

SUMMARY

“Illegal” Logging and Global Wood Markets: The Competitive Impacts on the U.S. Wood Products Industry

Prepared for:

American Forest & Paper Association

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Summary

Study Objectives

Illegal logging and illegal forest activities, in one form or another, have been high on the agenda, if not directly at the center, of numerous international conferences on forests. The issue has both environmental and economic implications, affecting U.S. wood products exporters competing in the global market. This study was commissioned by the American Forest & Paper Association, the national trade association representing U.S. companies engaged in wood and paper manufacturing and trade. *Seneca Creek Associates, LLC* and *Wood Resources International, LLC* collaborated on the project. The purpose was essentially three-fold:

- (1) to provide a perspective and context on the issue of illegal logging from the standpoint of global production and trading patterns;
- (2) to analyze the impacts of illegally produced and traded wood products on the ability of U.S. producers to export into key overseas markets; and,
- (3) to review the various institutional and government initiatives that have been proffered to address illegal logging, paying particular attention to potential implications for U.S. wood products trade.

Scope

Concerns about illegal logging or illegal forest activity have been raised in many parts of the world, but particular attention has been focused on a number of tropical countries and countries with economies in transition. For the purposes of this study, we elected to profile a few key countries/regions of the world, fairly representative of how the issue affects both producing as well as consuming nations. The countries/regions chosen were:

<u>Supplier Countries/Regions</u>	<u>Consuming Countries/Regions</u>
<ul style="list-style-type: none"> • Brazil • Indonesia • Malaysia • West/Central Africa • Russia 	<ul style="list-style-type: none"> • China • Japan • Europe (EU-15)

Collectively, these countries account for nearly 40% of global industrial softwood roundwood production, and nearly 50% of global industrial hardwood roundwood production. When the United States, Canada and the recently acceded EU countries are considered for analytical purposes, nearly 90% of world softwood production and 80% of world hardwood production are represented.

¹ “Illegal Logging and Global Wood Markets: The Competitive Impacts on the U.S. Wood Products Industry.” Prepared for the American Forest & Paper Association by Seneca Creek Associates, LLC and Wood Resources International, LLC. October, 2004.

For each of these countries/regions, a fairly detailed analysis was made of wood fiber flows and estimates of illegal forest activity. *Seneca Creek Associates, LLC* and *Wood Resources International, LLC* conducted hundreds of interviews, examined the literature and available data, consulted with stakeholders in key countries and conducted an economic analysis to measure competitiveness impacts related to legally suspicious material in the global wood market.

We also reviewed the literature on illegal logging, including reported estimates of the volumes and values of harvested timber alleged to be from illegal sources and traded internationally. While hard data on trade of forest products from illegal operations is virtually impossible to consistently gather, environmental NGOs and some government institutions have issued reports that offer estimates of the extent of illicit activity in one or more countries. Supporting evidence and methods for making these estimates were reviewed. For the analytical purposes of this project, independent estimates were derived based on our analysis and field research.

Extent of the Problem

Illegal logging and illegal trade in forest products is actually a complex set of interrelated legal, political, social and economic issues. The term “illegal logging” clearly signifies legal abuses, but the types of activities considered to be “illegal” that are described in various published and web-posted reports are wide-ranging. It is important to note that there is no international definition of illegal logging. Logging without a government-approved management plan may be perfectly legal in the U.S. South, but would be illegal in the Brazilian Amazon. Some nations with poor forest practices may in fact have a low level of “illegal logging” simply because their standards are so lax. As a generalized definition, “illegal logging” is most often referred to in the literature as when timber is harvested, transported, bought or sold in violation of national laws. Harvesting in national parks or reserves would be an obvious example of illegal logging, but often, poor forest practices (whether in violation of a specific set of rules or not) are also claimed to be associated with illegal activities. In most of the countries where illegal logging is of concern, the forests are government controlled and administered. Few of the governments acknowledge that illegal forest activity is more than an occasional annoyance. Yet, there are some kinds of abuses that, in the context of policy and trade discussions, seem to rise to a level of both domestic and international significance. Within the context of illegal logging, they are in our view:

- (1) harvesting without authority in designated national parks or forest reserves;**
- (2) harvesting without authorization or in excess of concession permit limits;**
- (3) failing to report harvesting activity to avoid royalty payments or taxes; and**
- (4) violating international trading rules or agreements, such as export bans or CITES.**

The thrust of this project was to examine the economics of the illegal logging issue and not the legal aspects, so we focused our inquiry on the extent of these four abuses, at least as so far as they can be approximated. While there are subtle and perhaps important differences in terminology, the terms ‘illegal logging,’ ‘illegal forest activity,’ and ‘suspicious volume’ are used interchangeably throughout the report. *Table 1* summarizes reported estimates of illegal

forest activity and the analytical assumptions used for this project. These estimates are more fully explained and supported in the body of the report.

Table 1: Reported Estimates of Illegal Logging Activities and Estimates of Production and Trade Derived from Wood Flow Analysis (and field research)

	Reported Estimates - % Illegal Forest Production and/or Imports	Selected Results Suspicious Material Wood Fiber Flow Analysis	Comments on Strength of Evidence and Analytical Assumptions
Profiled Countries/Regions			
Russia	20% - 50%	<u>Softwood</u> 15 – 20% of production 25% of log exports (40% to China) 15% of lumber exports 15% of plywood exports <u>Hardwood</u> 15 – 20% of production 25% of log exports (40% to China) 30% of lumber exports 20% of plywood exports	<p>The World Wild Fund for Nature (also known as WWF and World Wildlife Fund) has done extensive in-country analysis of Russia's legal framework and harvesting/production data. Its estimates are supported by our field research. Estimates by Greenpeace and others are less rigorous. FERN says at least 50% of the logging activities are illegal in parts of Russia.</p> <p>Several government estimates place illegal logging at 1% - 2% of harvest, but that's based on volume of seized timber only. Regional officials acknowledge serious problem.</p>
Indonesia	70% - 80%	<u>Hardwood</u> 60% of production 100% of log exports 65% of lumber exports 55% of plywood exports	<p>Very little supporting data for NGO estimates, but our field research suggests Indonesia to be one of the most problematic countries. Government officials agree. Reports of log export ban violations are persuasive. Our analytical assumption is based on wood fiber flow analysis and allowable cut estimates.</p>
Brazil	20% - 90% (generally the higher estimates refer to illegal logging in Amazonia)	<u>Hardwood</u> 15% of production 15% of lumber exports 15% of plywood exports	<p>Estimates vary widely and depend in part on what is included as "illegal." Since the mid 1990s, Brazil has strengthened enforcement. The major problem seems to be confined to the Amazon hardwood region where most reasonable estimates are between 20% and 47%. Brazil is a major producer of plantation-grown pine and eucalyptus, not at issue with respect to illegalities. We use 15% of total hardwood log supply.</p>
Malaysia	As high as 35% for illegal logging and 35% for illegal exports.	<u>Hardwood</u> 5% of production 10% of log exports 70% of log imports	<p>Higher estimates date to early 1990s and are repeated. More recently, journalistic reports about ramin trade are persuasive, but ramin accounts for small portion of total Malaysian production. Malaysian authorities strongly refute allegations of illegal activity and we found the forest concession system to be tightly controlled. However, most log imports are of suspicious origin.</p>

	Reported Estimates - % Illegal Forest Production and/or Imports	Selected Results Suspicious Material Wood Fiber Flow Analysis	Comments on Strength of Evidence and Analytical Assumptions
Profiled Countries/Regions (con't)			
W/C Africa	34% to 70% Gabon – 50%-70% Cameroon – 50% Ghana – 34%-60% Liberia – 80%	<u>Hardwood</u> 30% of production 30% of logs 30% of lumber	Relied on the literature and published reports, most of which have environmental campaign biases. For analytical purposes, we elected to use a conservative assumption.
Japan	20% - 80% of imports	<u>Softwood Imports</u> 15% softwood logs 5% softwood lumber 10% softwood plywood <u>Hardwood Imports</u> 20% hardwood logs 30% hardwood lumber 40% hardwood plywood	Analytical result based on analysis of source of imports for each major product group. Japanese imports are not suspect in any technical, legal sense. They are sourced from countries where, in some cases, significant illegal activities are suspected.
China	WWF 2002 estimate was 32% of imports of timber, pulp, and paper in 2000 were illegal	<u>Softwood</u> 30% of production 35% of log imports 17% of lumber imports 55% of plywood imports 32% of lumber exports 32% of plywood exports <u>Hardwood</u> 30% of production 32% of log imports 32% of lumber imports 56% of plywood imports 30% of log exports 31% lumber exports 31% plywood exports	Analytical result based on field research and analysis of source of imports for each major product group. Suspect imports from the originating countries are the largest component. No official government estimates were found. A government report related to domestic harvesting refers to “cutting outside of plan,” and other reports discuss harvesting violations.
EU-15	Up to 80% of tropical wood imports	<u>Softwood Imports</u> 15% of logs 7% of lumber 9% of plywood <u>Hardwood Imports</u> 25% of logs 6% of lumber 25% of plywood	Analytical result based on analysis of source of imports for each major product group. Percent reflects share of total EU-15 imports. Suspicious imports sourced primarily from Russia and now-acceded EU countries. Suspicious domestic production is assumed to be de minimis.

	Reported Estimates - % Illegal Forest Production and/or Imports	Selected Assumptions Wood Fiber Flow Analysis ^{II}	Comments on Strength of Evidence and Analytical Assumptions
Rest of World ^I			
Other Latin America	Bolivia – 80% Ecuador – 70% Peru – 80% - 90% Colombia – 42%	<u>Softwood</u> 2% of production <u>Hardwood</u> 17% of production	Most of the estimates for illegal logging in Latin America fail to provide persuasive evidence or supporting information. Our analytical assumptions are weighted regional averages, based on assumptions ranging from zero (softwood) to 20% (hardwood).
Other Asia	Papua New Guinea – 70% Myanmar – 50% Cambodia – 90% Laos – 45% Thailand – 40% Vietnam – 20% - 40%	<u>Softwood</u> 6% of production <u>Hardwood</u> 20% of production	Similarly, estimates for illegal logging in Asia generally fail to provide persuasive evidence or supporting information. Our analytical assumptions are weighted regional averages, based on assumptions ranging from 2% (softwood) to 40% (hardwood).
Acceding EU	Latvia – 20% Estonia – 50%	<u>Softwood</u> 10% of production <u>Hardwood</u> 10% of production	These economies in transition have been taking steps to clarify land tenure and strengthen forest management agencies. Governments believe most reported estimates are too high.
USA	0% - 10%	<u>Softwood Imports</u> Plywood <1% <u>Hardwood Imports</u> 1% of logs 10% of lumber 25% of plywood	Some news accounts with anecdotal information, but generally little reporting of illegal harvesting in the U.S. Suspicious domestic production is assumed to be de minimis. Suspicious imports based on countries of origin.
Canada	0% - 10%	<u>Softwood Imports</u> de minimis <u>Hardwood Imports</u> de minimis	As with the U.S., some news accounts with anecdotal information. Canadian government does not believe it to be a serious domestic issue. Suspicious domestic production is assumed to be de minimis.

^INote: These countries/regions were not specifically profiled but assumptions were used for purposes of the global economic modeling.

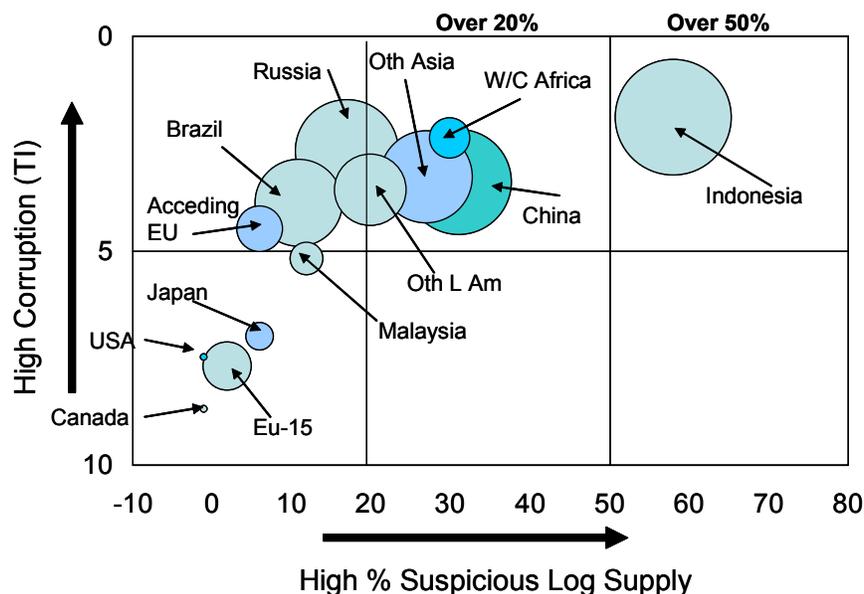
^{II} expressed as mid-point of assumed range.

Sources for Reported Estimates: Global Witness, Greenpeace, WWF International, Friends of the Earth, EIA/Telepak, FERN, RIIA and Others.

Corruption and Illegal Logging

Illegal logging is, in many respects, a symptom of corruption, graft, lax law enforcement, and poor social conditions. In fact, published measures of political and judicial corruption reveal a close correlation between corruption and illegal logging. **Figure 1** displays the relationship between using our independently derived estimates of suspicious log supply in elected countries. With almost 60% of its production suspect, Indonesia stands out as the country with both the highest rate of illegal activity and the most suspicious volume.

Figure 1: Corruption and Illegal Forest Activity



Note: Size of bubbles represents volume of suspect roundwood, including imports
Sources: Transparency International; WRI/SCA estimates of illegal logging

Global Production, Trade and Illegal Logging

The global value of 2002 total wood products trade (HTS Chapter 44) can be estimated at approximately \$69 billion, based on data available through the Global Trade Information Service (GTIS). Pulp, Paper and Paperboard trade would add another \$117 billion, bringing the total value of forest products trade to \$186 billion.

Based on our analysis, we believe that there is credible evidence to suggest that illegal logging of the kind that warrants international concern does, in fact, represent on the order of **8%-10% of global wood products production** and a roughly similar share of global wood products trade. This includes only the impact on production and trade of logs, lumber, and wood panels, and does not include the impact on production and trade of secondary wood products, furniture, or pulp and paper.

Table 2 provides a summary of our independent estimates of suspicious log and wood products production globally. In aggregate, about 8% of the world's roundwood is suspicious (likely illegal), somewhat less for lumber (6%), somewhat higher for plywood (17%). Most

illegal material – as most wood fiber, generally – is used domestically. About 14% of the world’s roundwood exports are suspect, but this represents only about 1% of the world’s roundwood production. Again, these figures are lower for lumber and higher for plywood. As much as 23% of global plywood exports are suspicious. Details in the main report break this information out between softwood and hardwood species.

Table 2: Summary of Suspicious Wood Products Flow (000 m³)

	Profiled Countries/Regions	Rest of World	World Total
Production & Imports			
<i>Roundwood</i>			
Production	726,836	936,138	1,662,973
Suspicious Volume	97,546	33,448	130,994
% Suspicious	13%	4%	8%
<i>Lumber</i>			
Production	168,366	234,058	402,428
Suspicious Volume	19,731	6,133	25,864
% Suspicious	12%	3%	6%
<i>Plywood</i>			
Production	35,816	23,263	59,079
Suspicious Volume	9,423	534	9,957
% Suspicious	26%	2%	17%
Entering International Trade			
<i>Roundwood</i>			
Exports	64,600	63,536	128,136
Suspicious Volume	16,542	1,427	17,969
as % of Exports	26%	2%	14%
as % of Production	2%	0%	1%
<i>Lumber</i>			
Exports	31,866	88,037	119,903
Suspicious Volume	5,425	1,502	6,928
as % of Exports	17%	2%	6%
as % of Production	3%	1%	2%
<i>Plywood</i>			
Exports	17,279	5,364	22,644
Suspicious Volume	5,093	144	5,237
as % of Exports	29%	3%	23%
as % of Production	14%	1%	9%

Table 3 summarizes the value associated with suspicious wood. The calculations show an estimated value associated with production of suspicious roundwood, lumber and plywood products of \$23 billion. Of this amount, about \$5 billion enters world trade, representing about 7% of the \$69 billion in world trade of primary wood products. These estimates should be qualified. They are based on values of traded products which tend to be higher than the value of products consumed domestically. Nonetheless, they represent an upper-bound estimate useful for comparative purposes. Note that the value of illegal imports is split relatively evenly between roundwood, sawnwood, and wood panels, with the total value of trade of illegal products ranging from US\$1.5-2.0 billion for each category.

Table 3: Estimated Value of Suspicious Wood Products
(\$ Million)

	Profiled Countries/Regions	Rest of World	World Total
Production			
Roundwood	8,844	3,210	12,053
Lumber	5,354	1,563	6,917
Plywood	3,345	189	3,535
Sub-Total	17,542	4,963	22,505
Imports			
Roundwood	1,594	30	1,624
Lumber	1,388	89	1,477
Plywood	1,053	767	1,820
Sub-Total	4,035	886	4,921
Exports			
Roundwood	1,124	107	1,231
Lumber	1,462	385	1,846
Plywood	1,671	47	1,718
Sub-Total	4,256	538	4,795

Economic Implications for U.S. Exporters

Using the Global Forest Products Model (GFPM) to simulate the global forest products sector, we can infer the economic impacts on U.S. export opportunities associated with illegal logging.² The economic simulation considers a baseline and alternate scenario. The GFPM baseline simulation uses historical data and makes projections of consumption, production, imports, exports and prices based on the status quo, i.e. a continuation of existing supply sources. The alternative scenario constrains, over a five-year period, the portion of fiber supply that is illegally produced in various countries. The assumptions about illegally produced timber are taken from our earlier described assessment of illegal forest activity and our wood flow analysis for the profiled countries.

² The GFPM is an econometric model of the global forest products sector developed and maintained at the University of Wisconsin.

Based on the simulations of the GFPM, we can roughly estimate the impact of illegal logging on U.S. wood products exporters. The simulation shows that U.S. exports of sawnwood and wood panels could increase by a cumulative total of more than \$2.8 billion through 2012, or an average of \$275 million annually. The average annual increase in the value of U.S. roundwood exports could also increase by an estimated \$186 million, bringing the projected total annual increase in value of wood product exports to just over \$460 million, in real dollar terms. This represents the opportunity costs for U.S. exporters because of illegal wood products in the global market.

Although the analysis was geared toward measuring the effect on U.S. exports, the GFPM simulation also shows that U.S. prices rise 2 – 4% as a consequence of removing the suspicious volume of roundwood from global production, thus increasing the value of domestic U.S. wood products shipments also by perhaps as much as \$500 – \$700 million annually. Elimination of suspicious roundwood in the global market would also have an effect on the pulp and paper sector that would be in addition to the impacts on wood products markets.

Because the GFPM is an aggregate simulation, information derived from the detailed profiles provides additional perspective. For example, in the case of China, the major U.S. wood exports currently are hardwood products. U.S. species compete directly with temperate hardwoods from Russia, but only partially with tropical timber in some segments of the Chinese market. About 30% of hardwood lumber produced and imported into China is manufactured from suspicious timber, according to our wood flow analysis. This would represent the upper bound of additional opportunities in the Chinese market from a reduction in supply or increase in cost of imported Russian and tropical hardwood timber, only some of which would be captured by the U.S. According to some sources, Chinese wood users would absorb significant cost increases before substituting for alternate sources.

In the case of Russia, economic accessibility and shipping distances are bigger factors than is scarcity in Russia. Changes in the forest licensing system and improved enforcement would not likely curtail Russian supply significantly, but it would raise the cost of Russian timber. To the extent that costs rise, other sources of softwood timber and lumber could become more competitive in the Chinese and Japanese markets. As is the case now, the United States would compete with Canada, New Zealand, South America and Europe. Due to the very low costs of Russian wood products, compared with US exports, the impact of eliminating illegal logging in Russia on the volume of U.S. softwood exports to China and Japan may not be significant, but the value of those exports should increase.

Economic Considerations in Addressing Illegal Logging

Socio-economic factors figure importantly in many aspects of illegal logging. Poverty, lack of education, lack of economic freedoms, and population growth are all contributing factors. Even subsistence-level farmers knowingly or unintentionally harvest in protected areas. Where there are more organized illegal operators, they can easily recruit labor among the impoverished or otherwise unemployed.

Operators that flout the law are a relatively small segment of the total forest products business, but those that choose to engage in illegal forest activity do so largely because of the higher profit potential and/or shortages of legal material. Typically, higher returns are possible

because illegal timber is presumably obtained at lower cost than otherwise would be the case if legal. Costs are lower even after considering a premium associated with the risk of penalties for being caught. Reducing the spread between the cost of illegal material (including the premium for risk) and the cost for legal material lowers the return to the illegal operator. Thus, to lessen the spread, either the cost of illegal material needs to rise, or the cost of legal material needs to fall. The former can be accomplished by beefing up enforcement. That makes the risk higher and makes it more difficult (more costly) to operate illegal timber. Lowering the cost of legitimate product is more challenging. Increasing the legally available raw material would be one way of reducing costs. Lowering operating costs through lower royalties or taxes is another possibility. Keeping costs from rising would also help keep legitimate operators competitive. The paradox is that increasing costs for producing and trading legitimate wood products could have a perverse economic effect by increasing the spread between legal and illegal material in the global market. Thus, certification and/or chain-of-custody tracking as a solution to illegal logging are by no means a forgone conclusion. If the added costs are significant, they could exacerbate the difference between legal and illegal wood products, increasing profitability for illegal operators, and/or diverting illegal wood to unencumbered markets.

Programs/Initiatives

A number of initiatives have been proffered by governments and international institutions to address illegal logging concerns. The most consequential initiatives to date, in terms of implications for the U.S., revolve around the EU Action Plan and European procurement policies. While Asian and North American countries have thus far favored addressing illegal logging through improved governance and enforcement (i.e. the Forest Law Enforcement and Governance process), Europe has been taking an approach to also affect changes through voluntary trade actions.

NGOs are increasingly using market campaigns to influence both the politics and the trade of suspicious wood products. European procurement policies are being revised to favor wood products for which the legality can be assured through independent verification or certification. If a system of export licensing or one with preference for chain-of-custody certified product takes root in Europe, U.S. industry (particularly importers) will likely feel both market and political pressure to do the same. Ultimately, even U.S. exporters could be subjected to similar requirements as tropical timber producers.

Country/Region Profiles

Detailed profiles for 8 country/regions are included in this report. Five of the profiles are of countries/regions that are primarily ***wood-producing*** and have been targeted by environmental NGOs and some international institutions because illegal forest activity is alleged to be a major problem. Three of the profiles are focused on countries/regions that are primarily ***wood-consuming*** and import timber products that are alleged to have been illegally sourced.

Brazil

Brazil's total harvest of industrial roundwood in 2002 was around 164 million cubic meters. However, two-thirds of the total timber harvest in Brazil comes from plantation forests, where illegal logging is not considered to be a problem. The problem of illegal logging is only

an issue with tropical timber production, which occurs primarily in the Amazon region. The majority (estimated at 85-86%) of wood harvested in the Amazon is consumed within Brazil, and only 15-16% is exported. Despite the fact that there has been an on-going problem with illegal logging in the Amazon region, the volume of illegal wood going into export markets is thus a relatively small portion of the country's total harvest.

Various NGO reports place the volume of illegal wood as high as 85% in the Amazon, although most recent estimates are between 20% and 47%. Some NGOs claim that a similarly high share of Brazil's exports is also illegal. Based on our analysis, it does not seem possible that the current level of illegal wood in Brazil's exports of tropical hardwood products exceeds 10-20%, and it could possibly be as low as 5-7%.

The Government of Brazil has taken a much tougher stance against illegal logging over the past several years, and has greatly increased the number of arrests, the volume of logs confiscated, and the level of fines imposed. Thus, the costs of illegal activity have been greatly increased, and have reduced the attractiveness of this practice, at least for the more responsible companies. Most of Brazil's wood exports are produced and traded by larger companies that are more sensitive to the illegal logging issue and are less likely to purchase logs from questionable sources than the medium and smaller mills. It is also perhaps easier for the regulatory agencies to monitor the activities of the larger companies. Thus, we believe that the wood exported from Brazil has a much higher percentage of legal wood, and hence a much lower level of illegal material, than the wood consumed domestically, which explains our relatively low estimate of illegal wood in Brazil's exports. The biggest impact on U.S. exporters, to date, is likely in the European market for hardwood lumber.

Indonesia

If there is one country that seems to embody the various elements of the illegal logging issue, Indonesia would be the most likely to be chosen. The country has long been a main target of environmental NGOs for poor forestry practices and controls. Historically, the national and regional governments have been prone to corruption, further exacerbated with decentralization following the demise of the Suharto regime. Concessions are poorly regulated and entangled in jurisdictional disputes. The deforestation rate is very high, estimated at 1.5 – 2.0 million hectares per year.

Indonesia accounts for about one-quarter of the world's tropical wood production and tropical hardwood lumber exports, and about half of global tropical hardwood plywood exports. We estimate industrial roundwood production at 51 million m³ in 2002, significantly higher than the probable legal volume of between 20 and 25 million m³. Because a high percentage of timber harvests might be considered illegal, a similar high share of Indonesia's lumber and plywood production and exports are also considered suspicious. Indonesia reimposed a log export ban in 2002, after permitting exports for three years, but unreported trade of raw logs is a problem acknowledged by the Indonesian government and confirmed by NGO and trade sources. We estimate that almost 2.9 million m³ were exported to Malaysia, China, Thailand and the Philippines. The Government of Indonesia has been forthcoming in seeking international assistance for its forestry sector and numerous projects have been initiated. Industry attempts to legitimize production through certification and export permitting have thus far been viewed skeptically by the international NGO and European trade groups. The largest impact on U.S.

wood product exporters is likely in markets such as Japan and the EU, for both hardwood plywood and lumber.

Malaysia

The forestry sector plays a dominant role in the Malaysia economy. The government and industry have a close relationship and both are engaged in promoting Malaysian wood products in world markets. Allegations of illegal domestic forest activity -- in some reports as much as 35% of production -- are likely overstated since regulations for timber operators and companies appear to be well-enforced. Cronyism is (and has always been) part of the timber concession system in Malaysia; some companies and/or individuals have powerful political influence, but laws and regulations are very clear. Most concerns about illegal activity involve trade abuses between Indonesia and the states of Sarawak and Sabah. Smuggling of timber from Indonesia to Malaysia for processing or re-export has been alleged and likely occurs. Malaysian authorities indicate that they have tightened enforcement and increased prosecutions of violators over the past few years. Even more rigorous enforcement has probably been hampered by a “blame game” that transpires between Indonesia and Malaysia.

West/Central Africa

In reports about the forestry sector in Africa, poverty and armed conflict join the list of issues that adversely impact forest management and drive illegal forest activities. Corruption is widespread; people in the trade quietly acknowledge that corruption is part of the cost of doing business in much of the region. Our review of the African situation was confined to published reports and primarily to the trading relationship between Africa and Europe.

For U.S. wood product exporters, competition with African suppliers is primarily in Western Europe and to a lesser extent China. Most of the competition would be in markets for hardwood lumber, veneer, and plywood. Historically, Europe was the principal importer of African timber products, although in recent years Asia has become a bigger market. The most important West/Central African countries, in terms of their impact on U.S. exporters in the international markets, are Gabon and Cameroon for logs, lumber, veneer, and plywood. In addition, Ghana and Côte d'Ivoire are relatively important sources of hardwood lumber, veneer, and plywood for international markets. Finally, Equatorial Guinea is a relatively important source of logs for China. Of these countries, Gabon, Cameroon, Equatorial Guinea and Ghana are frequently the focus of groups concerned about illegal logging.

Although it is difficult to verify their estimates, groups such as WWF, Friends of the Earth and Global Forest Watch all cite similar statistics on illegal logging in these four countries: Cameroon (50%), Equatorial Guinea (50%), Ghana (60%) and Gabon (70%). We note that most of these estimates appear to be based on studies done in the 1990s, and, as in other parts of the world, percentage figures are repeated from report to report without any new supporting evidence. For analytical purposes, we have assumed that the extent of illegal timber production in the west/central African region is around 30%. It may be higher, but supporting evidence in the literature, especially in terms of the abuses described earlier, is not well-documented.

Russia

Russia has a vast forest resource, although much of it is not economic to harvest and the country contributes only a relatively small percentage of the world's wood products. Even so, a surge in log exports in recent years, to both Asian and European markets, has meant an increase in influence for Russian timber in the international wood markets. Although the government officially downplays a problem with illegal forest activity, most sources believe that between 20-30% of the Russian harvest is illegal because of improper or non-existent felling licenses or cutting in excess of permitted volumes. Some NGOs place the estimate of illegal logging at 50% in some parts of the country. We examined both published sources and made field visits to gain an understanding of the illegal logging problem in Eastern Russia. Our best estimate is that 15-20% of the harvest in Russia may be "illegal," but with a higher percentage in log exports (25% on average, but likely higher for China).

The influence of Russia's illegal logging in the international markets is seen most directly in the country's log exports. The volume of log exports may be understated by exporters trying to avoid paying export taxes, but trade discrepancies are compounded because of the way regional customs data is compiled by the central government. Russia's softwood logs go primarily to China (44% of the total volume) where Russia has become the dominant supplier, and to a lesser extent to Finland (19%) and Japan (17%). Hardwood log exports are approximately one-third of the volume of softwood log exports, but in some cases are of much higher value. Exports to Finland (66% of the total volume) include a large volume of pulpwood, but exports to China (19%) are mostly high value sawlogs. The most direct impact on U.S. wood product exporters is likely in the Chinese market for high-grade hardwoods.

China

China presents a special case in addressing the problem of illegal logging. China's timber harvests have declined since logging bans were put into effect after 1998 and the acknowledged problem of cutting "over-plan" within China is thought to have little impact on international wood markets. More important is the large volume of logs and lumber of suspicious origin which are imported from Southeast Asia, Africa, and Russia. These are used to produce finished products for both the domestic Chinese market and for export. China's emergence as a major supplier of finished wood products to international markets has complicated efforts to control illegal logging in some regions. For example, while EU imports of tropical logs from West Africa have declined in recent years, due at least in part to efforts to reduce consumption of illegal logs, imports of finished products from China have increased. In many cases the Chinese products are produced from logs imported from West Africa, so that the shift in trade patterns may lead to no real decrease in EU consumption of illegal wood products.

China is the fastest growing market for wood products, which has fueled import growth, including a significant amount from countries without strong environmental or forest management controls. Based on data analysis and field research, we believe that up to 40% of Russian softwood log imports are suspicious (potentially illegal) because of cutting in excess of permitted volumes, harvesting without authorization or as undocumented/unreported exports. China's sources for hardwood log imports reads like a "Who's Who" of countries with problems with illegal logging. Because of remote access points and the circumventing of high export taxes or log export bans, a significant volume (as much as 10 -15%) of log imports may be

underreported. In total, perhaps 50% of China's hardwood log imports from Russia and West Africa may be considered to be of "suspicious" or illegal origin.

Imported Russian lumber is also suspect (as manufactured from illegal logs) but to a lesser degree. Reduced supply of Russian softwood would have only an indirect impact on U.S. producers as the Chinese market would likely absorb price increases or increase imports from other softwood suppliers such as New Zealand. U.S. temperate hardwoods compete with tropical species in only a small share of the Chinese market. While tropical hardwood receives the most attention with respect to illegal activity, Russian hardwood in the Chinese market represents the most direct competition for U.S. producers.

Japan

Japan imports large quantities of wood products from countries where allegations of illegal harvesting are prevalent, including Russia, Indonesia and Malaysia. Imports have also been increasing from China that, in turn, is a major importer of wood products from those same countries.

Russia is the largest supplier of softwood logs to the Japanese market, followed by the U.S. and New Zealand. Larch, red pine and white spruce are imported from Siberia and Far East Russia. While estimates are difficult to formulate, based on our research, we conclude that somewhere around 25% of the Russian harvest in the Far East is procured from sources with a high probability of having been harvested in violation of some national laws. These harvests are from areas either without officially authorized concessions or are in excess of permitted levels.

Malaysia is the main supplier of hardwood logs into Japan, followed by Papua New Guinea and Russia (temperate species). Other South Sea countries, such as the Solomon Islands, and central African countries are also significant sources for hardwood logs. NGOs have alleged that Japan imports Indonesian logs, most notably of ramin, that have been illegally relabeled and transshipped through Malaysia, allegations denied by the Japanese trade. The Government of Japan issued a "Joint Announcement" with Indonesia committing to address the problem. Japan was also instrumental in forming the Asian Forest Partnership that includes addressing illegal logging as one of its three core issues for collaboration.

The main competition for U.S. exporters from illegally sourced wood products in Japan is in softwood plywood (larch logs), engineered wood products (Chinese products made with Russian softwood), and hardwood lumber.

European Union

While some NGO reports have alleged that illegal logging occurs within the newly acceded European Union countries, including Estonia and Latvia, Europe seems to be more focused on reducing illegal forest activity in tropical countries. A year after the Asian Forest Law Enforcement and Governance (FLEG) conference in 2001, Europe followed with a process of its own. The European approach added "trade" to its tools for addressing illegal forest activity. Europe's FLEGT Action Plan was recently formally enacted by the European Commission (EC) and creates a program to encourage a licensing system for imported timber and sawnwood products. Under the initiative, the EU would enter into partnership agreements

with countries willing to create a verifiable export license program that ensures legality of products entering the EU market. These agreements would apply only to external EU trade.

In addition, several European countries have developed (or are in the process of developing) procurement policies that will require, or at a minimum provide guidelines for, proof of legality for timber product purchases. In every case, certification is favored as the preferred mechanism of ensuring legality. In all likelihood, over time, the EC program and national procurement policies will have implications for other countries trading with Europe, possibly including the U.S..

In Europe, illegally sourced wood products compete with U.S. exporters primarily in the hardwood and veneer markets.

Observations and Findings

(1) The “illegal logging” issue is an outgrowth of long-standing concerns over global forest conservation. The issue itself is confused by, yet intricately related to, deforestation and poor forest practices. In many ways, “illegal logging” is the most recent moniker for addressing pervasive and worrisome environmental degradation in tropical and sensitive boreal forests.

(2) Illegal forest activities can be defined broadly to include violations of any number of international, national or local laws and regulations. However, some illegal activities appropriately rise to a level of international concern. They would include: harvesting without authority in designated national parks or forest reserves and harvesting without or in excess of concession permit limits. In addition, illegal activities that are sometimes related include failing to report harvesting activity to avoid royalty payments or taxes; and, violating international trading agreements such as the Convention on International Trade of Endangered Species (CITES).

(3) No matter how broad or narrow illegal forest activity might be interpreted, its extent is impossible to know with any degree of certainty. Reported estimates are generally supported only through anecdotal information and supposition. Quantifying illegal logging by type of activity is even less precise. For example, one might think that measuring “logging in protected areas” would be possible through satellite technology, and this may be feasible in relatively small areas, but the definition of what “protected” means also seems to vary from country to country.

(4) Our investigation and analysis suggests that many of the reported estimates are likely exaggerated, at least in some cases, but illegal activity of the type that rises to international significance is nevertheless pervasive in some countries.

(5) Illegal logging is primarily a symptom of unclear or poorly enforced forest tenure, weak political institutions, corruption, inadequate natural resources planning and monitoring, and lax enforcement of sovereign laws and regulations. The problem appears to be most acute in countries without private forest ownership or clearly controlled tenure. Ambiguous forest tenure is a major impediment to legality as there is less incentive to protect assets from theft and destruction.

(6) Smuggling, money laundering and other criminal activity in the forest sector have been alleged in some countries and, in some cases, prosecuted. Timber can be a high valued item that is relatively easy to merge into legitimate distribution. The sometimes wide gap in cost between legitimate, legally procured timber and illegal timber provides an incentive for smuggling.

(7) Based on our assessment of estimates and analysis of wood fiber flows, we believe illegal forest activity (of the type that rises to a level of international concern) represents between 5% and 10% of global industrial roundwood production – approximately 4% for softwood, but 15% for hardwood.

(8) Most illegally produced timber is used domestically and does not enter international trade. The suspicious volume of roundwood that enter international trade represents on the order of just 1% of global production for both softwood and hardwood. However, we calculate (estimate) that

12% of global softwood roundwood exports and as much as 17% of global hardwood roundwood exports are of suspicious origin. Less than 4% of global trade in softwood lumber and plywood originates with timber of suspicious origin, but as much as 23% of hardwood lumber exports, and 30% of hardwood plywood exports might be considered suspicious. This is largely attributable to the Indonesian situation where a high percentage of production, and hence export, is believed to be illegal.

(9) Cost comparison between illegal and legal material is complex. Companies dealing in “illegal” wood products are not just paying a lower price for logs which have not required the same investment to obtain as “legal” logs. Bribes and other costs of acquiring illegal logs add to their cost, as does the increased level of risk. On the other hand, tax avoidance, ignoring labor laws, etc. can reduce their costs. Even more complexity is added due to the very wide range in price of tropical hardwood logs. For example, if illegal mills focus on higher value logs, their average log cost might be higher than legal mills consuming lower value logs. It is reasonable to assume that most companies choose to violate logging regulations because they have a financial incentive to do so, but quantifying the price advantage involves as much art as science. Nevertheless, an economic analysis based on simulations from the Global Forest Products Model (GFPM) suggests that illegal material depresses world prices by 7% - 16% on average, and U.S. prices by 2% - 4%, depending on the product. In certain important markets, illegal material significantly affects the ability of U.S. producers to export.

(10) Absent illegal volume in the global market, U.S. exports of sawnwood and wood panels could increase by a cumulative total of more than \$2.8 billion through 2012, or an average of \$275 million annually. The average annual increase in the value of U.S. roundwood exports could also increase by an estimated \$186 million, bringing the projected total annual increase in value of wood product exports to just over \$460 million, in real dollar terms. This represents a measure of the opportunity costs for U.S. exporters because of illegal wood products in the global market.

(11) The actual impact of illegal material on U.S. exports could be higher because the GFPM doesn't distinguish between softwood and hardwood species when compensating for changes in supply. According to the simulation, eliminating suspiciously produced roundwood from the global market puts upward pressure on prices that increases the value of domestic U.S. wood products shipments by an estimated \$500 – \$700 million annually. Elimination of suspicious roundwood in the global market would also have an effect on the pulp and paper sector that would be in addition to the impacts on wood products markets.

(12) While trade data discrepancies offer a hint of problems that may exist with unreported trade, data discrepancies by themselves are not prima facie evidence that illegal trade has occurred.

(13) Some groups have advocated measures to restrict the international trade of wood and paper products from countries with timber of suspicious or unknown origin. Policy advocates differ on whether an emphasis should be placed on capacity building efforts in countries of concern, or on influencing trade or consumption of suspicious products in the importing countries.

(14) The European Union is taking an approach that combines capacity building with voluntary measures to effect changes in European purchasing of imported timber and lumber products. The EC has enacted a plan to enter into bilateral agreements with non-EU countries to develop

and implement an export licensing that would be enforceable on EU imports of timber and sawnwood (lumber).

(15) Neither Japan nor China has expressed any interest in similarly regulating imports from trading partners (nor has the United States or Canada).

(16) Because of the fungibility and fluidity of global trade and manufacturing, bilateral trade measures are not likely to be very effective in reducing unsustainable forest practices, or, for that matter, the extent of illicit harvesting. Operators engaged in illicit activities will likely find ways to circumvent any new bureaucratic systems and trade flows will adjust to the imposed constraints.

(17) To be effective, solutions to the illegal logging issue must reduce the spread between the costs of operating illegally and the costs of operating legitimately. The larger the spread between legal and illegal costs, the greater the returns from illegal activity. Policy makers should consider that raising costs for legal trade could have a perverse and unintended impact.

(18) Apart from general trading rules through the World Trade Organization (WTO), the Convention on Trade in Endangered Species (CITES) is the only international legal instrument with enforceable provisions to restrict trade in specific species. A few commercially important timber species are listed under CITES. CITES data should correspond with official trade data, but frequently doesn't. Collection and analysis of trade data on listed species subject to CITES permits is not well-coordinated or supported. Ways to improve CITES information and data coordination should be explored.

(19) There has been a proliferation of organizations and meetings addressing illegal logging; significant staff and financial resources have been expended on this issue. Governments need to prioritize and reach a consensus on the appropriate forums in which these issues should be discussed and addressed.

(20) In general, forest resource information and monitoring systems are inadequate in most of the countries where illegal activity is believed to be a problem. Governments should support improved information management systems through the ITTO, FAO or other extant international institutions.

(21) Having taken great pains to review illegal logging estimates (i.e., the extent of the problem), the more important issue is not whether illegal activity occurs (it does), but how well can national institutions effect changes in their own management and enforcement cultures.

(22) Industry trade groups are increasingly adopting or strengthening codes of conduct that commit to purchasing legally procured and manufactured timber products. All of the major certification schemes include a standard to comply with all applicable legal and regulatory requirements.

(23) It is generally accepted that solving the problem of illegal logging will take more than just strengthened enforcement capacity and trade restrictions. This problem does not exist in a vacuum, but is inextricably tied to other economic, social and political problems. History shows that as economies grow, and as opportunities for education and healthcare improves, investments

in natural resources and environment follow. However, to improve the effectiveness of programs aimed at reducing illegal logging in producing countries, donor countries should try to tie their efforts to broader programs aimed at improving economic opportunities for those living in the effected regions.

(24) Finally, does the problem of illegal logging justify all the attention it receives? We believe that the importance of this issue to AF&PA extends well beyond the economic value of the trade opportunities lost to U.S. wood exporters. To the extent that the general public associates logging, in any country, with “illegal activity,” there is a danger of a negative impact on the “wood is good” image. Further, since most members of AF&PA have been actively involved in efforts to improve forest management through the SFI program, efforts to combat illegal logging in other countries seems a natural extension. Finally, this issue is not going to fade away, as NGOs have successfully connected the problems associated with illegal logging with other social and economic issues in the target countries. AF&PA should continue to take an active role in developing ways to solve the problem, if for no other reason to strengthen export promotion efforts in a market increasingly influenced by NGOs and buyer groups.