COMMENT

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A Lack of International Agreement over the Protection of Forests: How Nations Have Risen to the Challenge of Forest Management

INTRODUCTION

Even though forests serve as carbon sinks and are an important part of the ecosystem, there is currently no international binding agreement on the protection of forests. This failure to create an agreement is not due to lack of trying. Beginning with Rio in 1992, the subject of forest protection has been introduced at most, if not all,

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major United Nations climate change conferences in the last twenty years.[1]

Forests are categorized in three ways: tropical, temperate, and boreal.[2] The differences among the categories are based on the species living in the forest, and the forest's climate and location.[3] The focus of international agreements has been on protecting tropical forests because deforestation rates are higher, and these forests are the most biologically diverse.[4] Additionally, a considerable amount of the tropical forests in the world have been lost in the past fifty years.[5] From 1990 to 2005, tropical deforestation took place at an average rate of thirteen million hectares per year.[6] During that time period, Brazil and Indonesia were responsible for an average of forty percent of annual deforestation by area.[7] Tropical forests are also more effective as carbon sinks, holding as much as fifty percent more carbon per hectare than other forests.[8] Now, policy makers are also considering the importance of temperate and boreal forests, which constitute half of the world's forests.[9] Russia, Canada, and the United States contain seventy percent of the total temperate and boreal forests.[10]

Forests are also discussed in terms of being either primary or secondary. Primary forests have never been cut and are becoming more and more rare, totaling only one-fifth of the world's forests.[11] Though they comprise thirty-six percent of the world's forest area, they have decreased by over forty million hectares since 2000.[12] Secondary forests have been cut and then replaced.[13] They are usually

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1 *See, e.g.*, Rio, Copenhagen, and Cancun Conferences.

2 DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 1146 (Robert C. Clark et al. eds., 4th ed. 2011).

3 *Id.*

4 *Id.*

5 *Id.*

6 Charles Palmer & Stefanie Engel, *Introduction: Reducing CO_2 Emissions through Avoided Deforestation?*, *in* AVOIDED DEFORESTATION: PROSPECTS FOR MITIGATING CLIMATE CHANGE 1, 3 (Charles Palmer & Stefanie Engel eds., 2009).

7 *Id.*

8 *Id.*

9 HUNTER ET AL., *supra* note 2, at 1146.

10 *Id.*

11 *Id.*

12 FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, GLOBAL FOREST RESOURCES ASSESSMENT 2010: KEY FINDINGS 5 (2010) [hereinafter FAO], *available at* http://foris.fao.org/static/data/fra2010/KeyFindings-en.pdf.

13 HUNTER ET AL., *supra* note 2, at 1146.

smaller and younger with less biodiversity.[14] Primary forests hold a significant amount of carbon.[15] Some temperate primary forests in Australia have the highest known forest-carbon density in the world, up to 2,840 tons of carbon per hectare.[16] The amount of carbon stored in trees has actually been shown to increase in forests that are more than two hundred years old in Oregon's temperate zone.[17]

According to the 2010 Forest Resources Assessment, forests cover thirty-one percent of earth's total land area, with more than half of the forests located in Russia, Brazil, Canada, the United States, and China.[18] Almost seventy-five percent of forests are managed under a national forest program.[19] Deforestation primarily involves tropical forests being converted to agricultural lands.[20] Though rates of deforestation are decreasing, they are still high and need to be reduced further.[21] Brazil and Indonesia have both substantially reduced their rates of forest loss after having the highest net losses of forest in the 1990s.[22] Australia's rate of loss actually increased recently due to severe drought and forest fires, which demonstrates that climate, in addition to direct human activities, plays a role in deforestation.[23] This statistic shows a cycle of climate change affecting forests while forests affect the climate. South America and Africa have the largest net losses of forest.[24]

Forests store an estimated 289 gigatons of carbon.[25] This total can increase due to more protection of forests and the planting of new trees, but it can also decrease if forests are poorly managed.[26] The total planted forest has increased seven percent due to afforestation,

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14 *Id.*

15 COLLABORATIVE PARTNERSHIP ON FORESTS, SFM AND PRIMARY FORESTS 1, 2 (2012), *available at* http://www.cpfweb.org/32823-0b5a559f83d86c120294bcacc537703e.pdf.

16 *Id.* at 1.

17 *Id.*

18 FAO, *supra* note 12, at 3.

19 *Id.* at 9.

20 *Id.* at 3.

21 *Id.*

22 *Id.*

23 *Id.*

24 *Id.* at 4.

25 *Id.*

26 *Id.*

or the planting of trees where none existed before, especially in China.[27] Over the past two decades in China, volunteers have planted over thirty-five billion trees, increasing the nation's forest coverage to 16.55%.[28] Though major reforestation efforts have been developing in China over the past fifty years,[29] both the speed and scale of the afforestation movement make it the most ambitious project in the world.[30]

The causes of deforestation are varied, and often, deforestation occurs due to multiple factors, both immediate and underlying. The immediate causes are "agriculture expansion, wood harvesting, and infrastructure expansion such as road building."[31] The most common underlying causes are "poverty, economic growth, and other economic factors; government policies; technological advances; demographic change; and cultural factors."[32] Although agriculture expansion leads to the majority of deforestation, it is usually not the only reason as there are other underlying causes.[33]

Furthermore, not only can forests help slow the emission of carbon, but deforestation can also lead to more carbon in the atmosphere. Forest loss and degradation has resulted in almost twenty percent of total global greenhouse gas emissions.[34] The three greatest carbon-emitting nations in the world are the United States, China, and Indonesia.[35] The United States and China produce most of their carbon from industry and energy, but Indonesia's carbon comes mostly from forest fires and deforestation.[36] The fourth greatest carbon-emitting nation, Brazil, releases most of its carbon from deforestation as well.[37]

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27 *Id.* at 5.

28 China Internet Info. Ctr., *Afforestation*, CHINA THROUGH A LENS, http://www.china.org.cn/english/features/38276.htm (last visited Oct. 30, 2013).

29 CONSTANCE L. MCDERMOTT ET AL., GLOBAL ENVIRONMENTAL FOREST POLICIES: AN INTERNATIONAL COMPARISON 160 (Jeffrey A. Sayer ed., 2010).

30 China Internet Info. Ctr., *supra* note 28.

31 HUNTER ET AL., *supra* note 2, at 1147.

32 *Id.*

33 *Id.* at 1148.

34 MCDERMOTT ET AL., *supra* note 29, at 6.

35 U.S. Forest Serv. Int'l Programs, *Climate Change & Forests*, U.S. FOREST SERVICE, http://www.fs.fed.us/global/topic/climate_change/welcome.htm (last visited Oct. 30, 2013).

36 *Id.*

37 Palmer & Engel, *supra* note 6, at 2.

I
BENEFITS OF PROTECTING FORESTS

Though forests have multiple benefits, their role as carbon sinks is often the focus when discussing the importance of international protection of forests. Forests act as carbon sinks due to photosynthesis, which uses carbon dioxide to create plant energy.[38] Each year, forests absorb a net 1.5 billion tons of carbon, or one-fourth of the amount of carbon released during fossil fuel combustion.[39] Carbon remains in the forest as long as the trees are standing, but deforestation and fires release that carbon into the atmosphere.[40] In other words, forests are important not only to help contain carbon dioxide that is released today, but also to prevent that carbon dioxide from being released in the future. If forests are not managed well, their immediate use as a carbon sink will eventually be nullified.

Next, forests are also habitat for many diverse species. Fifty to ninety percent of terrestrial species live in forests.[41] Tropical forests house species that are unable to live elsewhere, so more tropical forest loss could cause these species to become extinct. If forest loss in the tropics remains the same, thirteen percent of the world's species could be extinct by 2015.[42] Fragmentation, or destroying parts of forests, can significantly harm species as well because they then no longer have enough space to hunt and reproduce.[43]

Moreover, forests serve as part of the local ecosystem. They prevent soil erosion by absorbing water and aid in keeping the soil moist.[44] Forests also help determine local climate and weather.[45] They play an important part in maintaining water quality by preventing the soil from eroding and adding silt to the water, and are a component of a healthy watershed.[46] Forests may also have an impact on flooding.[47]

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38 HUNTER ET AL., *supra* note 2, at 1149.

39 *Id.*

40 *Id.*

41 *Id.* at 1150.

42 *Id.*

43 *Id.*

44 *Id.*

45 *Id.*

46 *Id.*

In mountainous areas, when forest cover is destroyed, the runoff flows into streams, increasing the height of river levels and impacting downstream cities and farms.[48] Without trees to absorb that water, the runoff moves through the area faster, which can cause destruction at lower elevations.

Finally, forests provide resources for indigenous people and local communities. Destroying forests and their resources impacts the poor disproportionately because ninety percent of the 1.2 billion people worldwide considered to be in extreme poverty depend on forest resources.[49] These people use forests not only for fuel and food, but also for medicine and even shelter.[50] Indigenous and forest-dependent people protect the forests for everyone else because forests provide ecosystem services and combat climate change as carbon sinks.[51] Ecosystem services that forests supply include "health (through disease regulation), livelihoods (providing jobs and local employment), water (watershed protection, water flow regulation, rainfall generation), food nutrient recycling, and climate securities."[52] Even though forests provide all of these services, about 6.2 million hectares are converted to other land uses each year.[53] This number must be curbed significantly to ensure that forests are able to support both present and future generations.

II

LACK OF INTERNATIONAL AGREEMENT FROM NEGOTIATIONS

Despite the benefits of protecting forests, countries have yet to sign any binding international agreement to do so. A primary reason for this lack of agreement is that there is a divisive split between the developed countries of the Northern hemisphere (the North) and the developing countries of the Southern hemisphere (the South).[54] The North is concerned with conserving forest ecosystems and fostering sustainable management, especially in tropical forests, which are not

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47 Rhett Butler, *Impact of Deforestation: Local and National Consequences*, MONGABAY.COM, http://rainforests.mongabay.com/0902.htm (last updated July 22, 2012).

48 *Id.*

49 *Forests: Why Are They Important?*, THE REDD DESK, http://www.theredddesk.org/forests_why_are_they_important_1 (last updated Nov. 8, 2013).

50 *Id.*

51 *Id.*

52 *Id.*

53 *Id.*

54 HUNTER ET AL., *supra* note 2, at 1153.

found in the North.[55] The South, on the other hand, wants the ability to develop the economic potential of their forests and to exploit timber resources to bolster economic development.[56] A key principle shaping international environmental law is the right of each country to develop and to do so in its own way, which could mean overusing natural resources.[57] Though detrimental to the goal of international protection of forests, this policy allows developing nations to exploit their own forest resources. Thus far, national economic issues have won out over international environmental issues, so forests are not protected on an international level. States hope to maintain their own sovereignty throughout international negotiations that often restrict this freedom,[58] and this fear of losing the ability to develop in their own way may be a reason national issues have triumphed to date.

A. History of Attempts at Negotiation

As early as 1990, the international community began to recognize the necessity of creating a binding agreement that would "curb deforestation, protect biodiversity, stimulate positive forestry actions and address threats to the world's forests."[59] At the conference in Rio in 1992, however, the divisions between the North and the South were already clear and created the largest obstacles to an agreement.[60] The North wanted to restrict timber production in tropical forests while the South wanted a forest agreement to include temperate and boreal forests as well.[61] Brazil and Malaysia sought to link forest protection in the South to reduction of greenhouse gases in the North so that the protection of forests would not be an excuse for the North to not reduce their own emissions.[62] Furthermore, forest-dense countries wanted compensation for protecting their forests.[63] By the end of the Rio conference, there was no binding agreement, but simply "Forest

55 *Id.*
56 *Id.* at 1154.
57 *Id.* at 446.
58 *Id.* at 443.
59 *Id.* at 1153 (internal quotations omitted).
60 *Id.*
61 *Id.*
62 *Id.*
63 *Id.* at 1154.

Principles."[64] These Principles are very vague, mentioning a goal of sustainable forest management without providing a standard for reaching it.[65] They also stress the rights of countries to use their forests as they desire.[66] The "Forest Principles" really did not accomplish much in the way of a legal method of protecting forests. However, the Principles were an important start in creating a universally acceptable way to manage forests, and they were somewhat morally binding on those who participated.[67]

In 1995, the United Nations created the Intergovernmental Panel on Forests (IPF).[68] This panel was supposed to build upon the "Forest Principles," but it was unable to create any binding agreement.[69] The IPF met four times without reaching a consensus and could not even agree to recommend a future binding treaty about forests.[70] The panel was the first of its kind to analyze all forest-related issues,[71] even if the world was not yet ready for any binding agreement. After the failure of the IPF, the United Nations formed the Intergovernmental Forum on Forests (IFF) in 1997.[72] The IFF also could not reach a consensus and so did not accomplish much more than a vague recommendation to assess a legal framework for protecting all forests over the next five years.[73]

Following these short-lived organizations, the United Nations Forum on Forests (UNFF) became a permanent group in 2000 to discuss forest protection.[74] Its main objective is "to promote the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end."[75] The UNFF created a UN General Assembly Resolution in 2008, *Non-Legally Binding Instrument on All Types of Forests* (the

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64 *Id.*

65 *Id.*

66 *Id.*

67 Melanie Steiner, *The Journey from Rio to Johannesburg: Ten Years of Forest Negotiations, Ten Years of Successes and Failures*, 32 GOLDEN GATE U. L. REV. 629, 633 (2002).

68 HUNTER ET AL., *supra* note 2, at 1155.

69 *Id.*

70 *Id.*

71 Steiner, *supra* note 67, at 639.

72 HUNTER ET AL., *supra* note 2, at 1155.

73 *Id.*

74 *Id.*

75 *Id.* at 1156 (internal quotations omitted).

Resolution), to provide global objectives for forests.[76] As can be seen from its title, though the Resolution sets forth goals, they are not binding, so its success will certainly be limited. The Resolution reaffirms that each nation will be "responsible for the sustainable management of its forests and for the enforcement of its forest-related laws."[77] The Resolution also focuses on strategies that individual nations can undertake in the furtherance of sustainable forest management[78] while stating the importance of international cooperation towards this goal.[79] Therefore, any protection of forests must come from nations rather than an international treaty.

In the midst of the various forums discussing forests, the Kyoto Protocol, signed in 1997 and effective in 2005, created a problem of its own in its treatment of emissions from forests.[80] Article 3.3 stated that a nation's target level for greenhouse gas emissions could include the net changes from reforestation, deforestation, and afforestation since 1990.[81] Article 3.4 allowed other forest activities, like forest management and harvesting, to be counted in targets as well.[82] This inclusion of forests in a nation's emission level was quite controversial because the terms were left undefined.[83] By defining reforestation broadly enough to encompass restocking after harvesting, a nation could meet its commitments without changing much in the amount actually emitted.[84] Due to this confusion, the Bonn Agreement in 2001 limited the amount that forests could contribute to the Kyoto Protocol targets to fifty-four megatons of carbon, which is barely more than two percent of Annex I emissions.[85] Even without the change in target allowances, many of the reductions from different forest management activities would have still taken place.[86]

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76 *Id.*

77 G.A. Res. 62/98, 3, U.N. Doc. A/RES/62/98 (Jan. 31, 2008).

78 *Id.* at 4–7.

79 *Id.* at 7–8.

80 HUNTER ET AL., *supra* note 2, at 691.

81 *Id.*

82 *Id.*

83 *Id.*

84 *Id.* at 691–92.

85 *Id.* at 693.

86 *Id.*

B. Sustainable Forest Management

Although specific international forest agreements have failed, there is an international consensus that sustainable forest management (SFM) is an appropriate goal for forest policies.[87] Generally speaking, SFM "recognizes that forests must be managed as complete ecosystems to supply a wide array of goods and services for current and future generations."[88] Unfortunately, beyond this ambiguous definition, governments have not been able to decide on more specific criteria for SFM.[89] The United Nations is not much clearer, defining SFM as a "dynamic and evolving concept, [which] aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations."[90]

Despite the lack of specific criteria on SFM in an international context, various organizations have developed their own standards.[91] The best example so far is the Forest Stewardship Council's (FSC) creation of SFM criteria as applied to eco-labeling and timber certification.[92] The FSC is a nonprofit organization in Mexico.[93] The FSC Principles and Criteria, developed in 2000, pertain to SFM nationally rather than more locally.[94] They refer to both the economic benefits of forests as well as the environmental impact in order to develop a management plan.[95] Other similar organizations, such as the Canadian Standards Association (CSA), have also adopted criteria for forests as relating to the timber industry.[96]

Financing the program is a significant obstacle to implementing SFM throughout the world.[97] In 2009, the UNFF approved a resolution that described financing SFM through a Facilitative Process that would help countries combat deforestation.[98] The Resolution on the Means of Implementation for Sustainable Forest

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87 *Id.* at 1159.

88 *Id.*

89 *Id.*

90 G.A. Res. 62/98, *supra* note 77, at 4.

91 HUNTER ET AL., *supra* note 2, at 1160.

92 *Id.*

93 *Id.*

94 *Id.*

95 *Id.* at 1161.

96 *Id.* at 1161 n.1.

97 *Facilitative process*, UNITED NATIONS FORUM ON FORESTS, http://www.un.org/esa/forests/facilitative-process.html (last visited Nov. 8, 2013).

98 *Id.*

Management, created during the Special Session of UNFF9, is an attempt to aid developing forest-dense countries in securing funds for the protection of their forests.[99] Recognizing the "common but differentiated responsibilities of countries"[100] as well as the "insufficiency of current financing from all sources for sustainable forest management,"[101] the Resolution creates an intergovernmental expert group tasked with the job of proposing various strategies that will allow developing countries to access funding for SFM.[102] The document also declares that the UNFF will be responsible for monitoring the progress of the Facilitative Process and requests that the members of the Collaborative Partnership on Forests assist the project in any way they can.[103]

C. Reduced Emissions for Deforestation and Degradation

A key part of the South's agenda when creating an international agreement on forests is that they wish to be compensated for protecting their forests. This concept is known as "avoided deforestation," and it applies to compensating countries for preventing deforestation that would otherwise occur.[104] Out of this idea came Reduced Emissions for Deforestation and Degradation (REDD). REDD was created during the Cancun Agreements, a conference of the United Nations Framework Convention on Climate Change (UNFCCC) with an objective "to slow, halt and reverse forest cover and carbon loss."[105] The report encourages developing nations to take part in REDD and to start doing so by creating a national plan in order to implement the program.[106] This plan should also analyze the reasons for deforestation and try to find ways to halt forest loss.[107]

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99 *Id.*

100 U.N. Econ. and Soc. Council, U.N. Forum on Forests, Rep. of the Forum on the special session of the ninth session, 2-3, U.N. Doc. E/2009/118-E/CN.18/SS/2009/2 (Nov. 16, 2009).

101 *Id.* at 3.

102 *Id.* at 6.

103 *Id.* at 6–7.

104 Palmer & Engel, *supra* note 6, at 4.

105 U.N. Framework Convention on Climate Change, Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010, 12–14, U.N. Doc. FCCC/CP/2010/7/Add.1 (Mar. 15, 2011).

106 *Id.* at 12.

107 *Id.* at 13.

Another important piece of the plan is a national monitoring system to keep track of emissions levels.[108]

Though this text came out of prior discussions, the final draft consisted of two major changes.[109] First, REDD is not just about reducing emissions, but focuses on halting and reversing forest cover loss,[110] which is why the program is often referred to as REDD+. Second, the agreement does not refer only to developing countries reducing deforestation, but states that all countries should play a role.[111] One way that developed countries can assist is to help finance the program.[112] Though much progress was made for REDD, there are still omissions to the agreement, such as the definition of SFM or even of forest degradation.[113] With this framework, countries have been able to interpret how to put a REDD plan into action.

REDD focuses on forests' ability to sequester carbon.[114] The UN program is an attempt to have industrialized countries pay for the carbon services of the forests in developing countries, which includes improved forest management.[115] Though the agreement was not created until 2010, the REDD program actually began in 2008 to help prepare developing countries for the implementation of national REDD+ strategies.[116] There are currently forty-six partner countries involved in REDD, with nine pilot countries already implementing programs and seven others working towards implementation.[117] The fact that nine countries have already moved on to the implementation phase of a REDD+ plan in just a few short years shows how quickly the program can work, which is good news for the increased storing of carbon and the reduction of greenhouse gas emissions. REDD recommends a three-phase plan: developing a strategy supported by grants, implementing the strategy, and continuing implementation.[118] An important part of REDD is that local communities and custodians

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108 *Id.*

109 Kemen Austin et al., *The REDD+ Decision in Cancun*, WORLD RESOURCES INSTITUTE (Dec. 20, 2010), http://www.wri.org/stories/2010/12/redd-decision-cancun.

110 *Id.*

111 *Id.*

112 *Id.*

113 *Id.*

114 *FAQs*, UN-REDD PROGRAMME, http://www.un-redd.org/FAQs/tabid/586/Default.aspx (last visited Nov. 8, 2013) (follow "Q4" hyperlink).

115 *Id.*

116 *Id.* (follow "Q1" hyperlink).

117 *Id.*

118 *Id.* (follow "Q7" hyperlink).

of the forests are the ones benefitting from protection of these forests.[119] This strategy empowers those who depend upon and care for the forests rather than an uninvolved government.

REDD++ is now emerging, which involves adding entire rural landscapes to the program.[120] This concept focuses on reducing carbon emissions from all land use changes rather than from forests alone.[121] The incremental addition of pluses can best be understood by considering the scope of each notion. REDD++ adds to the definition of forest by including any "transitions in land cover that affect carbon storage, whether peatland or mineral soil, trees-outside-forest, agroforest, plantations or natural forest."[122]

A major issue facing REDD is funding. One proposed solution is to include REDD in an international carbon market. A major criticism of this method, however, is that the program will cause an influx of cheap credits that could destabilize the carbon market.[123] In addition, many countries with high deforestation rates also have high incidences of governmental corruption.[124] Without the proper institutional capacity, it is unlikely that participation in a carbon market will work well, and those countries must strive to become more reliable before REDD carbon credits should be distributed to them.[125] Though carbon credits may be a useful mechanism for funding REDD in the future, the developing countries who wish to use the credits must prove themselves able to do so honestly first.

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119 *See id.* (follow "Q15" hyperlink).

120 Lloyd C. Irland, *"The Big Trees Were Kings": Challenges for Global Response to Climate Change and Tropical Forest Loss*, 28 UCLA J. ENVTL. L & POL'Y 389, 393 (2010).

121 PETER AKONG MINANG ET AL., INT'L INST. FOR SUSTAINABLE DEV., THE REDD NEGOTIATIONS: MOVING INTO COPENHAGEN 3 (2009), http://www.iisd.org/pdf/2009/redd_negotiations.pdf.

122 *Id.* at 4.

123 Axel Michaelowa & Michael Dutschke, *Will Credits from Avoided Deforestation in Developing Countries Jeopardize the Balance of the Carbon Market?*, *in* AVOIDED DEFORESTATION: PROSPECTS FOR MITIGATING CLIMATE CHANGE 132 (Charles Palmer & Stefanie Engel eds., 2009).

124 *Id.* at 133.

125 *Id.*

III
NATIONAL PROTECTION OF FORESTS

Because there is no binding international agreement protecting forests, any policy governing forests are created by governments at either a national or subnational level.[126] These policies have significantly changed in the past twenty-five years, and they are becoming more restrictive.[127] However, there is still a debate over what sustainable forest practices really are.[128] Without any international negotiations, considering the actions and policies of specific countries in the form of case studies is the best way to examine the protection of forests today.

A. United States

The United States has the fourth most forests of any country in the world.[129] U.S. forests are categorized as forty-eight percent temperate, thirty-seven percent subtropical, and fifteen percent boreal.[130] These forests take up about one-third of the total land area, which is about 751 million acres.[131] Even on private lands, state and administrative laws govern forests.[132] Further, some states have created Forest Acts.[133] Forests that are considered U.S. National Forests are required to prepare forest-wide management plans.[134]

The United States Forest Service was created in 1905 because trees were being rapidly cut down to make room for farming and a fear developed that forests would soon disappear.[135] From its founding and until 1945, the Forest Service primarily concentrated on "protecting lands against overgrazing, controlling and combating fire, protecting fish and game, and providing public recreation."[136] Between 1960 and 1980, it began to manage its forests as part of a larger ecosystem

126 MCDERMOTT ET AL., *supra* note 29, at 4–5.

127 *Id.* at 5.

128 *Id.*

129 *Id.* at 71.

130 *Id.*

131 U.S. FOREST SERVICE, THE U.S. FOREST SERVICE–AN OVERVIEW 11, *available at* http://www.fs.fed.us/documents/USFS_An_Overview_0106MJS.pdf.

132 MCDERMOTT ET AL., *supra* note 29, at 82.

133 *Id.*

134 *Id.* at 83.

135 *Id.* at 79.

136 U.S. FOREST SERVICE, *supra* note 131, at 2.

rather than treating them as stand-alone resources.[137] Today, the Forest Service "manages 193 million acres of national forests and grasslands."[138] It plays some type of role in eighty percent of the forests in the United States.[139] Its mission is "to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations."[140]

The Forest Service has the biggest research program on forestry in the world.[141] Some of its research is based around climate change and the role forests play in the carbon cycle.[142] U.S. forests and wood products capture two hundred million tons of carbon each year, which is about ten percent of U.S. fossil fuel emissions.[143] The research program attempts to understand the carbon cycle as influenced by forest type and age as well as the impacts of forest management practices over time on carbon sequestration and emissions.[144] The Forest Service publishes estimates of forest carbon every year to the Environmental Protection Agency (EPA) so that it may report to the UNFCCC.[145]

Under the Forest Service Organic Act, "[n]o national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."[146] Courts have read this act very strictly in terms of reserving water rights along with the creation of national forests.[147] Although the Organic Act includes the protection of forests, it also mentions a supply of timber, which appears to show contradicting goals. This narrow reading could pose a problem if a company wanted to use the national forests only to

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137 *Id.*

138 *Id.* at 1.

139 *Id.* at 11.

140 *Id.* at 12.

141 *Id.* at 11.

142 *Mitigation*, U.S. FOREST SERVICE RESEARCH & DEVELOPMENT, http://www.fs.fed.us/research/climate-change/mitigation.php (last updated Feb. 20, 2013).

143 U.S. FOREST SERVICE, *supra* note 131, at 9.

144 U.S. Forest Service, *supra* note 142.

145 *Id.*

146 16 U.S.C. § 475 (2006).

147 *See* United States v. New Mexico, 438 U.S. 696, 718 (1978).

produce timber. Fortunately, no case has gone so far as to claim that a timber supply is superior to the protection of the forests.

The Forest Service has developed International Programs to "promote . . . sustainable forest management and biodiversity conservation internationally."[148] One of the goals of the International Programs is to adjust to climate change that has already begun through new forest management practices.[149] The Forest Service recognizes that this development of forest management practices can be accomplished both in the United States and internationally.[150] In this way, International Programs seek to slow deforestation rates to lower greenhouse gas emissions and increase the storage of carbon, to curb land degradation, and to use forests sustainably for energy.[151] Because the Forest Service has over one hundred years of experience managing national forests and grasslands, it believes it can help other nations, such as Mexico.[152] In turn, through working with other nations, the Forest Service has been able to bring important research, knowledge, and technology back to the United States in order to improve forest management domestically.[153]

In addition, the Forest Service operates under a mandate that it must balance the needs of Americans in using forest resources with sustaining the forests and grasslands in the United States.[154] This struggle between utilization and conservation is taking place in virtually all countries with forest resources.[155] The Forest Service collaborates with the U.S. Department of State to share its expertise on the relationship of forests to climate change with international negotiations, including the International Panel on Climate Change.[156] It is also a founding member of the MegaFlorestais group, which is comprised of the twelve largest forested countries discussing forest governance and reforms on an international level.[157] Members of

148 U.S. FOREST SERVICE, *supra* note 131, at 10.

149 U.S. Forest Serv. Int'l Programs, *Why does the US Forest Service Work Internationally?*, U.S. FOREST SERVICE, http://www.fs.fed.us/global/aboutus/policy/welcome.htm (last visited Nov. 8, 2013).

150 *Id.*

151 *Id.*

152 *Id.*

153 *Id.*

154 U.S. Forest Serv. Int'l Programs, *supra* note 35.

155 *Id.*

156 *Id.*

157 *Id.*

MegaFlorestais hold seventy percent of the world's forests.[158] The group connects forest agency leaders to discuss policy informally and confidentially, so it has been effective in bringing about change.[159] The Forest Service is currently partnered with governments, nongovernmental organizations, and communities in Mexico, Liberia, the Congo Basin, Russia, Indonesia, Jordan, and Brazil in an effort to reduce deforestation and degradation.[160]

The National Forest Management Act of 1976 (NFMA) created a system of forest management that limits the clear-cutting of forests following damage to the nation's forests due to timber practices.[161] NFMA also focuses on reforestation, recognizing "the need to reforest areas that have been cut-over or otherwise denuded or deforested, and [the] best potential rate of growth."[162] NFMA says that timber can only be harvested where it is safe to do so and will not harm the ecosystem.[163] For example, the harvesting of timber cannot damage "soil, slope, or other watershed conditions"[164] or "streams, streambanks, shorelines, lakes, wetlands and other bodies of water."[165]

B. Brazil

Brazil has the largest remaining tropical forest in the world with 519 million hectares[166] as well as the largest area of primary forest in the world.[167] Because Brazil is so forested, deforestation has been a major issue. From 1990 to 2005, Brazil lost the largest total area of forest cover of any country.[168] Land use changes, particularly

158 *Networking Support: MegaFlorestais*, RIGHTS AND RESOURCES INITIATIVE, http://www.rightsandresources.org/programs.php?id=82 (last visited Nov. 8, 2012).

159 *Id.*

160 U.S. Forest Serv. Int'l Programs, *supra* note 35.

161 *National Forest Management Act (NFMA)*, SIERRA FOREST LEGACY, http://www.sierraforestlegacy.org/FC_LawsPolicyRegulations/FPR_NFMA.php (last visited Oct. 30, 2013).

162 National Forest Management Act of 1976, Pub. L. No. 94-558, § 4, 90 Stat. 2949 (1976).

163 SIERRA FOREST LEGACY, *supra* note 161.

164 National Forest Management Act § 6(g)(3)(E)(i).

165 *Id.* at § 6(g)(3)(E)(iii).

166 *REDD in Brazil*, THE REDD DESK, http://www.theredddesk.org/countries/brazil/readiness_overview (last visited Oct. 30, 2013).

167 MCDERMOTT ET AL., *supra* note 29, at 222.

168 *Id.* at 223.

deforestation and fires in tropical forests, account for roughly seventy-five percent of Brazil's carbon dioxide emissions.[169] The main causes of deforestation are the expansion of commercial farming paired with smallholder agriculture,[170] which refers to farmers with less land and resources than others in the area.[171] Fortunately, deforestation rates in the Amazon dropped from about 1.9 million hectares per year in 2005 to about 0.6 million hectares per year in 2010.[172] This reduction was due to governmental actions, such as higher enforcement and protected area expansion, as well as low prices for certain goods in the international market.[173] However, the rate is expected to increase again because of agricultural expansion in the tropical forests, demand for grains and lands for grazing, and higher oil prices, increasing the production of biofuels.[174] Deforestation rates shift based on the prices of soy and beef as well as the strength of the Brazilian real against the U.S. dollar.[175]

Though Brazil is not a member of the UN-REDD program, it is a pilot member of the Forest Investment Program of the World Bank.[176] There is an emerging national consensus in Brazil that developed countries should provide compensation for efforts to reduce deforestation rates in developing countries.[177] Submitted as a proposal to the UNFCCC in 2007, the Amazon Fund was implemented in 2008 to meet this goal.[178] The Amazon Fund created an international "positive incentive fund" supported by donations from developed countries.[179] However, the supporting developed countries could not use the funds to reach their own target emissions levels as set forth in the Kyoto Protocol.[180] The Fund received an initial donation of one

169 Paulo Moutinho et al., *Reducing Carbon Emissions by Slowing Deforestation: REDD Initiatives in Brazil*, *in* AVOIDED DEFORESTATION: PROSPECTS FOR MITIGATING CLIMATE CHANGE 90 (Charles Palmer & Stefanie Engel eds., 2009).

170 MCDERMOTT ET AL., *supra* note 29, at 223.

171 John Dixon et al., *Framework for Analysing Impacts of Globalization on Smallholders*, FOOD AND AGRICULTURE ORGANIZATION, http://www.fao.org/docrep/007/y5784e/y5784e02.htm (last visited Nov. 8, 2013).

172 THE REDD DESK, *supra* note 166.

173 Paulo Moutinho et al., *supra* note 169, at 91.

174 *Id.* at 92.

175 *Id.*

176 THE REDD DESK, *supra* note 166.

177 Paulo Moutinho et al., *supra* note 169, at 94–95.

178 THE REDD DESK, *supra* note 166.

179 Paulo Moutinho et al., *supra* note 169, at 97.

180 *Id.*

hundred million dollars by the Norwegian government.[181] Furthermore, the U.S. Forest Service teaches forest management principles to those in the Brazilian Amazon.[182] The methods the Forest Service has shared with local partners about reduced impact harvesting are not only more cost-effective than previous practices, but they also help preserve the ecological benefits of forests.[183]

Nationally, Brazil has no legal framework to implement REDD.[184] An introduced bill known as Law Project 195/2011, previously Law Project 5.586/2009, attempted to institute a national REDD+ program.[185] Its goal was to "establish the national system of Reducing Emissions from Deforestation and Forest Degradation, Conservation, Sustainable Forest Management, Maintenance and Higher levels of carbon (REDD+), and other measures."[186] Public Forest Law 11.284/2006 transferred responsibility of Brazil's forests from the federal government to the states.[187] Previous to 2006, the Brazilian Institute of Environment and Renewable Resources (IBAMA) created national forest policy.[188]

Rather than a legal framework for REDD, Brazil has two policies to slow climate change and deforestation.[189] The National Plan on Climate Change, created in 2008, sets deforestation targets, such as decreasing deforestation by seventy percent by 2018.[190] Its funding comes from both national and international resources.[191] The Plan also requests that the National Public Forest Register list public forests that should be protected, preserved, and managed.[192] The National Plan to Combat Deforestation and Plan to Combat Deforestation at

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181 *Id.*

182 U.S. Forest Serv. Int'l Programs, *supra* note 35.

183 *Id.*

184 THE REDD DESK, *supra* note 166.

185 *Id.*

186 *Law Project nr.195/2011*, THE REDD DESK, http://theredddesk.org/countries/laws/law-project-nr1952011 (last visited Nov. 8 , 2013).

187 MCDERMOTT ET AL., *supra* note 29, at 225.

188 *Id.*

189 Emilie Champagne & Josh Roberts, *Case Study: Brazil*, THE REDD DESK 126 (Dec. 2009), http://www.theredddesk.org/sites/default/files/resources/pdf/2010/IUCN_ELC_2009_REDD-Legal-Frameworks_CASE-STUDY-BRAZIL.pdf.

190 *Id.*

191 *Id.*

192 *Id.*

State Level for the Period 2008–2011 allows for valuing forests for their many benefits, including protecting biodiversity and improving forest management.[193] Additionally, the Brazilian Constitution states a right to an economically balanced environment that should be maintained for present and future generations.[194] Thus, natural resources, including forests, are actually constitutionally protected in Brazil under the public trust doctrine.

Instead of a national scheme, individual Amazon states in Brazil, such as Amazonas and Acre, have created their own methods of frameworks for REDD.[195] For example, the Amazonas Initiative is being implemented in Amazonas, the largest state in Brazil with 157 million hectares of forest and ninety-eight percent forest cover.[196] In 2003, the "Green Free Trade Zone" led to sustainable development options for local rural people while the forests remained available.[197] This move brought about a 133% increase in the state area protected by law in addition to a fifty-three percent decrease in the rate of deforestation.[198] Based on the success of the zone, the state government presented the Amazonas Initiative in 2006.[199] With this voluntary program for compensation for forest's environmental services, interested parties could become partners and help implement programs reducing deforestation through payment.[200] The Initiative's objective is to "establish a fund which can be accessed to purchase ecosystem services provided by standing forests in the state, to develop activities that help prevent deforestation and to contribute to sustainable development."[201]

Brazil also established the "Zero Deforestation Pact" in October 2007, forcing the governors of states in the Amazon to set targets for deforestation reduction.[202] The agreement should reduce deforestation over seven years by creating incremental deforestation reduction targets.[203] This pact was supported by a wide range of entities, from

193 *Id.*

194 *Id.* at 126–27.

195 THE REDD DESK, *supra* note 166.

196 Paulo Moutinho et al., *supra* note 169, at 98.

197 *Id.*

198 *Id.*

199 *Id.*

200 *Id.* at 98–99.

201 *Id.* at 99.

202 *Id.* at 100.

203 *Id.*

nongovernmental organizations to indigenous people to the national congress to Amazon state governors.[204] The deal will reduce deforestation and distribute the benefits from compensation, and it serves as an example of implementing such a program at the state level.[205]

Despite the success of state mechanisms in reducing deforestation in Brazil thus far, Brazil still faces future challenges to a REDD program. First, there has yet to be an agreement on how REDD would be funded, whether it be through carbon credits, donations, or some combination of the two.[206] Next, though the initiatives in the Amazon states are working there, they will actually be obstacles to any sort of national program.[207] Last, debates remain about setting a baseline, ensuring project permanence, and achieving additionality.[208] Regardless of these problems that Brazil must overcome, a national REDD program is perhaps the best way so far to protect forests.[209]

C. Indonesia

Forests make up about sixty percent of Indonesia's land, making it the country with the third largest area of tropical rainforest in the world.[210] The forest cover totals about ninety million hectares.[211] Indonesia used to be second in tropical forests, only having less than Brazil's Amazon, but rapid deforestation reduced its area.[212] The main cause of this deforestation was forest-based economic and social development policies from 1967 to 1998.[213] Between 1994 and 2006, Indonesia became the world's third leading greenhouse gas emitter,

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204 *Id.*

205 *Id.*

206 *Id.* at 106.

207 *Id.*

208 *Id.*

209 *Id.*

210 *Indonesia*, UN-REDD PROGRAMME, http://www.un-redd.org/UNREDDProgramme/CountryActions/Indonesia/tabid/987/language/en-US/Default.aspx (last visited Oct. 31, 2013).

211 Charles Palmer & Krystof Obidzinski, *Choosing Avoided Deforestation Baselines in the Context of Government Failure: The Case of Indonesia's Plantations Policy*, *in* AVOIDED DEFORESTATION: PROSPECTS FOR MITIGATING CLIMATE CHANGE 110 (Charles Palmer & Stefanie Engel eds., 2009).

212 MCDERMOTT ET AL., *supra* note 29, at 169.

213 *Id.*

primarily as a result of deforestation.[214] Around eighty-five percent of Indonesia's emissions come from forest fires, peat burning, and forest clearance.[215] In fact, from 1997 to 1998, peatland fires comprised sixty to ninety percent of total greenhouse gas emissions in Indonesia.[216]

During 2000 to 2005, the rate of deforestation in Indonesia actually increased to 1.9% per year, as compared to the lower rate of 1.6% during 1990 to 2000.[217] In other words, about 1.8 million hectares of forest was lost each year.[218] A total of twenty-eight million hectares of forest has been removed since 1990.[219] Lowland tropical forests, such as Sumatra, Sulawesi, and Kalimantan, are the most prone to deforestation due to a high timber supply.[220] The primary cause of deforestation is the expansion of Indonesia's plantation estate, principally palm oil and timber, into forested areas.[221] Another issue is that government subsidies have reduced the costs of forest conversion as well as increased profits in that arena.[222] Since 1984, the Indonesian government has given nearly half a billion dollars in subsidies to timber plantation development.[223] To stop deforestation, Indonesia needs to provide incentives for reducing emissions concurrently with reversing the governmental failures on plantations.[224]

Like Brazil, Indonesia seems to agree that developing countries should be compensated for protecting their forests based on a statement by Rachmat Witoelar, Indonesia's minister of the environment, in January 2007.[225] This desire for compensation is a running theme among forest-dense countries of the South. Another commonality among developing countries with forests, including Indonesia, is the right to economic benefits from the exploitation of natural resources.[226] During the nineteenth century, countries like the

214 Palmer & Obidzinski, *supra* note 211, at 110.
215 *Id.*
216 *Id.* at 112.
217 *Id.* at 110.
218 *Id.*
219 *Id.* at 114.
220 *Id.*
221 *Id.* at 111.
222 *Id.*
223 *Id.* at 114.
224 *Id.* at 123.
225 *Id.* at 110.
226 *Id.* at 111.

United States took full advantage of natural resources, especially forests, before they realized their ecological importance.[227] Developing countries now want the same opportunity to gain from their own resources.

In 2007, the Indonesian government lobbied the UNFCCC to contemplate incentives for conserving forests.[228] Since then, Indonesia has moved the issue of reducing emissions through less deforestation in concert with sustainable economic development to the forefront.[229] The government also pushed for a new definition of deforestation: "the loss of forest due to human activities, including forest conversion to other uses that have lower carbon stocks and the loss of forest due to continuous degradation resulting from repeated fires and illegal logging."[230] The U.S. Forest Service has partnered with the Indonesian Ministry of Forests in an effort to improve forest governance as well as fire response and control since forest fires contribute significantly to deforestation in Indonesia.[231]

In contrast to Brazil, Indonesia partnered with UN-REDD in October 2009.[232] Completed in October 2012, the UN-REDD Indonesia Program created both a Reference Emission Level methodology and a National Forest Inventory database.[233] In 2012, Indonesia also completed a Participatory Governance Assessment (PGA) based on REDD+ as well as a REDD+ implementation plan for the province of Central Sulawesi.[234] The PGA results focus on the sensitive subject of governance issues in Indonesia, especially in regards to corruption and the rights of indigenous people, and how to overcome those problems while working toward a REDD+ objective.[235]

The UN-REDD Indonesia Program's Semi-Annual Report begins with lessons the nation has learned from implementing REDD+

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227 *See* HUNTER ET AL., *supra* note 2, at 1146–47.

228 Palmer & Obidzinski, *supra* note 211, at 113.

229 *Id.*

230 *Id.*

231 U.S. Forest Serv. Int'l Programs, *supra* note 35.

232 UN-REDD PROGRAMME, *supra* note 210.

233 *Id.*

234 *Id.*

235 *Indonesia Presents its REDD+ Forest Governance Progress*, UN-REDD PROGRAMME (Nov. 2012), http://www.un-redd.org/Newsletter34/Indonesia_Forest_Governance/tabid/106728/Default.aspx.

strategies.[236] First, Indonesia discovered that in order to be successful in a REDD+ program, decisions should bring together interested parties locally, nationally, and globally.[237] In this way, those who rely on the forests and their ecosystem benefits will be guaranteed a voice in the determination of how the forest will be managed and protected. Second, Indonesia recognized the substantial support that the UN-REDD Program provided to the government, especially noting that backing came from the United Nations, a neutral and respected organization.[238]

A significant challenge to any REDD+ strategy is considering the rights of humans and communities who depend on forests every day.[239] These rights must be a part of a successful and lasting program, and consensus building is extremely important.[240] In addition, the government must ensure its activities are "pro job, pro poor, pro growth, and pro environment."[241] Indonesia's Ministry of Forestry will play a key role in a REDD+ mechanism by preparing strategies to meet Indonesia's goal of reducing emissions up to forty-one percent by 2020.[242] Further, Indonesia has encouraged religious leaders to not only support REDD+, but also to assist in the education of their people.[243] Allowing the public to participate in environmental protection and to gain access to information is an important principle of international environmental law.[244] The participation and feeling of inclusion, especially of communities that depend on the forest daily, generally leads to a more successful and better-received program.

CONCLUSION

Based on the success thus far of national and statewide programs to protect forests and curb deforestation as well as the difficulty in

236 UN-REDD PROGRAMME INDONESIA, DIRECTORATE GENERAL OF FORESTRY PLANNING MINISTRY OF FORESTRY, SEMI-ANNUAL REPORT 2011, 7 (2011), *available at* http://www.un-redd.org/UNREDDProgramme/CountryActions/Indonesia/tabid/987/language/en-US/Default.aspx (access report under heading on this page "Programme Activity Updates," then click title "Semi-Annual report 2011 for UN-REDD programme Indonesia").

237 *Id.* at 8.

238 *Id.*

239 *Id.* at 13.

240 *Id.*

241 *Id.* at 16.

242 *Id.*

243 *Id.* at 26–27.

244 HUNTER ET AL., *supra* note 2, at 502.

creating any legally binding strategy that may be applied internationally, the best hope for the future is probably the creation of some pledge to institute such programs within individual nations. Rather than strict terms for a plan, a model law or goals would be the most beneficial because different countries have varied needs and issues in dealing with deforestation. Perhaps nations could sign a pledge through the United Nations, agreeing to create and enforce a law protecting their forests. That way, each nation could choose a strategy that is best suited to its particular circumstances.

The biggest problem facing the protection of forests today is the financing of the operation. Developed countries need to lead by example and help fund developing countries with forests, providing them with economic incentives not to exploit their natural resources. One possible scenario is to assign value to standing forests through carbon credits. For example, developing countries would receive carbon credits based on the amount of carbon their forests hold. As long as those forests remain standing, those credits will not be revoked. However, if deforestation occurs, they will be punished for not only losing carbon sinks, but also for emitting that carbon into the atmosphere. For this system to work, though, there must first be an international method for buying and selling carbon credits, which may or may not be plausible.

To conclude, a strong sentiment exists in developing countries in the South with forests for the defense of their own rights to sovereignty as well as rights to develop like those in the North. This belief will likely keep any true international protection of forests from occurring. Fortunately, this is not necessarily bad; it just means that individual nations must be held more accountable for the enactment and enforcement of their own laws protecting forests and ceasing deforestation. When considering how far developing nations have come in just the past ten years in their protection of forests, the future of forests does not seem so bleak.