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# Applying U.S. Law to Halt Deforestation in Southeastern Myanmar: A Survey of Potential Strategies

Douglas J. Kelso†

## INTRODUCTION

As the twentieth century draws to a close, the threat posed by environmental degradation grows increasingly apparent. Climatic change, ozone depletion, hazardous wastes, and numerous other ecological concerns gain growing prominence in national and international policy debates. Environmental degradation causes the loss of valuable atmospheric, hydrological, geological, and biological resources.<sup>1</sup> In terms of resource depletion, the rapid destruction of tropical rain forests poses one of the greatest ecological threats to our planet today. This paper proposes that proper application of United States law might discourage tropical deforestation abroad, using the nation of Myanmar (formerly Burma) as an example.

### A. *The Crisis of Tropical Deforestation*

Although tropical rain forests cover approximately seven percent of the earth's surface, they contain between fifty and ninety percent of the world's plant and animal species.<sup>2</sup> Properly utilized, a tropical rain forest can provide substantial economic benefits. Careful selective forestry can yield a continuous supply of valuable hardwoods. The forest provides food, fuel, fodder, hides, building material and other necessities for the

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1. The U.S. Congress has found the problems of deforestation to include wood shortages, wetland loss, siltation of water bodies, floods, destruction of indigenous peoples, extinction of plant and animal species, reduced food production capacity, loss of genetic resources, desertification, and possible global climatic destabilization. See 22 USCA § 2151p-1(a) (1990).

2. Kenton R. Miller, Walter V. Reid and Charles V. Barber, *Deforestation and Species Loss*, in Jessica T. Matthews, ed, *Preserving the Global Environment: The Challenge of Shared Leadership* 79, 83 (Norton, 1990) ("*Deforestation and Species Loss*").

populations of developing nations.<sup>3</sup> The forest stores and filters rainfall, providing clean drinking water, productive fisheries, and flood control. It is also a source of valuable medicine for both industrialized and developing nations.<sup>4</sup> Forests could potentially provide abundant export crops to help developing countries reduce trade debts.<sup>5</sup>

Yet, throughout the tropics, deforestation has reduced large tracts of the most biologically diverse ecosystems on earth to desert. Without the forest to absorb rain water and hold soil in place, the land becomes vulnerable to erosion, resulting in mudslides, ruined fisheries and fouled drinking water. An estimated 100 acres of rain forest vanish every minute.<sup>6</sup>

The disappearance of biogenetic diversity through tropical deforestation is a permanent and possibly catastrophic loss to all nations. Unknown species may hold new cures for diseases, new sources of food, or bases for new industries. The economic loss of genetic potential through extinction may be beyond computation.<sup>7</sup> Some species are endemic to only a few square miles of tropical rain forest, the destruction of which could cause their extinction. As the loss of that forest may forever eliminate a potentially valuable species from the world's gene pool, all nations have an interest in halting tropical deforestation around the globe.<sup>8</sup>

The causes of deforestation vary between nations. Slash-and-burn farming and ranching are perhaps the most widespread problems.<sup>9</sup> To

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3. Id at 95.

4. Tropical plants have so far yielded medicines for Hodgkin's disease, Parkinson's disease, multiple sclerosis, malaria, leukemia, dysentery, hypertension, heart surgery and epilepsy. John Hemming, *Exploitation Will Save the Rainforest*, The Times (May 17, 1990).

5. James Brooke, *Harvesting Exotic Crops To Save Brazil's Forest*, NY Times A12 (Apr 30, 1990). See also *Forest Sceptics*, Economist 94 (May 26, 1990); John Hemming, *Exploitation Will Save the Rainforest*, The Times (May 17, 1990); Michael McCabe, *Marketing the Rain Forests*, San Francisco Chronicle Z21 (Oct 1, 1989).

6. Philip Shabecoff, *Loss of Tropical Forests Is Found Much Worse Than Was Thought*, NY Times A1 (Jun 8, 1990).

7. See Marilyn Post, *The Debt-For-Nature Swap: A Long-Term Investment for the Economic Stability of Less Developed Countries*, 24 Intl Law 1071 (1990).

8. While an extinction is a global loss, the loss is felt most keenly in that nation in which the species was found. For example, imagine that a vine indigenous to a small area of rain forest contains a unique chemical that will cure Alzheimer's disease. Any country possessing the vine could reap a fortune from its managed harvest. Were this vine destroyed for agriculture or logging, humanity would lose a cure for a debilitating disease, and the country would lose a natural resource more valuable than the crops or timber the land would otherwise produce.

9. *Deforestation and Species Loss* at 85 (cited in note 2). See also Janet Raloff, *Unraveling the Economics of Deforestation*, 133 Science News 366 (1988); Walter B. Kleeman Jr., *Furniture Makers Ensnared in Environmental Battle*, Wood & Wood Products 34 (Oct 1989).

prepare an area for farmland or range, an entire tract is clear-cut and burned and the ash used to fertilize the soil. However, the soil itself is barren of nutrients and cannot support agriculture or grazing for more than a few years, after which the farmers move on, clearing additional forest to support their livelihood.

Other causes of deforestation include the cutting of trees for firewood, strip-mining, flooding from hydroelectric development projects, and timber harvest.<sup>10</sup> In most of the world, timber harvest currently causes little deforestation compared to other factors. However, in some countries, vast tracts of forest are still clear-cut for tropical hardwoods, lumber, and paper.

### B. *Deforestation in Myanmar*

Myanmar is one nation in which tropical timber harvest causes substantial deforestation.<sup>11</sup> Myanmar contains the largest remaining rain forest in Southeast Asia. As with many tropical nations, Myanmar lost significant forest acreage in the past; roughly 20% of Myanmar's forest disappeared between 1960 and 1985. In the past several years, however, the rate of deforestation in Myanmar has increased dramatically.<sup>12</sup> Unrestrained logging, slash-and-burn agriculture and firewood collection have devastated large areas of Myanmar's rain forest, leaving behind more than a million acres of denuded landscape littered with decaying logs, ashes, and stumps.

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10. Janet Raloff, *Unraveling the Economics of Deforestation*, 133 Science News 366 (1988); Walter B. Kleeman Jr., *Furniture Makers Ensnared in Environmental Battle*, Wood & Wood Products 34 (Oct 1989).

11. Other areas include Sarawak (in Malaysia) and parts of central Africa. Sara Oldfield, *The Tropical Chainsaw Massacre*, New Scientist 54 (Sep 23, 1989).

12. According to the Food and Agriculture Organization, the rate of destruction of Myanmar's forests has increased 500% in recent years. By various estimates, Myanmar will exhaust its usable teak reserves in five to fifteen years at present extraction rates. Out of a conservatively estimated 1.25 million acres cut every year, only 50,000 acres are replanted. Denis D. Gray, *Last Teak Forests Disappearing as Burmese Seek Quick Profits*, Seattle Times A7 (Oct 17, 1990) ("*Last Teak Forests*"); Philip Smucker, *Thailand's Neighbor Logging Policy Hit*, Inter Press Service (July 12, 1990); *Myanmar Pays More Attention to Afforestation*, Xinhua News Service (Aug 23, 1990); Charles P. Wallace, *Face-Off Heats Up Over Teak in Asian Forest*, Los Angeles Times H5 (Aug 14, 1990) ("*Face-Off Heats Up*"); Roger Matthews, *Cash-Starved Regime Courts an Ecological Disaster*, Financial Times 6 (Jun 21, 1990) ("*Cash-Starved Regime*").

Myanmar's tropical rain forest contains 80% of the world's teak reserves.<sup>13</sup> Teak is one of Myanmar's major exports,<sup>14</sup> with most of the trade routed through Thailand. The major importers of teak are the United States, Japan, Denmark and Italy.<sup>15</sup> Teak is the most valuable hardwood in the world; a single large teak tree can be worth up to US \$75,000 on the world market.<sup>16</sup> Highly prized for its strength and beauty, teak was once the wood of choice for ship construction. Today, its primary use is in luxury items.<sup>17</sup>

### 1. *The Political Situation in Myanmar*

Myanmar has been under isolationist, authoritarian socialist governments since gaining independence from Britain in 1948. Four decades of mismanagement have left Myanmar one of the poorest countries in the world, despite abundant natural resources.<sup>18</sup> Myanmar's governments have also been noted for intense political repression.<sup>19</sup> In 1988, approximately 3000 civilians died when the military suppressed a popular uprising of monks, students, and workers. The current military government,

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13. Philip Smucker, *Thailand's Neighbor Logging Policy Hit*, Inter Press Service (July 12, 1990); Binod Bhattarai, *Instant Cash from Teak Forests*, Inter Press Service (Apr 26, 1990). Formerly, the world's major sources of teak were India and Thailand. Overharvesting in India has reduced some teak forests to desert, and unrestrained cutting in Thailand virtually eliminated most of its teak by 1985. *Face-Off Heats Up* (cited in note 12). Small amounts of teak remain in Thailand, Laos, Kampuchea, and Vietnam. Inferior grades of teak come from Indonesian plantations. *Last Teak Forests* (cited in note 12). In addition to teak, there are other useful woods in Myanmar's forests, but only 22 of more than 1600 wood species have been extensively researched and given industrial applications. *The United Nations and Burma* 8 (U.N. Information Centre, Rangoon, Nov 1987) ("*U.N. and Burma*").

14. Teak and other forest products comprise over 30% of Myanmar's export revenues. *U.N. and Burma* at 8 (cited in note 13). Teak is second only to rice as the major foreign exchange earner. *Myanmar 1990: Country Presentation by the Government of the Union of Myanmar* 2 (U.N. Conference on Least Developed Countries, Paris, Sep 3-14, 1990) ("*Myanmar 1990*"). However, teak may now be the leading export commodity; rice exports have fallen since the current regime took power. *Economic Trends in Burma*, East Asian Executive Reports 24 (Jan 15, 1990).

15. *Last Teak Forests* (cited at note 12).

16. *Cash-Starved Regime* at 6 (cited at note 12).

17. Major end uses of tropical woods include furniture, paneling, flooring, veneers, plywood, pulpwood, knife handles, musical instruments, and lumber. Sheryl A. Barnett, *Sparing the Wood*, *Newsday* 3 (Apr 19, 1990).

18. C. Kijang, *Burma: Military Regime Boosted by Foreign Aid and Investment*, Inter Press Service (Dec 4, 1990). Myanmar's natural resources include fisheries, oil fields, mineral reserves, the largest remaining tract of rain forest in Southeast Asia, and (as mentioned) 80% of the world's teak reserves (see note 13 and accompanying text).

19. Shiro Yoneyama, *Asia Gets Mixed U.S. Reviews on Human Rights Records*, Kyodo News Service (Feb 2, 1991). See also Philip Smucker, *Burma: Human Rights Record Questioned as Civil War Deepens*, Inter Press Service (Jun 6, 1988).

known as SLORC,<sup>20</sup> came to power at that time. The crackdown prompted the massive withdrawal of foreign aid by many governments that had previously supported Myanmar.<sup>21</sup> In May 1990, Myanmar held an open election in which the opposition National League for Democracy party won a landslide victory.<sup>22</sup> SLORC responded by arresting opposition leaders and refusing to honor the election results.<sup>23</sup>

SLORC has also continued a long civil war against several of Myanmar's indigenous peoples, most notably the Karen in Myanmar's southeastern forests.<sup>24</sup> For years, the Karen sold teak for subsistence and to support their struggle against the Myanmar government.<sup>25</sup> The Myanmar army has vigorously persecuted the Karen; government troops have destroyed cropland, burned villages, and shot civilians on sight<sup>26</sup> in a struggle that has occasionally spilled over into Thailand.<sup>27</sup>

Further complicating this situation is Myanmar's illegal drug trade; Myanmar is one of the world's leading heroin producers. Under the guise of fighting opium warlords, Myanmar's army has driven thousands of vil-

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20. SLORC: State Law and Order Restoration Council.

21. A number of nations cut off foreign aid to Myanmar as a result of the government's response to the uprising. Japan was Myanmar's largest donor; it donated \$259 million to Myanmar in 1988, 78% of the nation's total foreign assistance, before it cut off foreign aid following the uprising. *Myanmar: What Should U.S. Do?*, Los Angeles Times D3 (Mar 11, 1991). Other nations that provided foreign aid prior to 1988 included West Germany, Denmark, Canada, Australia, Britain, Finland, China, Switzerland, South Korea, and Norway. Aid also came from the Asian Development Bank, the European Economic Community, and the United Nations. *Myanmar 1990* at 12 (cited in note 14).

22. Philip Smucker, *Burma: Mood of Apprehensive Uncertainty After Elections*, Inter Press Service (May 31, 1990).

23. *Burma: Even Buddha Is Banned*, Economist 29 (Aug 25, 1990). See also Philip Smucker, *Burma: West Moves From Confrontation to Reconciliation* (Jan 23, 1991) for a summary of the election and subsequent events. Among the imprisoned opposition leaders is recent Nobel Prize winner Aung San Suu Kyi. Julian Isherwood, *Nobel Prize for Burma Opposition Leader*, Daily Telegraph 1 (Oct 15, 1991).

24. The major ethnic groups in Myanmar are Burman, Chin, Kachin, Karen, Kayah, Mon, Rakhine, and Shan. There are also sizable Indian and Chinese communities. *U.N. and Burma* at 1 (cited in note 13). The Karen have been striving for independence or autonomy under a federal system. See Carol Conragan, United Press International (May 26, 1990), available in LEXIS, Nexis Library, UPI File. The Karen struggle predates Myanmar's independence; they had resisted British rule and sought sovereign recognition at the time of independence.

25. The Karen are dependent on the forest for teak and other wood, bamboo, food, and medicine. The loss of the forest is expected to devastate their culture. Sutin Wannabovorn, *Thai Loggers Fell Trees in Burma and Then Just Leave Them*, Reuters (Nov 2, 1990), available in LEXIS, Nexis Library, Reuter File. Although the Karen harvest timber, they employ selective harvest techniques in conjunction with replanting to preserve the forest ecosystem. James Pringle, *Thai Loggers 'Rape' Burma Teak Forest*, The Times (May 26, 1990) ("*Thai Loggers 'Rape' Burma*"); *A Border Lined With Gold*, Economist 31 (Apr 6, 1991).

26. Conragan, United Press International (May 26, 1990) (cited in note 24).

27. *Myanmar Soldiers Allegedly Plunder Thai Village*, Kyodo News Service (Jan 29, 1991).

lagers from the forests, killing many in the process.<sup>28</sup> SLORC has been accused of ignoring heroin traffic in favor of suppressing the insurgency.<sup>29</sup>

## 2. *Foreign Timber Contracts*

Following the 1988 crackdown, SLORC found itself facing a number of problems: a restive and angry population, a continuing civil war against the Karen and other minorities, a devastated national infrastructure, and poor living standards. Myanmar's treasury held only US \$10 million in foreign reserves.<sup>30</sup> SLORC responded to this fiscal crisis by opening its borders to foreign investors.

In 1989, Myanmar signed more than 200 contracts and entered into over 150 additional joint ventures with foreign enterprises.<sup>31</sup> These new arrangements included oil and gas ventures, coastal fishing operations, gem mining, and timber harvesting. In 1989, Myanmar raised \$100 million with 22 timber concessions to Thai companies,<sup>32</sup> and by 1990, had granted over 40 concessions.<sup>33</sup> The concessions often went to companies closely linked to Thai military officers and politicians.<sup>34</sup>

The timber concessions have proven environmentally catastrophic as unrestrained clear-cutting devastates vast tracts of forest land. Thai timber companies, having found their opportunities in Thailand restricted by

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28. Philip Smucker, *Politics of Teak Enmeshed in War of Repression*, Inter Press Service (Apr 23, 1990).

29. Angus MacSwan, *Burma Heroin Production Booms as Junta Focuses on Dissent*, Reuters (Oct 4, 1990).

30. *Thai Loggers 'Rape' Burma* (cited in note 25).

31. Chen Bingqi, *Myanmar Makes Big Strides in Implementing Its Open-Door Economic Policy*, Xinhua News Service (Jan 3, 1990).

32. *The Cost of Wood*, Economist 39 (Dec 23, 1989). This figure may seem high; it represents roughly 40% of Myanmar's export income of \$250 million in 1989. However, wood products have historically accounted for over 30% of Myanmar's exports. *U.N. and Burma* at 8 (cited in note 13). In Myanmar's F.Y. 1988-89, 149,000 tons of raw teak were legally exported. In F.Y. 1989-90, this dropped to 120,000 tons. *Myanmar 1990* at 27 (cited in note 14).

33. *Thailand: Environmental Groups Meet With Premier on Burma Logging*, Inter Press Service (Jun 15, 1990).

34. *Cash-Starved Regime* at 6 (cited in note 12). Other companies from Singapore, Taiwan, and Hong Kong harvest teak from the interior of Myanmar through joint ventures with the Myanmar government, and the Chinese bring timber out of the northern part of the country. *Last Teak Forests* (cited in note 12). See also Yuli Ismartono, *Burma Cozies Up to Big Brother Thailand*, Inter Press Service (Mar 13, 1990).

a commercial logging ban,<sup>35</sup> are taking advantage of the chance to harvest Myanmar's teak forests.<sup>36</sup>

Myanmar has ostensibly regulated forestry for decades under strict forest practice laws.<sup>37</sup> For example, Myanmar law nominally requires timber companies to leave some trees standing, leave stumps behind to throw up shoots for ground cover, and leave trees on hillsides to prevent mudslides.<sup>38</sup> In practice, timber companies ignore the regulations. Instead, they log the forests as rapidly as possible using large-scale mechanized clear-cut operations that resemble strip-mining more than forestry.<sup>39</sup> Several Thai companies have also been implicated in timber poaching and smuggling.<sup>40</sup>

If Myanmar properly enforced its forestry laws, timber-related deforestation would pose little problem. Myanmar publicly boasts of a well-established forestry department,<sup>41</sup> although Myanmar officials have

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35. The ban went into effect in early 1989 after hundreds of people died from mudslides directly attributable to rapacious deforestation. Philip Smucker, *Thailand: Will Logging Ban Serve to Protect Rain Forests?* Inter Press Service (Jan 25, 1989).

36. Apparently the timber companies recognize the instability of the current political situation and are maximizing their harvest while they still have access to Myanmar's forests, removing even undersized trees. See *Thailand: Environmental Groups Meet With Premier on Burma Logging*, Inter Press Service (Jun 15, 1990). One problem is that each timber concession is for a three to five year period. *Burma Detains 250 Thai Loggers, Says Forests Are Being Stripped*, Reuters (Jun 27, 1990) ("*Burma Detains Loggers*"). Timber companies have no incentive to replant, as they have no guarantee of being able to harvest the next generation of timber.

37. Traditionally, Burmese loggers have employed a harvest system implemented by the British in the 19th century known as the Burma Selection System. Under the Burma Selection System, only the largest teak trees were cut. The trees were removed individually by elephants with minimal damage to the surrounding forest and "seed trees" were left to help regenerate the area. Areas were selectively cut in thirty year cycles to provide a continuous supply of teak for world markets. See *Face-Off Heats Up* (cited in note 12); *Last Teak Forests* (cited in note 12); *Cash-Starved Regime* at 6 (cited in note 12).

38. *Cash-Starved Regime* at 6 (cited in note 12).

39. *Thai Loggers 'Rape' Burma* (cited in note 25); Sutin Wannabovorn, *Thai Loggers Fell Trees in Burma and Then Just Leave Them*, Reuters (Nov 2, 1990); Dianne Dumanoski, *Logging Threatening Asian Tropical Forests*, Boston Globe (Jul 28, 1990).

40. Thai companies have been involved in illegal timber activities in Kampuchea, Laos and Malaysia. Timber smuggling has often been extensive and sophisticated; in mid-1990, Myanmar authorities shut down an operation that involved 125 Thai and 25 Myanmar timber workers, three secret sawmills, a variety of logging equipment, and military hardware (including a mortar and four grenade launchers). Chit Tun, *Burma Cracks Down on Timber Smugglers, Drug Runners*, United Press International (Jun 29, 1990) ("*Burma Cracks Down*"). Insurgent groups such as the Khmer Rouge have assisted the Thai companies in obtaining poached hardwoods. Shiela Tefft, *Thai Loggers Devastate Forest*, Christian Science Monitor 3 (Dec 26, 1990); Philip Smucker, *Thailand's Neighbor Logging Policy Hit*, Inter Press Service (July 12, 1990).

41. *Myanmar 1990* at 17 (cited in note 14).



admitted to problems with forestry law violations.<sup>42</sup> In December 1990, Myanmar asked the Thai government to enter a joint venture to curb the depredations of unregulated Thai companies.<sup>43</sup> Despite official warnings and occasional arrests of loggers,<sup>44</sup> however, Myanmar has failed to make the Thai companies comply with timber harvest laws.

### 3. *The Military Advantages of the Teak Harvest*

Although timber provides export fees that help support the Myanmar military,<sup>45</sup> the timber contracts are more than a source of revenue for SLORC. They have proven to be a valuable strategic aid against the Karen insurgency.<sup>46</sup> By granting forestry concessions to Thai companies, the government prevented the Karen from earning money through logging. The forestry concessions require timber companies to build all-weather logging roads that will accommodate the military vehicles of the Myanmar army.<sup>47</sup> Clear-cutting has also stripped away the forest cover that provided the Karen with places to hide.

The impoverished Karen have reacted to the pressure in several ways. Some have demanded fees from Thai loggers.<sup>48</sup> Others have reportedly met timber extraction with violent resistance.<sup>49</sup> To protect timber operations against raids, some companies have paid guerilla groups such as the Kampuchean Khmer Rouge to provide armed protection for their logging operations.<sup>50</sup>

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42. *Burma Rejects Environmentalist Charges of Forest Destruction*, United Press International (Jun 26, 1990). See also *Burma Cracks Down* (cited in note 40).

43. Steven Erlanger, *Burmese Teak Forest Falls to Finance a War*, NY Times A6 (Dec 9, 1990).

44. *Burma Detains Loggers* (cited at note 36).

45. The military received a 15% budget increase in 1990. Binod Bhattarai, *Instant Cash from Teak Forests*, Inter Press Service (Apr 26, 1990).

46. Myanmar officials have admitted privately that Myanmar granted timber concessions to Thailand primarily to gain control over the sensitive border region currently dominated by the Karen. Id.

47. *A Border Lined With Gold*, Economist 31 (Apr 6, 1991).

48. *Face-Off Heats Up* (cited in note 12).

49. *Thai Timber Company's Bowser Destroyed by Myanmar Insurgents*, Xinhua News Service (Jan 13, 1991); *Thai National Security Council to Meet on Threats from Myanmar Ethnic Groups*, Xinhua News Service (Jan 14, 1991); Philip Smucker, *Politics of Teak Enmeshed in War of Repression*, Inter Press Service (Apr 23, 1990).

50. Philip Smucker, *Thailand's Neighbor Logging Policy Hit*, Inter Press Service (Jul 12, 1990).

### C. *The Role of International Action*

As the rapid deforestation in southeastern Myanmar is confined within Myanmar's borders, only Myanmar's government may stop it. SLORC could cancel the timber contracts and expel timber companies or use teak revenues to hire foresters to enforce forestry laws. As long as the insurgency continues, however, SLORC's desire for immediate cash and military advantage will probably override Myanmar's long-term need for resource preservation. The civil war may last until indigenous minorities such as the Karen either receive some measure of independence or are completely defeated.

While SLORC currently maintains sovereign control within Myanmar, other nations might attempt to influence Myanmar to halt its rapid timber sales and discourage deforestation. Although Myanmar will ultimately suffer the most from its deforestation, other nations will also be harmed.<sup>51</sup>

This Comment surveys possible strategies by which the United States government, using existing law, might act to halt the rapid destruction of Myanmar's tropical rain forests.

## I. ECONOMIC SANCTIONS

Nations commonly use economic sanctions to express displeasure and to force governmental policy changes. A government imposes economic sanctions in the hope that loss of capital, goods, or market access will persuade the targeted foreign government to behave as desired. This section will evaluate sanctions the United States could apply against Myanmar and their probability of success in halting deforestation. Direct economic pressures on Thailand will also be considered.

### A. *Economic Sanctions as a Political Strategy*

Economic sanctions can severely damage international relations. Sanctions typically spur resentment, anger, and economic retaliation. A backlash is particularly likely when one country seeks to induce a change in what has traditionally been another country's sovereign concern, such as the exploitation of domestic natural resources. Any nation desiring positive relations with another should seek alternatives to sanctions.

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51. See notes 2-10 and accompanying text.

However, if the United States determines economic sanctions against Myanmar are appropriate, the sanctions should be designed to ultimately preserve the teak trade. Treating forests as economic assets to be utilized and not destroyed will best serve forest preservation,<sup>52</sup> so Myanmar should be allowed to exploit its forest resources to the greatest degree that is ecologically sound.<sup>53</sup> The aim of economic or diplomatic pressures should not be to destroy the teak trade but to end destructive logging and promote sustainable harvest practices. The United States should lift sanctions once Myanmar has begun reforestation and implemented proper timber management.

Any United States sanctions on Myanmar would require multilateral participation to be effective. Persuading other nations to cooperate would probably be difficult; past attempts to isolate Myanmar internationally with economic sanctions have failed, largely because of Myanmar's close trading relationships with Thailand and China. Most of Myanmar's foreign trade passes through China, a nation unlikely to join a boycott of Myanmar.<sup>54</sup> Myanmar's strong nationalistic and isolationist tendencies may thwart external efforts to induce reform, particularly through coercive economic pressure. SLORC has previously shown strong resistance to outside interference.<sup>55</sup>

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52. See, for example, Michael Cross, *Spare the Tree and Spoil the Forest*, *New Scientist* 24 (Nov 26, 1988). A common protection strategy in the developed world is to maintain national parks or nature preserves that are off-limits to exploitation. However, wilderness and park reserves lock off sometimes vital resources in poorer nations and are constantly raided. A more realistic approach is to limit exploitation to sustainable levels. Increasingly, conservation biologists believe that national parks are not the solution in the developing world, as many of these parks exist only on paper and are poached, logged, farmed and mined in practice. See William Booth, *Saving Rain Forests By Using Them*, *Washington Post* A1 (Jun 29, 1989).

53. One proposed management system involves the use of "extractive reserves." An extractive reserve is an area of forest set aside for sustainable resource collection. The area may supply food, medicinal plants, gums, fibers, dyes, oils and other products for marketing locally and abroad. Within an extractive reserve, mechanized logging and road construction could be banned, making limited selective cutting a practical timber harvest technique. Local processing plants and cottage industries can turn forest products into finished goods, providing jobs with a stable resource base. Several studies have shown that extractive activities can be more profitable than ranching or logging in the rainforest. Nina Broner Workman, *Brazil's Thriving Environmental Movement*, *Technology Review* 42 (Oct 1990). See also John Hemming, *Exploitation Will Save the Rainforest*, *The Times* (May 17, 1990).

54. Philip Smucker, *Burma: West Moves From Confrontation to Reconciliation*, Inter Press Service (Jan 23, 1991).

55. Myanmar has steadfastly refused to join ASEAN (Association of Southeast Asian Nations), SAARC (South Asian Association for Regional Cooperation), or any similar organization. In a press conference, the SLORC Information Committee reiterated Myanmar's prior policy, stating that interference in internal affairs by outsiders was unwarranted and that "we have never interfered in the affairs of others and we expect the others to reciprocate." *Press Conference by SLORC Information Committee, Minister for Agriculture and Forests, Minister for*

Thailand provides an alternative target for economic sanctions. Thailand has a thriving export industry in finished teak products that relies heavily on Myanmar's teak. The United States could impose sanctions on Thailand until the Thai government requires timber companies under its control to practice responsible forestry. For example, the United States could pressure Thailand to restrict timber imports and control the timber industry within Thai borders.

### B. *Foreign Aid Moratorium*

Many observers approved when the United States and other nations cut off foreign aid to Myanmar in response to the 1988 crackdown.<sup>56</sup> Some would argue that the U.S. should maintain a moratorium on aid to Myanmar until SLORC reforms domestic forestry policies.<sup>57</sup> However, the termination of foreign aid may have aggravated the problem by prompting SLORC to sell Myanmar's forest resources to private enterprise to raise capital.

The United States is also applying economic pressure on Thailand, although the reasons are unrelated to forestry; the U.S. eliminated all economic and military aid to Thailand following a military coup in February 1991.<sup>58</sup> Even before withdrawing foreign aid, however, the U.S. provided Thailand with minimal financial support.<sup>59</sup> Continuing to withhold aid would have a minimal impact on Thailand's economy and might encourage wasteful resource consumption.

### C. *Embargo*

One of the most direct forms of economic pressure is a partial or total import ban on commodities from a given nation. As deforestation in

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*Trade and Planning*, Burma Broadcasting System (Oct 5, 1990); reported by British Broadcasting Corporation (Oct 8, 1990).

56. Since the 1988 uprising, the United States has cut off \$12 million in aid, suspended favorable tariff treatment, and opposed loans to Myanmar from the International Monetary Fund and other organizations.

57. Recent U.S. policy has focused on withholding aid from Myanmar pending human rights reforms (see notes 67-69 and accompanying text).

58. *Thailand: U.S. Cuts Aid After Coup*, Inter Press Service (Feb 25, 1991). The United States is unlikely to restore aid until a democratically elected government replaces the leaders installed following the coup. *United States Hopes for Early Election in Thailand*, Reuters (Jul 29, 1991).

59. In 1990, Thailand received \$16,400,000. Philip Smucker, *Thailand: Coup Shifts Foreign Policy, But Business Not Affected*, Inter Press Service (Feb 26, 1991); *Japan Unlikely to Halt Aid to Thailand Despite Coup*, Kyodo News Service (Feb 24, 1991). Against the potential revenues from hardwood exports, this sum is minimal.

Myanmar occurs primarily because of the large profits attainable from teak and other hardwoods, a ban on Myanmar hardwoods would almost certainly depress the market for Myanmar's timber products. If the United States, as one of the major purchasers of teak,<sup>60</sup> were to ban teak imports within its jurisdiction, the overall market value of teak would fall.

Because other markets exist for teak, a U.S. ban on teak would probably not destroy the profitability of the teak trade. The United States might therefore attempt to spearhead a drive to halt hardwood exports around the world. A global teak embargo would have a more drastic impact on the teak market than a country-specific ban but would be more difficult to implement. Other trade moratoria have met with varying success; among them are bans on rhinoceros horn and elephant ivory.

Attempts to halt the rhino horn trade through prohibition have met with disheartening failure.<sup>61</sup> The ban on elephant ivory, however, has slowed the overall rate of elephant poaching.<sup>62</sup> Arguably, the ivory ban has been successful if viewed as a temporary measure allowing elephant populations to recover while management plans are developed to use the herds profitably in a sustainable manner.<sup>63</sup> Similarly, a teak ban should be no more than a temporary action to halt clear-cutting pending development and implementation of responsible harvest techniques.

Teak is used today in construction and as an ornamental wood. Substitute materials exist for both purposes; unlike rhino horn, teak has no

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60. See note 16 and accompanying text.

61. Illicit trade in rhino horn primarily serves two inelastic markets: Yemen, where it is used for dagger handles, and China, where it is used for traditional medicines. Neither market is susceptible to international pressure. Forcing rhino horn onto the black market has raised the price of the horn, contributing to the slaughter of additional thousands of rhinos by profit-driven poachers. Virginia Morell, *Running for Their Lives*, Intl Wildlife 4, 13 (May-Jun 1990). The demand for the horn is so great that valuable Chinese rhino horn carvings have been ground to powder for medicinal use. *Chinese Poaching Ming Artifacts for More Rhino Horns*, Chicago Tribune 4C (Oct 2, 1990).

62. Poaching roughly halved the world elephant population in the 1980s. In central African nations, the rate of poaching has declined dramatically following the ban, and the black market price of ivory has fallen more than 90%. See Charles Clover, *End of Ivory Ban 'Will Threaten Elephants'*, Daily Telegraph 23 (Feb 14, 1991); *The Ivory Paradox*, Economist 16 (Mar 2, 1991). However, in southern Africa, poaching may have increased since the ban; nations in that region had previously managed elephant herds for the ivory and maintained stable populations. Without a legal market for ivory, there is no motivation to protect elephants from poachers. See *Elephants: Poachers' Pause*, Economist 42 (Mar 2, 1991); Cris Chinaka, *Five African States to Sign Ivory Trade Treaty*, Reuters (Jan 16, 1991).

63. *The Ivory Paradox*, Economist 16 (Mar 2, 1991); *Elephants: Poachers' Pause*, Economist 42 (Mar 2, 1991). An effective plan might involve continent-wide implementation of herd management techniques successfully employed in southern African states.

end consumer who feels the need to have teak at all costs.<sup>64</sup> While an international ban on teak furniture and other items may not eliminate the global demand for teak, it could restrict the trade to a small black market. Reducing the demand for teak would lower the incentive for timber companies to harvest the wood and possibly reduce the motivation to clear-cut.

The United States might also impose a broader embargo. A ban on all Southeast Asian teak or all hardwoods would be more easily enforceable than a ban on Myanmar teak.<sup>65</sup> The U.S. should carefully evaluate the consequences of even a temporary general embargo. Although a general teak ban could deprive Myanmar of a valuable export commodity until sensible harvest practices were in place, it would also cause serious economic harm to all Southeast Asian timber workers, including those in nations that practice renewable timber management. Further, it may become comparatively more profitable to clear rain forest for such "higher" economic uses as farming or rangeland if an embargo lowered the value of timber.<sup>66</sup> If a hardwood ban went into effect, the industrialized world and multilateral banks should help Southeast Asian nations develop sustainable and profitable forest resource management.

The United States could impose an embargo in one of several ways, discussed below. First, Congress could pass specific legislation to ban the import of teak. Second, in the absence of congressional action, the executive branch could halt the flow of teak into the United States by acting under present laws. The executive branch could employ an existing congressional directive to impose sanctions on Myanmar or could act under laws designed to protect endangered species, either by declaring teak an endangered species or by using another species as a surrogate to invoke key provisions of the United States Endangered Species Act.

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64. Hardwoods such as rosewood or mahogany could be used in place of teak in luxury goods. Softwoods, brick, clay, metal, glass, or other materials may be used in construction. Some hardwoods are used wastefully for disposable goods that might be made from plastic or fiber plants such as flax. Use of substitute materials would provide more hardwood for consumer durables and luxury items.

65. A ban on teak might have to include plantation stock and wild timber taken through sustainable forestry, since legal and illegal teak may be indistinguishable. Wild teak harvested in Myanmar could be slipped in among plantation teak, for example.

66. Jonathan Thatcher, *Southeast Asia Needs Help to Keep Its Forests*, Reuters (Sep 3, 1989).

### 1. *Direct Ban on Myanmar Imports*

The United States Congress, as part of the Customs and Trade Act of 1990,<sup>67</sup> has authorized the president to impose sanctions against Myanmar until the Myanmar government ends specified political and human rights abuses.<sup>68</sup> To date, the president has failed to act. Although a halt to deforestation is not a listed condition, the president has the discretion to block the import of all Myanmar goods, including tropical timber, while political abuses continue. The law also calls upon the president to seek cooperative agreements with other industrial democracies, which include Italy, Denmark, and Japan. The president could thus place a ban on all teak coming from Myanmar and ask other teak importers to do the same.

The president's authority to impose sanctions under this bill will continue until SLORC has taken specified steps to fight the drug trade, lifted martial law, freed all political prisoners, and abdicated power to a civilian government.<sup>69</sup> Once Myanmar has met the listed conditions, the United States might be able to work more effectively with the next government. Although a teak embargo under the Customs and Trade Act of 1990 must be lifted at that point, the temporary disruption of the teak trade would still provide disincentives to continue logging at current levels.<sup>70</sup>

### 2. *Endangered Species Protection*

Another approach to halting the import of teak into the United States would be to use endangered species protection laws. The executive

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67. Customs and Trade Act of 1990, Pub L No 101-382, 104 Stat 629-726.

68. Pub L No 101-382, § 138, 104 Stat 653 (1990) (Economic Sanctions Against Products of Burma): "If the President does not certify to Congress that Myanmar has implemented specified political reforms by October 1, 1990, then he shall impose economic sanctions upon Myanmar as he deems appropriate. He shall also attempt to persuade other industrialized democracies to cooperate in sanctions against Myanmar. In imposing sanctions, the President shall give primary consideration to those products (including tropical timber) which constitute major imports from Myanmar, unless he determines that sanctions against those products would adversely affect U.S. economic interests. If the President fails to impose sanctions, he shall report his reasons for not doing so to Congress." Senator Daniel Moynihan introduced this bill largely to address Myanmar's human rights violations, but with support by environmentalists as well. See *Burma Detains 250 Thai Loggers, Says Forests Are Being Stripped*, Reuters (Jun 27, 1990); Binod Bhattacharai, *Instant Cash from Teak Forests*, Inter Press Service (Apr 26, 1990).

69. Pub L No 101-382 § 138(b).

70. Congress could similarly ban all imported hardwood from any nation and create an exception for states using logging methods certified as "ecologically sensitive" by the U.S. State Department. This would resemble the current system of State Department certifications for human rights violations.

branch might declare teak to be an endangered species and ban its exploitation and import.

a. The Endangered Species Act

In the United States, the Endangered Species Act (ESA) mandates substantial protection for plants and animals listed as endangered.<sup>71</sup> Section 9 of the ESA bans the import of any endangered plant species into the United States<sup>72</sup> or its transport in interstate or foreign commerce.<sup>73</sup> This law applies to any person, corporation, or government entity within the jurisdiction of the United States.<sup>74</sup>

Section 7 of the ESA places upon every federal agency an affirmative duty to develop programs for threatened and endangered species conservation.<sup>75</sup> This language is not qualified by economic efficiency or political expediency;<sup>76</sup> all agencies of the federal government must act to protect and promote the recovery of listed species.<sup>77</sup>

i. *Placing teak on the endangered species list.* The Secretary of the Interior could add teak to the endangered species list.<sup>78</sup> A species must face the risk of extinction over all or a "significant portion" of its geo-

71. 16 USC §§ 1531-1544 (1988 and Supp 1989).

72. 16 USC § 1538(a)(2)(A).

73. 16 USC § 1538(a)(2)(C).

74. 16 USC § 1538(a)(2).

75. 16 USC § 1536(a)(1). "Conservation" encompasses all methods and procedures necessary to bring an endangered species to the point where it is no longer endangered. 16 USC § 1532(3).

76. However, designating a "critical habitat" under the ESA requires an analysis of economic impact. 16 USC § 1533(b)(2). Therefore, economics need not be considered in the listing process, but must be taken into account in selecting options for protecting the species. For a discussion of the critical habitat issue, see Mark Bonnett and Kurt Zimmerman, *Politics and Preservation: The Endangered Species Act and the Northern Spotted Owl*, 18 *Ecol L Q* 105, 146-52 (1991) ("Bonnett and Zimmerman").

77. Beyond refraining from jeopardizing or destroying a species, all federal agencies must continuously develop programs to bring rare plants and animals to the point where they may be removed from the list of threatened or endangered species. Thomas France and Jack Tuholske, *Stay the Hand: New Directions for the Endangered Species Act*, 7 *Pub Land L Rev* 1 (1986). The Supreme Court has noted that the "plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost." *Tennessee Valley Authority v Hill*, 437 US 153, 184 (1978).

78. 16 USC § 1533(a)(1) states that a species may be listed as endangered or threatened if it is now or will foreseeably become in danger of extinction through any of the following factors: (A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Most of the world's remaining teak is in Myanmar's forests, which are being rapidly clear-cut. Myanmar's lax enforcement of its existing laws would seem to meet the ESA's listing requirements if teak is actually facing extinction.



graphic range to be listed.<sup>79</sup> Thus, to list teak as endangered, the Secretary would have to determine that the southeastern region of Myanmar constitutes a "significant portion" of the species' range and that the tree was in danger of extinction. As teak is being slowly replanted, extinction seems a remote possibility even within Myanmar. Therefore, an ESA listing protecting teak is unlikely.

ii. *The use of surrogates under the ESA.* It may be possible, however, to invoke the Endangered Species Act to ban teak imports without declaring teak to be an endangered species. An ESA listing requires a "critical habitat" designation,<sup>80</sup> which means an endangered species may act as a "surrogate" to protect an entire ecosystem.<sup>81</sup>

A number of listed endangered species are indigenous to Myanmar.<sup>82</sup> As Myanmar is the last major undisturbed refuge for hornbills, tapirs, rhinoceroses, and wild elephants in Southeast Asia,<sup>83</sup> protection of Myanmar's rain forest ecosystem may be critical to the survival of these species. Because deforestation in the region is due largely to teak harvest operations, protection of these species requires an end to clear-cutting. The Secretary of the Interior has the power under the ESA to ban the import of all products made with Myanmar hardwoods until clear-cutting has stopped.

#### b. Convention on International Trade in Endangered Species

The United States might also request that teak be declared endangered under the Convention on International Trade in Endangered Species (CITES).<sup>84</sup> CITES attempts to protect endangered species by

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79. 16 USC § 1532(6).

80. The designation of a species' critical habitat must be made concurrently with its listing but may be periodically revised. 16 USC § 1533(a)(3).

81. Notable surrogates in recent years have included the northern spotted owl (used to block clear-cutting on federal lands in the Pacific Northwest; see Bonnett and Zimmerman at 105 (cited in note 76)) and the snail darter (used to halt construction of the Tellico Dam; see *Tennessee Valley Authority v Hill*, 437 US 153 (1978)). In each case, the substantive protection of the ESA has been used to compel protection of one species while "incidentally" bringing about another desired result.

82. Recognized endangered species in the area include Asian elephants, Asian tapirs, Bengal monitor lizards, brown eared pheasants, clouded leopards, various gibbons, Javan and Sumatran rhinoceroses, leopards, marbled cats, musk deer, river terrapins, Temminck's golden cats, tigers, and white-winged wood ducks. See Endangered Species List, 50 CFR § 17.11 (1990).

83. Dianne Dumanoski, *Logging Threatening Asian Tropical Forests*, Boston Globe 3 (Jul 28, 1990).

84. The Convention on International Trade in Endangered Species of Fauna and Flora, [1976] 27 UST 1087, TIAS No 8249 ("CITES") is a multilateral convention that went into force in 1975. Most major participants in the international teak trade—Denmark, Italy, Japan,

regulating international trade through a system of export and import permits. CITES is the only global treaty that explicitly protects plants.<sup>85</sup> The Convention calls upon signatories to use domestic law to restrict trade in species listed in the CITES appendices.<sup>86</sup> CITES does not apply to trade occurring wholly within national borders, but only to international wildlife trade.

Under CITES, "species" includes "any species, subspecies, or geographically separate population thereof."<sup>87</sup> The CITES appendices list protected species. Appendix I of CITES lists species believed threatened with extinction.<sup>88</sup> The Convention allows only noncommercial trade in wild plants of these species and requires permits from both the importing and exporting states.<sup>89</sup> Appendix II of CITES lists species that may become threatened without adequate trade regulation.<sup>90</sup> Exporting countries may issue commercial trade permits for Appendix II species after determining that trade will not harm wild populations.<sup>91</sup>

The United States may have the best implementing infrastructure of any CITES signatory,<sup>92</sup> but can inspect only a fraction of the wildlife shipments that enter the country.<sup>93</sup> There is a particularly serious enforcement problem with imports of protected plant species.<sup>94</sup>

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Thailand, and the United States—are party to CITES. Myanmar, however, is not a signatory. US Department of State, *Treaties in Force* 295 (1990).

85. See Faith Campbell, *Legal Protection for Plants in the United States*, 6 Pace Envir L Rev 1, 2 (1988). The CITES appendices now include over 40,000 species of plants, the majority being orchids. CITES, Art VII(4) provides that Appendix I plants be treated as Appendix II species if artificially propagated for commercial purposes, so trade in plantation timber would not be halted.

86. CITES requires each member state to appoint one or more "scientific authorities" to monitor the status of listed species and one or more "management authorities" to regulate permits for the import and export of listed species. CITES, Art IX. In the United States, the Secretary of the Interior acts in both capacities. CITES is incorporated into the Endangered Species Act at 16 USC § 1537a (1988). In some countries, no authorities were responsible for wildlife management prior to CITES. Laura H. Kosloff and Mark C. Trexler, *The Convention on International Trade in Endangered Species: Enforcement Theory and Practice in the United States*, 5 BU Intl L J 327, 334 (1987).

87. CITES, Art I(a). Because it is "geographically separated" from Indonesia's teak plantations or from scattered stands elsewhere in Asia, Myanmar's teak could fit into this category.

88. CITES at 1119-31.

89. CITES, Art III.

90. CITES at 1134-43.

91. CITES, Art IV.

92. Kosloff and Trexler, 5 BU Intl L J at 329 (cited in note 86).

93. Id at 344.

94. Cycads, for example, are highly prized by an international collectors' market, and eighty out of ninety-six known taxa are threatened with extinction in the wild. Cacti are also desired by collectors and are often traded in violation of CITES. Smuggling is only one problem, however. Plants imported in violation of CITES often slide through customs unnoticed or

CITES allows any party to the treaty to enter "reservations" on any listed species upon entering the Convention<sup>95</sup> or within ninety days after a species is listed by amendment to Appendices I or II.<sup>96</sup> The Convention treats a party entering a reservation as a nonparty for purposes of trade in that species or its parts or derivatives.<sup>97</sup> A reservation permits a CITES party to engage freely in trade with nonparty states or with CITES signatories that have also entered a reservation on the species. Thus, a party need only enter a reservation to avoid CITES restrictions.<sup>98</sup>

In addition to creating the reservations loophole, the Convention also declines to regulate imports from non-party states. A CITES signatory may accept from a nation documentation that substantially conforms to CITES permit requirements. In other words, management authorities in Myanmar (as the original exporter) and Thailand (as the reexporter) could both falsely certify that the specimen was obtained in compliance with domestic law and fear little challenge from other CITES parties.

In short, the Convention on International Trade in Endangered Species offers little or no protection for Myanmar's forests. Even if Myanmar were a party to CITES and teak were listed in the CITES appendices, any party could enter a reservation and continue the trade. Moreover, because CITES addresses only international trade and not domestic protective measures, a surrogate species listing under CITES cannot protect an entire ecosystem.

The use of endangered species protection law shows promise, but teak could probably not be listed as an endangered species under either the U.S. Endangered Species Act or CITES. Instead, any efforts to block

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ignored. In a test conducted by the World Wildlife Fund, U.S. customs officials asked no questions about the open import of cacti or orchids, although virtually all species of these plants are CITES-listed. Cactus specimens were confiscated only for health reasons. John B. Heppes and Eric J. McFadden, *The Convention on International Trade in Endangered Species of Wild Fauna and Flora: Improving the Prospects for Preserving Our Biological Heritage*, 5 BU Intl L J 229, 239 (1987). See also Faith Campbell, *Legal Protection for Plants*, 6 Pace Envir L Rev 1, 11 (1988).

95. CITES, Art XXIII(2).

96. CITES, Art XV provides for amendments.

97. CITES, Art XXIII.

98. Thailand would likely enter a reservation on teak. The wood and timber industries in Thailand are influential, with many military and government officials possessing substantial interests in timber operations. Roger Matthews, *Cash-Starved Regime Courts an Ecological Disaster*, Financial Times 6 (Jun 21, 1990). Teak importing nations such as Japan might also enter reservations. Japan's CITES enforcement has been inconsistent, and Japan has entered more reservations than any other nation. Japanese customs officials have permitted importation of such products as tortoise shell and ivory taken in violation of the laws of the source countries and often ignore CITES provisions on proper documentation. Eric McFadden, *Asian Compliance with CITES: Problems and Prospects*, 5 BU Intl L J 311, 313-15 (1987).

the import of Myanmar teak into the U.S. through endangered species law would probably require the use of one or more endangered surrogate species. This way, the United States could ban teak imports so long as the teak harvest contributed substantially to habitat destruction within the "critical habitat" of the listed species.

#### D. *The Proper Role of Sanctions*

Should the United States attempt to impose sanctions under domestic and international law? The threat of economic sanctions might well motivate a nation to halt deforestation. However, application of sanctions against Myanmar may not be a useful policy. Other nations are unlikely to participate significantly in organized sanctions. SLORC would strongly resist outside pressure, and the United States exercises very little influence on the Myanmar government at this time. Although the United States might push Thailand into acting through economic threats, Thailand has only limited influence over deforestation within Myanmar. Brash action by the United States might seriously impair U.S.-Thai relations and strengthen resistance to environmental reforms. Given the limited probable effect of available economic sanctions and the strong potential for undesirable backlash, the United States should consider sanctions only as a last resort.

## II. ECONOMIC INCENTIVES

Instead of employing economic pressures to force a policy change, the United States might instead offer economic incentives to encourage forest protection. Renewed ties with Myanmar could provide the United States with an opportunity to work with the regime to promote such desired reforms as ending the conflict with the Karen. So long as relations with SLORC remain poor, the United States can expect to have little voice in Myanmar's affairs.

#### A. *Foreign Aid Restoration*

The United States should consider resuming aid to Myanmar, possibly conditioned on peace talks, forestry reforms, or both. Given sufficient aid, SLORC might be less willing to sacrifice national resources for fast income. Myanmar may require substantial assistance to match the income currently received from timber sales.

The West has recently become more conciliatory, making renewed aid to Myanmar more politically feasible. Western diplomats have recognized that a confrontational posture has only hardened SLORC's resolve to stay in power.<sup>99</sup> Other governments have been mending relations with Myanmar as well. China was the first neighbor to resume trade. Australia has resumed trade talks and foreign aid. In 1989, Japan recognized SLORC and has begun to restore foreign aid.<sup>100</sup>

Foreign aid is often extended to developing nations in the form of grants or loans for economic development. Unfortunately, developmental aid frequently supports large, poorly conceived industrial or construction projects.<sup>101</sup> The United States should carefully design loans or grants to Myanmar to promote sustainable economic development of the rain forests.

The United States might specifically condition aid on the implementation of forest protection measures: Myanmar would have to protect large tracts of forest as nature preserves or extractive reserves in return for developmental support. The aid might then go to industries that use non-timber forest resources in a sustainable manner. Although recent studies show that a forest is more valuable if maintained instead of clear-cut,<sup>102</sup> a massive demonstration project or widespread education may be

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99. Philip Smucker, *Burma: West Moves From Confrontation to Reconciliation*, Inter Press Service (Jan 23, 1991).

100. C. Kijang, *Burma: Military Regime Boosted by Foreign Aid and Investment*, Inter Press Service (Dec 4, 1990).

101. Brazil provides notorious demonstrations of poor planning. The construction of a highway across the Amazon, for example, largely transformed the state of Rondonia into one of the most deforested areas in the Amazon rainforest. Nina Broner Worcman, *Brazil's Thriving Environmental Movement*, *Technology Review* 42 (Oct 1990). Brazil also borrowed over US \$30 billion to build a series of unneeded hydroelectric dams that caused the flooding of vast areas of rain forest. Patricia Adams, *Saving Forests—With Debt*, *World Press Review* 47 (Oct 1989).

102. Janet Raloff, *Unraveling the Economics of Deforestation*, 133 *Science News* 366 (June 4, 1988), (citing the Repetto study, World Resources Institute, *The Forest for the Trees? Government Policies and the Misuse of Forest Resources*). See also *Hit and Run in Sarawak*, *New Scientist* 49 (May 12, 1990); Rodney Tasker, *Losing Nature's Cures*, *Far Eastern Economic Review* 48 (Apr 28, 1988).

Exploiting all potential products of the rain forest (timber, wildlife, medicines, ornamental plants, etc.) in a sustainable manner provides greater long-term economic gain than large-scale timber harvest. For example, a study of a large patch of Peruvian rain forest revealed that one hectare of forest was worth \$6,820 if used only for herbs, fruits, nuts, latex, and other renewable resources. In neighboring Brazil, a tree plantation of the same size was valued at \$3,184, or less than half the value of the natural forest. The value from cattle grazing was even less: \$2,960. These dollar amounts reflected the estimated cumulative values of all future harvests for 50 years but were calculated as current values (much as a financial manager would determine the value of a long-term bond). Based on plant inventories, collection and transportation costs, and market prices, the study determined that the plot produced roughly \$400 worth of fruit and \$22 worth of rubber per year. If some of the 60 commercial hardwood trees found on the site were also

needed to display the economic value of an intact rain forest to a developing nation.

### B. *Debt-for-Nature Exchanges*

In recent years, conservation organizations have adopted a practice of redeeming portions of a developing nation's foreign debt in exchange for a guarantee that the nation will fund forest protection.<sup>103</sup> This generally involves purchasing a portion of that nation's debt from the lender at a discount and redeeming the debt in local currency for conservation purposes. This can be a cost-effective method of conservation, as debts may be purchased for as little as twenty percent of face value.<sup>104</sup> Each dollar paid toward the debt can thus provide several dollars' worth of conservation efforts, such as establishing and protecting forest preserves.<sup>105</sup>

Arranging a debt-for-nature exchange is a complicated process.<sup>106</sup> The sponsoring party, typically a conservation organization, must obtain the cooperation of public and private bodies that are often located in several nations. The sponsor must then locate the debt and go through an often complicated transfer of title to assume the debt. Most important, the sponsor must locate an effective conservation organization within the debtor country to ensure proper use of funds obtained by the exchange.

Although a conservation organization normally needs to take the lead in a debt-for-nature exchange, the United States government can participate in such a plan. Congress has called upon the United States' executive directors of multinational development banks<sup>107</sup> to negotiate for departments in each bank to promote debt-for-nature exchanges and

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selectively cut and sold, another \$310 could be generated every 20 years. Harvesting all the trees on that plot at once would generate a one-time gain of about \$1,000, but would render the land nearly useless for future production. William Booth, *Saving Rain Forests By Using Them*, Washington Post A1 (Jun 29, 1989).

103. For a general discussion of debt-for nature exchanges, see Comment, *Debt-For-Nature Swaps, Assessing the Future*, 6 J Contemp Health L and Pol 319 (1990); Marilyn Post, *The Debt-for-Nature Swap: A Long-Term Investment for the Economic Stability of Less Developed Countries*, 24 Intl Law 1071 (1990).

104. Comment, *Debt-For-Nature Swaps, Assessing the Future*, 6 J Contemp Health L & Pol 319, 328-334 (1990).

105. A variation on the debt-for-nature exchange would be to trade debt forgiveness for the cancellation of timber concessions. For example, if SLORC revoked \$1 million worth of timber concessions, Myanmar might gain \$1.5 million in forgiven debt.

106. See Comment, 6 J Contemp Health L & Pol at 321-23 (cited in note 104).

107. The International Bank for Reconstruction and Development, the International Development Association, the Inter-American Development Bank, the African Development Bank, and the Asian Development Bank.

other resource conservation strategies.<sup>108</sup> Additionally, the Agency for International Development ("AID") may help nongovernmental organizations purchase the discounted commercial debts of eligible nations to support conservation projects. AID support for debt-for-nature exchanges is available to finance the protection of oceans, the atmosphere, and wildlife, as well as the establishment of parks, reserves, local conservation projects, and land and resource management programs.<sup>109</sup> An eligible nation must fully commit to the proposed project's long-term viability and be able to oversee the project.<sup>110</sup>

The AID could support a variety of projects to protect Myanmar's forests. For example, a conservation organization might use debt-for-nature exchanges to help Myanmar establish additional nature reserves and wildlife parks.<sup>111</sup> An exchange might fund research into timber management techniques having less serious environmental impacts than large-scale clear-cuts.<sup>112</sup> A nongovernmental organization might also develop a system to monitor and swiftly report timber law violations, a valuable contribution so long as the Myanmar authorities take action against violators. A debt-for-nature exchange could help fund immediate replanting of clear-cut areas,<sup>113</sup> as the timber companies have been lax about replanting to date.

Myanmar's foreign debt of roughly \$4.2 billion<sup>114</sup> may seem small in relation to the debts of other developing countries, but it represents a large share of Myanmar's economy. Myanmar's budget was \$11 billion in 1991<sup>115</sup> with annual service payments on its debt exceeding \$200 mil-

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108. 22 USC § 262p-4c (1988).

109. See 22 USC § 2281 (Supp 1989). Congress has authorized supporting debt-for-nature exchanges for a variety of activities, listed at 22 USC § 2283 (Supp 1989).

110. 22 USC § 2284 (Supp 1989).

111. As permitted at 22 USCA § 2283(a)(3). Myanmar currently has 17 wildlife sanctuaries and parks. *Three Wildlife Parks Established in Myanmar*, Xinhua News Service (Jan 24, 1991). The funds might also be used to establish extractive reserves.

112. The development of sound systems of resource management is permitted by 22 USC § 2283(a)(4).

113. The promotion of regenerative approaches to forestry is allowed by 22 USC § 2283(a)(9).

114. *Press Conference by SLORC Information Committee, Minister for Agriculture and Forests, Minister for Trade and Planning*, Burma Broadcasting System (Oct 5, 1990); reported by British Broadcasting Corporation (Oct 8, 1990). Myanmar's major national lenders are Japan, Germany, France, and Denmark, and the main multilateral lenders are the IBRD/IDA and the Asian Development Bank. *Myanmar 1990: Country Presentation by the Government of the Union of Myanmar* 11 (U.N. Conference on Least Developed Countries, Paris, Sep 3-14, 1990).

115. *Myanmar Government Makes Supplementary Budget*, Xinhua News Service (Mar 21, 1991).

lion.<sup>116</sup> Government-supported debt-for-nature exchanges could retire a large portion of Myanmar's debt if the political and diplomatic obstacles were removed.

To implement debt-for-nature exchanges through the AID, however, the Myanmar government would have to support conservation and be ready to cooperate under a long-term plan and prepare enforcement measures. Otherwise, the AID could not support an exchange.<sup>117</sup> SLORC appears unsuited for cooperating in an exchange; relations between the United States and Myanmar must substantially improve before this approach can be viable.

The Thai government would be a better candidate for a debt-for-nature exchange; relations are warmer and contacts with the West are stronger. An arrangement with the Thai government could raise funds to develop cost-effective, ecologically sound logging techniques.

### C. *Direct Technical Assistance*

The International Forestry Cooperation Act of 1990<sup>118</sup> authorizes the U.S. Secretary of Agriculture to provide technological support to foreign countries to improve forestry technology, conserve and manage forest land, rehabilitate cutover areas, use forest resources more efficiently, and protect habitat. This support is available to countries that receive assistance from the AID.<sup>119</sup>

Because the AID currently provides no assistance to Myanmar,<sup>120</sup> there is little chance for the United States to provide direct aid for reforestation or improving forestry techniques. However, Thailand receives AID assistance and hosts an AID office.<sup>121</sup> The AID could ask the Department of Agriculture to help Thailand improve harvest techniques in Thailand's timber industry. However, if the new harvest methods are not more profitable than clear-cutting, the timber companies will refuse to adopt them. Since the terms of the timber concessions require Thai com-

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116. *Burma's Economy to Grow*, Def & For Aff Wkly 3 (Apr 10, 1989). Compare the \$200 million service payments with the \$100 million Myanmar received in 1989 for timber concessions (see note 32 and accompanying text). Debt forgiveness could provide greater economic gain than timber sales.

117. 22 USC § 2284.

118. International Forestry Cooperation Act of 1990, Pub L No 101-513, §§ 601-607, 104 Stat 2070, codified at 16 USCA §§ 4501-05 (Supp 1991).

119. Id at § 602(c). 16 USCA § 4501(c) (Supp 1991).

120. 22 CFR § 215, Appendix A (1991).

121. Id.



panies to build roads capable of accommodating military vehicles,<sup>122</sup> clear-cutting is a naturally appealing alternative; a network of roads that will transport heavy equipment strongly encourages large-scale industrial logging.

#### D. *The Need for Enforcement*

Regardless of what steps are taken to encourage forest protection and develop sustainable forest industries, the United States would need to ensure proper implementation of the new policies. Any policy that failed to address the economic realities of a developing nation (i.e., landless poor and economic pressures to exploit resources for maximum immediate profit) would be difficult to enforce and would almost certainly fail. "Protected" forest areas would be open to poachers and slash-and-burn farmers if not guarded. Trade restrictions would be useless without sufficient customs expertise and personnel. Debt-for-nature exchange agreements, if not monitored, could create unprotected "paper parks." Sustainable resource management techniques would probably be ignored without sufficient debt relief and development aid. A well-planned forest protection plan would thus be little more than an intellectual exercise without proper mechanisms to ensure compliance.

### CONCLUSION

Deforestation in Myanmar is a serious problem. Uncontrolled timber harvest continues to transform large areas of the southeastern Myanmar rain forest into barren clearings. Recent timber operations are generating short-term profits at the cost of Myanmar's long-term economic growth potential. Deforestation also causes severe environmental disruption in Myanmar and contributes to global biodiversity loss.

The United States needs a comprehensive strategy to influence Myanmar to halt its deforestation policies. The United States should take steps to improve diplomatic relations with SLORC. SLORC's stubborn resistance to external influence makes improved relations an essential precursor to effective action.

The United States should also offer Myanmar substantial foreign aid under stringent conditions. As detailed above, SLORC not only receives income from teak sales for its military, but gains significant military benefits from the clearing of forest and the construction of timber roads in the

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122. *A Border Lined With Gold*, *Economist* 31 (Apr 6, 1991).

Karen-occupied area. A cessation of hostilities will be needed to halt deforestation in the region. Therefore, the U.S. should condition a portion of its aid on peace negotiations and an armistice with the Karen. Although the United States could fund and facilitate the negotiations, they should remain under the control of SLORC and the Karen leadership.

Additional aid should be contingent on human rights reforms and a halt to deforestation throughout Myanmar. Generally, improving economic uses of the forest would provide the best incentive to discontinue policies that promote deforestation.

The United States should consider economic sanctions only after other avenues of change have been foreclosed, and only if Myanmar's other trading partners agree to cooperate in an embargo. Sanctions would probably increase Myanmar's perceived need to sell its natural resources to gain foreign currency, while building resentment and resistance to U.S. policy goals.

The United States should act quickly. Each day sees the destruction of several thousand acres of Myanmar's rain forest, the loss of a cornucopia of potential wealth for Myanmar's poor, and the disappearance of a unique and irreplaceable habitat for known and unknown species that may someday prove a priceless resource to all humanity.

