modified (GM) trees. *See* Schwartz, *supra* note 86, at 444-45 (2006) ("The International Tropical Timber Agreement ("ITTA") will not apply to CDM projects. The ITTA aims to ensure that all tropical timber products traded internationally originate in sustainably managed forests . . . . [O]ther potentially applicable agreements—like the Convention on International Trade in Endangered Species of Wild Fauna and Flora ("CITIES") or the FAO Tropical Forestry Action Plan—will most likely never apply to GM tree reforestation projects."). Other writers are more optimistic. *See* Alvarenga & Moreen, *supra* note 254, at 4 (referring to sustainable forestry activities as a way of mitigating the adverse effects of forest conservation and management projects on the international timber market).

256. *See COP/MOP-1 Report – Part Two*, *supra* note 245, Decision 5/CMP.1, ¶ 12(c) (providing for a socio-economic impact assessment in case a preliminary analysis indicates the potential for adverse socio-economic impacts).

257. *See COP-9 Report – Part Two*, *supra* note 85, Decision 19/CP.9.

258. *See* IPCC SPECIAL REPORT ON LULUCF, *supra* note 18, ¶ 90.

provision for small-scale afforestation and reforestation projects targeting low-income communities and individuals.[259]

Although the international legal framework is already in place, the practice is still incipient.[260] The challenges for upcoming commitment periods include: considerations of profit sharing in forest management and conservation projects; local participation in the decision-making process at all levels (from project conception to project implementation and management);[261] and the harmonization of domestic policies and measures with the international legal framework so as to allow local communities to benefit from forestry activities.[262]

4. Domestic CDM Forestry Subsidies

A domestic CDM forestry subsidy scheme that is harmonized with the climate change legal framework is a powerful incentive for current afforestation and reforestation projects and other LULUCF activities that might eventually be added for upcoming commitment periods. This harmonization should start with the elimination of conflicting domestic subsidies, as the Parties directed at COP/MOP-1.[263] An example is domestic legislation penalizing forest conservation and promoting land clearance (deforestation) for agricultural purposes and urban sprawl.[264]

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259. *See COP-9 Report – Part Two*, *supra* note 85, Decision 19/CP.9 Annex, ¶ 1(i) ("'Small-scale afforestation and reforestation project activities under the CDM' are those that are expected to result in net anthropogenic greenhouse gas removals by sinks of less than 8 kilotonnes of CO_2 per year and are developed or implemented by low-income communities and individuals as determined by the host Party.").

260. *See* UNEP Risoe CDM/JI Pipeline Analysis and Database, http://cdmpipeline.org/overview.htm (last visited Nov. 5, 2007) (listing 1666 CDM projects that are "at validation" and 154 that are "in the process of registration").

261. *Cf.* Schwartz, *supra* note 86, at 480 (recommending that local stakeholders be given the opportunity to comment on projects that may threaten biodiversity).

262. *See* Sagemüller, *supra* note 13, at 236 ("Domestic legal regimes may allow individual landowners to generate credits from LULUCF activities that may be traded on the international market.").

263. *See* Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol, Montreal, Can., Nov. 28–Dec. 10, 2005, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on its First Session – Part Two: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol at its First Session*, Decision 31/CMP.1, ¶ 8, U.N. Doc FCCC/KP/CMP/2005/8/Add.4 (Mar. 30, 2006).

264. *See* Steven A. Kennett, *Carbon Sinks and the Kyoto Protocol: Legal and Policy Mechanisms for Domestic Implementation*, 21 J. ENERGY & NAT. RESOURCES L. 252, 273 (2003).

It is worth noting that public subsidies are not limited to offering financial support. They might take the form of direct payments in cash, goods, or services to forest landowners for promoting carbon sequestration; purchases of land or land interests; or implementation of general forest management service programs.[265] Thus, national public subsidies concerning LULUCF activities should be planned in accordance with the international legal framework and other domestic subsidies for forest management generally.

IV. *OVERCOMING THE OBSTACLES TO, AND ADVERSE IMPACTS OF, FOREST AND FORESTRY PROJECT ACTIVITIES UNDER THE CDM FOR UPCOMING COMMITMENT PERIODS*

In general, if well-managed and implemented, project-based forest and forestry activities in the CDM, beyond just afforestation and reforestation practices, can serve many environmental, social, and economic purposes and benefit small, rural, and poor communities and individuals. The positive aspects of forestry activities can overcome political, legal, and technical challenges; the risks to biodiversity and watersheds; and the promotion of deforestation. This section, then, is dedicated to examining trends and proposing actions for future commitment periods.

A. *Overcoming Political and Legal Obstacles*

U.S. resistance to the Kyoto Protocol may be overcome once a new administration comes to power. The 2006 elections in the United States saw the Democrats take the majority from the Republicans, which might indicate a Democratic victory in the 2008 presidential election. In view of Democratic sensibilities with respect to climate change, and the fact that the Clinton Administration signed the Kyoto Protocol but faced a Republican Congress, one could see how the United States is much more likely to ratify the Protocol.[266]

On the other hand, two factors indicate that the EU will not easily accept forestry activities in the CDM in future commitment

265. *See* ROSENBAUM ET AL., *supra* note 19, at 46.

266. *See* JUSTUS & FLETCHER, *supra* note 188, at 11 (implying that, contrary to the Bush administration, the Clinton administration demonstrated an affinity towards the international climate change legal regime).

periods. The EU's refusal to accept credits from forestry activities in the ETS is the first clear indication.[267] In addition, should the afforestation and reforestation limitation be overcome in the CDM for future commitment periods, the language used in the ETS suggests that it is not likely that the EU will accept the expansion of allowable activities.[268] Instead of using just the terms afforestation and reforestation in the ETS, legislators used the phrase LULUCF,[269] which indicates that the EU anticipated future attempts to broaden the scope of forestry projects in the CDM and opted to exclude all forestry projects in advance.

Prospects are better for the CDM's current limitation on forestry activities to afforestation and reforestation projects. Decision 11/CP.7 provides that the limitation is valid for only the first commitment period and that the Parties should decide upon new LULUCF activities for upcoming commitment periods.[270]

B. *A Stronger Link Between the Climate Change Legal Regime and Other Major Multilateral Environmental Agreements*

As far as CDM forestry activities are concerned, in light of environmental, social, and political implications arising internationally from the climate change debate, it is crucial that the legal regime create links beyond those envisioned between the Liaison Group and the Rio Conventions.[271] Following the exam-

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267. *See* KENNETH M. CHOMITZ ET AL., WORLD BANK, OVERVIEW: AT LOGGERHEADS? AGRICULTURAL EXPANSION, POVERTY REDUCTION, AND ENVIRONMENT IN THE TROPICAL FORESTS 23 (2007), *available at* http://siteresources.worldbank.org/INTTROPICALFOREST/Resources/2463822-1161184206155/3060670-1161608416166/PRR-AL_SAOverviewwebnonembargo.pdf ("[S]ome observers think that tackling climate change requires paying about US$3 a ton for CO_2 abatement—and European Union (EU) members are currently paying up to US$20 a ton (though this price is volatile). In other words, deforesters are destroying a carbon storage asset theoretically worth US$1,500-US$10,000 to create a pasture worth US$200-US$500 (per hectare). Yet carbon markets, such as those under the Kyoto Protocol and EU Emissions Trading Scheme, do not reward forestholders for reduced emissions from avoided deforestation.").

268. *See* Sagemüller, *supra* note 13, at 233 (noting that the EU's decision not to recognize credits for LULUCF activities is premised on the fact that forestry credits can be obtained at relatively low prices, reducing emissions allowances prices and inhibiting domestic action aimed at curbing greenhouse gas emissions).

269. *See* Council Directive No. 2004/101/EC, art. 1, 2004 O.J. L 338, at 18, 21.

270. *See COP-7 Report – Part Two (Volume I), supra* note 47, Decision 11/CP.7 Annex, ¶¶ 14-15.

271. Conference of the Parties to the Kyoto Protocol, New Delhi, India, Oct. 23-

ple set by the FAO,[272] stronger communications channels ought to be opened with the World Bank and the International Labor Organization on the potential implications and benefits of forestry activities on employment conditions and opportunities.[273] The Secretariat of the Convention on Biological Diversity has also provided a paradigm to be followed in the socio-economic area by developing a specific study on the relationship between biological diversity and climate change.[274] Firmer institutional cooperation beyond interconnected environmental areas would help prevent poor social conditions, such as the ones threatening the credibility of CDM biofuels and biomass project activities.[275]

C. *Environmental and Socio-Economic Impact Analyses and Assessments*

The importance of environmental and socio-economic impact assessments is doubtless. Nonetheless, two major factors appear to limit the power of climate change negotiators to go beyond merely requiring preliminary analysis instead of an impact assessment. The first one is a legal limitation. Article 21 of the 1972 Declaration of the United Nations Conference on the Human Environment clearly states that countries have the sovereign right to exploit their own natural resources pursuant to their own environmental policies.[276] In addition, Principle 17 of

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Nov. 1, 2002, *Report of the Conference of the Parties on its Eighth Session - Part Two: Action Taken by the Conference of the Parties at its Eighth Session*, Decision 13/CP.8, ¶ 1, U.N. Doc FCCC/CP/2002/7/Add.1 (Mar. 28, 2003) (affirming the need for enhanced cooperation between the UNFCCC, the Convention on Biological Diversity, and the Convention to Combat Desertification).

272. *See* ROSENBAUM ET AL., *supra* note 19, at 31 (taking into consideration the benefits and pitfalls of markets as tools for the encouragement of mitigation activities).

273. *See 1997 SBSTA Report*, *supra* note 100, ¶ 28 (listing improved working environments, increased economic opportunities, and the development of local production capacity as potential benefits arising from jointly implemented activities).

274. *See* SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, INTERLINKAGES BETWEEN BIOLOGICAL DIVERSITY AND CLIMATE CHANGE: ADVICE ON THE INTEGRATION OF BIODIVERSITY CONSIDERATIONS INTO THE IMPLEMENTATION OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE AND ITS KYOTO PROTOCOL 48 (2003), *available at* http://www.biodiv.org/doc/publications/cbd-ts-10.pdf.

275. *See* Press Release, Inter-Am. Dev. Bank, IDB Targets $3 Billion in Private Sector Biofuel Projects (Apr. 2, 2007), *available at* http://www.iadb.org/NEWS/articledetail.cfm?artid=3779&language=En (announcing investments in ethanol and biofuels production while closely examining questions regarding labor conditions).

276. *See* United Nations Conference on the Human Environment, Stockholm,

the Rio Declaration on Environment and Development, while embracing environmental impact assessments, establishes that they shall be conducted only when the proposed activity is likely to adversely impact the environment.[277]

The second factor seems to be of a policy nature. That is, the whole validation, verification, and certification process for afforestation and reforestation projects is already overly burdensome, bureaucratic, time consuming, and replete with high procedural costs. Adding an environmental and social-economic impact assessment for those projects that, at first, do not present the risk for any adverse impacts would make CDM forestry activities practically unfeasible in light of the aforementioned legal, political, and technical obstacles already apparent.[278]

D. *Good Governance: Education, Training, Public Awareness, Land Tenure, Transparency and Domestic Accountability*

Good governance in CDM forestry can be achieved by supporting domestic legislation that enhances the role of sinks in the climate change legal regime.[279] Legislation could be aimed at, inter alia, combating corruption, regulating ownership and management of public forested areas, reconciling the interests of private owners (land tenure), promoting education, providing training and public awareness, and ensuring transparency.[280] The positive interaction of the aforementioned socio-economic

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Swed., June 5-16, 1972, *Declaration of the United Nations Conference on the Human Environment*, Principle 21, U.N. Doc A/Conf.48/14/Rev.1 (June 16, 1972) ("States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies . . . .").

277. *See* United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development*, Principle 17, U.N. Doc A/CONF.151/26 (Vol. I) (Aug. 12, 1992) ("Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.").

278. *See* Trexler & Kosloff, *supra* note 77, at 35 ("Overly detailed reviews of environmental impacts could require the equivalent of an environmental impact statement. Such a process could prove so expensive that it would impede the ability to prepare and fund projects.").

279. *See* ROSENBAUM ET AL., *supra* note 19, at 53 ("Having a legal foundation for forest [greenhouse gas] mitigation projects will enable forests to play a positive role in UNFCCC compliance.").

280. *See* CHOMITZ ET AL., *supra* note 267, at 19-22 (providing policy recommendations for maximizing forest management and conservation while reducing poverty).

elements with forestry practices is crucial for overcoming the obstacles and challenges CDM forestry activities will face in future commitment periods.[281]

CONCLUSION

Forest and forestry projects in the CDM were extremely controversial during the climate change negotiations, and as a result, they were limited to afforestation and reforestation practices. The main concerns included the difficulty of monitoring forest and forestry activities; the hampering of stronger domestic mitigation action because they provided cheap carbon credits; and the fear that they would lead to deforestation.

However, CDM forest and forestry projects can provide benefits that trump their adverse effects. If there is flexibility on a human-induced requirement for future commitment periods, forest conservation projects can help foster biodiversity and, if sustainable, provide positive revenue alternatives for local communities.

In order for that to occur, though, current obstacles, such as the United States' refusal to ratify the Kyoto Protocol, the EU's refusal to accept CDM LULUCF credits, and the legal limitation on allowable practices, must be overcome. At the same time, technical challenges, including additionality, defining baseline and monitoring methodologies, choosing a domestic definition for forests, and overseeing issues of non-permanence and leakage, are necessary for ensuring the positive outcomes of forestry projects and softening resistance for upcoming commitment periods.

281. *See id.* at 22 ("While forests have many environmental benefits, only two command a global constituency with potentially large willingness to pay for those benefits: carbon storage and conservation of globally significant biodiversity. Mobilizing global finance for these environmental services is a crucial long-term challenge.").