LOGGING OFF

Mechanisms to Stop or Prevent Industrial Logging in Forests of High Conservation Value

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Front: Clearcut logging on Gribbell Island, British Columbia. Gribbell Island is located within the largest network of intact coastal temperate rainforest left on the planet. The island contains a high density of Kermode or "spirit bears," the white phase of the American black bear. Photograph copyright Ian McAllister/Raincoast.org (2000).
Back: Results of illegal logging in the swamp forests around Danau Sentarum National Park, West Kalimantan, Indonesia. This area is an important habitat for orangutans, proboscis monkeys, crocodiles, and other species. One of the largest primary freshwater swamp forests remaining in Kalimantan, Danau Sentarum is one of two sites in Indonesia to be designated a Wetland of International Importance by the Ramsar Convention on Wetlands. Photograph courtesy of the US Department of Agriculture Forest Service, Remote Sensing Applications Center.

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Foreword

It is easy when confronting the current and future state of the world's forests to slip into a pessimistic mindset. Tropical deforestation, the single most important cause of species extinction and source of one-fifth of humankind's annual carbon dioxide emissions, continues largely unabated. Large-scale logging and mining, altered fire regimes, expanding agriculture and other pressures confound forest conservation efforts in many regions. For example, highly destructive logging is now rampant throughout what is left of Indonesia's rich lowland forests, including within several national parks. A large swath of the Brazilian Amazon will be rapidly degraded and deforested if proposed major infrastructure development in the region moves forward as planned. And remaining large areas of intact national forests in the United States have a highly uncertain future in the face of pressures to expand road-building and commercial logging operations within them.

Under current trajectories, most of the world's remaining closed canopy forests —forests sufficiently large and intact to retain most or all of their species and ecological processes—will be gone by midcentury. Moreover, the pressures that the world's forests face now will likely increase with the expanding human population (projected to rise from 6.1 billion now to about 10 billion by 2050) and growing demands for arable land and wood products.

Yet possibilities do exist to slow and ultimately reverse these trends. One is to focus conservation activities on forests threatened by industrial logging, both legal and illegal. A large proportion of the world's remaining forests fall into this category—far more than are currently protected—and many of these have not yet been highly degraded. These production forests constitute a tremendous but fleeting conservation opportunity. Conserving them while meeting the world's demands for wood products will require three concurrent actions: greatly reducing or eliminating industrial logging operations within forests that have the greatest value for biodiversity conservation, strengthening the sustainability of forestry operations in regions of relatively lower conservation value, and expanding wood supplies from well-managed plantations.

In this report, Ted Gullison, Mary Melnyk, and Carmen Wong provide guidance on how to tackle the first of these objectives. They provide the first broad assessment of the potential tools available for nongovernmental organizations (NGOs), governments, and other stakeholders to reduce or eliminate industrial logging in high conservation value forests. Reviewing a series of case studies of different approaches that have already been applied in tropical and temperate forests, they identify 15 different mechanisms through which logging could be stopped or prevented. These range from purchasing timber concessions for protection and cracking down on illegal logging to international timber boycotts and import bans. Several mechanisms have been successfully

implemented, and some, such as conservation easements, have been applied in a number of countries for decades. These mechanisms vary in several important ways, including

- the point they target in the flow of forest products from forest to consumer
- whether governments or third parties such as NGOs serve as the key implementer
- their applicability to public versus private forest lands
- the scale (from forest stand to national) at which they can be applied and their associated ability to target specific high conservation value forests
- the key factors, such as the availability of resources for legal challenges or the presence of strong forestry legislation, that may greatly influence their effectiveness in any given forest

As Gullison and coauthors elaborate, these mechanisms also face some common challenges to their successful application. One is to decide which production forest areas should be the focus of efforts to eliminate logging. At a broad geographic scale, the "biodiversity hotspots," "frontier forests," "critical ecoregions," and other recent priority-setting exercises provide valuable (and despite their varying methodologies, largely overlapping) guides for selecting forests with the highest conservation value. Within them, the authors suggest that finer-scale biodiversity assessments and effective land-use planning with key stakeholders can further specify priority locations where logging operations should be halted.

A related challenge confronting the successful application of these mechanisms is the potentially high opportunity costs of diminished or lost timber revenues. In areas where the damage from commercial timber extraction can be held to low levels, these opportunity costs might be reduced by protecting forests after timber stocks have been extracted. In most cases, however, one or more sectors of society—government, industry, donors, or NGOs—must bear these costs if logging is to be effectively stopped.

Clearly, substantial political will and increased financial investments will be essential to broadly implement this approach to forest conservation. Conservation scientists and institutions can help strengthen the former by providing policymakers with clearer consensus assessments of geographic priorities for biodiversity conservation. The latter would benefit from new funding sources, for example, through establishing a market value for associated reductions in carbon emissions.

We urge donor agencies, forest policymakers, NGOs, and responsible industry to draw upon this toolkit of mechanisms for reducing or preventing industrial logging in high conservation value forests. Seizing the opportunities to apply these mechanisms will help alter current trajectories of forest and biodiversity decline and allow us all a more optimistic appraisal of the future of the world's forests.

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Executive Summary

Recent conservation assessments by major international environmental organizations have identified much of the world's remaining forests as having high value for biodiversity conservation (referred to in this paper as high conservation value forests). A variety of approaches will be needed if the biodiversity in these forests is to be conserved, including sustainable forestry, expansion of wood supply from well-managed plantations, intensification of sustainable food production on existing agricultural lands, and the complete elimination of industrial logging and other threats to forests with the highest value for biodiversity. The objective of this paper is to examine how the last approach can be advanced, namely, to review the mechanisms that can be used to stop or prevent industrial logging in forests that are priorities for conservation. It is worth stressing that this paper does not suggest that all logging in natural forests should be stopped; indeed, sustainable forestry can make a significant contribution to forest conservation if it occurs in forests of lower conservation value than would be converted to nonforest land uses in the absence of a well-managed forest industry. The focus of this paper is specifically on stopping or preventing industrial logging in forests that have the highest conservation value, where logging and other threats are causing unacceptably high impacts to the biodiversity present in these forests.

This paper reviews mechanisms to stop or prevent logging in forests with the highest value for biodiversity.

The context in which the logging of high conservation value forests is taking place varies greatly. At one extreme, illegal logging occurs in some protected areas. At the other extreme, responsible forestry companies are following best practices on their own lands, but because they are operating in forests with high value for conservation, they should, if possible, transition out of these areas and carry out forest management for timber production elsewhere.

This review identifies 15 possible mechanisms for stopping or preventing logging, and uses the flow of forest products from forest to consumer as the framework for discussing them. The paper presents a number of temperate and tropical case studies of the application of each mechanism in order to illustrate its application, to assess the effectiveness of its implementation, and to draw out key conclusions.

The mechanisms that can be used to stop or prevent industrial logging in the forests of the highest priority for conservation include

- *Increased allocation of public forests to conservation* to prevent them from being allocated to timber production
- *Increased enforcement against illegal logging* that is taking place in public forests that have not been allocated to timber production, or where logging is occurring in timber production forests, but the timber rights have not been legally obtained

- *Compensation to owners for retiring legally acquired timber rights,* either with *conservation concessions* on public lands, or with *conservation easements* or *land purchases* on privately owned forests
- *Expropriation by governments* of timber rights in public forests or on privately owned lands, or de facto expropriation of timber rights with the *implementation of logging bans*
- *Requirements of industry to protect high conservation value forests within timber concessions,* as stipulated by either governments or third party standards for sustainable forestry
- *Legal challenges of logging practices* when timber rights are legally held, but the manner in which logging is occurring is illegal, or *protests and boycotts* to challenge the "social license" of a company to operate at its place of business
- *Obstruction of the international flow of forest products with export bans, import bans, and the Convention on International Trade of Endangered Species* to reduce market pressure for continued harvest
- *Reduction of demand for forest products at the point of sale,* either through *protests and boycotts,* or by using *forest certification and chain of custody* to provide substitute forest products that are certified as coming from well-managed forests of lower conservation value

Identifying the most appropriate mechanism will require careful site-specific evaluation.

Whether a mechanism is feasible for a specific forest depends on such factors as whether the forest is publicly or privately owned, the legality of the logging that is occurring, whether funds are available to compensate the owners of timber rights and other stakeholders for the opportunity cost of conservation, and the legality of the mechanism in question. As such, the selection and implementation of the most appropriate mechanism will almost always require careful site-specific evaluation. However, there are also measures that will broadly facilitate the protection of high conservation value forests in all countries. These measures include supporting strong legislation and regulatory capacity for the management of all forests, creating public support for conservation measures, and improving capacity to track the flow of forest products.

The case studies demonstrate that it is currently feasible to apply all of the mechanisms reviewed in this paper. However, the following suggested activities could be implemented to expand the rate and geographical scale at which the mechanisms are effectively applied:

- Harmonization of the various conservation priority mapping exercises so that an unambiguous set of biodiversity conservation priorities is presented to decision makers
- Finer-scale conservation assessments within broad high conservation value forest types to guide land-use planning and conservation actions
- Creation of a database to facilitate the implementation of the mechanisms (e.g., maps of logging concessions, valuations of the timber resource, potential local partners)
- Regional screening exercises to determine which mechanisms are most appropriate for different countries

- Production of "how to" manuals that will detail how local stakeholders can identify and implement the most appropriate mechanism to stop industrial logging
- Provision of necessary legal and technical assistance where the absence of these resources is hindering the application of appropriate mechanisms
- Increased protection of high conservation value forests and increased plantation production of forest products so that efforts to stop logging in a particular forest do not simply result in "leakage" (i.e., displace logging) to another forest of high conservation value
- Increased efforts to halt other threats to forests, particularly the conversion of forests to nonforest land uses

There is an urgent need for all concerned parties—including NGOs, governments, aid agencies, foundations, and responsible forestry companies—to work together to implement these mechanisms in forests that are of top priority for conservation while there is still the opportunity to do so.

CHAPTER 1

THE PROBLEM

Global conservation prioritization exercises have identified significant areas of the world's remaining forests as having particularly high value for the conservation of biological diversity. These assessments use criteria such as species diversity, endemism, historical rates of habitat loss, and current degree of threat to determine which forests have the greatest need for protection. Examples of prioritization exercises include the World Resources Institute's *frontier forests* (WRI, 1997), Conservation International's *biodiversity hotspots* (CI, 2001), World Wide Fund for Nature's *critical ecosystems* (WWF, 2001), and The Nature Conservancy's *last great places* (TNC, 2001).

Many of the forests that are a priority for conservation—referred to in this paper as *High Conservation Value Forests* or *HCVF* (see text box)—are highly threatened. Threats to these forests include unregulated logging, forest fires, and conversion to other land uses such as small scale or industrial agriculture (UN Population Division 1996, Nepstad et al. 2001, WRI et al. 1998, Whitmore and Sayer 1992). There is an urgent need to mitigate these threats and to ensure the conservation of HCVF while the opportunity remains.

A variety of approaches will be needed to conserve HCVF, a difficult task that must be accomplished within the constraints of meeting the growing global demand for forest products and food. The portfolio of possible approaches includes promoting

High Conservation Value Forests

This paper refers to forests that are priorities for conservation as *High Conservation Value Forests (HCVF).* The use of this terminology is not meant to give priority to any particular assessment exercise that conservation scientists and international environmental organizations have carried out, which differ to some extent in their criteria and recommendations. For example, most prioritization assessments have used only biological criteria to identify conservation priorities, but at least one organization includes social criteria such as religious or cultural importance to define HCVF (Forest Stewardship Council, 2001). For convenience, this paper uses *HCVF* to refer to any forest that has been identified as a priority for conservation by the various assessment exercises, whichever criteria have been employed. There is a need to harmonize the findings of the various schemes in order to present a unified set of recommendations to decision makers.

the sustainable management of natural forests of lower conservation value, expanding wood supply from well-managed plantations, intensifying sustainable agricultural production on existing agricultural lands, and eliminating (or substantially decreasing) industrial logging in HCVF.

Determining which approach is appropriate for specific forests can best be accomplished at the regional level through land-use planning. An effective regional planning process is one that allocates forests in a participatory manner to fiber production, conservation, production of nontimber forest products, and conversion to other land uses. In this context, logging can take place in a responsible manner, long-term land use is stable, and the establishment of adequate protected areas assures the conservation of biodiversity. Experience from countries where effective land-use planning exercises have been undertaken demonstrates that it is possible to achieve trade-offs in forest use that are acceptable to the majority of forest stakeholders.[1]

Unfortunately, effective regional land-use planning has not taken place (or the results have not been implemented) in many countries, particularly in the developing world. There is often little or no planning, or it has been based on inadequate information. As a result, logging may be unplanned, unregulated, or occurring in forests where it is clearly inappropriate. In other cases, a regional planning process may have been carried out in the past, but new information on forest productivity or the value of forests for biodiversity means that the land-use plan is outdated and needs revision. In the absence of a land-use planning process (or as an input to it) Frumhoff and Losos (1998) suggest a framework for helping to identify appropriate land uses to maximize the probability that HCVF will be conserved. They suggest that forests of exceptional value for biodiversity should be either protected or gazetted for low-impact land uses, such as the production of nontimber forest products. They suggest that it is appropriate to promote sustainable forestry in cases where forests are not of critical biological importance, where there is a regulatory or incentive structure in place that suggests sustainable forestry is indeed possible, and where there is a significant risk of conversion of these forests to nonforest uses. Finally, they suggest that in areas where the prospects of implementing sustainable forestry are small, and the biological importance of forests is lowest, emphasis should be put on simply trying to reduce the impacts of unregulated logging.

Logging is often unplanned or occurs in forests where it is clearly inappropriate.

Under a regional land-use planning process, or under the framework proposed by Frumhoff and Losos, conserving HCVF will undoubtedly require withdrawing at least some portion of forests from industrial timber production. The need to stop logging in high-priority regions has been raised in the literature elsewhere (e.g., Reid & Rice 1997, Rice et al. 1997). It is also an important conclusion of the "Protected Areas Working Group" of the Forest Industry and Conservation CEO's Forum facilitated by the World Bank (World Bank 2001) and the Informal NGO Working Group on Retiring Timber Concessions,[2] the latter of which provided the impetus for writing this paper.

[1] For example, see Appendix 1a.

[2] Jake Brunner (World Resources Institute, Global Forest Watch); Mike Coda (The Nature Conservancy, Climate Change Program); Tom Dillon (World Wildlife Fund, Global Forest Program); Peter Frumhoff (Union of Concerned Scientists, Global Environment Program); Elizabeth Losos (Smithsonian Institution, Center for Tropical Forest Science); Tom Lovejoy (The World Bank); Susan Minnemeyer (World

The conditions under which industrial logging of HCVF is occurring vary greatly. For example, in some parts of the world, unregulated illegal logging of HCVF is occurring in protected areas. In other places, logging and forest management is carried out in an exemplary manner, meeting the current criteria for best practices. However, by virtue of the fact that it is taking place in an HCVF, it should be phased out. Thus, a variety of approaches or mechanisms will be needed to end logging in HCVF, commensurate to the variety of contexts under which it occurs.

The objective of this report is to facilitate the conservation of priority HCVF by reviewing mechanisms that can be used to halt or prevent industrial logging. In order to provide a framework for presenting the mechanisms, we briefly describe the flow of forest products from forest to consumer and show where each mechanism may be applied. Case studies are presented briefly for each mechanism in the main text, while detailed accounts are available as appendices. The case studies have been chosen for their ability to demonstrate the application of the mechanism, but not all of the case examples have taken place in HCVF. The following section of the paper compares attributes of the 15 mechanisms, such as their intended duration and critical requirements for implementation. The paper concludes with suggestions for next steps and possible ways that the widespread implementation of the mechanisms reviewed in this study can be encouraged.

A variety of approaches are available to end or limit logging in forests with high conservation value.

The intended audiences for this paper are nongovernmental organizations (NGOs), communities, donors, international agencies, and governments that are interested in preserving HCVF. Forest products companies operating in HCVF may also be interested because it describes a variety of ways in which they can transition the relevant parts of their operations out of controversial forests, thereby reducing or avoiding conflict with civil society concerned about the fate of HCVF. We hope that this document will be successful in advancing discussion and helping to catalyze the urgent protection of HCVF.

Resources Institute, Global Forest Watch); Alex Moad (US Forest Service, International Program); Kent Redford (Wildlife Conservation Society, International Programs); Richard Rice (Conservation International, Center for Applied Biodiversity Science); Simon Rietbergen (International Union for the Conservation of Nature); Nigel Sizer (formerly World Resources Institute, now The Nature Conservancy, Forests Program for Asia/Pacific); Gemma Smith (World Conservation Monitoring Centre); Bill Stanley (The Nature Conservancy, Climate Change Program); Kurt Talbot (Conservation International).

CHAPTER 2

MECHANISMS TO HALT OR PREVENT LOGGING IN HCVF

Framework

Figure 1 illustrates the decision or control points that guide the flow of forest products from forest to market. In the case of public forests, the initial decision point pertains to land-use planning. With differing levels of public and technical input, most governments have officially allocated much of their public forests to conservation, timber production, indigenous reserves, conversion to agriculture, and other uses. Nevertheless, in some countries such as Canada and Guyana, significant areas of forest have not yet been allocated to any particular use or have been allocated for timber production, but the private sector has not yet acquired the timber rights. It is worth noting that the actual dynamics and status of a country's forests may not correspond to official allocations. For example, colonists and industrial agricultural companies may illegally convert timber production forests, unallocated forests, and conservation forests to agricultural uses.

For publicly owned forests that have been allocated to timber production, concession agreements may specify in considerable detail how timber rights may be exercised. In addition to complying with legal guidelines that regulate logging, industrial forestry companies may also require a "social license" to operate. That is, in some cases, they will need the acceptance of civil society in order to log and to sell their forest products. If a logging company does not have the support of civil society, it may face public protests and boycotts of its products. Owners of private forests have greater freedom in the manner and rate at which they harvest timber, although some legislation may still regulate logging on their lands (e.g., the Endangered Species Act in the United States, or legislation requiring the retention of a certain percentage of forest cover on privately owned land in the Brazilian Amazon) or the sale of forest products. In some cases, private forest owners may also require a social license to log and sell their products.

Besides complying with legal guidelines, industry may also require a "social license" to operate.

After trees have been harvested, logs are processed to varying degrees depending on the desired end use, ranging from very limited processing (e.g., production of dimensional lumber) to intensive processing (e.g., paper, particleboard, flooring, or veneer). Forest products may be sold domestically or exported. If they sell to international markets, exporters require national permission to export, as well as clearance from any relevant international treaties to which their countries are signatories, such as CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora). Similarly, importers of forest products may require permission to import certain species both from their own governments and from international treaty bodies. After it reaches its ultimate country of destination, lumber

may undergo additional processing before its final point of sale to retailers (e.g., furniture and do-it-yourself stores), manufacturers, or the construction industry.

The preceding discussion pertains to timber that is legally harvested from public and private forests. Timber may also enter into national and international trade in several other ways, some legal and some illegal. Timber from plantations is generally legal, that from forests that are being converted to other land uses (e.g., conversion to agriculture or energy projects) may or may not be. Illegal timber may be taken from land that has not been allocated to timber production (e.g., national parks) or from forests allocated to timber production, where it has been harvested in an illegal manner (e.g., harvests that exceed the annual allowable cut or that come from within-concession set-asides). Domestic and international trade in timber may also circumvent legal channels.

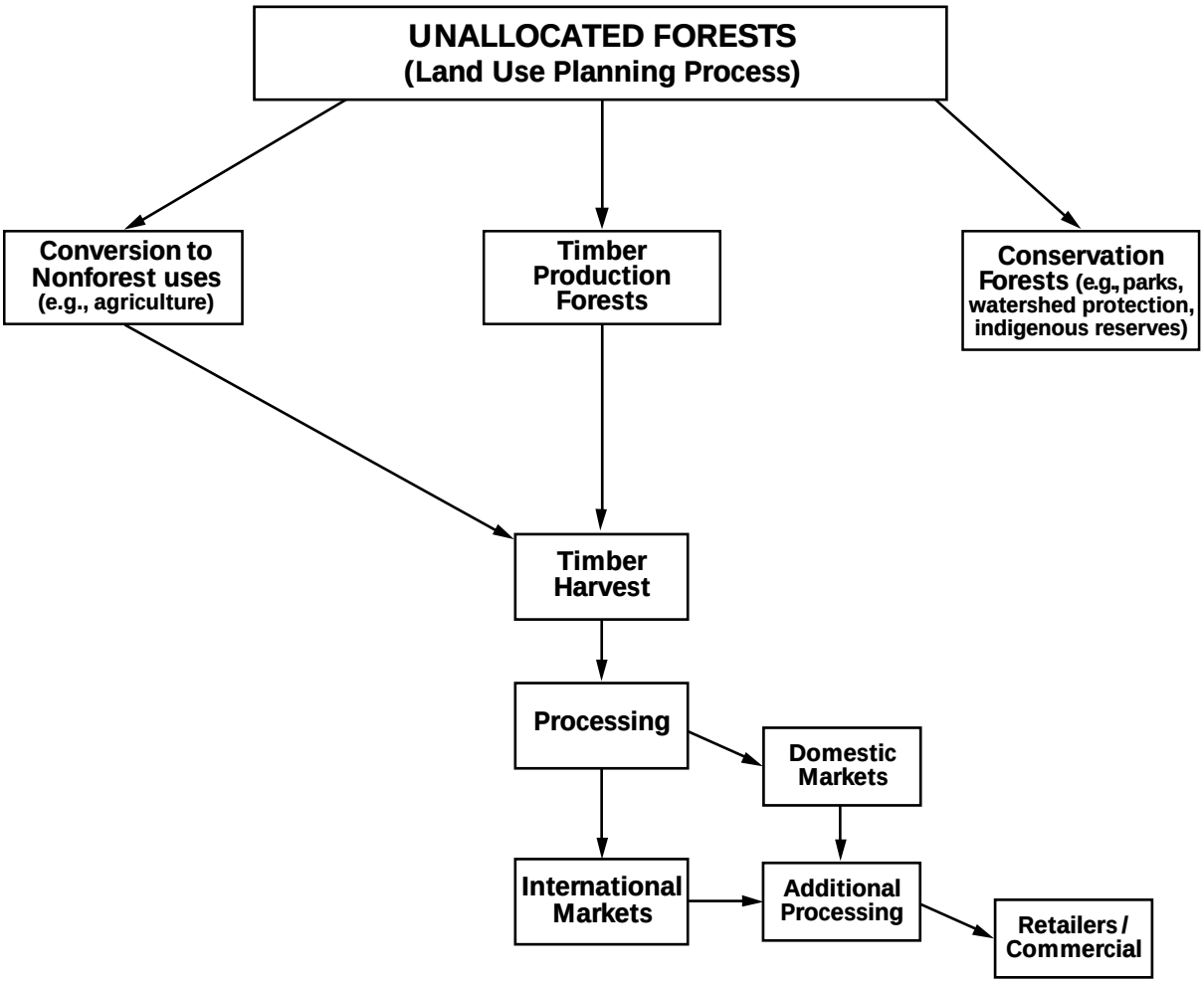

Figure 1. Flow of Forest Products from Forest to Market

Mechanisms to Stop or Prevent Logging

Mechanisms that can be used to stop or prevent logging in HCVF are now presented in the sequence that they can be applied along the flow of forest products (Figure 2). The description of each mechanism includes brief examples of its application, which the appendices discuss in more detail. Enabling conditions that facilitate the implementation of each mechanism are also discussed. The references that document the examples are presented only in the appendices.

1. Create conservation forests from currently unallocated land

Description: The earliest point along the supply chain at which a mechanism for stopping or preventing logging can be applied is to avoid granting timber rights for a particular forest and, instead, award it protected status. Two examples of countries that have recently allocated land to protection are Canada and

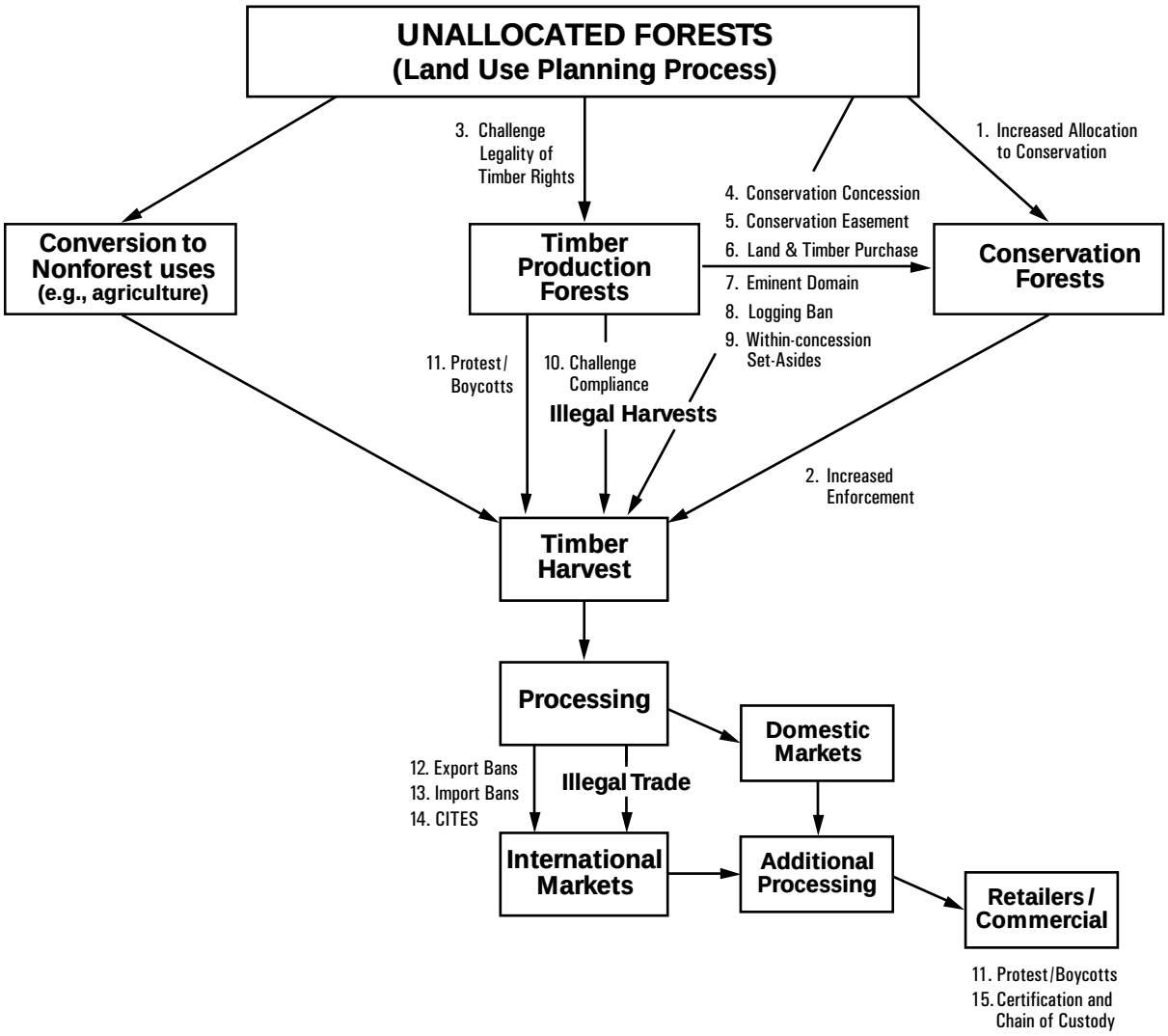

Figure 2. Organizational Framework for Mechanisms to Halt or Prevent Logging in HCVF

Suriname. The government of the Canadian province of British Columbia recently announced approval of the Muskwa-Kechika Management Area, designating 666,184 ha to new protected areas. With this allocation, British Columbia meets its goal of protecting 12 percent of its land area (Appendix 1a). In the tropics, the government of Suriname recently created the Central Suriname Nature Reserve, an area that protects 10 percent of the country's land base (Appendix 1b). Although exploratory timber leases had previously been granted for some of these forests, there was a moratorium in place that prevented the conversion of exploratory leases to timber concessions.

Variations on this mechanism are possible. For example, allocation of public forests to indigenous peoples' reserves may be one way to prevent them from being allocated to timber production. Whether this is effective in securing their long-term protection will depend on whether the indigenous groups themselves intend to log.

Enabling conditions: For this mechanism to be effective in halting or preventing logging, a country must have significant areas of unallocated forests.

The next two mechanisms act to halt or prevent logging by companies that have no legal right to harvest timber. The first eliminates logging on lands that have not been allocated for timber production. The second revokes illegally obtained timber rights.

2. Increase enforcement against illegal logging in forests not allocated to timber production

Description: The second mechanism is to increase enforcement against illegal logging of forests that have not been allocated to timber production. Such forests include conservation forests (protected areas of all types), unallocated public lands, and some indigenous peoples' reserves. Effective enforcement requires that there is enabling legislation in place that provides the legal basis for stopping logging. It also requires that there is the political will and the capacity to enforce the legislation. Illegal logging can result if any of these three requirements is not in place. Enforcing against illegal logging can be problematic. The following two examples illustrate some of the difficulties involved.

The provincial government of British Columbia loses up to half a billion dollars of timber a year from illegal logging in protected areas.

The provincial government of British Columbia in Canada loses up to half a billion dollars of timber a year from illegal logging in protected areas and concession set-asides because of insufficient enforcement staff to monitor the vast areas of forest. Attempts are being made to develop a cost-effective means of using DNA analysis to identify the origin of timber and to increase public vigilance in reporting violations (Appendix 2a).

Indonesia also has insufficient capacity to effectively enforce its forestry legislation and protect its forests from illegal logging, but because of widespread corruption there is also a lack of political will to take action against even well-documented cases of illegal logging. Logging of national parks has been common since the economic crisis in Asia (Appendix 2b). The NGOs Environmental Investigation Agency and Telapak have attempted to get the Indonesian government

to stop illegal logging in Tanjung Puting National Park in Kalimantan by publicizing the extent of the logging, and identifying the persons involved, but have met with limited success. The huge profits from illegal logging and corruption within the Indonesian government mean that there is no political will to take action against the violators. If no effective solution is found soon, there is a great risk that the majority of Indonesia's forests and their biodiversity will be lost (McCarthy 2001, Jepson et al. 2001).

Enabling conditions: This approach requires a government with the capacity and the political will to enforce existing legislation against illegal logging. Technical assistance, and local and domestic pressure for action, may provide incentives for governments to increase their enforcement efforts. In some countries, NGOs can assist governments in monitoring illegal logging and help increase public support for such efforts.

3. Challenge the legality of timber rights

Description: Many countries have complex requirements for obtaining a timber concession, which may include extensive multistakeholder consultation. In addition, the allocation of timber rights should not contravene other types of environmental legislation. Violations of regulations or legis-lation can be used to challenge the legality of the concession in court; if successful, the concession may be revoked. For example, the Seattle Audubon Society challenged the US Forest Service and the Bureau of Land Management, arguing that timber concessions in 13 National Forests did not meet requirements of the US Endangered Species Act, in this case, failing to provide critical habitat for the northern spotted owl (Appendix 3a). In the tropics, the Nicaraguan community of Awas Tingni challenged a forestry concession owned by the Korean company Kum Kyung in Eastern Nicaragua on the basis that the company had not conducted the necessary community consultation, nor had it obtained approval from the local government (Appendix 3b).

A Nicaraguan community challenged a forestry concession on the basis that the Korean logging company had not conducted the necessary community consultation.

Such legal challenges may not result in a permanent end to logging. Although the current concession holder may forfeit the illegally obtained timber rights, another forestry company (or even the original company) might reapply and gain the timber rights by following proper protocol.

Enabling conditions: This mechanism requires strong legislation, rule of law, and financial and legal resources to mount legal challenges.

The next group of mechanisms aims at stopping or preventing logging in areas where timber rights are or can be legally held by the private sector, either on public or private lands. These mechanisms may be initiated by third parties or by governments. If they are implemented by third parties, they tend to be expensive, as a third party has no legal basis for divesting an owner of its legally held timber rights and therefore must offer appropriate compensation. Governments, on the other hand, may not be legally required to offer compensation for retiring timber rights; however, they may choose to do so for other reasons.

Third-party mechanisms to change the allocation of land from timber production to conservation include the following:

4. Conservation concessions

Description: A conservation concession involves an NGO or other third party substituting for a forestry company and obtaining timber rights in accordance with existing forestry legislation. The main difference between a conservation concession and a regular forestry concession is that in the case of the conservation concession, the owners choose not to harvest the timber they have purchased. Instead, the timber rights are retired for conservation. In addition to purchasing the timber rights, the terms of the conservation concession may require that the owner pay a concession fee, compensate communities for lost employment, and pay surrogate export taxes. The intention of a conservation concession is that the owner displaces the logging company for the duration of timber rights.

A conservation concession involves bidding competitively for timber rights, then choosing not to harvest the purchased timber.

One of the first attempts at a conservation concession was initiated in 1996 by the Northwest Ecosystem Alliance when it successfully bid for the salvage rights to 125 ha of fire-scarred forests in the Okanogan National Forest in Washington state (Appendix 4a). The Forest Service subsequently awarded the sale to the second highest bidder when it became clear that NWEA had no intentions of logging. In the tropics, Conservation International is in the process of establishing a conservation concession in Guyana (Appendix 4b). Operating under Guyana's forestry law, Conservation International was granted an exploratory permit bid to develop a management plan for a 100,000 ha forestry concession in Southern Guyana. If the bid is successful, the area will become a conservation concession some time in 2002.

The intended duration of a conservation concession is the same length as the tenure of the timber rights. Thus in most cases a conservation concession does not necessarily protect a particular HCVF permanently. The previous two examples describe situations where a conservation organization displaces logging for one or more harvest rotations, but the land still remains allocated to timber production. However, a conservation concession can be used in conjunction with other measures to achieve a permanent end to logging, such as by attaining protected area status. For example, the Northwest Ecosystem Alliance purchased the timber rights for 11,363 ha of State Forest in Washington, which was subsequently converted to a Natural Resource Conservation Area. This action permanently ended the possibility of logging this forest (Appendix 4c). Similarly, the purchase of timber rights was used to retire logging on government concessions adjacent to Noel Kempff Mercado National Park in Bolivia (Appendix 4d). The park boundaries were then extended to incorporate the areas previously under concession.

Enabling conditions: This mechanism requires financing equivalent to normal concession fees, and possibly additional payments of surrogate export and domestic taxes, and funds for generating employment. An important requirement for conservation concessions is that it must be legal to purchase but not exercise timber rights. In some countries this is illegal and would lead to the government withdrawing the concession.

5. Conservation easements

Description: A conservation easement is a permanent, legally binding restriction on the use of private land. The landowner does not surrender ownership of the property, but does forfeit certain specified development rights. In some cases, the landowner is able to claim some portion of the resulting reduction in land value as a tax credit. Landowners may choose to put conservation easements on their properties of their own accord, or a third party such as an NGO might approach a landowner seeking to put a conservation easement on the property, and offering financial compensation for doing so. Compensation would be based on the reduction of the value of the land resulting from restrictions in land use, including the loss of profits from timber harvests. Conservation easements are quite common in North America and are slowly gaining acceptance in other parts of the world.

A conservation easement is a permanent, legally binding restriction on the use of private land.

On the Copper River Delta in Alaska a proposed easement is under negotiation between the National Wildlife Federation and the Chugach Alaska Corporation (CAC) (Appendix 5a). The CAC had previously planned to build roads through the Delta to access timber supplies. The easement would prohibit road building and other ecologically damaging activities in the area. In return for forgoing development, the CAC would retain traditional use rights to the area, as well as receiving payments equivalent to the profits that would have been generated if the road building and logging had occurred. In the tropics, the Nature Conservancy (TNC) recently acquired a 1,800 ha property in the Maya Mountain Marine Corridor in Belize (Appendix 5b). In order to satisfy the seller's concerns about the property's long-term conservation status, TNC agreed to place an easement on the property that would permanently prohibit development of the land.

Enabling conditions: The use of conservation easements requires that the host country recognize such easements as legal. Not all parts of the world do so; for example, some countries in Latin America do not. Unless the landowner is willing to bear the full cost of the reduction in property value that may result from applying a conservation easement, funds may be needed to provide incentive for private landowners to accept the easements.

6. Land and timber purchase

Description: When private lands are purchased to prevent logging, their price includes not only the value of the timber rights (as is the case in the purchase of an easement), but also the value of the land for the most profitable alternative use. This is the most expensive means of stopping or preventing logging where timber rights have already been legally acquired. A prime example is the purchase by the US government and the State of California of 4,545 ha of redwood forests for almost half a billion dollars from the Pacific Lumber Company (Appendix 6). In the tropics, the expansion of Noel Kempff Mercado Park in Bolivia included the purchase of a small area of private lands (160 ha), in addition to the purchase of timber rights on public lands, as mentioned above in the discussion of conservation concessions (Appendix 4d).

Enabling conditions: This mechanism requires the financial resources to pay full market value for the land and timber, as well as requiring that owners have full and unencumbered land title.

Governments also have several mechanisms at their disposal to stop logging in HCVF once timber rights have been legally allocated to industrial logging companies. These mechanisms vary in the scale at which they are applied, and in their intended duration.

7. Eminent domain

Description: Eminent domain[3] refers to the right of a government or municipal body to unilaterally acquire property (including timber rights) for public use and to determine the level of compensation (with or without the aid of the courts) that will be paid to owners. For example, the government of British Columbia, Canada, recently expropriated the timber rights owned by Macmillan Bloedel Ltd. In order to expand Strathcona Provincial Park on Vancouver Island, the provincial government expropriated the timber rights on 8,000 ha of forest (Appendix 7a). Although not legally obligated to compensate Macmillan Bloedel, the province did so in order to avoid the adverse effects that uncompensated expropriation would have on future investment in the province. Similarly, in Australia, small amounts of privately owned land were expropriated to create the Wet Tropics World Heritage Area in Queensland (Appendix 7b). A serious unintended consequence was that private landowners cleared thousands of hectares of native forest to avoid possible expropriation during the months that the government was deciding the final boundaries of the park.

Eminent domain refers to the right of a government to acquire property for public use and to decide what compensation the owner will receive.

Enabling conditions: Application of eminent domain is an extreme measure with potentially strong repercussions on both the perception of investment risk and the use of private land. In addition, expropriating land without compensation or allocating public funds for compensation both require extensive public support. Furthermore, it must be carried out in a transparent and strategic manner, if it is to avoid unintended negative repercussions on private land use.

8. Logging bans

Description: Governments can stop or prevent logging on both public and private HCVF by banning logging. Because a logging ban may be temporary, it is a less extreme measure than eminent domain and can be applied over a much larger scale. In addition, a logging ban allows land to remain in private ownership and does not necessarily restrict other uses of the forest. However, if the only economic use for a forest is timber production, then a logging ban becomes a de facto expropriation of land.

Broadly applied logging bans may not discriminate between logging HCVF and logging forests of low conservation value. This can cause a drastic reduction in timber supply, with the result that logging may shift to forests in other regions or countries, which may or may not be HCVF. Thus logging bans can have unexpected and counterproductive consequences.

A recent example of a government banning logging from public forests occurred in China (Appendix 8a). Damaging flash floods in 1998 were blamed on the logging of primary forests in the headwaters of major rivers. The government

[3] Also referred to as "resumption."

responded by banning logging in 18 provinces until a major zoning exercise identified those forests that are required for watershed protection and those that can be managed for timber. This removed approximately 42 million ha of forest from timber production, leading to a widespread wood shortage within the country. Imports from Malaysia, Indonesia, Papua New Guinea, Gabon, and Siberia have filled this demand, making China the second largest importer of timber in the world. Approximately 60–70 percent of the loggers who lost their jobs as a result of the logging ban are reported to now work in reforestation. Others work in ecotourism, and some have turned to wildlife poaching. Illegal logging continues to supply household energy needs. Kenya implemented a partial logging ban in 1999 in attempts to decrease deforestation (Appendix 8b). Although the government has increased enforcement against logging of government forests, there is strong pressure to log and export timber, and illegal logging continues in some areas.

Many of the loggers who lost their jobs as a result of China's logging ban are reported to now work in reforestation.

Enabling conditions: Public support is needed to implement a logging ban, as it may result in significant employment loss and de facto expropriation of timber values from private landowners. Also necessary are the technical capacity and political will of the government to enforce the logging ban and alternative sources of timber supply to meet the resulting domestic shortfall in supply.

9. Within-concession set-asides

Description: Governments and other standard-setting bodies such as the Sustainable Forestry Initiative or the Forest Stewardship Council can require the protection of certain HCVF that occur within forestry concessions, such as the habitat of endangered species or riparian corridors. If HCVF form only a small percentage of the total concession area, the opportunity cost of excluding such habitats will be relatively small and may be willingly borne by the company. An innovative example is the recent initiative between Westvaco and The Nature Conservancy (Appendix 9a). TNC will work with Westvaco to identify and develop management plans for all areas of high conservation value within Westvaco's 590,000 ha of forests in the United States.

The Hunstein Range in Papua New Guinea (PNG) provides another example (Appendix 9b). After failing to permanently halt the awarding of their traditional territories as logging concessions through a legal challenge, three communities declared their traditional lands a 220,000 ha wildlife management area under PNG's Fauna (Protection and Control) Act. This legislation allows local management committees to give conservation and small-scale development activities priority over export logging, reducing the effective size of the logging concession by almost half.

Enabling conditions: Logging activities are extensive and diffuse, making monitoring difficult and expensive. Successful implementation of within-concession set-asides therefore requires either the goodwill of the company (i.e., commitment to implement best practices, and commitment to transparency through some third-party auditing) or technical capacity and political will on the part of the governments or third parties to verify compliance (see mechanism 15, Forest certification, p. 17).

The mechanisms discussed to this point aim to stop the logging of a particular HCVF by either challenging the legal basis upon which timber rights have been awarded or by divesting logging companies of their timber rights through voluntary or mandatory measures, usually involving compensation. The remaining mechanisms are applicable to situations where companies legally own and are exercising their rights to log in HCVF. These mechanisms try to stop logging by either challenging the legality of logging practices, or by reducing market access and/or demand for forest products originating from HCVF.

10. Challenge compliance to logging regulations

Description: Even though a forest products company may have the legal right to log, it may do so in a way that does not comply with forestry regulations. In that case, there may be cause for at least a temporary halt to logging. For example, an industrial logging company may exceed its annual harvest quota, or it may log in a manner that breaks guidelines for minimizing logging damage. However, unless there is good monitoring capacity and strong penalties for poor logging practices, it may be difficult to halt logging by challenging a company's compliance with logging regulations. For example, the Sierra Legal Defense Fund (SLDF) recently audited the compliance of logging companies with British Columbia's Forest Practices Code concerning riparian buffers for salmon stream protection in Canada. They found that at the majority of sites, logging had been conducted in such a way that it violated regulations (Appendix 10). In 2000, SLDF submitted a formal complaint to the North American Commission on Environmental Cooperation asking for investigation into provincial and federal enforcement of laws protecting fish and fish habitat in British Columbia. The commission has agreed that there is enough evidence to begin an investigation.

Compliance challenges alone are unlikely to halt logging permanently, but may buy time and improve logging practices.

Enabling conditions: In order for this mechanism to be successful in stopping logging, strong forestry legislation must be in place, requiring that timber rights be forfeited if a company is convicted of a gross violation of logging practices. In addition, adequate personnel and financial resources are needed to monitor logging and to bring charges against violators. Even if successful, this mechanism alone is unlikely to halt logging permanently, but it may buy time and improve logging practices while other, more permanent approaches are pursued.

11. Protest and boycotts

Description: Even though a company may have legally acquired its timber rights, and its operating practices may be in compliance with relevant forestry legislation, it may still require approval from civil society (i.e., it may require a "social license") to log and to sell its forest products. This happens when legislation differs from public expectations concerning acceptable use of certain types of lands, such as HCVF. Failure to obtain a social license may mean that a company faces disruptions of its operations through local protests and sabotage. And at the marketplace, boycotts and protests may reduce product sales. For example, the 12-member Friends of the Lubicon led a successful boycott against the Daishowa-Marubeni corporation in Alberta, Canada, which ultimately led to the company's

commitment not to log forests that are part of a potential Lubicon Indian land settlement (Appendix 11a).

An example of a boycott against a tropical timber *species* (rather than an HCVF) is provided by Friends of the Earth, which led a boycott against mahogany originating from Brazil (Appendix 11b). The organization was successful in reducing mahogany imports to Britain by 98 percent over a 7-year period. However, the British boycott was not successful in stopping mahogany logging because demand from other countries (primarily the United States) absorbed the production that would have been sold in Britain in the absence of the boycott. It is also possible that timber derived from other HCVF was substituted for the mahogany that would have been sold on the British market.

To avoid protests, companies have agreed to voluntary moratoriums on logging in such places as Murmansk in Russia.

In the United States, boycotts have been launched in recent years against major home improvement chains, such as Home Depot, Lowes, and Wickes, with the goal of obtaining assurances that these retail stores will not stock wood products originating from old growth or "ancient" forests. In order to avoid or stop protests and boycotts, companies have agreed to voluntary moratoriums on logging in such places as the Great Bear Rainforest in Canada and Murmansk in Russia (Barclay 2001).

Enabling conditions: The requirements for boycotts and protests to be successful in stopping or preventing logging in an HCVF include a civil society that cares about and is prepared to act on forest conservation issues, the ability to identify a company's products and consumers in the marketplace, the ability to reach consumers with the message of the boycott, and the availability of substitutes for the boycotted products.

The next group of mechanisms acts to control or eliminate international trade in forest products originating from HCVF. Importing and exporting governments can act on their own initiative, banning or regulating trade in forest products that are thought to come from HCVF (although doing so may trigger trade disputes), or they may act based on requirements of the Convention on the International Trade in Endangered Species (CITES), which restricts trade in endangered species.

12. Export bans

Description: There are various reasons for banning the export of forest products. Perhaps the most common practice is to ban the export of raw logs with the goal of increasing the value-added benefits captured by the producing country. Unfortunately, excluding international markets for unprocessed logs increases local supply and reduces domestic prices. Artificially low log prices encourage inefficiency in the processing sector, which uses raw logs as input to their operations and can actually accelerate total logging (Repetto and Gillis 1988).

As a conservation tool, a country may ban the exports of all forest products, or may ban only those forest products that are thought to come from high conservation value species or forests. However, since only a fraction of forest products originating from HCVF may be exported, an export ban in itself may

not be effective in stopping or slowing logging from these forests. It may also be difficult to distinguish between forest products that derive from HCVF and those that come from other forests. For this reason, an export ban may be implemented in conjunction with other conservation measures, such as a logging ban, as was the case in the Philippines (Appendix 12a). In 1989, the government of the Philippines banned log and lumber exports from natural forests and also banned logging from areas where illegal harvest was greatest. The export ban has been successful, but has caused unemployment in the forest products sector. The export ban was lifted for a year in 1998 in response to the country's need for foreign currency caused by the economic crisis in Asia.

The Philippines banned log and lumber exports from natural forests and banned logging from areas where illegal harvest was greatest.

Another example is provided by Cameroon (Appendix 12b). In 1999, the government implemented a partial ban that prohibited the export of all but two timber species. The government also increased export taxes on timber and invested in increasing the capacity for secondary wood processing in the country in order to generate employment. Neighboring countries have increased their timber exports to Europe to make up for Cameroon's reduced exports.

Enabling conditions: In order for an export ban to successfully stop or prevent the industrial logging of HCVF, exports must comprise the majority of the demand for forest products from the HCVF; otherwise, forest products will simply be diverted to local markets and logging will continue.

13. Import bans

Description: Governments may decide to ban the imports or use of products originating from HCVF, although to date few national governments have done so. One exception is Austria, which in 1992 attempted to implement a de facto ban on tropical timbers by imposing a 70 percent tariff and mandatory labeling (Appendix 13). These actions were challenged immediately as a nontariff barrier to trade, and member countries of the Association of South East Asian Nations threatened retaliatory trade measures. The tariff was subsequently revoked.

Although few national governments have attempted to enact import bans, there are many examples of lower levels of governments banning the use of certain products from what they perceive as HCVF. For example, hundreds of city councils in Germany and Holland have banned the use of tropical timbers in their projects, and in the United States, the state governments of Arizona and New York prohibit the use of tropical timbers in state construction projects (FAO 1994).

Enabling conditions: In order for an import ban to be successful in stopping or preventing industrial logging in HCVF, several requirements must be met. First, it must be possible to enact a ban that is nondiscriminatory and that will withstand legal challenges. Second, the country that enacts the import ban must account for the majority of the consumption of the forest products originating from the HCVF of interest. Otherwise, forest products will simply be diverted to other markets.

14. CITES

Description: The Convention on International Trade in Endangered Species (CITES) provides another potential mechanism for stopping or preventing logging in HCVF. CITES can restrict international trade in species that might be threatened by trade with an "Appendix II" listing. Species listed on Appendix II can only enter international trade if they are documented as being sustainably harvested. CITES can award an Appendix I listing to those species that are in danger of extinction, which bans trade entirely. The burden of proof is quite large to demonstrate that trade in fact threatens a commercial tree species.

CITES can be effective at stopping logging if target species are internationally traded and are a majority of the harvest.

One of the first tree species to be listed on CITES was *Fitzroya cupressoides* (alerce), a valuable timber species that occurs mainly in Chile and to some extent in Argentina (Appendix 14). In Chile, alerce forests have been reduced to about 20,000 ha, less than 15 percent of their original extent. The species is protected by Chilean law and was listed on CITES Appendix I in 1975.

Enabling conditions: In order for CITES to be an effective tool against logging a particular HCVF, the CITES-listed species must compose the majority of harvest that occurs in a forest, otherwise logging for other timber species will continue even in the presence of a CITES listing. The majority of the trade in the species must be international, with little local demand, otherwise restricting trade with CITES will simply divert production to local markets.

To this point mechanisms have either acted to prevent logging in HCVF or to prevent forest products from reaching the consumer. The final class of mechanisms acts after forest products from HCVF have reached the market. These mechanisms try to directly prevent the purchase of forest products from HCVF through boycotts or protests (as discussed above), or they direct demand to forest products that can be demonstrated to come from sustainably managed forests, thereby reducing the market for products originating from HCVF.

15. Certification and chain of custody

Description: Forest certification, chain of custody, and product labeling can indirectly contribute to halting or preventing logging in HCVF by taking demand away from forest products that originate from HCVF and directing it towards products that come from demonstrably well-managed forests (presumably not HCVF). The steps involve the development of principles and criteria for sustainable forest management, independent certification of managed forests to these principles and criteria, the use of chain of custody to track forest products originating from these forests to market and, finally, the use of a label so that consumers may identify and preferentially purchase these products. A wide variety of national and international certification systems exist, none of which has gained widespread acceptance by all stakeholders.

For example, the Forest Stewardship Council (FSC)—headquartered in Oaxaca, Mexico—has created a global set of forestry standards developed primarily by the NGO community (Appendix 15). To date, certifiers accredited by the FSC have certified approximately 20 million ha of forests worldwide. Numerous retailers

in the United States and Europe have announced environmental purchasing policies that will favor FSC-certified products if they are available. However, the FSC's standards are not widely accepted by industry and private forest owners. Other national systems have been created, such as the Canadian Standards Association (CSFC 2001), the Sustainable Forestry Initiative (AF&PA 2001), and the Pan European Forest Certification (2001). These have certified many additional tens of millions of hectares, but they do not have the support of all the environmental organizations. Efforts are under way to promote the "mutual recognition" of substantially equivalent certification systems, but a major divide still separates the FSC from other certification systems (WWF et al. 2001, Bass 2001).

Enabling conditions: In order for forest certification to stop or prevent logging in HCVF, the following requirements must be met. First, the standards must preclude logging in HCVF, otherwise certification only reduces some rather than all of the impacts caused by logging. Second, the supply of certified forest products must be sufficient so that it reduces demand for uncertified products originating from HCVF. Finally, certified products must be able to compete with noncertified products in terms of either cost and/or utility, or be preferred for other reasons.

CHAPTER 3

COMPARISON OF MECHANISMS

This section compares the mechanisms in order to help the reader identify which mechanisms may be appropriate for different contexts. Table 1 (pp. 23–25) provides a summary comparison of the mechanisms, which is the basis for the following discussion.

Applicability to Different Forest Tenures

Most of the mechanisms identified in this study are applicable to both public and private lands. The obvious exceptions are the first three, which aim to increase the amount of public lands allocated to conservation or to prevent illegal logging of public forests. There are also some differences in the applicability of third-party mechanisms for retiring legally acquired timber rights. Conservation concessions are applicable to public forests, while conservation easements and land purchases are the corresponding mechanisms for private forests.

Key Implementer

Although most of the mechanisms ultimately require the participation of many different stakeholders, a key implementer can be identified for each (i.e., the party whose participation initiates or is required for the mechanism to be effective). A third party such as a nongovernmental organization (NGO) can be the key implementer of 9 of the 16 mechanisms. Third parties can challenge the legality of timber rights acquired by a company or the compliance of a company with harvest and management regulations. They can use three mechanisms for purchasing timber rights for conservation purposes. In addition, they can develop and certify sustainable forestry principles that require within-concession set-asides of HCVF. Finally, they can try to reduce the ability of a forestry company to operate in HCVF by challenging its social license or by promoting the sale of products from certified forests. The remaining mechanisms require the participation and/or initiative of governments.

Intended Duration

Mechanisms that are intended to achieve a permanent halt to logging in public forests involve the legal allocation of unallocated land to conservation, the reallocation of land from timber production to conservation (expropriating timber rights), or legislating that some HCVF within public forests managed for timber be set aside for conservation. Permanent mechanisms to end logging on private lands include conservation easements, land purchase, expropriation of land, and voluntary or mandatory within-concession set-asides. The successful application of any of these mechanisms would result in a permanent end to the legality of logging

in an HCVF. Enforcement and vigilance may still be necessary to stop illegal logging. Conservation concessions are intended to last the duration of one or more management cycles. Consequently, additional measures to ensure the ongoing protected status for the lands are desirable.

The remaining mechanisms are of either a much shorter or a variable duration. For example, stopping logging by challenging either the legality of the acquisition of the timber rights or compliance with regulations governing harvesting practices may cause only a temporary shutdown. Other mechanisms that focus on eliminating trade or reducing demand will last only as long as there is commitment on the part of the implementer.

Scale and Displacement

The majority of the mechanisms are applied at a local level, i.e., at the level of a forest stand or concession. One exception is within-concession set-asides, which are applied at a sub-stand level. Other mechanisms operate at scales above a single stand. These include increased enforcement applied throughout a country's forests, logging bans, boycotts and protests, import and export bans, and CITES, all of which can operate at a national level.

There are advantages and disadvantages of working at each scale. Mechanisms that apply to a small scale, such as private land purchases, will have relatively high transaction costs, but can be highly focused. Mechanisms that operate at a large scale (e.g., a national logging ban) have lower transaction costs, but may include many lower conservation priority forests. Thus, they risk shutting off so much timber supply that there is substantial "leakage" of logging to HCVF in other regions or countries.

Type of Mechanism

The mechanisms can be classified as to whether they act directly or indirectly and whether they accomplish full or partial protection. Most of the mechanisms identified in this study are direct. The exceptions are those mechanisms that target trade in forest products. Conservation easements, for example, act directly to completely shutdown logging in a particular HCVF. Boycotts, on the other hand, act directly but may be only partially effective in stopping logging in a particular forest because they target demand for only a small portion of the products that originate from an HCVF. Certification and labeling act indirectly, in that they do not stop logging in HCVF at all, but rather reduce demand for products originating from HCVF by promoting alternative products.

Distribution of Opportunity Costs

A critical factor affecting the long-term success of these mechanisms is the willingness of different sectors of society to bear the opportunity cost of conservation. These costs are summarized below for each of the main players.

- *Government:* In general, the government (and civil society) bears an opportunity cost of conservation through lost revenues (concession fees, taxes, foreign exchange, etc.) whenever forests are withdrawn from timber production. This happens when unallocated land is allocated to conservation, or when logging is stopped for whatever reason on land that has been allocated for timber production. In the latter case, the government may be required to pay the loss of profits from logging. For these reasons, significant public support and/or

financial resources, and alternative sources of government revenue, are needed for governments to willingly incur these opportunity costs. Only the conservation concession explicitly offers compensation to governments for lost taxes and foreign exchange earnings, although there is no reason in principle why other mechanisms such as conservation easements and land purchases could not do so as well.

- *Industry (legal):* Legal industry bears an opportunity cost of conservation when it is divested of its timber rights without compensation. This can occur if a government exercises eminent domain or implements a logging ban without compensation, or if measures are taken to reduce international trade and demand for forest products legally originating from HCVF. Governments should take into account the possibility of perverse outcomes if they fail to fairly compensate the private sector for lost timber rights. If appropriate compensation is not offered, then the willingness of corporations to invest in a country may be jeopardized, or it can lead to counterproductive behavior such as private landowners clearing HCVF from their lands in order to avoid the risk of expropriation.
- *Industry (illegal):* If it can be stopped, illegal industry will bear the opportunity cost of all the mechanisms that can be applied to it to stop illegal logging, as it has, by definition, no legal entitlement to compensation.
- *Communities:* Where communities are beneficiaries of—but not holders of—timber rights, they often bear the opportunity cost of conservation through lost employment opportunities and forgone local taxes. This may occur even if the logging that is stopped is illegal. Only the conservation concession explicitly offers compensation to local communities. However, compensation may be offered to local communities under other mechanisms, even though these mechanisms do not require it. For example, if a government sells timber rights to a conservation group instead of a logging company, it may choose to direct these revenues back to local communities, as in the case with the purchase of the Loomis State Forest in Washington, where proceeds went to a public school trust. Or, the implementation of a logging ban by a government may be accompanied by investment in alternative economic activities that might generate local employment, such as reforestation, as happened in China after it imposed a logging ban. Since support from communities is often critical to the longevity of any measure to halt logging in HCVF, it is reasonable to assume that the more the opportunity cost of conservation can be shifted away from communities, the greater the likelihood of permanently protecting the HCVF of interest.
- *Third parties:* Third parties such as NGOs bear some or all of the opportunity costs when they buy timber rights and then retire them for conservation. In the case of private lands, third parties may buy only the timber rights through a conservation easement, or they may buy the land outright, with all the development rights attached (including timber). In the case of public lands, third parties can act as "pseudo-forestry companies," paying for all the economic benefits a forestry company would provide on an ongoing basis, including compensation to governments and local communities. Or they can simply purchase the one-time timber rights as means of facilitating the transition of the land's legal status to one that will preclude future logging.

In general, ensuring that the legal owners of timber rights are fairly compensated for stopping logging, and that the opportunity costs of conservation are shifted to those entities that are both willing and able to bear them, will help achieve a lasting end to logging in HCVF.

Enabling Conditions

The ability of the various mechanisms to provide a positive contribution to conservation will be enhanced if the following conditions are met:

- *Strong enabling legislation and regulations:* Strong legislation is a requirement for application of many of the mechanisms. Regulations controlling the logging of lands not allocated to timber production and the way in which public timber rights may be acquired and exercised, as well as guidelines for conservation of HCVF within concessions, can all play a critical role in offering legal avenues to halt logging. In addition, legislation permitting the purchase of timber rights for conservation purposes (e.g., easements, conservation concessions, timber purchases on public lands) is also necessary but absent in many countries.
- *Rule of law:* Regulations are only as effective as the ability to implement them, and so the effectiveness of mechanisms that depend on regulations to stop logging will be compromised if regulatory agencies lack the capacity or political will to do their jobs. The values of society and their attitude toward nature and development will influence the pressure on government to uphold existing legislation.
- *Resources for legal challenges:* The availability of financial resources to mount third-party legal challenges to possible violations of forestry legislation is critical. Often local communities are best placed to challenge the legality of industrial logging, but without help and funding are unable to do so.
- *Parties willing to bear the opportunity cost of conservation:* Most of the mechanisms require that some party be willing to bear the opportunity cost of conservation. This may be the general public, expressing support for compensating logging companies to sell their timber rights for park expansion or for allocating more public lands to conservation and resources for enforcement. It may be donors providing resources to an environmental organization so that it may purchase timber rights and offer other forms of compensation directly. Or it may be purchasers of forest products willing to purchase substandard, more expensive, or alternative forest products in order to decrease demand for forest products from HCVF. In the future, it may be possible to offset the opportunity cost of conservation with payments for the enhanced environmental services that protected forests will provide, such as watershed protection or increased carbon storage and sequestration. However, such funding is not widely available at present.
- *Ability to identify and track products originating from an HCVF:* In order to shut down logging in a particular HCVF, mechanisms applied at the level of distribution and sale of forest products require that the products originating from a particular forest be identified, and that the principal market for these products be influenced. Failure to do so will greatly reduce the effectiveness of these mechanisms.

Although these factors, as a group, will generally enhance the mechanisms to stop logging in HCVF, each mechanism depends on these factors to different degrees. Hence,

Table 1. Comparison of Attributes of Mechanisms to Stop Logging in HCVF.

	Increased Allocation	Enforcement Against Logging on Land Not Allocated for Timber Production		Third Party Retires Legally Acquired Timber Rights		
	1. Increased Allocation of Public Lands to Conservation	2. Increased Enforcement Against Illegal Logging	3. Challenge Legality of Acquisition of Timber Rights	4. Conservation Concessions	5. Conservation Easements	6. Land (+Timber) Purchase
Applicable Land Tenure	Public	Public	Public	Public	Private	Private
Key Implementer	Government	Government	Third Party	Third Party	Third Party	Third Party
Intended Duration of Mechanism	Permanent	Variable	Variable	One management cycle (possible transition to permanent)	Permanent	Permanent
Scale	Stand - National	Stand - National	Stand	Stand	Stand	Stand
Ability to End Logging in Specific HCVF	High	High	High	High	High	High
Bearer of Opportunity Cost of Conservation						
Govt. (Public)						
Industry - Legal						
Industry - Illegal						
Communities*						
Third Parties						
Critical Elements Affecting Outcome	1. Significant areas of unallocated land 2. Support for conservation from key stakeholders 3. Low opportunity cost helps, but not critical	1. Strong forestry legislation 2. Regulatory capacity and political will	1. Strong forestry legislation 2. Resources for legal challenge 3. Regulatory capacity and political will	1. Legislation allowing a conservation concession 2. Financing for compensating full opportunity cost of conservation	1. Legislation recognizing conservation easements 2. Financing to compensate for logging profits	1. Financial resources to pay for full land value, including timber

* if local employment, taxes, etc.

Table 1. continued.

	Governments Retire Legally Acquired Timber Rights			Shut Down Logging on Land Allocated to Timber Production	
	7. Eminent Domain	8. Logging Ban	9. Within-Concession Set-Asides	10. Challenge Legality of Logging Practices	11. Protests and Boycotts
Applicable Land Tenure	All	All	All	All	All
Key Implementer	Government	Government	Government/ Third Party	Government/ Third Party	Third Party
Intended Duration of Mechanism	Permanent	Variable	Permanent	Variable	Variable
Scale	Stand	Stand - National	Sub-stand - National	Stand	Stand - National
Ability to End Logging in Specific HCVF	High	High	High	Variable	Variable
Bearer of Opportunity Cost of Conservation					
Govt. (Public)					
Industry - Legal					
Industry - Illegal					
Communities*					
Third Parties					
Critical Elements Affecting Outcome	1. Support for conservation from key stakeholders 2. Regulatory capacity and political will	1. Support for conservation from key stakeholders 2. Regulatory capacity and political will 3. Availability of substitute products so that logging isn't displaced to other HCVF	1. Forestry legislation or standards requiring set-asides 2. Regulatory capacity and political will from govern-ment or stan-dards body; or goodwill from private sector for voluntary implementa-tion	1. Strong forestry legislation 2. Resources for legal challenges	1. Support for conservation from key stakeholders 2. Regulatory capacity and political will 3. Ability to shut down whole market, including availability of substitute products

* if local employment, taxes, etc.

Table 1. continued.

	Shut Down International Trade in Species Coming from HCVF			Reduce Demand for HCVF Products
	12. Export Bans	13. Import Bans	14. CITES	15. Certification and Chain of Custody
Applicable Land Tenure	All	All	All	All
Key Implementer	Government	Government	Government	Third Party
Intended Duration of Mechanism	Variable	Variable	Variable	Variable
Scale	National	National	National	Stand
Ability to End Logging in Specific HCVF	Variable	Variable	Variable	Low
Bearer of Opportunity Cost of Conservation				
Govt. (Public)				
Industry - Legal				
Industry - Illegal				
Communities*				
Third Parties				
Critical Elements Affecting Outcome	1. Support for conservation from key stakeholders 2. Regulatory capacity and political will 3. Exports constitute majority of demand for HCVF products	1. Ban withstands legal challenges (e.g., GATT) 2. Importing country accounts for majority of demand for products from HCVF	1. Extensive scientific documentation of conservation status of species 2. Exports to signatories of CITES constitute majority of demand 3.CITES-listed species is the dominant commercial species in the HCVF in which it occurs	1. Standards must preclude logging in HCVF 2. Supply of certified forest products is great enough to reduce demand for forest products from HCVF 3. Certified forest products are cost-competitive or preferred for other reasons by majority of demand

* if local employment, taxes, etc.

some mechanisms can be implemented even if some of these conditions are not perfectly met. For example, Guyana has not formally passed its new strong forestry legislation and, at least at present, it has insufficient resources to effectively regulate forestry activity in the country. Despite this situation, it appears that Conservation International will be able to implement its conservation concession because of its willingness to bear the opportunity cost of conservation. At the same time, efforts to pass the legislation and regulate forestry activities should be supported, since they will help to protect HCVF (and to more generally improve forest management) in the country. Thus, a dual strategy of supporting the enabling conditions for conservation of HCVF, while at the same time initiating protection of specific HCVF, should be pursued. Even some of the mechanisms that only offer short-term protection, such as challenging the legality of logging rights acquisition, can play a valuable role by buying time and maintaining opportunities for conservation until long-term strategies can be implemented (Reitbergen , 2001).

CHAPTER 4

NEXT STEPS

This review provides a basic catalog of mechanisms that have been used to halt or prevent industrial logging in HCVF. Making this diverse range of mechanisms better understood may move the conservation community one step closer to acting upon the findings of recent prioritization exercises that identified priority forests for conservation. Subsequent possible steps by parties seeking to conserve HCVF by applying these mechanisms include

1. Harmonize the existing HCVF mapping exercises so that there is consensus on the conservation priorities.
2. Create and distribute a database of information that would facilitate the implementation of the mechanisms, including
   - Maps of existing logging concessions and the occurrence of illegal logging activities
   - Database of potential partners for each HCVF, including local and international NGOs, donors, and international agencies
   - Information on the legality of the various mechanisms, especially on creating conservation easements, conservation concessions, and new protected areas
   - Valuation of forest resources to help quantify the financial resources needed for compensation to stop logging
   - General assessment of which mechanisms are most appropriate (or have been tried) for different HCVF
3. Map conservation priorities on a finer scale to provide guidance for prioritizing forests for protection within broad HCVF types. For example, Conservation International identifies all of Southeast Asia as a conservation priority, but prioritization on a finer scale is now needed within this broad region to choose local conservation priorities.
4. Produce a detailed "how to" manual on implementing the various mechanisms. The manual could include not only a detailed description of procedures, but also links to supporting resource websites and to conservation organizations that have geographical expertise or experience with a particular mechanism. The manual could also address regional variation in the suitability and application of each mechanism.
5. Provide resources and technical assistance to implement mechanisms in prioritized countries or regions, such as

- Financial and technical assistance to countries in drafting strong forestry legislation and enacting legislation for other conservation tools such as easements and conservation concessions
- Financial and technical assistance in improving the enforcement capacity of agencies that regulate land use and in conducting studies on the full economic cost of illegal logging, which can be used to build public support for increased enforcement
- Financial and legal assistance to communities that are located in HCVF that wish to challenge the legality of timber rights and logging practices on their traditional lands
- Financial assistance to compensate legitimate stakeholders for the opportunity cost of conserving HCVF
- Assistance in improving the ability to identify and track forest products to their point of origin

6. Help to ensure that stopping or preventing logging in one particular HCVF does not simply result in the displacement of logging to another HCVF somewhere else. Such measures include increased support for enforcement of protected forests and support to increase production from well-managed plantations and sustainably managed forests of lower conservation value.
7. Review the suitability of these mechanisms with regard to their effectiveness in addressing other threats to forests, such as illegal conversion to either small or industrial agriculture.

References

American Forest and Paper Assocation (AF&PA). 2001. The Sustainable Forestry Initiative Program. On the AF&PA website at *www.afandpa.org/forestry/sfi/menu.html,* accessed June 2, 2001.

Barclay, W. 2001. Personal communication, April 27, 2001. Bill Barclay is international forests campaigner at Greenpeace.

Bass, S. 2001. The Forest Stewardship Council—Brief Lessons for MMSD. Draft discussion paper for the MMSD Assurance Group Meeting, May 7–8, 2001.

Canadian Sustainable Forestry Certification Coalition (CSFC). 2001. The CSA Standards for Canada's Forests. On the coalition's website at *www.sfms.com/standar.htm,* accessed June 2, 2001.

Conservation International (CI). 2001. Hotspots. On the CI website at *www.conservation.org/xp/CIWEB/strategies/hotspots/hotspots.xml,* accessed June 2, 2001.

Food and Agriculture Organization (FAO) of the United Nations. 1994. Forests, trade and the environment. In *The State of Food and Agriculture 1994.* Chap. 25. On the FAO website at *www.fao.org/docrep/t4450e/T4450E0p.htm#Tropical timber import bans,* accessed August 28, 2001.

Forest Stewardship Council. 2001. Principle 9 Advisory Panel Recommendation Report—Draft.

Frumhoff, P.C., and E.C. Losos. 1998. Setting priorities for conserving biological diversity in tropical timber production forests. Cambridge, Mass.: Union of Concerned Scientists.

Jepson, P., J.K. Jarvie, K. MacKinnon, and K.A. Monk. 2001. The end for Indonesia's lowland forests? *Science* 292(5518): 859–861.

McCarthy, J. 2001. Wild logging: The rise and fall of logging networks and biodiversity conservation projects on Sumatra's rainforest frontier. Occasional Paper No. 31. Bogor, Indonesia: Center for International Forestry Research.

The Nature Conservancy (TNC). 2001. Saving the last great places. On the TNC website at *nature.org/international/misc/art2191.html,* accessed June 2, 2001.

Nepstad, D., G. Carvalho, A.C. Barros, A. Alencar, J.P. Capobianco, J. Bishop, P. Moutinho, P. Lefebvre, and U. Lopes da Silva, Jr. 2001. Road paving, fire regime feedbacks, and the future of Amazon forests. *Forest Ecology and Management* 5524: 1–13.

Pan European Forest Certification Council (PEFC). 2001. Website at *www.pefc.org,* accessed June 2, 2001

Reid, J.W., and R.E. Rice, 1997. Assessing natural forest management as a tool for tropical forest conservation. *Ambio* 26(6): 382–386.

Reitbergen, S. 2001. Personal communication, April 13, 2001. Simon Reitbergen is acting coordinator of the Forest Conservation Programme of the International Union for the Conservation of Nature (IUCN).

Repetto, R., and M. Gillis, eds. 1988. *Public Policies and the Misuse of Forest Resources.* New York: Cambridge University Press.

Rice, R.E., R.E. Gullison, and J.W. Reid, 1997. Can sustainable management save tropical forests? *Scientific American* 276(April): 44–49.

United Nations Population Division. 1996. *World Population Prospects 1950–2050* (the 1996 revision). On diskette. New York: United Nations.

Whitmore, T.C., and J.A. Sayer, eds. 1992. *Tropical Deforestation and Species Extinction.* London: Chapman & Hall.

World Bank. 2001. CEO's Forum: Forests and Conservation. Working Group Protected Areas. On the World Bank website at *http://wbln0018.worldbank.org/essd/essd.nsf/6d0ba59b041433b185256a4000709170/669572aad847425b85256a470063150d?OpenDocument,* accessed August 28, 2001.

World Resources Institute. 1997. WRI's frontier forests assessment. In *The Last Frontier Forests: Ecosystems and Economies on the Edge.* On the WRI website at *www.igc.org/wri/ffi/lff-eng/assess.htm.*

World Resources Institute (WRI), UN Environment Programme, UN Development Programme, The World Bank. 1998. Forest loss is severe in the tropics, graph in *World Resources 1998–99: A Guide to the Global Environment,* New York: Oxford Univ. Press. On the WRI website at *www.wri.org/wr-98-99/deforest.htm#tropics,* August 28, 2001.

World Wide Fund for Nature (WWF). 2001. *The Global 200—Blueprint for a Living Planet.* On the WWF website at *www.panda.org/livingplanet/global200_new.cfm,* accessed June 2, 2001

World Wide Fund for Nature, Global Forest Policy Project, Fern, Friends of the Earth, Falls Brook Centre, Robin Wood, Natural Resources Defense Council, Forest Peoples Programme, American Lands, Swedish Society for Nature Conservation. 2001. Forest certification and mutual recognition: The fundamentals. Joint release, February 14, 2001. On the Sustainable Forestry and Certification Watch (SCFW) website at *www.sfcw.org/mutualrecognition/forest_certification_and_mutual_.htm,* accessed August 28, 2001.

Appendices: Case Studies

Methodology

The following appendices review case studies that demonstrate how various mechanisms can be used to stop or prevent logging of a particular forest. Case studies were chosen based on their ability to demonstrate the application of a particular mechanism, but they do not necessarily all take place in an HCVF as identified in the conservation priority setting assessments. Each case study contains

- A narrative description
- An attempt to identify the elements that were critical to determining the outcome (whether negative or positive)
- An attempt to identify in table format the distribution of costs and benefits flowing from the forest before and after implementation of the mechanism. If a case study describes a situation where the mechanism was not successfully implemented, then only the existing distribution of benefits is described

In most cases, a temperate and a tropical case study are provided for each mechanism. For some mechanisms, it was not possible for the authors to find good documentation on two case studies, so only a single case study is presented. All currencies are in US dollars unless otherwise noted.

Appendix 1
Create Conservation Forests from Unallocated Land

A. Temperate Example
Declaration of New Protected Areas in British Columbia, Canada

Description

In 1998, the 4.4 million ha Muskwa-Kechika Management Area in British Columbia, Canada, was established based on the recommendations arising from a Land and Resource Management Plan. The management plan resulted from the strategic planning of land uses by multiple stakeholders. Within the Muskwa-Kechika Management Area, protected areas and areas dedicated to settlement, mining, and logging were designated based on consensus among stakeholders. An advisory board with a $2.4 million (CDN) trust fund was created to manage the area. The adjoining Mackenzie Land and Resource Management Plan was subsequently approved in 2000, adding 1.9 million ha to the Muskwa-Kechika Management Area. An additional $1 million was added to the trust fund to cover the increased costs of management. With the addition of the Mackenzie, British Columbia met its target of protecting 12 percent of its land base.

Critical Elements in Determining Outcome

- Stakeholder participation and support for the public planning process.
- Sufficient land to meet the needs of all stakeholders.

References

British Columbia Land-Use Coordination Office. 2000. Government approves MacKenzie land use plan. Press release, November 14, 2000. On the website of the BC Ministry of Sustainable Resource Management at *www.luco.gov.bc.ca/lrmp/mackenzi/nr111400.htm,* accessed February 23, 2001.

Muskwa-Kechika Management Area News. February 2001. On the management area's website at *www.muskwa-kechika.com/library/pdfs/newsletter01.pdf,* accessed February 23, 2001.

Schweizer, B., 2001. Personal communication, February 26, 2001. Betty Schweizer is the planning team leader at the Planning Division in the Prince George office of the British Columbia Ministry of Forests.

Distribution of Costs and Benefits Before and After New Protected Areas

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government		- Decrease conflict among stakeholders - Increase economic investment security in area	- $3.4 million (CDN) for trust fund - Cost of partaking in long public planning process
Industry	- Unrestricted land base	- Secured areas for timber harvesting	- Forgone profits on protected areas - Cost of partaking in long public planning process
Local Communities		- Secured land base to sustain jobs	- Cost of partaking in long public planning process
NGOs		- 666,184 ha of protected areas	- Cost of partaking in long public planning process

B. Tropical Example
Suriname Central Nature Reserve

Description

In 1998, the government of Suriname created the Central Suriname Nature Reserve, permanently protecting 10 percent of the country as well as linking three smaller existing reserves. Previously, the government had granted exploratory permits to several Asian logging companies to inventory and develop management plans for major concessions in part of this area. However, because of strong lobbying by international and national environmental groups, the government put a moratorium on granting new concessions. There were reports that one company had already begun logging in forests that were to become part of the reserve, but after the creation of the protected area, government officials declared logging would be stopped and compensation paid to logging companies with exploratory licenses. Conservation International raised $1.5 million of private donations that formed the core funding of the Suriname Conservation Fund. Additional funding from the Global Environmental Facility increased this endowment to $15 million for managing Suriname's entire protected areas network, in addition to the costs of managing the newly created reserve.

Distribution of Costs and Benefits Before and After Park Creation

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Potential revenue from logging	- Met goal of 12% of country protected - Endowment to manage protected areas network	- Forgo possibility of timber revenues
Industry	- Exploratory permit	- Compensation for exploratory permit costs	- Cost of exploratory permit - Loss of potential concession
Local Communities		- Potential employment from protected area management	- Loss of potential employment in logging
NGOs		- Reserve established	- Cost to raise donations
Donors			- $1.5 million

Critical Elements in Determining Outcome

- Significant areas of unallocated land.
- Government's motivation and support for the conservation of tropical forests, encouraged by third-party financing and international support for the creation of protected areas.
- Low opportunity cost of protection.

References

Conservation International. 1998. Suriname protects major, pristine, tropical wilderness. Press release. Formerly on the CI website at *www.conservation.org/WEB/NEWS/PRESSREL/98-0617.HTM,* accessed February 21, 2001.

Morpurgo, L. 1998. Suriname rain forest to get one million for nature reserve. Associated Press. June 17, 1998. On the Forest Conservation Portal website at *www.forests.org/archive/samerica/surget1m.htm,* accessed February 21, 2001.

Prebble, C. 1999. Country Profile: Suriname. *ITTO Newsletter* 9(2). On the website of the International Tropical Timber Organization at *www.itto.or.jp/newsletter/v9n2/13.html,* accessed February 21, 2001.

Appendix 2
Increase Enforcement Against Illegal Logging in Forests Not Allocated to Timber Production

A. Temperate Example
Enforcement Against Illegal Logging in Conservation Areas in British Columbia, Canada

Description

The Royal Canadian Mounted Police (RCMP) Forest Crimes Unit and forestry compliance officers from the British Columbia Ministry of Forests together head enforcement and investigation against illegal logging in British Columbia. Enforcement is difficult because it requires monitoring hundreds of thousands of kilometers of logging roads. In addition, in order to press charges, investigators must actually observe the illegal logging taking place or be able to prove where stolen logs originate. The Canadian Forest Service and the Ministry of Forests are developing a method to identify the origin of logs based on DNA. In addition, Crimestoppers, an initiative to engage the public in helping to solve crimes, assists the Ministry of Forests by advertising unsolved forest crimes and relaying anonymous tips to the nearest forest district. The RCMP estimate that British Columbia loses $300–$500 million (CDN) worth of

Distribution of Costs and Benefits Before and After Increasing Enforcement

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government			- 5-person forest crimes investigation RCMP unit - 430 forestry compliance officers
Industry	- $1,500-2,000/day per illegal operation - $300-500 million per year industry		- Possible criminal charges - Loss of profits from illegal logging
Local Communities			
NGOs			

timber each year to illegal loggers, with much of the wood cut from valuable cedar stands in forests in and around the boundaries of protected areas and in stream buffers left in legal cutblocks. The Ministry of Forests publicly acknowledges that they lose $10–$20 million per year to log theft. Companies are responsible for some of the illegal logging in areas bordering their legal licenses. Other illegal logging is done by smaller organized groups of individuals working at night with portable mills and chainsaws with mufflers. Indigenous groups also log illegally in order to assert their traditional rights to forests.

Critical Elements in Determining Outcome

- Government motivation and regulatory capacity.

References

Brunet, R. 1998. If a tree is stolen in the forest, does the NDP notice? *BC Report,* p. 27.

Feinberg, J. 2001. War over wood. *The Chilliwack Progress.* February 5, 2001.

Kerr, J. 2000. Rustling in the forest: Fighting tree theft may be easier with new DNA technique. March 2000. On the website of the Royal Canadian Mounted Police at *www.rcmp-grc.gc.ca/online/online000313.htm,* accessed Jan. 31, 2001.

B. Tropical Example
Tanjung Puting National Park, Indonesia

Description

The NGOs Telapak (Indonesia) and the Environmental Investigation Agency (UK) have been campaigning to stop illegal logging in Tanjung Puting National Park in central Kalimantan. Tanjung Puting is a critical habitat for orangutans and contains ramin, a valuable timber species. Telapak and the EIA documented that local businessman Abdul Rasyid and his company Tanjung Lingga were illegally logging in Tanjung Puting. They produced a documentary to expose these illegal activities. The release of *The Final Cut* triggered the Indonesian government to implement some measures against illegal logging such as destroying rails, seizing logs, and shutting down sawmills. This reduced to some extent the flow of illegal logs from the park. In addition, the governor of central Kalimantan established a new commission for the park; however, he chose Abdul Rasyid's brother to head it. Abdul Rasyid appears to have suffered no long-term setbacks from illegally logging the park. He was awarded additional concessions by the governor and was even selected to the Peoples' Consultative Assembly, the Indonesian National Parliament.

In January 2000, members of Telapak and the EIA visited Tanjung Puting to monitor the situation in the park. Upon arrival they were kidnapped and beaten by Tanjung Lingga's staff and were released only after interventions by the NGOs, the highest levels of the Indonesian government, and the British ambassador. Afterwards, a team from the Ministry of Forestry and Estate Crops went to Tanjung Puting to investigate and found that Abdul Rasyid was stealing $8 million in timber a year from

the national park. A further team of environmental police went out, but were met by angry crowds and had to take refuge in the local police station. Parliamentary commissions from the lower house of parliament filed reports and called for action to be taken against Rasyid. No one has been prosecuted. The sawmills also continued to operate with no sign of any kind of enforcement until April 2001. At that time, a new minister of forestry was appointed and banned the international and domestic trade of ramin. The minister has also asked that ramin be listed in CITES Appendix III. Whether such declarations will actually stop logging within the protected area remains to be seen.

Critical Elements in Determining Outcome

- Corruption and the high profits from illegal logging make it difficult to stop logging in the national parks.

Distribution of Costs and Benefits Before and After Attempts at Increased Enforcement

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Informal revenue/ kickbacks		
Industry	- High profits		
Local Communities	- Some employment		
NGOs			

References

Environmental Investigation Agency and Telapak Indonesia. 1999. The final cut: Illegal logging in Indonesia's orangutan parks. On the EIA website at *www.eia-international.org/Campaigns/Forests/Indonesia/FinalCut/index.html.*

Environmental Investigation Agency and Telapak Indonesia. 2000. Illegal logging in Tanjung Puting National Park: An update on the final cut report. On the EIA website at *www.eia-international.org/Campaigns/Forests/Reports/tanjung/index.html.*

Environmental Investigation Agency. 2001. US wood imports hasten orangutan extinction. Press release, January 4, 2001. On the EIA website at *www.eia-international.org/Campaigns/Forests/Updates/t0000039.html*

Environmental Investigation Agency and Telapak Indonesia. 2001. Call for minister's dismissal over the destruction of Tanjung Puting National Park. Press release, January 25, 2001. On the EIA website at *www.eia-international.org/Campaigns/Forests/Updates/t0000040.html.*

Environmental Investigation Agency. 2001. Indonesia takes action to save forests and orangutans. April 19, 2001. On the EIA website at *www.eia-international.org/Campaigns/Forests/Updates/t0000042.html,* accessed May 13, 2001.

Appendix 3
Challenge the Legality of the Acquisition of Timber Rights

A. Temperate Example
Northern Spotted Owl Court Injunctions, USA

Description

The Seattle Audubon Society launched several legal challenges against the US Forest Service and the Bureau of Land Management that resulted in federal injunctions banning most timber sales in 13 national forests in the Pacific Northwest. The Audubon Society alleged that the federal agencies had failed to meet requirements of the Endangered Species Act. In particular, the agencies responsible had failed to provide critical habitat and to consider the effect of the spotted owl management strategy on other species that are dependent upon old-growth forests. In response, President Clinton developed the Northwest Forest Plan, which attempted to resolve the conflicts in management between spotted owls, other associated late-successional species, and timber supply by allocating land and assistance money and by setting management guidelines on federal land. This plan permanently eliminated logging in late-successional reserves in national forests within the range of the spotted owl, effectively reserving 77 percent of national forests for the protection of spotted owls and other late-successional species. Over time, these legal challenges had caused the management objectives of US national forests to shift from timber production to managing the needs of a single species and, finally, to attempt to manage ecosystems whereby other values in addition to timber and owls are managed over the long term.

Critical Elements in Determining Outcome

- $1.2 billion of federal economic assistance for local job retraining, watershed restoration, and community infrastructure, helped to obtain local support for conservation initiatives.
- The strength of the Endangered Species Act and the strong rule of law permitted NGOs to challenge timber sales on federal lands.
- Pending petitions to list other endangered species such as salmon under the Endangered Species Act supported the need for the federal government to provide late-successional habitat.

References

Marcot, B., and J.W. Thomas. 1997. Of spotted owls, old growth and new policies: A history since the Interagency Scientific Committee report. USDA Forest Service PNW-GTR-408. On the Forest Service website at *www.fs.fed.us/pnw/pubs/marcot.pdf,* accessed February 19, 2001

Wong, C.M., and R.W. Gray. 2000. Managing for northern spotted owls north and south of the 49th parallel. Unpublished report to the British Columbia Ministry of Forests.

Distribution of Costs and Benefits Before and After the Legal Challenge

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Revenue from timber sales	- Release of other timber sales on non-late-successional federal forests from injunction - Decrease further court injunctions	- Forgone timber-related revenue from 70% decrease in logging - $1.2 billion economic assistance
Industry	- Profits from logging	- Release of other timber sales on non-late-successional federal forests from injunction - Increased logging costs because of moratorium on roads	- Loss of logging profits
Local Communities	- Timber-related employment	- $1.2 billion economic assistance	- Loss of timber-related employment (about 16% decrease)
NGOs		- Protected late-successional habitat on federal land	- Legal costs
Donors			

B. Tropical Example
Challenge of Korean Logging Concession by Indigenous Nicaraguan Community

Description

In 1995, Nicaragua's Ministry of Environment and Natural Resources (MARENA) granted a 30-year 62,000 ha logging concession to the Korean parent company Kum Kyung and its subsidiary Sol de Caribe S.A. (SOLCARSA). However, prior to granting the concession, MARENA had failed to consult the local community of Awas Tingni and the local government, the Regional Council of the North Atlantic Coast Autonomous Region (RAAN). By law, RAAN must also approve concessions. In 1995, the community of Awas Tingni filed an *amparo* action ("an action for emergency relief from a violation of fundamental rights") against MARENA in Nicaragua's Supreme Court, claiming that their constitutional rights to their traditional territories and

resources were violated by the concession. Their legal challenge was rejected; however, RAAN continued efforts to stop the concession by filing another *amparo* action with the Supreme Court. This challenge was successful, and the court revoked the concession because the RAAN had not approved of the deal. MARENA ignored the court order and SOLCARSA continued logging. Again RAAN went to the Supreme Court, which subsequently ordered the president of Nicaragua to void the concession. MARENA finally complied in February 1998. Despite managing to void the concession, the community of Awas Tingni still does not have secure tenure rights and continues to press the government of Nicaragua for the recognition of their tenure. They have filed a complaint to the Inter-American Commission of Human Rights of the Organization of American States.

Critical Elements Determining Outcome

- Strong forestry legislation that requires community consultation and local government approval for all forestry concessions.
- Resources to support legal challenges.

Distribution of Costs and Benefits Before and After Court Challenge

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Tax revenues and concession fees		- Legal fees
Industry	- Profits from logging		- Loss of investment in infrastructure
Local Communities		- Maintenance of nontimber benefits to the degree that logging can be stopped	- Legal fees
NGOs			- Legal fees

References

EarthFirst! Victory over SOLCARSA. *EarthFirst! Journal.* Vol. 18, No. 6, June-July 1998. On the website of the *EarthFirst! Journal* at *www.enviroweb.org/ef/old/Litha98/solcarsa.html.*

Indian Law Resources Center. 1998. Nicaruaga is sued before the Inter-American Court of Human Rights. Press release. July 13, 1998. On the website of the Indian Law Resources Center at *www.indianlaw.org/body_nicaragua_is_sued.htm.*

World Rainforest Movement. Nicaragua: Transnational logging company files suit against NGO. *WRM Bulletin.* Issue 15. September 1998. On the WRM website at *www.wrm.org.uy/bulletin/15.html#Nicaragua.*

Appendix 4
Conservation Concession

A. Temperate Example
Salvage Timber Purchase in Okanogan National Forest, Washington, USA

Description

With its bid of $28,875 in 1996, the Northwest Ecosystem Alliance (NWEA) won the salvage rights to 125 ha of fire-scarred trees in the Okanogan National Forest in Washington State. NWEA bid on these trees in an effort to stop what it felt to be unnecessary salvage logging. Because NWEA refused to salvage these logs, which was contrary to US federal regulations, the Forest Service awarded the timber to the second highest bidder. The Forest Service reportedly spent $450,000 preparing this sale and building two miles of road into the area. NWEA was unable to contest the sale due to a 1996 bill that exempted salvage logging from environmental and public review. Along with two other NGOs, NWEA filed a formal petition with the US Agriculture Secretary demanding that the highest bid for federal timber be accepted regardless of whether the bidder plans to log or not. They lost this challenge, but obtained a directive from the Secretary stating that salvage sales in roadless areas must demonstrate that these forests are imminently susceptible to fire and pose a risk to local communities. This directive did not change regulations mandating acceptance of the highest bid on federal timber but did stop salvage logging in areas that did not pose significant fire hazard.

Unsuccessful Attempt at a Conservation Concession

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Timber-related revenue and employment		
Industry	- Logging profits		
Local Communities	- Timber-related employment		
NGOs			

Critical Elements in Determining Outcome

- Federal legislation mandating that bidders on federal timber must log.
- Rider on a bill that exempted salvage sales from environmental and public review.

References

Frost, E. 1996. Broken promises lead to lawsuit on logging Thunder Mountain: Another dog of a salvage sale on the way. On the website of the Headwaters Environmental Center at *www.headwaters.org/archive/timber_sales/thunder_mtn.html*, accessed February 2, 2001.

Muro, M. 1997. Let ecologist buy federal timber. *New York Times.* March 29, 1997. p. A19, national edition.

B. Tropical Example *Guyana*

Description

In October 2000, the Government of Guyana announced that it had granted an exploratory permit to Conservation International (CI) as a first step in establishing a 25-year 100,000 ha forest concession. Although the forestry legislation was originally designed to allow logging companies to develop legal forestry concessions on government lands, CI is using it to establish a concession for conservation objectives, and it will not exercise its rights to harvest timber in the area if it successfully obtains them. CI now has three years to submit a satisfactory management plan to the Guyanese Forestry Commission and to negotiate the terms for the concession. Currently, CI is in the process of conducting a stakeholder assessment to ensure that all parties with a legitimate interest in the area will be compensated for any loss of benefits they currently receive. Payment for the concession will include, at minimum, a per-hectare concession fee to the government and a trust fund for local employment and training. The deal is far from complete, but there appear to be no obstacles that would hinder a satisfactory conclusion. The deal is not permanent—it is only for 25 years—but CI should have the first right to renew the concession at the end of the 25-year period.

Critical Elements in Determining Outcome

- Existing forestry legislation does not require logging if the timber rights are bought (i.e., a conservation concession is legal).
- The relatively low value of the commercial timber means that full compensation for lost revenue can be offered.
- The remoteness of the area means that there are few stakeholders with which to negotiate.

References

Abelson, R. 2001. Preserving the forest by leasing the trees. *New York Times.* September 24, 2000. p. 6, business section.

Saving the forest with a timber lease. 2000. *Global Environmental Change Report.* pp. 1–2. October 13, 2000. Arlington Mass.: Cutter Information Corporation.

Distribution of Costs and Benefits Before and After Concession Established

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Potential revenue from logging in the future	- Current payments for timber resource	
Industry	- Concession currently unallocated--no industry players	- No industry players	
Local Communities	- Full traditional use values until concession awarded to logging companies	- Full traditional use values - Employment from monitoring and enforcement	- Potential loss of future logging jobs
NGOs		- Establish a protected area in Guyana, a country with almost no parks	- Several million dollars to negotiate deal and establish trust fund

C. Temperate Example *Purchase of Timber Rights in Loomis State Forest, Washington, USA*

Description

In 1999, the Northwest Ecosystem Alliance (NWEA) raised $16.5 million to buy the timber rights on the 11,363 ha Loomis State Forest in northeastern Washington state. This initiative began when NWEA sued the Washington Department of Natural Resources (DNR) under the federal Endangered Species Act over the management of the state forest. In response, the DNR proposed a deal whereby it would accept market value for the timber and transfer the land from trust status to a permanent Natural Resource Conservation Area if NWEA dropped its legal suit. This would ensure that the state's trust beneficiaries (in this case, Washington State's school trust fund) would receive the same income as if logging had occurred. It would also allow other timber sales in the remaining parts of the state forest to proceed if NWEA dropped its legal suit. The state would remain owner and manager of the land and would continue to manage it for all existing uses aside from road building and logging. The deal was opposed by local timber, cattle, and school board interests because they felt that the DNR underestimated the timber value and did not compensate for local job loss. This

initiative was also criticized for shifting the responsibility for conservation funding from the public to the private sector.

Critical Elements in Determining Outcome

- Unlike US federal laws, Washington state laws do not require that logging take place if timber rights are purchased.
- The ability of NWEA to raise large amounts of money within a year.

Distribution of Costs and Benefits Before and After Timber Sale

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Income to school trust fund	- Full market value of timber to school trust fund - Avoided lawsuit and able to log in remainder of state forest	
Industry	- Profits from 11,363 ha	- Ability to bid on remaining state forest	- Loss of logging profits
Local Communities	- Income to school trust fund - Timber-related jobs	- Full market value of timber (DNR 25% management fee not withheld) to school trust fund at one time and not from timber harvests over 80 years - Recreational and traditional uses, such as grazing, maintained - School trust maintains mineral rights - Public involvement in management plan	- Possible underestimation of timber value - Loss of timber-related jobs
NGOs		- Lawsuit avoided - 11,363 ha protected	- Efforts to raise money in a year - At least $300,000 in campaign expenses - Unable to challenge management on rest of state forest
Donors		- 11,363 ha protected	- $16.5 million

References

Northwest Ecosystem Alliance. Victory for the Loomis Forest. On the NEA website at *www.ecosystem.org/projects_loomis.html,* accessed January 22, 2001.

O'Toole, R. 1999. Environmentalists buy 25,000 acre Loomis Forest Wilderness. Commentary by the Thoreau Institute. July 7, 1999. On the website of the Political Economy Research Center at *www.perc.org/newsloomis1.htm,* accessed January 22, 2001.

State of Washington. 2000. Board transfers part of Loomis State Forest to conservation status. Press release. January 5, 2000. On the Washington website at *www.access.wa.gov/news/article.asp?name=n0001019.htm,* accessed Jan 22, 2001.

D. Tropical Example
Expansion of Noel Kempff Mercado National Park, Bolivia

Description

In 1996, 1 million ha were added to the Noel Kempff Mercado National Park in Bolivia. This was accomplished primarily by purchasing the privately owned logging rights from adjoining timber concessions, then changing the designation of those areas from timber concessions to protected areas, and finally adding them to the park. The collaboration of Fundacion Amigos de la Naturaleza (FAN), The Nature Conservancy, the Bolivian government, and three private investors in a 30-year Climate Action Project made the expansion of the park feasible. The goals of the project were to gain 7–10 million metric tons of carbon benefits over 30 years by

- retiring logging and adding these forests to the national park
- assuring future conservation by establishing activities to generate alternate income through a park endowment fund and commercializing biological resources
- mitigating "leakage"—the displacement of unsustainable logging to nearby land

The project provided $9.6 million for the first 10 years to buy out the adjacent logging rights on government-owned land and to establish a $1.5 million trust fund to finance park management operations. Logging rights were bought on the condition that companies could not reinvest funds into unsustainable logging elsewhere. The Bolivian government receives 49 percent of the carbon offsets and sale of these offsets goes into funding biodiversity objectives. The three investors were American utility companies, and they will receive the remainder of the carbon offsets. The carbon benefits are expected to last in perpetuity because of the permanent protection of the expansion and the permanent endowment to fund conservation.

Critical Elements Determining Outcome

- Availability of funds to buy the timber rights.
- Interest in carbon-offset projects from utility companies in Annex 1 countries under the Kyoto Protocol.
- Financial hardship on the part of the owners of the timber concession providing them with strong motivation to sell.

References

Moreno, A. 2001. Personal communication, Feb. 22, 2001. Adolfo Moreno is the executive director of the Noel Kempff Climate Action Project.

Noel Kempff Climate Action Project. Website at *www.noelkempff.com,* accessed February 21, 2001.

Distribution of Costs and Benefits Before and After Land Purchase

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Revenue from timber	- 49% of carbon offsets, of which sale proceeds go to conservation management - Revenue from ecotourism	- Administration of the project (cost covered by endowment) - Loss of revenue from timber
Industry	- Revenue from timber	- Funds from the sale of concessions (these cannot be invested in logging elsewhere)	- Loss of timber revenues - Must cooperate on sustainable forestry practices elsewhere
Local Communities	- Employment from logging	- Employment (1/2 of park guards) - Revenue from ecotourism - Revolving funds for micro-enterprises - Aids securing land tenure	- Loss of logging-related employment
NGOs		- Doubled park size	- $2 million for land purchase - Technical assistance, TNC - Management of park, FAN
Donors		- 51% of carbon offsets to three American utility companies	- $7.6 million

Appendix 5.
Conservation Easement

A. Temperate Example
Copper River Delta, Alaska, USA

Description

The Copper River Delta in Alaska is threatened by proposed road construction and logging by the Chugach Alaska Corporation (CAC). The CAC is owned and run by local indigenous peoples. The National Wildlife Federation (NWF) has proposed to buy a conservation easement that would prohibit the CAC from constructing the road and conducting other environmentally destructive activities on the Delta. The conservation easement would preserve the Delta, guarantee a profit to the CAC of similar magnitude to what timber sales would have generated, and guarantee the CAC's 1,900 shareholders the right to use these lands for traditional uses. The proposed agreement has received a mixed reception. Some members of the CAC feel the conservation easement represents a loss of control over the land and thus, a loss in identity. Other members of the CAC (particularly the Eyak Nation) feel the road construction would damage fishing on the Delta and thus favor the easement.

Conservation easements with other Alaskan First Nation corporations have been established in Prince William Sound with funds from the Exxon Valdez oil spill settlement. For example, in 1997, the Tatitlek placed a conservation easement on 37,530 ha of their lands as part of a larger conservation package that also includes a transfer of 13,000 ha of the corporation's land to the park system and Chugach National Forest in return for $34 million. The Tatitlek retain access rights for hunting, fishing, and gathering on the land under the easement.

Critical Elements in Determining Outcome

- Sufficient financial resources available to pay fair compensation.
- Marginal timber value makes the price of conservation easements affordable.

References

National Wildlife Federation. 2001. Threats to the Copper River Delta. On the NWF website at *www.nwf.org/copperriver/threats.html,* accessed January 23, 2001.

Exxon Valdez Oil Spill Trustee Council. 2001. Habitat protection program: Large parcel status report. Draft March 1, 2001. On the Alaska website at *www.oilspill.state.ak.us/Habitat/LgTableNew.htm,* accessed August 27, 2001.

Distribution of Costs and Benefits Before and After Easement

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Corporate taxes from logging	- Expansion of protected area	- Loss of corporate taxes
Industry and Local Communities (Chugach Alaska Corp.)	- Develop road without EIA - Timber-related jobs - Profits from logging	- Guaranteed profit and dividends to its community shareholders - Decreased threat to subsistence way of life - Decreased conflict with Eyak Nation	- Loss of timber-related revenue and employment
NGOs		- Protect Copper River Delta from road construction	- Funds for conservation easement
Donors			

B. Tropical Example
Purchase and Easement on Maya Mountain Marine Corridor, Southern Belize

Description

The Ohio Chapter of The Nature Conservancy (TNC) recently pledged $500,000 to purchase 1,818 ha of tropical rainforest in Belize's Maya Mountain Marine Corridor. This area along the Rio Grande River contains important jaguar and manatee habitat and is used by 165 species of migratory birds that also spend time in Ohio. The owner—a native of Ohio—was interested in selling the forests, but only under the condition that the land be conserved in perpetuity. TNC will be able to provide this guarantee by putting a conservation easement on the property, which will permanently prohibit logging. The Toledo Institute for Development and Environment—TNC's local counterpart in Belize—will be responsible for managing the property. In order to be able to put an easement on the property, TNC had to first work with the government of Belize to set the legal framework for conservation easements. This property became the recipient of Belize's first conservation easement.

Critical Elements Determining Outcome

- Legal basis for conservation easements was created in Belize.
- Availability of sufficient funds to purchase the property and easement.

Distribution of Costs and Benefits Before and After Purchase/Easement

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government		- Ecotourism revenues - Ecosystem services maintained	- Costs to establish laws - Staff time
Industry			
Local Communities	- Access to forest products	- Possible access to forest products - Ecosystem services - Possible revenues from tourism	- Loss of income from forestry
NGOs		- Conservation goals achieved	- $500,000
Donors			

References

The Nature Conservancy. 2000. Multiple initiatives demonstrate Ohio's commitment to Belize. On the TNC website at *nature.org/states/ohio/resources/art2907.html*, accessed February 21, 2001.

The Nature Conservancy. 2001. Pristine rain forest protected in Belize. Press release. January 25, 2001. On the TNC website at *www.tnc.org/international/press/press147.html*, accessed February 21, 2001.

Appendix 6
Land and Timber Purchase

Temperate Example
Headwaters Redwood Forest, California, USA

Description

In March 1999, the US federal government and the State of California bought 4,545 ha of redwood forest for $480 million from the Pacific Lumber Company. The purchase was part of a larger agreement that included a 50-year conservation and sustained-yield plan on the company's adjacent 95,900 ha and withdrawal of lawsuits filed against the state and federal governments for unconstitutional seizure of Pacific Lumber's property.

The designation of the permanent Headwaters Forest Reserve was a result of a decade of public protests, lawsuits, and negotiations between governments and the company. Efforts to protect this forest began in 1989 with proposed legislation by various congressmen and senators to add portions of Pacific Lumber's land to a national forest or park. In 1995, the Environmental Protection Information Center (EPIC) and the Sierra Club filed a lawsuit to stop salvage operations by Pacific Lumber. In 1996, the federal and state government signed an agreement with Pacific Lumber to pursue the public acquisition of the Headwaters Forest. This agreement included a commitment of public money for the purchase and a commitment to develop a mutually acceptable Habitat Conservation Plan (HCP) to allow limited logging on Pacific Lumber's remaining land. The HCP permitted an incidental take of listed species under the Endangered Species Act, provided adequate conservation measures are taken to allow the long-term survival and recovery of the species (e.g., no logging in marbled murrelet conservation areas for 50 years).

Negotiations over the purchase price and the conditions of the HCP and sustained yield plan took more than two years to complete. The most controversial item was the high annual allowable cut permitted under the plans. Pacific Lumber ultimately signed the agreement when the federal government increased the annual allowable cut by 40 million board feet over the state's initial estimate (conditional on a watershed analysis). Additional funding for economic assistance was provided to the local communities by the state.

Since the purchase, EPIC and the Sierra Club have launched lawsuits to challenge the terms of the sustained yield plan. According to the State, as of December 1999 Pacific Lumber was complying with the conditions of the HCP and had received a two-year operating license.

Critical elements determining outcome:

- Extensive public support for a conservation initiative. The purchase was spearheaded by the direct and extensive involvement by the state governor, senators, and congressmen, and it was encouraged by public protests of up to 9,000 people from NGOs and local communities. The eventual federal-state partnership and public support permitted the leveraging of sufficient funds.
- Ability to defer contentious issues, such as the decision on annual allowable cut.
- The $500 million debt of Pacific Lumber provided the company with motivation to sell.
- The ability of the governments to offer additional compensation in the form of approvals of logging plans on Pacific Lumber's other lands.

Distribution of Costs and Benefits Before and After Land Purchase

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Future revenue from corporate logging income taxes on the 4,545 ha to be protected	- Public support for initiative	- $480 million in compensation - Legal costs - $12 million to compensate county for lost tax revenue - Lost corporate tax revenue from 4,545 ha
Industry	- Future logging profits from 4,545 ha	- $480 million in proceeds of sale - Approval of management plan for remaining lands - 50 years of stability from regulation changes	- Legal costs - Limits of logging on other lands under HCP - Cannot void HCP by selling - Forgone profits from logging the 4,545 ha
Local Communities	- Future logging-related jobs	- $12 million for job retraining and lost tax revenue	- Possible loss of logging-related jobs (however, company did not anticipate any job losses)
NGOs		- Protection of largest stand of privately owned redwoods	- One activist died - Arrests - Legal costs - Compromised conservation objectives on Pacific's remaining land

References

Boilard, S. 1999. Opportunities and challenges for the state: The Headwaters Forest. Legislative Analyst's Office Report. May 4, 1999. On the website of the Legislative Analyst's Office at *www.lao.ca.gov/050499_headwaters/050499_headwaters.html,* accessed January 28, 2001.

Booth, W. 1999. California, U.S. buys ancient redwoods. *Washington Post,* March 3, p. A1.

State of California. 1999. Governor Davis delivers $12 million in economic assistance to Humboldt County residents. State of California press release, March 17, 1999.

Pacific Lumber Company. 2000. The Pacific Lumber Company "Headwaters Forest" Chronology. June 2000. On the Pacific Lumber Company website at *www.palco.com/hforest.htm#chronology,* accessed January 22, 2001.

Appendix 7
Eminent Domain

A. Temperate Example
Expansion of Strathcona Park, British Columbia, Canada

Description

Under the Forest Act of British Columbia, Canada, the provincial government can exert eminent domain to remove land from logging licenses without compensation, as long as it amounts to less than 5 percent of the area or volume of a license. In 1990 and 1995, the government exercised eminent domain by creating provincial parks on 8,000 ha of public land that had previously been designated as timber licenses with timber rights awarded to the MacMillan Bloedel forestry company. MacMillan Bloedel filed a lawsuit against the Province seeking compensation for lost harvesting rights. The Province did not admit liability but agreed to pay compensation because it did not want to deter future corporate investment in the province. The company dropped its lawsuit in 1999 when it agreed with the Province to enter a settlement agreement. The company wanted compensation of 20,000–30,000 ha of land that it could own and manage outside of the Forest Practices Code. The Province also wanted a land exchange, but because of public outrage over the privatization of public land, it decided on a cash-only compensation payment of $83.75 million (CDN). The public was particularly concerned because MacMillan Bloedel had recently been taken over by US-based Weyerhaeuser Corporation, and there was great public suspicion about transferring land to a multinational. NGOs, the public, and First Nations were also concerned that this deal would set a precedent for 12 other forestry companies that are seeking compensation for lost timber rights.

Critical Elements in Determining Outcome

- The Province owns 90 percent of the land in British Columbia. If it exercises eminent domain on these lands, it is expropriating only timber rights and not the land, as would be the case if the forests were privately owned. This somewhat increases the ease with which eminent domain can be carried out in British Columbia compared with jurisdictions where the majority of forests are privately owned.
- Forestry legislation allows the government to expropriate timber rights for the creation of protected areas.

Distribution of Costs and Benefits Before and After Expropriation

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Corporate taxes on land to be expropriated	- Compensation decreases perceived risk in future investment in province - Avoided lawsuits - 8,000 ha of park created	- $83.75 million (CDN) compensation
Industry	- Future profits on expropriated lands	- Cash compensation of $83.75 million	- Lost profits on 5.75 million m^3 or 8,000 ha of timber licenses - Forgone timber harvesting rights/license
Local Communities	- Employment generated from logging the expropriated forests		- Loss of timber-related employment on these lands
NGOs		- Clear message that public lands are not to be privatized - 8,000 ha of park created	- Cost of campaign

References

Clogg, J. 1999. Save BC's public lands: Backgrounder on MacMillan Bloedel Settlement Agreement. On the West Coast Environmental Law website at *www.wcel.org/wcelpub/1999/cplmbdeal.html,* accessed February 5, 2001.

Clogg, J. 1999. The MacMillan Bloedel Settlement Agreement: Submissions to Mr. David Perry. June 30, 1999. On the West Coast Environmental Law website at *www.wcel.org/wcelpub/1999/perrysub2.html,* accessed February 5, 2001.

Environment News Service. 1999. Cash not land to compensate MacMillan Bloedel for parkland. August 17.

Perry, D. 1999. MacMillan Bloedel Parks Settlement Agreement Decision. On the British Columbia province website at *www.for.gov.bc.ca/pab/news/mb/decision/index.htm,* accessed February 5, 2001.

B. Tropical Example
Creation of Wet Tropics World Heritage Area, Australia

Description

In 1988, the Australian federal government used eminent domain to help create the Wet Tropics World Heritage Area in the state of Queensland. The area was mostly under public ownership, but some key corridors and rare forest types were privately owned. The declaration effectively banned logging on public land and the government spent $50 million (AUD) on job development (reforestation) and business compensation (mill reconfiguration to handle plantation species) in local communities. Opposition to the creation of the protected area came from aboriginals, because their land had been included without consultation, and from the state government and private landowners, who felt the deal infringed upon their rights. Although approximately 2 percent of the protected area remains in private hands, the government wanted to ensure that it took ownership of certain key properties. The government attempted to obtain voluntary agreements by compensating the owners for these lands. However, in a few cases, it resorted to expropriation, as it was entitled to do under the Acquisition of Land Act 1967. The use of expropriation on selected properties caused widespread logging on private land as landowners attempted to avoid having their land and forests expropriated. Several thousand hectares of forest were destroyed in a few months, much of which were not even being considered for the World Heritage Area.

Critical Elements in Determining Outcome

- Legislation for expropriating private land for creating protected areas.
- National and international support.

References:

Laurance, W.F. 2001. Personal communication, May 3 and May 17, 2001. William F. Laurance is senior research scientist with the Biological Dynamics of Forest Fragments Project of the Smithsonian Tropical Research Institute and National Institute for Amazonian Research, Brazil.

Queensland Department of Natural Resources. 2000. Resuming land. On the Queensland DNR website at *www.dnr.qld.gov.au/resourcenet/land/landservices/resumingland,* accessed May 16, 2001.

Queensland Wet Tropics Management Authority. 1999. A controversial beginning. On the Wet Tropics World Heritage Area website at *www.wettropics.gov.au/mlr/a_contoversial_ begnning.htm,* accessed May 17, 2001.

Distribution of Costs and Benefits Before and After Expropriation

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Timber-related revenue	- Creation of a World Heritage Area	- Cost of acquiring private land - $50 million (AUD) on job creation and compensation program
Industry	- Profits from logging	- Compensation and reconfiguration of mills for plantation species	- Loss of logging-related profits from primary rainforest - Forgone logging license
Local Communities	- Logging-related jobs and revenue	- Job-creation program (reforestation and millwork)	- Loss of logging-related jobs
NGOs		- Creation of protected area	- Cost of campaign to protect area (picketing logging operations)
Donors			

Appendix 8
Logging Bans

A. Temperate/Tropical Example
China

Description

China banned logging of primary forests in the headwaters of major rivers in nine provinces after logging in the Yangtze River headwaters was blamed for major flash floods in 1998. The logging ban was expanded to 18 provinces in 1999. The ban temporarily closed natural forests to harvesting until they are zoned according to current forest health and values. Where environmental values outweigh timber values, logging will likely be permanently banned. Some degraded forests may be closed to logging pending their recovery, while other forests may be sufficiently healthy to allow timber harvests to resume. The government has strengthened law enforcement and checks on licenses for timber harvesting, transport and processing, but has not developed specific operating guidelines and regulations for forest management and conservation. The logging ban is accompanied by plans to return farmland to forests on slopes greater than 25 percent, which will be accomplished by offering incentives to farmers to plant trees. Over the long term, China plans to increase plantations, while restoring degraded forests and protecting the remaining natural forests.

By removing 42 million ha of forest from timber production, the logging ban caused a shortage in domestic wood supply. China has become the second largest importer of wood in the world; annual timber imports have increased by 10 million m^3. China now buys hardwood from Malaysia, Indonesia, Papua New Guinea, and Gabon, and softwoods from Siberia. Illegal trade has developed between China and some neighbors, and there are concerns about the sustainability of the timber supply of countries exporting to China.

The ban caused the loss of an estimated one million jobs in the timber industry. Reportedly, 600,000–700,000 former loggers are now employed planting trees. Other ex-loggers have turned to ecotourism but are earning 3 to 4 times less than they did logging, or have resorted to illegal logging and poaching. (For example, panda poaching in Sichuan has doubled since the ban.) Ongoing private cutting for firewood is not recorded in government statistics, yet it is estimated to account for at least half of domestic timber consumption. For the ban to be effective, alternative sources of energy for households are needed.

The central government pays for 70 percent of the resettlement and re-employment costs resulting from the logging ban; the remainder is borne by local governments and enterprises. Because local revenues depended on logging, local governments have not been able to provide their share of compensation. One way to increase available funds for the unemployed would be for cities at the mouth of the Yangtze, which

are benefiting from the reforestation and protection of headwaters, to contribute 1–3 percent of their revenues to those headwater communities impacted by the logging ban.

Critical Elements in Determining Outcome

- Availability of timber imports to substitute for domestic production.
- Availability of compensation to local communities.
- Degree of enforcement of the ban and the management capacity of local forestry officials.

Distribution of Costs and Benefits Before and After Logging Ban

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Timber-related revenue and employment	- Prevention of major flash floods	- $12 billion in aid and environmental protection - Cost to import timber
Local Communities	- Timber-related revenue and employment	- Economic aid	- Loss of timber-related employment and trevenue
NGOs			- Reforestation aid

References

Bourke, I.J. 2000. International trade implications of Asia-Pacific timber bans: Who wins and who loses? Paper presented to Asia-Pacific Forestry Commission policy seminar on efficacy of removing natural forest from timber production as a strategy for conserving forests. Noosaville, Queensland, Australia. May 13, 2000. On the FAO website at *www.fao.org/forestry/fop/foph/trade/doc/apfc.htm,* accessed August 27, 2001.

China Online. 2000. Logging ban hurts jobs in China Shennongjia. March 4, 2000. On the China Online website at *www.chinaonline.com/issues/social_political/NewsArchive/secure/2000/may/c00042507.asp,* accessed May 9, 2001.

US Embassy Beijing. 2000. Trees vs. people—PRC Natural Forest Protection. US Embassy Beijing Report. August 2000. On the embassy website at *www.usembassy-china.org.cn/english/sandt/yunnan-forest-one.htm,* accessed May 10, 2001.

Pearce, F. 2001. Logging ban backfires. On New Scientist online news website February 28. Located at *www.newscientist.com/news/news.jsp?id=ns9999471,* accessed August 27, 2001.

Xiong, L. 2001. Diqing: Facing the challenge of China's logging ban. On the Green Earth Volunteers website at *http://greenearth.hypermart.net/archive/diqing.htm*, accessed May 9, 2001.

B. Tropical Example
Kenya

Description

Because of excessive logging and lack of reforestation, the government of Kenya suddenly implemented a countrywide ban on logging in government forests in November 1999. A similar ban in 1986 had been unsuccessful, when the government had attempted to decrease logging by reducing the number of sawmills. Three logging companies are exempt from the current ban because they are major employers in the country. Strong pressure remains to log in order to earn hard currency to service foreign debts. The government has posted armed guards at entry points into government forests in order to enforce the ban. However, there are reports of illegal logging in Mt. Kenya National Park. It is also unclear whether local communities have been adequately compensated for the loss of timber-related jobs.

Critical Elements in Determining Outcome

- Pressure to log to service Kenya's debt.
- Degree of enforcement against illegal logging.

Distribution of Costs and Benefits Before and After Logging Ban

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Timber-related revenue		- Loss of logging-related revenue - Cost of increased enforcement
Industry	- Profits from logging		- Loss of logging-related profits from government forests
Local Communities	- Logging-related jobs		- Loss of logging-related jobs
NGOs			- Cost of campaign for enforcement of the ban
Donors			

References

Environment News Service. 1999. Kenya shuts forests to loggers. November 11, 1999. On the Forest Conservation Portal website at *www.forests.org/archive/africa/kenyashut.htm*, accessed May 22, 2001.

Appendix 9
Within-Concession Set-Asides

A. Temperate Example
The Nature Conservancy-Westvaco Partnership, USA

Description

In the fall of 1999, Westvaco Corporation and The Nature Conservancy announced a partnership that will see all of Westvaco's US land holdings—some 590,000 ha—surveyed for sites of high conservation value, including habitats that contain rare and endangered plant and animal species and ecosystems. This initiative builds upon Westvaco's existing special areas program, which had already identified 145 sites of high biological or geological value and formulated special management plans for them. Westvaco will provide $1 million to The Nature Conservancy to review and make recommendations on management plans for the existing special areas, to

Distribution of Costs and Benefits Before and After Within-Concession Set-Asides

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government			- $1 million in financing
Industry	- Potential logging revenue from areas of high conservation value	- Global recognition for leading conservation activities	- Forgone revenue from restricting or eliminating logging in special habitats
Local Communities	- Employment	- Employee morale boosted - Jobs in environmental stewardship	- Reduced employment from reduction in production forest area
NGOs		- Expanding sphere of influence beyond its own lands	- Some potential loss of credibility if seen to be compromised or used by private sector
Donors			

survey all Westvaco lands for additional special sites, and to develop appropriate management plans.

Critical Elements Determining Outcome

- Westvaco's leadership position in sustainable forestry and environmental stewardship, which provided the initiative to open up its entire lands to scrutiny and to finance the participation of The Nature Conservancy.
- The Nature Conservancy's desire to work cooperatively with the private sector to expand its sphere of influence.

References

The Nature Conservancy. 1999. Timber company opens all of its U.S. lands to nature conservancy for rare species survey. Press release, September 9, 1999. On the TNC website at *www.tnc.org/press/press35.html,* accessed February 21, 2001.

Westvaco Corporation. 2001. The Nature Conservancy and Westvaco Corporation embark on a historic partnership. On the Westvaco website at *www.westvaco.com/environment/tnc/tnc.htm,* accessed February 21, 2001.

B. Tropical Example
Designation of Wildlife Management Area Within Logging Concession in the Hunstein Range, PNG

Description

In 1993, the Individual and Community Rights Advocacy Forum (ICRAF), a local human rights agency, acting on behalf of local landholders and a women's council, launched a legal challenge against the government of Papua New Guinea for unlawfully declaring a forestry area in East Sepik province without the consent of local communities. Under the country's Forest Act, forestry agreements must obtain the consent of all landowners. Landowners in Papua New Guinea are mostly local communities and family groups and 97 percent of land is community owned. There had been allegations of fraud, forgery, undue influence, lack of or insufficient awareness of the legal details, and unconscionable signing by some of those who signed the Forest Management Agreement (FMA) with the Papua New Guinea Forest Authority. Some villagers wanted the FMA to be renegotiated; others wanted it to be cancelled. The communities were successful in obtaining an interim injunction to halt logging in the area, and the government agreed to review the logging concession and subsequently removed it from planning maps.

However, the legal challenge did not halt logging because it did not permanently change the land uses permitted in the region. In 1996, the Papua New Guinea Forest Authority acquired the April Salumei concession, an area of approximately 521,500 ha, which included part of the Hunstein Range. An Initial Environmental Assessment in 1998 by the government's own Department of Environment and Conservation concluded that the concession was likely to be financially unviable and should not be logged, and that the decision on land use must rest with the landowners. There were

also serious concerns about the actual operable area of the concession, with estimates ranging from 35,000 ha to 380,000 ha. In 1997, three communities who opposed the logging declared their land within the forestry concession a 220,000 ha wildlife management area (WMA) using the Fauna (Protection and Control) Act. Although such designation does not excise the WMA from the FMA or prohibit logging, it has effectively reduced the size of the logging concession by almost half because the local management committee favors conservation and smaller scale development activities over export logging. The Papua New Guinea Forest Authority appears for the time being to recognize the landowners' management direction.

Critical Elements in Determining Outcome

- Legislation available to communities to designate protected areas within forestry concessions.
- Financial support available to pay for legal costs.

References

PNG logging legal challenge. September 23, 1992. On the NativeNet website at *nativenet.uthscsa.edu/archive/nl/9209/0054.html,* accessed February 14, 2001.

Dawson, T. 2001. Personal communication, February 22, 2001. Tim Dawson is the Forest Coordinator with the Worldwide Fund for Nature's Sepik Community Land Care Project in Papua New Guinea.

Distribution of Costs and Benefits Before and After Challenging Concession

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Potential revenue from export and corporate income taxes	- Decreased local unrest	- Loss of export taxes - Legal fees
Industry	- Logging profits from 35,000 - 380,000 ha		- Loss of logging profits
Local Communities	- Potential royalties from logging (at most 5% of total) - Destruction of traditional forest values	- Traditional livelihoods maintained - International funding for alternate income from ecotourism, portable sawmill, landowner awareness patrols	- Loss of logging-related jobs
NGOs		- Stopped logging/ planning for < 3 years	- $10,000 for legal fees

Costs and Benefits After Designation of Protected Area Within Logging Concession

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Expected revenue from export and corporate income taxes on 220,000 ha	- Decreased local unrest - Respite from international NGOs	- Loss of export and corporate income taxes from 220,000 ha - Loss of employment for citizens
Industry	- Logging profits from 220,000 ha	- Decreased local unrest - Relative stability to log remaining land	- Loss of logging profits from 220,000 ha
Local Communities	- Potential at most 10% royalty from logging	- Maintenance of traditional use on 220,000 ha wildlife management area - Funding and technical support from WWF	- Loss of potential royalties from 220,000 ha - Loss of logging-related employment
NGOs		- Protected wildlife management area	- Cost of anthropologist to set up WMA ($30,000)

Appendix 10
Challenge Compliance of Forestry Company to Logging Regulations

Temperate Example
British Columbia, Canada

Description

Recent audits of the compliance of logging companies with British Columbia's Forest Practices Code have found substantial noncompliance. Large fish-bearing streams require mandatory reserve zones while management around smaller fish-bearing and non-fish-bearing streams is left to the discretion of district forest managers. The Forest Practices Board found that nearly half of the audited small fish-bearing streams were misclassified and that the Ministry of Forests had approved many of the riparian management plans without adequate information to determine the presence or absence of fish. The Sierra Legal Defense Fund found 83 percent of 1,086 audited streams had been clearcut to their banks. With additional examination of 100 streams, they found 44 percent of the stream plans did not contain the minimum information required by the code, 40 percent of streams in logging areas had not been identified or were misclassified, and only 43 percent of fish-bearing streams were properly classified as such. While the code allows fines up to $1 million (CDN) per day, few companies have been fined for noncompliance with riparian buffers. Between 1995 and 1998, only $2.3 million was collected for noncompliance.

In 2000, the Sierra Legal Defense Fund submitted a formal complaint to the North American Commission on Environmental Cooperation (NACEC) asking for an investigation into the provincial and federal enforcement of laws protecting fish and fish habitat in British Columbia. NACEC was established under the North American Free Trade Agreement to investigate complaints that signatory countries are not enforcing their environmental laws. NACEC has agreed that there is enough evidence to begin an investigation.

Critical Elements in Determining Outcome

- Forest practices legislation with rigorous requirements for riparian zone management and protection.
- Well-funded and motivated NGO to independently monitor compliance.

References

Sierra Legal Defence Fund. 1996. Stream protection under the code. Vancouver: Sierra Legal Defence Fund. On the SLDF website at *www.sierralegal.org/reports/stream.pdf.*

Sierra Legal Defence Fund. 2000. Feds to explain fish law failures. On the SLDF website at *www.sierralegal.org/issue/forest_fish.html,* accessed February 24, 2001.

Welters, M. 2001. Personal communication, February 14, 2001. Michael Welters is a law student at the University of Victoria, Canada.

Distribution of Costs and Benefits Before and After Assessing Compliance

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government		- $2.3 million in fines	- Cost of monitoring and enforcement - Complaints from industry
Industry	- Logging profit from logging in riparian areas		- Cost of riparian management and forgone timber revenue
Local Communities		- Protected sources of drinking water - Better protection of fish	
NGOs		- Better protection of fish and fish habitat	- Cost of audits and launching legal action

Appendix 11
Protest and Boycotts

A. Temperate Example
Friends of the Lubicon Boycott Against Daishowa-Marubeni International Ltd., Canada

Description

In the late 1980s, the Japanese company Daishowa-Marubeni International Ltd. was granted exclusive timber rights to a 2,900,000 hectare area of northern Canada in order to supply a pulp and paper mill that it would establish. Of this area, 1,000,000 ha were involved in an ongoing land claim by the 500-member Lubicon Indian band. After the band's attempts to negotiate a moratorium on logging this area failed, a 12-member NGO, Friends of the Lubicon, was formed in Toronto. Friends of the Lubicon initiated a campaign to get Daishowa to publicly commit to a moratorium on logging the land in question until the Lubicon land claim was settled. At the time, Daishowa refused to make such a commitment, but did say that it did not currently have any plans to log the disputed lands.

Friends of the Lubicon began a letter-writing campaign to Daishowa clients, encouraging them to boycott the company's products. Ultimately, they convinced nearly 50 companies to join the boycott, costing Daishowa, according to its own estimates, $20 million (CDN) in lost sales over six years. The company took Friends of the Lubicon to court, alleging the illegality of the NGO's actions, but the court upheld the group's right to organize a boycott.

In May 1998, after receiving a pledge from the Canadian government to replace any lost timber rights with timber rights elsewhere, Daishowa made a commitment to not log the disputed lands until a settlement had been reached. The boycott was subsequently lifted. To date, a land settlement has not been reached.

Critical Elements Determining Outcome

- Ability to influence Daishowa's customers, which includes both the exposure of these companies to NGO pressure, as well as the availability of alternative sources of supply.
- The legality of the boycott was upheld.
- Government's guarantee of full compensation if any lands are lost to Lubicon land claim.

Distribution of Costs and Benefits Before and After Mechanism

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Potential royalty payments and taxes from logging the 10,000 km^2 under contention	- Ability to settle land claims in good faith with Lubicon - Taxes if Lubicon decide to log	- Loss of royalty payments - Loss of taxes if Lubicon decide not to log
Industry	- Potential profits from logging the 10,000 km^2 under contention	- No loss of profits, as Daishowa will be compensated with other lands if Lubicon win	- Cost of lost sales during boycott -- $20 million (CDN)
Local Communities	- Employment	- Capture of royalty payments if Lubicon win claim and proceed with logging	- Loss of employment if Lubicon win land claim and decide not to log
Lubicon Indians	- Degradation of, and loss of revenue potential from, traditional lands	- Secure the possibility that timber resources available at the time land claim settled	
NGO			- Cost was very little: essentially just a letter-writing campaign

References

Friends of the Lubicon. 2001. Background on the Lubicon Lake Indian Nation's Struggles. On the Friends of the Lubicon website at *www.tao.ca/~fol/Pa/luback.htm,* accessed February 21, 2001.

Guerette, D. 1998. Daishowa off the hook for court costs. *Record-Gazette,* November 10. Peace River, Alberta.

B. Tropical Example
Friends of the Earth (UK)—Mahogany Boycott

Description

In 1992, Friends of the Earth-UK launched its "Mahogany is Murder" campaign, which had as its goal completely stopping the import of mahogany into the United Kingdom. At that time, Britain was the second largest importer of mahogany in the world. The hope was that a reduction in British demand would translate into

a reduction of mahogany harvests in Brazil, thereby reducing or eliminating the deforestation and violence against Indians that the mahogany harvest was purported to cause. Friends of the Earth produced a leaflet and advertisements for their campaign, directly lobbying both merchants and consumers. The UK Timber Trade Federation and the Brazilian government complained to the Advertising Standards Authority, which ruled against Friends of the Earth and required it to end its graphic leaflets and cinema advertisements.

In one sense, the boycott was successful. According to Friends of the Earth's figures, by 1999 mahogany imports were down 98 percent to a mere 842 m^3. On the other hand, mahogany logging continues unabated, with the US market absorbing available production.

Critical Elements Determining Outcome

- Ability to demonstrate convincing links between harvest and ecological and social impacts.
- A relatively "green" consumer base in the UK.

References

Friends of the Earth. 2001. Mahogany is murder. On the Friends of the Earth website at *www.foe.co.uk/campaigns/biodiversity_and_habitats/forest/mahogany_is_murder/*, accessed February 21, 2001.

Tyack, S. 2001. Personal communication, February 20, 2001. Sarah Tyack is head of international campaigns at Friends of the Earth International.

Distribution of Costs and Benefits Before and After Boycott

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government			
UK Industry	- Profits from mahogany imports	- Loss of profits	
UK Communities	- Ability to buy mahogany	- No more "guilty conscience"	- Unable to buy mahogany
NGOs			- The campaign cost approximately £60,000
Donors			

Appendix 12
Export Bans

A. Tropical Example
Philippines

Description

Forest cover in the Philippines has been reduced to an estimated 18 percent of its original extent, and at current rates of deforestation forests will virtually disappear by 2010. In 1989, in an effort to decrease the rate of forest loss, the Philippine government banned log and lumber exports from natural forests. The government only permitted the export of forest products originating from plantations. The export ban was accompanied by a logging ban of all primary forests, of secondary forests on slopes > 50 percent or above 1,000 meters of elevation, tax incentives to develop industrial plantations, and a tariff reduction on imported wood products. The government attempted to establish a complete logging ban for 30 years across the country, with exemptions for community-based logging and public and private tree farms. Because of concern over the loss of revenue and foreign exchange (the government estimated a loss of $15 million per year), the ban was imposed only in hotspots of illegal logging. Currently, logging of natural forests is banned in 54 provinces.

The export ban and logging bans have greatly decreased the annual allowable cut and have caused great job loss. The export ban is not permanent and was lifted in 1997 because of the need for foreign exchange during the Asian economic crisis. Protests by 20 NGOs and the Catholic Church restored the export ban in June 1998. Illegal logging still occurs in some provinces because of the lack of political will to enforce logging bans (many politicians own logging businesses), improper delineation of primary forest, excess mill capacity, and inadequate compensation to communities for job loss.

Critical Elements in Determining Outcome

- The political feasibility of an export ban appears to be a function of the need for foreign exchange and the degree of protests by the Catholic Church and NGOs.
- Availability of alternative supplies of forest products, including international supplies, which were encouraged through tariff reduction.

References

Department of Environment and Natural Resources Republic of the Philippines. 2001. Press releases. On the DENR website *www.denr.gov.ph,* accessed January 18, 2001.

Distribution of Costs and Benefits Before and After Export Ban

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Timber-related foreign revenue from exports - Taxes, employment from logging industry	- Reduce national protests	- Loss of timber-related revenue and employment (87% decrease in roundwood exports) - Cost of increased enforcement and investigation - Increase in illegal logging and trade
Industry	- Profits from logging and processing products from natural forest - Access to foreign markets	- Incentives to establish industrial plantations	- Reduction of annual allowable cut - Investment in industrial plantations - Forgone foreign markets
Local Communities	- Timber-related employment	- Emphasis on community-based forest management - Retention of watersheds	- Loss of 34,000 jobs
NGOs		- Shift from natural forest to plantations for timber supply	- Costs of protests
Donors			

Guiang, E.S. 2000. The case of the Philippines: Study of the efficacy of removing natural forest from timber production as a strategy for achieving forest conservation objectives. In Asia-Pacific Forestry Commission. Efficacy of removing natural forests from timber production as a strategy for conserving forests. Discussion papers.

International Tropical Timber Organization. 1997. Annual review and assessment of the world tropical timber situation 1999. On the ITTO website at *www.ITTO.or.jp/inside/review1997/country.html,* accessed January 18, 2001.

Lasco, R.D. 1998. Carbon sequestration of Philippine tropical forests: Implications to global warming. Philippines University, Los Baños, College, Laguna (Philippines), College of Forestry, Environmental Forestry Program.

World Rainforest Movement. 1999. Philippines: Logging ban opposed by logger politicians. *WRM Bulletin,* No. 28, November 1999. On the WRM website at *www.wrm.org.uy/bulletin/28/Philipines2.html*, accessed January 18, 2001.

World Resources Institute. 2001. Country Profiles: Philippines. On the WRI website at *earthtrends.wri. org/country_profilesindex.cfm?theme=9&CFID=14503&CFTOKEN =36947510,* accessed August 27, 2001.

B. Tropical Example *Cameroon*

Description

In an effort to decrease logging in its forests, Cameroon banned the export of hardwoods in June of 1999. The log export ban was a measure that had been called for by Cameroon's 1994 forest policy, designed in conjunction with the World Bank's environmental unit. The ban excluded two timber species (ayous and sapelli) that account for 50 percent of total wood production. To help compensate for the loss of revenue and increased unemployment caused by the ban, the government increased export taxes on the remaining species and invested 18 million (CFA) francs in secondary processing facilities in order to boost employment. Because local rural people are allowed to continue to log the banned hardwoods for small-scale use, there is some risk that logs still find their way to the international market through illegal trade. Neighboring countries have increased their exports in order to meet European demand for African redwood.

Critical Elements in Determining Outcome

- Measures to compensate for unemployment and lost profits resulting from export ban.
- Capacity for enforcing ban.

References

Adams, M. 2000. Market Trends: Prices for African timbers have withstood the Asian financial crisis and demand remains strong. ITTO *Newsletter,* Vol. 10, No. 2, February 2000. On the website of the International Tropical Timber Organization at *www.itto.or.jp/newsletter/v10n2/7.html,* accessed May 26, 2001.

Rainforest Action Network. 1999. Cameroon hardwood ban may not prove effective in slowing rainforest destruction. Press release, July 12, 1999. On the RAN website at *www.ran.org/news/newsitem.php?id=161&area=home,* accessed May 27, 2001.

Reuters Limited. 1999. Cameroon makes exceptions to log export ban. July 1, 1999. On the Forest Conservation Portal website at *www.forests.org/archive/africa/camexcba.htm,* accessed May 22, 2001.

Distribution of Costs and Benefits Before and After Export Ban

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Timber-related export revenue	- Revenue from sawn-wood exports - Decreased rate of logging	- Loss of $28 million in export revenue - Cost of improving secondary processing capability
Industry	- Profits from log exports	- Profits from sawnwood exports	- Loss of logging-related export profits - Cost to increase secondary processing capacity and expand in neighboring countries
Local Communities	- Logging-related jobs	- Expected 6,000 associated jobs with new secondary mills	- Loss of logging-related jobs
NGOs			- Cost of campaign for enforcement of the ban
Donors			

Appendix 13
Import Bans

Mandatory Tariff and Labeling for Tropical Forest Products Entering Austria

Description

In September 1992, the government of Austria enacted a de facto import ban on tropical forest products by imposing a 70 percent tariff and a requirement for mandatory labeling. (Tropical forest products from sustainable operations were to be specially eco-labeled.) Money raised from the tariff was to be invested in tropical rainforest conservation projects. The government also banned the use of tropical timber in the construction of public buildings. These measures were based on recommendations from an Austrian government rainforest commission, which was formed after three years of pressure from Global 2000 and Greenpeace Austria.

Protest from Malaysia and Indonesia, both large exporters of tropical wood, brought this case to the attention of GATT (General Agreement on Trade and Tariffs) and ITTO (International Tropical Timber Organization). Malaysia argued that the tariffs discriminated against developing countries because the labeling was not required of temperate wood. Malaysia also argued that the tariff served more to protect Austria's domestic timber industry than to create incentives for sustainable tropical forest management. Some tropical countries perceived the import tariff as providing an incentive for countries to convert their forests to agriculture, rather than providing incentives for long-term forest management. Threats of a boycott of Austrian products by ASEAN (Association of South East Asian Nations) and a lack of support by other European countries forced Austria to rescind the tariff and labeling requirements in 1993.

Critical Elements Determining Outcome

- The apparent illegality of the tariffs.
- The threat of reciprocal trade sanctions by ASEAN countries.

References

Food and Agriculture Organization of the United Nations. 1994. Forests, trade and the environment. In *The State of Food and Agriculture 1994.* FAO Agriculture Series, No. 27, Chap. 25. On the FAO website at *www.fao.org/docrep/t4450e/T4450E0p.htm #Tropical timber import bans.*

Trade and Environment Database. 1992. Austria timber import ban. TED Case Studies, Vol. 1, No. 1, September 1992. Online at *www.american.edu/ted/AUSTRIA.HTM,* accessed February 21, 2001.

Lindemann, M. 1993. Update on the Austrian situation. September 18, 1993. On the Forest Conservation Portal website at *www.forests.org/archive/europe/austupda.htm,* accessed February 22, 2001.

Distribution of Costs and Benefits Before and After Implementation of Tariffs

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Unfettered trade with ASEAN countries	- Decreased pressure from the public and NGOs - Increased tax revenues from tropical timber imports	
Industry	- Malaysian industry profits of $93 million in tropical timber export to Austria	- Tariffs make domestic production more cost competitive	- 70% import tax to enter Austrian market
Local Communities	- Value-added jobs in Austria based on tropical woods	- Better-informed purchasing decisions	- Possible reduction in jobs if timber becomes too expensive
NGOs		- Funding for tropical conservation projects	- Cost of campaign
Donors			

Appendix 14
CITES

Temperate Example
Chilean Listing of Fitzroya cupressoides

Description

Alerce *(Fitzroya cupressoides)* is a high-value timber species that occurs in Chile and Argentina. It has been overharvested to such an extent that the area of alerce forests has been reduced to 20,000 ha in Chile, a mere 15 percent of its former area. Alerce was listed on Appendix I of CITES in 1975, which banned all international trade in this species, and *all* logging has been officially prohibited since 1976. There are reports that illegal logging for domestic markets continues.

Critical Elements Determining Outcome

- Producing and importing countries were signatories to CITES.

References

Earle, C.J. 2001. *Fitzroya cupressoides* (Molina) Johnston 1924 in the Gymnosperm Database. On the www.conifers.org website at *http://131.220.103.1/conifers/cu/fi/index.htm,* accessed February 21, 2001.

World Conservation Monitoring Centre, 2001. Tree Conservation Database, *Fitzroya cupressoides.* On the World Conservation Monitoring Centre website at *www.wcmc.org.uk/cgi-bin/SaCGI.cgi/trees.exe,* accessed February 21, 2001.

Distribution of Costs and Benefits Before and After CITES Listing

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government	- Export taxes from logging the remaining forests	- Reduction of national and international pressure to protect species threatened by trade	- Loss of export revenue on remaining forests
Industry	- Profits from logging the remaining forests		- Loss of profits from logging remaining stands
Local Communities	- Employment from logging the remaining forests	- Existence value and/or recreational possibilities	- Loss of employment from logging remaining forests
NGOs			
Donors			

Appendix 15
Certification and Chain of Custody

Forest Stewardship Council

Description

The Forest Stewardship Council (FSC) was formed in 1993 with the goal of providing a credible international labeling scheme for forest products that would guarantee that a forest product comes from a well-managed forest. The FSC has developed international principles and criteria of sustainable forest management, and it accredits third-party certifying organizations to certify forests to these standards. The FSC supports the development of regional and national standards that are based on its international principles and criteria. It also certifies chain-of-custody procedures so that certified forest products can be tracked to the market and provides a logo so consumers can recognize and preferentially purchase FSC-certified products.

To date, approximately 21.5 million ha of forests have been certified to FSC standards. The majority of these forests are located in North America and Europe. In some parts of the world, buyer clubs and purchasing policies are rapidly emerging that favor the purchase of FSC-labeled products if they are available.

There are two ways that FSC might help conserve HCVF. The first is by providing a means for consumers to identify products that come from well-managed forests. In this way, it can reduce demand for products coming from poorly managed HCVF and thus slow down their exploitation. In this sense, it is an indirect mechanism for stopping the logging of a particular HCVF, because it does not act directly to shut down logging. Rather, it acts to reduce demand for the products that originate from HCVF forests by providing certified alternatives. In order for this approach to be successful, the supply of FSC-certified wood must be sufficient to displace all the production from HCVF, and the majority of consumers must prefer certified forest products for either price or ethical reasons. These conditions seem unlikely to be met in the near future. Currently, the supply of FSC-certified wood is grossly insufficient to meet demand, and a large part of the consumers of forest products (e.g., Asia) are indifferent to certification.

A second way that FSC certification can help in the conservation of HCVF is through Principle 9, which states that management should maintain or enhance the attributes of HCVF forests. (FSC has developed its own definition of HCVF, which is available on its website.) The operational guidelines are that forestry should avoid HCVF that are candidates for protection, unless they are under risk of deforestation or degradation. If a production forest contains HCVF, or is itself an HCVF, then FSC requires a precautionary approach to management and a higher intensity of monitoring. In this way, FSC can be a direct mechanism for the conservation of particular HCVF. Although its application would not stop or prevent logging completely

in the HCVF, it would presumably conserve the forest in better shape than if unregulated logging or deforestation took place.

Critical Elements Determining Outcome

- The area of FSC-certified forests is rapidly expanding but is still grossly insufficient to displace demand for forest products from HCVF.
- The ability of FSC-certified forestry to provide a financially competitive alternative to unregulated logging and other destructive land uses will ultimately determine whether it can prevent the degradation or loss of significant quantities of threatened HCVF.

References

Forest Stewardship Council. 2001. Home page of the FSC website, *www.fscoax.org,* accessed February 21, 2001.

Distribution of Costs and Benefits Before and After the Emergence of FSC

Stakeholder	Initial Distribution of Benefits	Subsequent Distribution of Benefits	Cost of Implementation
Government			
Industry	- Variable, depending on management standards	- Market access	- Costs of certification - Often reduced profitability
Local Communities	- Variable, depending on management standards and treatment of social issues	- Local rights recognized - Involvement in stake-holder process - More nontimber values provided	- Perhaps reduced short-term employment
NGOs		- Mechanism for working with industry	- Costs of accreditation to certify

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