

# NOT AS EASY AS FALLING OFF A LOG: The Illegal Logging Trade in the Asia-Pacific Region and Possible Mitigation Strategies

Foreign Policy  
at BROOKINGS

Vanda Felbab-Brown

March 2011

WORKING PAPER  
Number 5

# NOT AS EASY AS FALLING OFF A LOG: The Illegal Logging Trade in the Asia-Pacific Region and Possible Mitigation Strategies

Vanda Felbab-Brown

# ACKNOWLEDGMENTS

---

I wish to thank Bill Antholis, Seyom Brown, Kerstin Canby, Michael O’Hanlon, and Theodore Piccone for their invaluable comments. Erasmo Sanchez provided excellent research assistance.

# TABLE OF CONTENTS

---

<b>EXECUTIVE SUMMARY</b> . . . . .	<u><a href="#">v</a></u>
Supply-side Measures . . . . .	<u><a href="#">vi</a></u>
Demand-side Measures. . . . .	<u><a href="#">viii</a></u>
<b>INTRODUCTION.</b> . . . .	<u><a href="#">1</a></u>
<b>THE DEFINITION CONUNDRUM AND THE PARADOX OF LEGAL VERSUS SUSTAINABLE TIMBER.</b> . . . .	<u><a href="#">5</a></u>
<b>THE GLOBAL SETTING—THE GROWING DEMAND FOR TIMBER</b> . . . . .	<u><a href="#">7</a></u>
<b>THE SIZE OF ILLEGAL LOGGING AND ILLEGAL TIMBER TRADE</b> . . . . .	<u><a href="#">8</a></u>
<b>THREATS POSED BY ILLEGAL LOGGING: THE TRADE-OFFS AND COMPLEMENTARITIES BETWEEN MONEY AND ENVIRONMENT.</b> . . . . .	<u><a href="#">11</a></u>
<b>THE STRUCTURE OF THE INDUSTRY</b> . . . . .	<u><a href="#">16</a></u>
<b>ILLEGAL LOGGING AREAS AND TRAFFICKING ROUTES IN ASIA-PACIFIC</b> . . . . .	<u><a href="#">22</a></u>
Countries with Timber Production near Historically Peak Levels . . . . .	<u><a href="#">22</a></u>
Countries with Timber Production past Historically Peak Levels . . . . .	<u><a href="#">28</a></u>
Overall Government Response to Illegal Logging in the Asia-Pacific Region. . . . .	<u><a href="#">36</a></u>
<b>POLICY CONSIDERATIONS: THE TRADEOFFS AND COMPLEMENTARITIES OF SECURING DIFFERENT ECONOMIC AND ENVIRONMENTAL OBJECTIVES.</b> . . . . .	<u><a href="#">37</a></u>
Managing the Supply . . . . .	<u><a href="#">37</a></u>
<i>Regulatory Design</i> . . . . .	<u><a href="#">37</a></u>
<i>Greater Law Enforcement</i> . . . . .	<u><a href="#">38</a></u>
<i>Border Control</i> . . . . .	<u><a href="#">40</a></u>
<i>Managed Logging versus Bans on Logging</i> . . . . .	<u><a href="#">40</a></u>
<i>Involving the Local Community.</i> . . . .	<u><a href="#">41</a></u>
<i>Alternative Livelihoods Efforts</i> . . . . .	<u><a href="#">42</a></u>
<i>Plantations and Reforestation</i> . . . . .	<u><a href="#">43</a></u>
<i>Certifying Wood</i> . . . . .	<u><a href="#">43</a></u>
<i>Carbon-for-Forest Payoffs</i> . . . . .	<u><a href="#">45</a></u>
Managing Demand. . . . .	<u><a href="#">48</a></u>
<i>Encouraging Demand for Certified Wood: The Greening of Customers</i> . . . . .	<u><a href="#">48</a></u>
<i>Decreasing Demand for Wood</i> . . . . .	<u><a href="#">50</a></u>
<b>CONCLUSIONS.</b> . . . .	<u><a href="#">52</a></u>
<b>RECOMMENDATIONS</b> . . . . .	<u><a href="#">55</a></u>
Supply-side Measures . . . . .	<u><a href="#">55</a></u>
Demand-side Measures. . . . .	<u><a href="#">57</a></u>

# EXECUTIVE SUMMARY

---

- Several positive developments for the world's forests have taken place at the end of the 21<sup>st</sup> century's first decade. In the December 2010 Cancun summit on global warming, countries agreed to halt or reverse the loss of forests by approving payments from rich countries to poor countries not to deforest as a way to offset their carbon emissions under a mechanism known as Reducing Emissions from Deforestation and Forest Degradation (REDD). Also, over the past few years, regulatory frameworks to combat illegal logging in a number of key markets, such as the United States and the European Union, have been tightened to prohibit the importation of illegal timber or to demand due diligence standards.
- Both deforestation and illegal logging in a number of critical areas of rich tropical forests and biodiversity, such as Indonesia, have slowed down over the 2000s as compared to the 1990s. Illegal logging in places such as Burma, Cambodia, and Indonesia, appears to have declined from their peak levels in the 1990s and early 2000s when illegal logging often constituted more than 50% of logging. But such declines have been accompanied by intensifying deforestation and illegal logging in places such as Russia and Papua New Guinea. Both forest depletion and increased law enforcement in particular locales has driven this "balloon effect." Illegality of timber extraction and smuggling has also become more hidden.
- Thus, critical challenges remain. Still intense and prevalent in the Asia-Pacific region and elsewhere, illegal logging continues to pose multiple threats to national governments, local communities, and the world. These include timber depletion and deforestation, global warming, biodiversity loss, intensification of other environmental threats, such as flooding and desiccation, higher economic costs, intensification of violent conflict, and exacerbation of corruption.
- Policies adopted to mitigate a particular threat, such as preventing flooding, often do little to address other threats, such as preserving biodiversity. Similarly, policies to combat illegal logging through mechanisms such as certification of timber legality do not necessarily enhance the sustainability of logging practices or protect biodiversity. Biodiversity preservation in particular is often the least emphasized aspect of regulatory designs. Forestry frameworks often lack complementarity between other policy objectives like preserving natural forests and biodiversity. Even a policy such as REDD+, while potentially a salvation for the world's forests, does not inevitably yield full preservation of natural forests and biodiversity. Whether measures to combat carbon emissions are in harmony with preserving natural forests will be critically dependent on the particular design of the REDD+ program, including their price structure.
- In the Asia-Pacific region, Indonesia, Cambodia, Burma, Malaysia, Russia, and Papua New Guinea are, or at one point were, significant sources of illegal timber. Vietnam, Thailand, Malaysia, and China are major processors and consumers of illegal timber. Intense legal and illegal logging

has significantly depleted the forests of several of these countries. Countries, such as Thailand and Malaysia, that are past their production or have instituted bans on logging experienced intense deforestation and illegal logging in the 1980s and 1990s.

- China is the epicenter and pivot of the world's deforestation, illegal logging, and timber processing and the world's largest wood workshop, processing legal and illegal wood extracted from the Asia-Pacific region, and increasingly also tropical Africa and the Amazon. Along with China, the United States, Europe, Japan, and increasingly India and the Middle East constitute key consumers of the world's timber.
- Facing forest depletion, environmental disasters, and intense Western pressure to mitigate deforestation and illegal logging, including greener and tougher regulation in key Western markets, and lured by the prospect of cash-for-forest transfers, governments in the Asia-Pacific region have progressively recognized the threats posed by problematic logging. Laws and regulations regarding logging have been progressively tightened, and many countries in the region now have rather stringent laws on the books. Effective and committed enforcement, however, remains a major challenge.
- The illegal logging economy involves a complex and diverse set of actors. These include illegal loggers, logging and processing companies, timber barons, timber launderers, local interest groups, such as local communities, law enforcement agencies, and industry associations, national governments, processing and retail companies, and final—often faraway—consumers. Policies to mitigate illegal logging and enhance sustainability and biodiversity protection need to address drivers of illegal logging for each of these actors.
- The extent of unsustainable, environmentally damaging, and illegal practices that still characterize the timber industry in the Asia-Pacific region cries out for still better forms of regulation

and more effective law enforcement. Unfortunately, there are no easy solutions to the problem; and almost every single possible regulatory action is either hard to implement or entails difficult trade-offs and dilemmas. The lack of common definition of timber legality compounds those problems.

#### • **Supply-side Measures**

- *Regulatory Design*  
A regulatory design should be stringent and enforceable, but not onerous. What that actually means when such principles are being operationalized for a specific country needs to be evaluated on a case-by-case basis and is often very difficult to gauge. The minimum inescapable feature of a regulatory design is stable and clear property rights regarding land and timber. Often countries lack the capacity or interest to develop such property rights.
- *Greater Law Enforcement and Border Control*  
Neither industry self-regulation, nor even a strict regulatory design, have proven to be sufficient mechanisms to combat illegal logging in the absence of effective law enforcement. Addressing corruption and capacity of law enforcement institutions is critical. But in the domain of illegal logging where ascertaining legality or illegality of timber is highly complex, increasing law enforcement faces difficult obstacles once medium baselines of enforcement effectiveness are achieved. Despite technological improvements in log tagging and DNA testing, checking logged and transported timber is very resource intensive and difficult. The complexity of value chains, transportation routes, and the processing of timber into timber products creates multiple opportunities for timber laundering. Increased law enforcement tends to weed out the most obvious and least competent criminals, resulting in illegal timber practices being more hidden and sophisticated, but no less

detrimental, and in the displacement of timber extraction and smuggling to new areas, often with greater environmental costs.

▫ *Managed Logging versus Logging Bans*

Logging often depletes the forest to the point that governments feel the need to resort to bans on logging. In environments with poor regulatory frameworks and meager enforcement, neither the timber industry, nor governments, nor local communities, often have the capacity to regulate the logging and trade in wood sufficiently to assure sustainable conservation. A logging company's long-term best interest may be to log in a sustainable way, but uncertainty about the future and short-time horizons encourage behavior that causes the industry to eat its own tail. Blanket bans, however, can also encourage illegal logging since key stakeholders lose an interest in forest preservation. To the extent that logging bans significantly squeeze the income of local communities, the timber industries, or national governments, pressures toward illegal logging intensify.

▫ *Involving the Local Community*

Forest management frameworks developed in the late 1990s and early 2000s, often spurred by NGOs fighting illegal logging, have emphasized involving the local community and developing it into a key stakeholder in forest management. As a result, governments have transferred sizable portions of forest to local communities. The results have been very mixed for a variety of reasons, however. Local contexts and details of such schemes matter a great deal. Merely involving a local community does not necessarily lead to its ecological benevolence or the sustainability of logging.

▫ *Alternative Livelihoods*

Although assuring legal livelihood for local communities is critical to discourage them from participating in illegal logging and

cooperating with law enforcement, alternative livelihood projects from the sustainable use of other forest products have often been ineffective. They have generated profits that are too low, compounded by the costs of transportation and the lack of ready markets, created too few jobs, required long-term investment with little immediate cash flows for the community, and proved technically too complex.

▫ *Plantations and Reforestation*

Plantations have showed themselves to be a highly imperfect solution. The plantations and reforestation are often far more expensive than cutting native forests and require heavy state subsidies. Assuring tree survival on a plantation at an economically-profitable rate is often challenging. Productivity in the Asia-Pacific has been often poor. Environmentally too, plantations bring only very modest, if any, biodiversity benefits.

▫ *Certification of Timber*

A favored approach to combat illegal logging is the use of timber certification to designate that the logged and traded timber has been sourced and transported in a legal or sustainable way and that illegal timber has not been mixed into the legal timber. But certification too faces some of the same obstacles as law enforcement, including resource intensiveness and quality. Critically, although much certification centers on timber's legality, the fact that timber is certified as legal does not guarantee that it was harvested sustainably and in an environmentally sensitive way. Problematic certification can undesirably whitewash consumer conscience and encourage greater, and undesirable, consumer demand.

▫ *Carbon-for-Forest Payments*

Along with other payments for ecological services, carbon for forest payments, such as REDD+, gives one of the greatest hopes to the world's forests, by placing a value on

natural ecosystem preservation. Critical issues that will determine the effectiveness of REDD+ are yet to be worked out, including funding, the development of stable and sufficiently large carbon credit markets, effective monitoring, assuring that benefits trickle down from national government to local interest groups, and, importantly, price structure. Unless natural unlogged forests are valued far more than other forests, stakeholders may be tempted to reach carbon payments from reforestation, with biodiversity once again facing critical degradation.

- **Demand-side Measures**

- *Increasing Demand for Certified Wood*

Facing more aware and environmentally-conscious customers, intense lobbying by environmental NGOs, and progressively tighter regulatory settings, retailers in sensitive markets in the West have increasingly adopted greener practices and policies to encourage timber's legality. Some of the most significant regulatory measures to have been adopted recently include the 2008 amendments to the U.S. Lacey Act prohibiting the import and sale of illegal timber, the 2010 due diligence requirements approved by the European Union, and prohibitions on government procurement of illegal timber adopted by a number of countries. Cumulatively, the various laws and NGO lobbying are sending strong market signals for the cleaning and perhaps greening of the logging industry and have a high potential

to reduce the prevalence of illegal logging and timber smuggling. They have already had an appreciable impact on supply and processing markets in the Asia-Pacific, such as Indonesia, Vietnam, and China. But their effectiveness will depend on the quality of law enforcement in the regulated markets and the ability of unconcerned suppliers and processors to switch to "dirty" markets with little sensitivity to timber's legality and environmental impacts. Many of such markets in the Asia-Pacific region are experiencing intense growth.

- *Decreasing Demand for Wood*

Critical for forest and biodiversity preservation, decreasing demand for wood is extraordinarily difficult since wood is not a niche or luxury commodity consumed by a small segment of any country's or the world's population, but an essential component of one's everyday consumption. With China, India, Brazil, and other countries developing economically, assuring adequate timber supply, and specially assuring the preservation of biologically rich forests will present a severe challenge. Efforts to increase efficiency through recycling and waste-reduction measures have so far not halted the steady increase of demand for wood. Efforts to encourage the use of other materials, such as metal, bricks, or plastic, have also resulted only in modest changes to consumer behavior and make sense only if the use of other materials is in fact less environmentally damaging.



# INTRODUCTION

---

The last quarter of 2010 brought important positive news for the world's forests. In October, the Food and Agricultural Organization (FAO) released data (self-reported by governments and sometimes of dubious accuracy)<sup>1</sup> showing that global deforestation in 121 tropical countries during the 2000s slowed down compared to the 1990s: From 28 million acres of tropical forest lost on average in the 1990s, 23 million acres were lost in the 2000s.<sup>2</sup> Important reductions took place in some of the major areas of tropical forest loss, such as Brazil and Indonesia.

In December 2010, at the Cancun climate change summit, parties to the UN Framework Convention on Climate Change (UNFCCC) agreed to slow and perhaps reverse forest loss and related carbon-emissions in developing countries. Under a plan known as Reducing Emissions from Deforestation and Degradation (REDD+), whose critical details are yet to be worked out, countries and entities concerned with reducing carbon emissions and preserving forests have agreed to pay developing countries to reduce cutting down their forests and to reforest. REDD+ is perhaps the most dramatic manifestation of the increasing trend to price previously undervalued ecological services provided by forests, such as carbon

capture, and possibly one of the greatest hopes for natural forest and biodiversity preservation. Developing market pricing mechanisms for natural forest ecosystems, including carbon market pricing mechanisms, will finally place a value on natural forests and perhaps their biodiversity, as opposed to merely timber or land, and thus could reduce the contradiction between environmental preservation and the economic imperatives many countries with intense deforestation are experiencing.

Furthermore, legal requirements in the West prohibiting the import of illegal timber or mandating government procurement of legally-certified timber are increasingly sending strong market signals to decrease the availability of illegal timber in Western countries with strong sensitivity toward timber legality. The effects of such measures, such as the 2008 Expansion of the Lacey Act in the United States and the 2010 adoption of due diligence requirements on timber legality by the European Union, are far less pronounced in Asia and other emerging markets and developing countries, including Brazil and Africa, where environmental sensitivities tend to be far lower. Nonetheless, the increasing Western focus on mandating timber legality is starting to reverberate even in those less sensitive markets.

---

<sup>1</sup> Governments often do not have extensive monitoring systems of logging in their countries. Satellite data is not collected by all countries, do not necessarily cover the entire country, and in legal logging areas cannot necessarily identify whether the logging taking place is consistent with the logging plan. Field assessments are also often sporadic snapshots of only a particular area. Moreover, with the growing Western opprobrium attached to deforestation and illegal logging and the promise of international payments for the preservation of forests, governments have an interest to underestimate the level of deforestation and illegal logging in their countries. Various opportunities for explaining away discrepancies in collected data exist. For example, discrepancies between authorized quota and export volumes can be explained away by boosting the production of forest plantations.

<sup>2</sup> Food and Agriculture Organization of the United Nations (FAO), *Global Forest Resources Assessment, 2010*, <<http://www.fao.org/docrep/013/i1757e/i1757e.pdf>>.

Overall, global awareness of illegal logging and deforestation has expanded greatly over the past two decades.<sup>3</sup> Various measures to address illegal logging and maintain forest biodiversity, such as certification of sustainably and legally logged timber and forest management plans are increasingly being adopted throughout the world, including in the Asia-Pacific region. Although these measures are often highly imperfect, their prevalence and intensity have increased substantially, and in some cases there are signs of at least their partial effectiveness in preserving timber and even forests.

But these positive developments should give no reason for complacency. Deforestation and illegal logging still continue at a massive, unsustainable, and critically environmentally damaging pace. Southeast Asia and the Asia-Pacific region more broadly—the focus of this article, and one of the world’s most important hotspots of biodiversity—is unfortunately also an area of the most intense deforestation in the world, with devastating and irreparable effects on its and the world’s forests and ecosystems. With illegal logging accounting for a very large portion of forest destruction in the region, Southeast Asia has one of the highest rates of deforestation of any major tropical region. At the peak of logging in the region, in the mid- and late 1990s, nearly 1.2% of forest was lost yearly, followed by South America (0.8%), and Africa (0.7%).<sup>4</sup> Positively, during the 2000s, Southeast Asia’s logging fell from an average of 5.9 million acres lost annually in the 1990s to 1.73 million acres annually in the 2000s, a significant decrease in the rate of deforestation.<sup>5</sup> Illegal logging too has experienced significant reductions in some of the Asia-Pacific countries during the 2000s.<sup>6</sup> The extent of South America’s and Africa’s deforestation now surpasses that of Southeast Asia’s. Some countries in the Asia-Pacific region, such as China have actually reforested land. But deforestation, forest degradation, and illegal logging in Southeast Asia continue

to threaten the remaining pockets of biodiversity of global significance in the region and the survival of many endangered species, and contribute to global warming.

Moreover, many of the new trends and policy developments that are giving hope for the world’s forests could entail hidden dangers. First of all, even salutary policies adopted at the strategic level often die in implementation: As this article shows for illegal timber, policy implementation is often beset by numerous challenges and problems, including weak execution and enforcement. Without diligence and maintained focus, any improvements in policies and outcomes regarding illegal logging and deforestation could easily dissipate.

Second, in many of the policy designs seeking to mitigate illegal and problematic logging, forestry plans often problematically prioritize the sustainability of economic revenues over environmental concerns, such as biodiversity preservation. Such policy designs also determine how complementary or adverse various environmental objectives are to each other: A certain design of the carbon-for-forest payoffs could indeed be a part of the salvation for the world’s natural forests and their biodiversity; others could privilege reforestation without biodiversity protection. At the core of some of the surprising contradictions and trade offs is the paradoxical fact that the loss of timber and the loss of forests are not identical. Thus solving the problem of sustainable supply of timber does not equal solving the problem of sustained forest ecosystems and their biodiversity. In fact, many of the measures adopted by governments in the Asia-Pacific region to preserve timber, including forest plantations, often skew the “solution” toward preserving timber, but away from preserving the natural ecosystem. That is because timber in general, though far from all species of trees and bamboo, is renewable through

---

<sup>3</sup> For a seminal work by one of the pioneers of forest conservation, see Michael Williams, *Deforesting the Earth: From Prehistory to Global Crisis* (Chicago: University of Chicago Press, 2002).

<sup>4</sup> Ben Boer, Ross Ramsay, and Donald Rothwell, *International Environmental Law in the Asia-Pacific* (London: Kluwer Law International, 1998): 48, 99.

<sup>5</sup> Between 2000 and 2010, South America suffered the largest net loss of forests of approximately 9.88 million acres per year, followed by Africa with 8.4 million per year. FAO, 2010: 17-19.

<sup>6</sup> Sam Lawson and Larry McFaul, “Illegal Logging and Related Trade: Indicators of Global Response,” Chatham House, July 2010: xvi.

reforestation and plantation promotion, while the overall forest ecosystem is not. Plantations and reforestation can achieve neither the original forest's structure and complexity nor its biodiversity. In fact, a natural forest that has been merely logged will face biodiversity losses. Yet it is precisely the economic bias toward preserving a sustained supply of timber, rather than natural ecosystems and biodiversity that has been the dominant concern for many countries in the world that are experiencing major deforestation, including those of the Asia-Pacific region. And the measures adopted have been geared primarily toward assuring a sustained supply of timber or mitigating other detrimental environmental effects, such as flooding, but not the preservation of natural, especially primary<sup>7</sup> forest and its biodiversity.

Similarly, even effectively addressing the problem of illegal logging, as difficult as it is, does not necessarily preserve sustainability, biodiversity, or enhance other desirable logging practices. As demand for wood and for agricultural land obtained by deforestation continues to expand, it remains to be seen if timber extraction and deforestation—whether legal or illegal—can be made sustainable and consistent with biodiversity preservation. Unlike wildlife consumption that often, but not everywhere, constitutes a luxury good and represents niche markets limited to a particular segment of the world's population, such as affluent Chinese and Asians, the consumption of timber is ubiquitous in everyday life and directly or indirectly involves every single individual on the planet.<sup>8</sup> Measures to reduce this demand have so far not achieved much success; in fact, demand throughout the world continues to grow. With global population expected to increase to 9 billion over the next four decades, mostly in developing countries, demand for food is also rising, often satisfied by the deforestation of remaining forest instead of better utilization of already deforested land. Increasingly, foreign governments, such as China and countries in

the Middle East, are trying to secure land abroad to cultivate African oil palm, rice, and other staples there, often by deforesting the land.<sup>9</sup>

That the devil and angel are in the details also applies to REDD+. Whether such mechanisms preserve natural forests yet remains to be seen and depends on many factors, not the least of which is the actual price structure and design of such pricing mechanisms, including REDD+.

Thus, despite the positive developments of 2010 and the undeniable progress in global recognition of the threat of forest loss and degradation and the improvement and intensification of efforts to address it, the question still remains whether these measures and others, such as, crucially, demand reduction for timber and deforested land, can be developed, adopted, and enforced fast enough to prevent the world's natural forests from experiencing major collapse and irretrievable species loss.

This article analyzes the pervasiveness of illegal logging in the Asia-Pacific region, the numerous threats it generates, and the effectiveness of various policies adopted to mitigate it. In doing so, it also explores the following contradictions and challenges that governments and forest policy designs face: the trade-off between economic interests in logging and environmental imperatives in preserving natural forests; the surprisingly frequent lack of complementarity between legal timber and sustainable timber and the paradox that assuring timber legality may even compound its lack of sustainability; and the challenge of designing carbon pricing mechanisms in such a way to increase not only forested land but also to preserve natural forests and biodiversity. The various governments, because of local economic and political pressures, are bound to prioritize these objectives differently. Effective designs need to be informed by local case-by-case assessments. It is not the province

---

<sup>7</sup> A primary forest is one that has not been logged at all.

<sup>8</sup> Demand for wildlife is bifurcated between very poor populations, such as in Africa that consume bushmeat to increase their calorie and protein intake, and affluent, mainly Asian consumers for whom the consumption of exotic meat and so-called Traditional Chinese Medicine made out of wildlife is highly-prized luxury good.

<sup>9</sup> China, for example, agreed to renovate 6000 kilometers of roads in the Congo, many in the country's luxuriant rainforest, reportedly to cultivate African oil palm there.

of this article to prescribe exactly how this should be done country-by-country. It is appropriate to insist, however, that forestry policies be pursued with full cognizance of the trade-offs and with a determination to cause as little value loss as possible in each

of the realms. Such policy deliberations need to accord full weight to the less urgent, but nonetheless crucial, need to preserve biodiversity and natural ecosystems. This article provides best-practices guidance to that effect.

# THE DEFINITION OF CONUNDRUM AND THE PARADOX OF LEGAL VERSUS SUSTAINABLE LUMBER

---

The term illegal logging is used broadly to describe a range of undesirable behavior associated with the felling of trees. Thus the term can have different legal meanings in different jurisdictions and even the same understanding of the term across some jurisdictions does not involve the same level of illegality, enforcement requirements, or penalties. Illegal logging usually refers to one or more of the following problematic practices: logging of protected or endangered species, including those listed under the Convention on International Trade in Endangered Species (CITES)—the international treaty that regulates international trade in endangered animal and plant species—such as ramin and big-leaf mahogany; logging in protected areas; logging in violation of permits, certification, or other national requirements stipulating volume, size of trees, areas of logging, etc.; logging with fake or illegally obtained permits; damaging trees so they can be legally felled; processing timber without documentation; operating a mill without a license; and other practices to avoid taxation, such as buying timber above market price, overvaluing services received, and manipulating debt cash flows.<sup>10</sup> Some NGOs apply the term “illegal logging” to any undesirable, environment-damaging forestry practice, regardless of whether such a practice actually violates any national or international law. Illegal trade in timber also involves trading with underdeclared amounts of timber

species listed under CITES; fake declarations of species and origin; transportation in violation of tracking requirements; other practices involved in avoiding taxation; and laundering of wood.

With the exception of CITES, no internationally accepted definition or law of illegal logging exists, and thus logging without a management plan may be perfectly legal in the United States, but illegal in Brazil.<sup>11</sup> Indeed, virtually all international discussions refer to legality of timber “as defined by the national laws and regulations where harvesting is taking place.” Since the 2008 expansion of the Lacey Act, the United States now prohibits the import of timber illegally sourced abroad. But no country in the Asia-Pacific region has a similar prohibition, although illegality of timber may be assigned in some of these countries on the basis of the absence of a phytosanitary certificate from the country of origin.

How a country or international regime defines the illegal behavior reflects the particular timber extraction problem the country is trying to address and the objective of the regulation, such as timber supply preservation, prevention of tax avoidance, assurance of worker health, biodiversity preservation, or the avoidance of other ecological damage such as flooding, soil erosion, and desiccation. Addressing one problem does not equal addressing the others;

---

<sup>10</sup> See, for example, Duncan Brack, “Illegal Logging and the Illegal Trade in Forest and Timber Products,” *International Forestry Review*, 5(3), 2003: 195-198; and Duncan Brack, Kevin Gray, and Gavin Hayman, *Controlling the International Trade in Illegally Logged Timber and Wood Products* (London: Royal Institute of International Affairs, 2002); and Debra Callister, “Corrupt and Illegal Activities in the Forest Sector: Current Understandings and Implications for the World Bank,” Background Paper for the 2002 Forest Strategy, *World Bank*, May 1999.

<sup>11</sup> Seneca Creek Associates, LLC, and Wood Resources International, LLC, “Illegal” Logging and Global Wood Markets: *The Competitive Impacts on the U.S. Wood Products Industry*, November 2004.

in some cases, a policy to address one aspect of the problem, such as a ban on logging in a particular area to prevent flooding, can be contradictory for addressing another, such as biodiversity preservation as loggers expand their operations into previously pristine forest.

Moreover, legal logging can be as damaging as illegal: the fact that a timber concession has a government permit to log in an area does not guarantee that the logging plan results in forest regeneration and prevents devastating ecological effects. Moreover, under some circumstances, illegal logging may be no more environmentally damaging than legal logging, not just small-scale illegal logging by indigenous groups

in tropical forests, but also industrial-type logging. In the Russian Far East, one of the largest suppliers of timber in the world, for example, legal logging often does not reach the set maximum quota, and as illegal logging falls still under the same legal quota, its timber sustainability and environmental effects are not necessarily more pronounced and more detrimental than those of legal logging. Yet there are good reasons to question whether both the set quota and forestry practices in the Russian Far East are sustainable either for continuing timber supply or ecosystem preservation. In general, staying within a legal quota and other formal legal compliance does not determine the sustainability of the forest practice nor its economic or environmental desirability.

# THE GLOBAL SETTING—THE GROWING DEMAND FOR TIMBER

---

Currently the worldwide sales of timber products are worth about a trillion dollars annually, though more wood is used locally for fuel than traded for industrial purposes.<sup>12</sup> In Africa, for example, much of the harvested wood is used for local fuel. Still, a large and increasing global demand for timber stimulates both intense deforestation and intense illegal logging. In many ways China—the epicenter and pivot of the world’s deforestation, illegal logging, and timber processing—has already become the world’s largest wood workshop, processing legal and illegal wood extracted from Southeast Asia, tropical Africa, the Amazon, and the Russian Far East. Although the Asia-Pacific region is among China’s principal suppliers, as its forests are rapidly becoming depleted, both legal and illegal logging are increasingly pushed to new areas in the world. China is both a vast importer and exporter of wood. Although much of the timber it exports comes from domestic sources, many of its timber imports are re-exported, often after some level of processing. China’s imports tripled in volume in the late 1990s and early 2000s and are expected to further double by 2016 as a result of its rapidly expanding domestic

market, including for infrastructure, housing construction, and furniture, and the rising international demand for its low-cost forest products.<sup>13</sup> China is also a major and growing manufacturer of plywood and paper, with much of its paper produced from recycled materials.<sup>14</sup>

The United States, the European Union, and Japan are among the world’s largest and most intense consumers of finished wood items, and its per capita consumption has continued to rise since the mid-1960s despite improvements in recycling. Wood consumption in China is about 15 times lower than in the United States, but its rates of consumption are growing at a far higher pace than those of the United States, and so it is only a matter of time before China will overtake the United States at least in absolute numbers.<sup>15</sup> India’s wood-consumption rate also continues to grow rapidly.<sup>16</sup> All of the major demand countries and regions consume “illegal” wood, though the United States and European Union have increasingly adopted a range of measures to prevent illegal timber from entering and being consumed in their jurisdictions.

---

<sup>12</sup> Raffi Khatchadourian, “Stolen Forests: Inside the Covert War on Illegal Logging,” *The New Yorker*, October 6, 2008: 20.

<sup>13</sup> Forest Trends, “China and the Global Market for Forest Products: Transforming Trade to Benefits Forests and Livelihoods,” March 2006: 4 and 7, <[http://www.illegal-logging.info/uploads/China\\_and\\_the\\_Global\\_Market.pdf](http://www.illegal-logging.info/uploads/China_and_the_Global_Market.pdf)>.

<sup>14</sup> Brian Stafford, “Environmental Aspects of China’s Papermaking Fiber Supply,” Forest Trends, July 2007.

<sup>15</sup> Khatchadourian: 20.

<sup>16</sup> India has managed to limit the shrinking of its natural forests by feeding its increasing demand for wood from abroad, such as Burma. It has also invested strongly in reforestation: In the tropics, India reported the largest total increase in planted forest land—9.5 million acres—over the past two decades. FAO, 2010: 262. It has thus gone from a country with a net deforestation to a country with a net reforestation.

# THE SIZE OF ILLEGAL LOGGING AND ILLEGAL TIMBER TRADE

---

Although there are nearly 10 billion acres of forested land on Earth, this seemingly large number is only a fraction of the area that was forested only a few thousand years ago.<sup>17</sup> Only a third is primary forest; much of the rest that counts as forest is seriously degraded.<sup>18</sup> Each year over 38 million acres of forest are felled or razed, a substantial portion illegally.<sup>19</sup> Development, urbanization, and globalization have caused massive depletion of forests throughout the world, including in the Asia-Pacific region. Vast tracks of natural forests have been irretrievably lost. Some 8,000 years ago, most of Southeast Asia was forested, but since the 1800s, large-scale deforestation to meet rising demand for rice, rubber, palm oil, timber, and land to support industrial crops has dramatically expanded. Increasing efforts since the 1980s to regulate timber extraction under state and even international control have also resulted in the emergence of intense illegal logging throughout the region. Illegal logging constitutes a large portion of forest destruction in the Asia-Pacific region. Although in some parts of the world, including the Asia-Pacific region, reforestation is taking place on former farmland and degraded forest and all major temperate and boreal forests are expanding, the quality of timber and biodiversity in such secondary growths, often

monoculture tree plantations, tends to be significantly diminished.<sup>20</sup>

In the past six decades, the world's tropical rainforests have been reduced by 60%. Two-thirds of what remains is fragmented.<sup>21</sup> A fifth of this rainforest remains in Indonesia, but, despite some important improvements in the 2000s, the country faces tremendous pressure from logging—legal and illegal.<sup>22</sup> Throughout the 1990s, Indonesia experienced some of the most intense deforestation and illegal logging in the world. As a result, in 2006, Indonesia was estimated to have about ten years left, but has since tried to implement moratoria on at least certain types of logging concessions to slow its forest depletion.<sup>23</sup> In many other countries of Southeast and East Asia, less than 20 years of natural forest at current cutting rates are left. Some of them, such as Malaysia, Thailand, and Vietnam, have already depleted their forests for commercial logging, at least those not set aside for environmental protection. Others, such as Burma and Papua New Guinea forests, are expected to have their forests depleted in about ten years if unsustainable logging patterns continue.<sup>24</sup>

Estimating the size of illegal logging and its prevalence in particular locales is problematic. Obtaining

---

<sup>17</sup> FAO, 2010. For more on trends, see also, FAO, *Global Forest Resources Assessment, 2005*, <<http://www.fao.org/forestry/foris/data/fra2005/kf/common/GlobalForestA4-ENsmall.pdf>>.

<sup>18</sup> Ibid. FAO counts as forest an area with as little as 10% tree cover.

<sup>19</sup> Elisabeth Rosenthal, "New Jungles Prompt a Debate on Rain Forests," *The New York Times*, January 30, 2009.

<sup>20</sup> See, Rosenthal; and "Seeing the Wood," *The Economist*, November 18, 2005.

<sup>21</sup> *The Economist*, "The world's lungs: Forests and how to save them, A Special Report," September 25, 2010: 4.

<sup>22</sup> Nearly a third of the world's rainforest is in Brazil and a fifth in Congo. The second biggest forest area is the boreal forest, mostly in Russia, Scandinavia, and Canada. *The Economist*, September 25, 2010.

<sup>23</sup> Forest Trends: 13-4.

<sup>24</sup> Ibid.



data on illegal economies, i.e., those that take place in violation of some prohibition or regulation, is inherently difficult. In the case of logging, the difficulties are compounded by the lack of monitoring of vast amounts of forests and extracted timber, the complexities of distinguishing between legal and illegal wood, and the lack of an accepted definition of illegal logging. Not surprisingly, estimates vary widely. According to some reports, in the mid-2000s, between 2-4% of softwood lumber and plywood (such as pines, firs, and spruces) traded globally, and as much as 30% of hardwood lumber and plywood (such as oak, aspen, ramin, mahogany, and merbau), could have come from illegal logging activities.<sup>25</sup> Other sources suggested that as much as 70% of the \$100 billion global timber trade may be illegal.<sup>26</sup>

In the Asia-Pacific region, for example, in the 1990s, 90% of logging in Cambodia and Burma was illegal and 70% of Indonesia's logging and 95% of its timber exports were illegal.<sup>27</sup> (For comparison, illegal logging in the United States, conducted primarily by individuals or small operations, is estimated to amount to as much as 10% of forest production.)<sup>28</sup> In the Philippines, where illegal logging used to be particularly intense in the 1980s and 1990s, 40 million acres of natural forest have been reduced to just 1.75 million. Overall, more than 5.5 million acres of tropical rainforest are lost in Southeast Asia *annually*. Some of the species most sought by illegal loggers in Southeast Asia include ramin, teak, ebony, agathis, ironwood, and merbau.

As a result of international pressure and having logged out their forests, several large producers of illegal timber in the Asia-Pacific region reduced the

size of their illegal logging during the 2000s. In Indonesia, by one estimate, for example, illegal logging declined by an impressive 75% from the peak baselines.<sup>29</sup> But apart from inevitable difficulties with data accuracy, especially in distinguishing legal and illegal logging practices in a legally-approved logging area, the bigger issue is that legal logging does not necessarily imply sustainable and appropriate logging. Illegal logging in primary tropical forests, even when not leading to complete deforestation, nonetheless degrades the biodiversity of the forest.

Much of this illegally extracted wood ultimately heads to the United States, countries of the European Union, India, the Middle East, and Japan. Transshipment routes for illegal timber often go through China where processing and laundering takes place, but China is also an important final destination. South Korea, Thailand, Malaysia, and Vietnam constitute secondary processing areas and, increasingly, final destinations. At least prior to the 2008 expansion of the Lacey Act in the United States, Environmental Information Agency (EIA) and Global Witness, two NGOs tracking illegal timber extraction and trade, estimated that the United States may have imported as much as \$330 million worth of illegal timber from Indonesia annually during the 1990s and early 2000s while about a third of its imports from China may have been of illegal timber.<sup>30</sup> Other estimates, however, put the proportion of illegal timber in U.S. imports an-order-of-magnitude lower, at between 2-4%, even while acknowledging the growth in the U.S. illegal timber imports between 2001 and 2006.<sup>31</sup> At least until the Lacey Act amendments, some U.S. buyers even prefinanced the illegal logging, such as for Latin America's big-leaf mahogany, by providing financing for timber

<sup>25</sup> Seneca Creek: 154.

<sup>26</sup> Rudy S. Salo, "When Logs Roll Over: The Need for an International Convention Criminalizing Involvement in the Global Illegal Timber Trade," *Georgetown International Environmental Law Review* 16, 2003: 130.

<sup>27</sup> See, for example, Nigel Dudley, Jean-Paul Jeanrenaud, and Francis Sullivan, *Bad Harvest? The Timber Trade and the Degradation of the World's Forests* (London: Earthscan, 1995); and Environmental Investigation Agency (EIA) and Telepak, *Timber Trafficking: Illegal Logging in Indonesia, South East Asia, and International Consumption of Illegally Sourced Timber*, 2001, <<http://www.eia-international.org/files/reports26-1.pdf>>.

<sup>28</sup> Martha Mendoza, "Thieves Steal Hundreds of Millions of Dollars in Trees Yearly from American Forests," *San Francisco Chronicle*, May 17, 2003.

<sup>29</sup> Sam Lawson and Larry McFaul, *Illegal Logging and Related Trade: Indicators of Global Response*, Chatham House, July 2010: xiii.

<sup>30</sup> EIA, *Timber Trafficking*: 4; and Global Witness, *A Disharmonious Trade: China and the Continued Destruction of Burma's Northern Frontier Forests*, October 2009: 100, <[http://www.globalwitness.org/media\\_library\\_detail.php/856/en/a\\_disharmonious\\_trade\\_china\\_and\\_the\\_continued\\_dest](http://www.globalwitness.org/media_library_detail.php/856/en/a_disharmonious_trade_china_and_the_continued_dest)>.

<sup>31</sup> The size of illegal timber exports was estimated by this study as less than 5 million cubic meters RWE in 2001 and more than 9 million cubic meters RWE in 2006, with growth of imports from China over that period accounting for a significant portion of the increase. See Lawson and MacFaul: 106 and 108.

companies that would extract it in Brazil and elsewhere.<sup>32</sup> Similarly, many of Asia's timber companies that dominate much of the worldwide timber trade routinely finance and prefinance illegal logging in the Asia-Pacific region and elsewhere in the world.

According to some estimates, the European Union's imports of timber and wood products from China also contained at least a third of illegal timber during most of the 2000s.<sup>33</sup> According to these estimates, as of 2005, the European Union was believed to be spending about \$4.5 billion per year on worldwide imports of illegal wood.<sup>34</sup> The United Kingdom's import of tropical timber was believed to contain as much as 60% of illegal-sourced timber. But other estimates put these numbers significantly lower, indicating that by 2008, imports of illegal wood in some of the major European importers, such as the UK, constituted only between 2-4% of their timber imports.<sup>35</sup> A series of policies meant to curb the importation and use of illegal timber in the European Union, including legislation on due diligence requirements passed in the summer of 2010, have a significant potential to alter those percentages.

Asian markets are also large importers and consumers of illegal and unsustainable sourced timber. In the 1990s and early 2000s, as much as 50% of Japan's

tropical timber imports were estimated to be illegal at source.<sup>36</sup> Reductions of illegally-sourced imports from Indonesia have likely reduced this proportion during the 2000s. But although Japan's per capita consumption of illegal wood has been halved over the past few years, it is still double that of the United States or United Kingdom, with illegal timber representing approximately 9% of Japan's timber imports.<sup>37</sup> Japan's efforts to combat illegal timber exports have also been considerably weaker than those of the EU or the United States.<sup>38</sup> In the mid-2000s, domestic consumption of suspicious (likely illegal) timber in China amounted to at least a third of its total consumption, while in Indonesia, it came to 55%.<sup>39</sup> At least a third of China's timber imports likely involved illegal timber, with the proportion being far higher for imports from individual countries, such as Indonesia, Burma, and Papua New Guinea, and previously the Congo and Liberia, where the portion of illegal wood in total timber imports could surpass 90%. The illegal timber imports in China have appeared to decline to about 20% over the 2000s.<sup>40</sup> The global value of the illegal timber trade is estimated at \$25.5 billion a year.<sup>41</sup> But the import markets too have shown an increased willingness to take on illegal logging during the 2000s, with imports of illegally sourced wood declining by 30% for some of the major importers from their peak levels.<sup>42</sup>

---

<sup>32</sup> Arthur Blundell and Raymond Gullison, "Poor Regulatory Capacity Limits the Ability of Science to Influence the Management of Mahogany," *Forest Policy and Economics*, 5, 2003: 402.

<sup>33</sup> Global Witness (2009): Ibid.

<sup>34</sup> World Wildlife Fund (WWF), *Failing the Forests: Europe's Illegal Timber Trade*, November 2005: 97, <<http://assets.panda.org/downloads/failingforests.pdf>>.

<sup>35</sup> Lawson and MacFaul: 108.

<sup>36</sup> EIA, *Timber Trafficking*: 4. Seneca Creek provides a lower estimate of Japanese illegal timber imports of about 35% of all hardwood, while the American Forest and Paper Association provided a smaller estimate yet of 17% of Japanese timber imports being illegal at source. See, Seneca Creek: 144-145; and Forestry and Forest Products Research Institute (FFPRI), *Current Activities to Combat Illegal Logging and Associated Trade in Illegally Sourced Wood Products in Japan*, 2005: 3, <[http://www.illegal-logging.info/uploads/Japan\\_illegal\\_logging\\_action\\_survey\\_2005%5B1%5D.pdf](http://www.illegal-logging.info/uploads/Japan_illegal_logging_action_survey_2005%5B1%5D.pdf)>.

<sup>37</sup> Lawson and MacFaul: 106.

<sup>38</sup> Ibid.: 63-64.

<sup>39</sup> Seneca Creek: 15-16.

<sup>40</sup> Lawson and MacFaul: 105-106.

<sup>41</sup> EIA, "EU's Failure to Ban Imports of Stolen Timber Undermines Efforts to Tackle Deforestation at Copenhagen," Press Release, December 14, 2009.

<sup>42</sup> Lawson and MacFaul: xiii.

# THREATS POSED BY ILLEGAL LOGGING: THE TRADE-OFFS AND COMPLEMENTARITIES BETWEEN MONEY AND ENVIRONMENT

---

## TIMBER DEPLETION AND DEFORESTATION

Illegal logging and unsustainable harvesting seed their own destruction, as both often lead to forest collapse beyond its capacity to continue producing enough timber for commercial logging. For example, some logging concessions occasionally violate cutting cycles by logging at a several times higher rate than specified in the license and beyond the forest capacity to regenerate. The most direct threat of such practices thus is the loss of timber for domestic consumption needs, the decline in legal logging profits, dependence on timber imports, and even possibly the collapse of domestic timber logging and processing industries, with its ensuing job and revenue losses, often in areas of great poverty. Such depletion beyond commercial viability indeed has been the fate of forests in many countries in the Asia-Pacific. Nor is this lack of sustainability unique to the region, with similar patterns replicated for both individual species of timber and entire forests in Africa and Latin America, where for example not one single mahogany operation was sustainable in the 1990s and early 2000s.<sup>43</sup> Although local forest-dependent populations are often involved in illegal logging, as the forest dwindles, their livelihoods and way of life often become critically threatened. Timber loss also deprives local populations, especially the poorest, of fuel, often their principal energy

source—even though timber extraction for fuel is a principal cause of deforestation and other detrimental environmental effects in the first place. The UN-backed effort, The Economics of Ecosystems and Biodiversity (TEEB) estimates that forests and other natural ecosystems provide between 47%-89% of the so-called “GDP of the poor”, i.e. the total source of livelihood of forest-dwelling and rural poor households.<sup>44</sup> The world’s poorest 400 million people are wholly or partially dependent on forests.

## GLOBAL WARMING

The Earth’s forests, especially its tropical forests, play vital roles in global carbon storage and the management of global climate. As with any logging, illegal logging releases millions of tons of greenhouse gases into the atmosphere, thus directly contributing to global warming.<sup>45</sup> Roughly half the dry weight of a tree is made up of stored carbon, most of which is released when the tree is burned (or rots).<sup>46</sup> Countries with intense deforestation, especially of tropical forests, tend to be some of the world’s largest emitters of carbon, with Brazil and Indonesia as a result ranking as the 3<sup>rd</sup> and 4<sup>th</sup> world’s largest emitters, after the United States and China. In 2006, the Stern Review on the economics of climate change estimated that deforestation represents more than 18% of global emissions, “a share that is greater

---

<sup>43</sup> Blundell & Gullison: 396.

<sup>44</sup> Pavan Sukhdev et al, *Mainstreaming the Economics of Nature*, The Economics of Ecosystems and Biodiversity, 2010, <[http://www.teebweb.org/LinkClick.aspx?fileticket=bYhDohL\\_TuM%3D&tabid=924&mid=1813](http://www.teebweb.org/LinkClick.aspx?fileticket=bYhDohL_TuM%3D&tabid=924&mid=1813)>: 15.

<sup>45</sup> Ramsay Ravenel and Ilmi Granoff, “Illegal Logging in the Tropics: A Synthesis of the Issues,” *Journal of Sustainable Forestry*, 19, 2004: 354.

<sup>46</sup> *The Economist*, September 25, 2010.

than is produced by the global transport sector.”<sup>47</sup> The vast majority of this deforestation takes place in the tropics, where illegal logging and forest razing often constitutes more than 50% of timber felling.

Global warming will in turn generate a host of undesirable feedback effects befalling the world’s forests. Melting permafrost will release billions of tons of methane, an especially potent greenhouse gas, warming the planet further. As a result of rising aridity, droughts, pests, and fires, all intensified by global warming, some of the world’s forests will die off (though in some parts, forests are expected to expand, but not enough to compensate for the losses.) Such effects have already taken place: Between 2000 and 2005, for example, the world’s third-most forested country, Canada, lost 5.2% of its tree cover, partly due to a bark-beetle plague caused by mild winters. By 2009, they had devastated 50 million acres of Canada’s pine forest.<sup>48</sup>

## BIODIVERSITY LOSS

Southeast Asian forests are enormous storehouses of biodiversity. More than half of all the planet’s threatened species live on 1.4% of the land surface. Although these areas should be “hyperhot” priorities for conservation, they often occur in areas of intense deforestation and illegal logging, such as Indo-Burma, and the Philippines.<sup>49</sup> Indonesia alone, for example, contains 17% of the world’s bird species, 16% of its reptiles, 12% of its mammals, and 10% of its plants. Yet deforestation and illegal logging are driving many of its species, including many of its endemic species, to extinction as a result of habitat destruction. Much of the illegal logging takes place in environmental reserves and national parks, often the last repositories of rare and highly valuable timber species, thus causing particularly detrimental environmental effects; including biodiversity loss and

ecosystem collapse. In Burma, Indonesia, and New Guinea, many of these national parks are the last remaining safe havens of critically endangered animal species, including Sumatran rhinoceros, clouded leopard, tiger, orangutan, proboscis and spider monkeys, and sun bear.

Any logging in a natural primary forest undermines its biodiversity, and unsustainable and illegal logging often completely decimates the entire ecosystem. While, reforestation can restore the commercial availability of timber, biodiversity losses are mostly irretrievable. Any logging in a forest also has several secondary detrimental environmental effects. Loggers cut roads through the forest, thus opening it for wildlife hunting and wildlife trade, establishment of human settlements, and forest razing—legal or not—for agricultural land, such as soy, rice, and African oil palm plantations, rubberwood, and cattle ranching, and other agribusinesses and hydropower. These knock-on and feedback effects greatly intensify environmental degradation and forest and biodiversity loss.

## OTHER ENVIRONMENTAL EFFECTS

Forests also play a critical hydrological role. By degrading water catchments, the removal of forests thus greatly exacerbates catastrophic flooding—the impetus for bans on logging in several countries in Southeast Asia and China—as well as soil erosion, desiccation, and damage to agricultural crops, undermining physical and food security for populations located near rivers. The catastrophic floods in July 2010 in Pakistan that destroyed a quarter of the country’s agricultural land have been partially attributed to illegal logging in the northern parts of the country and deforestation for agricultural land in Sind and Punjab.<sup>50</sup> The heavy rains of September 2000 caused widespread flooding across Southeast

<sup>47</sup> The Review on the Economics of Climate Change, Executive Summary, October 30, 2006, <<http://siteresources.worldbank.org/INTINDONESIA/Resources/226271-1170911056314/3428109-1174614780539/SternReviewEng.pdf>>.

<sup>48</sup> *The Economist*, September 25, 2010: 5.

<sup>49</sup> Thomas Brooks, Russell Mittermeier, Cristina Mittermeier, Gustavo da Fonseca, Anthony Rylands, William Konstant, Penny Flick, John Pilgrim, Sara Oldfield, Georgina Magin, and Craig Hilton-Taylor, “Habitat Loss and Extinction in the Hotspots of Biodiversity,” *Conservation Biology*, 16(4), August 2002: 919.

<sup>50</sup> Alex Rodriguez, “Pakistan Flood Crisis Blamed Partly on Deforestation,” *Los Angeles Times*, October 13, 2010.

Asia, especially in the Mekong Delta, killing hundreds of people and displacing more than one million from their homes in Cambodia, Vietnam, Laos, and Thailand. At the same time, cutting down trees also reduces precipitation, which has vast implications for agriculture, possibly making established crops in a particular area unviable. Poor forestry practices often exacerbated by illegal logging also increase the likelihood and intensity of forest fires with catastrophic forest fire outbreaks often consuming a forest area several times larger than the legally or illegally harvested area.<sup>51</sup> In addition to natural outbreaks, such fires are also often set by plantation companies that seek cheap land to grow commercial timber of African oil palm or otherwise exploit logged-over land. In Southeast Asia, such forest fires have blanketed the region in smoke and haze, creating health hazards and disrupting economic activity. One of the worst outbreaks in 1997-98 cost Indonesia \$7 billion and its neighbors \$2 billion.<sup>52</sup> Moreover, tropical forests have “tipping points” where the intensity of the detrimental feedback effects—deforestation, increasing temperatures, aridity, and fires—becomes such that the forest can no longer sustain itself and starts dying off.

## ECONOMIC COSTS

Illegal logging imposes substantial economic costs on both source areas and global legal timber markets. In source countries, it is estimated to cause economic losses of \$15 billion each year—the same amount proposed for annual REDD+ (reducing emissions from deforestation and forest degradation) funding to reduce deforestation by 50%.<sup>53</sup> While on the one hand illegal logging often provides employment for the poor, it does so at exploitation levels with only tiny profits accumulated by poor loggers. It deprives the state of large-scale revenues; and even when

illegal profits are received by the country’s governing entities, as often is the case, they often serve only to enrich individual coffers while large segments of the population continue to lack employment and basic socio-economic needs, to perpetuate warped power distribution, and to prevent the emergence of a basic social compact between the state and the population where taxation underpins policy choices and fosters accountability.

World timber prices are estimated to have been depressed by 7-16% by illegal timber flooding the global market.<sup>54</sup> Such costs accumulate disproportionately to countries that have well managed forests. If there were no illegal timber entering the market, U.S. timber exports would increase by approximately \$460 million a year.<sup>55</sup>

## VIOLENT CONFLICT INTENSIFICATION

Illegal logging often fuels violent conflict, both by encouraging social disruption and social conflict or by fueling organized political violence, such as civil wars and insurgencies. Social conflict often stems from problematic and corrupt allocation of timber concessions, compounding the lack of clear land titles, demarcated property rights to forest and its products, and land security. It also takes place between illegal loggers who often move into logging areas from outside and even abroad and established local populations, as, for example, has been the case in Indonesia, Laos, and Cambodia.<sup>56</sup> Local populations often lack enforceable deeds to their ancestral lands, and as a result of outside illegal logging lose access to timber and forest products on which they depend for basic livelihoods. Established populations also of course participate at least to some extent in deforestation, especially when they practice swidden agriculture, and sometimes also in extensive illegal logging. At

---

<sup>51</sup> Forest Trends: 14.

<sup>52</sup> World Bank assessment cited by International Crisis Group, *Indonesia: Natural Resources and Law Enforcement*, Asia Report No. 29, December 20, 2001: 4.

<sup>53</sup> EIA (2009).

<sup>54</sup> American Forest and Paper Association estimate cited by Forest Trends: 14.

<sup>55</sup> Seneca Creek.

<sup>56</sup> See, for example, International Crisis Group: 1,4-5; and Niels Strange, Ida Theilade, So Thea, Arvid Sloth, and Finn Helles, “Integration of Species, Persistence, Costs, and Conflicts: An Evaluation of Tree Conservation Strategies in Cambodia,” *Biological Conservation* 137, 2007: 223-236.

times, state response to illegal logging can generate violence and social conflict as well, such as when the state confronts illegal loggers with force or attempts to relocate native and migrant populations from forest areas. Such policies, even while meant to limit illegal logging and preserve the forest, can also generate further marginalization of poor and indigenous communities as well as human rights abuses, as has sometimes been the case in Thailand's dealings with its hill tribes, for example.<sup>57</sup>

Illegal logging generates millions of revenues for insurgents and other belligerent actors across the world. During the late 1980s and early 1990s, it funded both the Khmer Rouge and the government forces in Cambodia, extending and intensifying conflict by many years.<sup>58</sup> In Burma, similarly, both the junta's military and various insurgent groups, such as Kachin New Democratic Army, the Kachin Independence Organization and the United Wa State Army, have supported their military operations and political control as a result of timber and other resource extraction. In Liberia and Sierra Leone, Charles Taylor not only used funding from illegal logging as a mechanism to augment his power and profits, but preserving access to these timber resources became the primary purpose of conflict perpetuation. Such has been the case in the Congo.

In Afghanistan and Pakistan, insurgent groups, such as the Afghan Taliban and its Pakistani cousin, Tehrik-i-Taliban, also derive large profits, perhaps on the order of millions, from illegal logging. In eastern Afghanistan, such as in Paktya and Kunar Provinces, illegal timber extraction and smuggling of timber to Pakistan has a history that goes at least back to the 1980s. Just as with its drug policy, the Taliban's

attitude toward illegal logging has varied: in the mid-1990s, it tried to prohibit it, antagonizing the local tribes benefiting from the traffic and actually temporarily losing control of the area as a result.<sup>59</sup> In the 2000s, local Taliban factions have largely embraced the timber smuggling, charging fees to tribal loggers for access to logging areas and smuggling routes.<sup>60</sup> At times, local tribes have embraced the Taliban precisely because they resented the Afghan government's perceived prohibition on logging.<sup>61</sup>

In Pakistan's Swat valley, an area often referred as Pakistan's Switzerland, deforestation and illegal timber extractions perpetrated by "timber mafia" often in cahoots with local powerful landlords have gone on for decades before the Tehrik-i-Taliban gained strength in the area. As it did so, it started charging taxes for a variety of legal and illegal economies in the area, including logging. By some estimates, as much as 15% of forest cover in Swat disappeared while the Taliban was strong in Swat.<sup>62</sup>

However, it should also be noted that granting access to resource extraction, including illegal resource extraction, has also been a mechanism for the establishment of peace or at least conflict reduction. After decades of inconclusive civil war between the central government and various separatist groups, the junta in Burma managed to broker ceasefires with many of them both as a result of a balance of power change in its favor and a result of granting many of these separatist groups the right to extract resources, including through "illegal" logging in areas of their autonomous control. Such incentives were critical for the insurgent groups to agree to a ceasefire.<sup>63</sup> Even today the junta uses the denial or dispensation of logging and other concessions, or alternatively cracks down

---

<sup>57</sup> Minna Hares, "Forest Conflict in Thailand: Northern Minorities in Focus," *Environmental Management*, 43, 2009: 381-395.

<sup>58</sup> Philippe Le Billon, "The Political Ecology of Transition in Cambodia, 1989-1999: War, Peace and Forest Exploitation," *Development and Change*, 31 (4), 2000: 785-805.

<sup>59</sup> Michael Griffin, *Reaping the Whirlwind* (London: Pluto Press, 2001): 147. For more details on Taliban's attitudes toward various illegal economies, see, Vanda Felbab-Brown, *Shooting Up: Counterinsurgency and the War on Drugs* (Washington, D.C.: The Brookings Institution, 2009): 113-155.

<sup>60</sup> Amber Robinson, "Soldiers Disrupt Timber Smuggling in Afghan Province," *American Forces Press Service*, June 8, 2009.

<sup>61</sup> C.J. Chivers, "A Blast, An Ambush and A Sprint Out of a Taliban Kill Zone," *The New York Times*, April 20, 2009.

<sup>62</sup> Rodriguez.

<sup>63</sup> Jake Sherman, Sherman, Jake. "Burma: Lessons from Cease-fires," in Karen Ballentine and Jake Sherman, *The Political Economy of Armed Conflict: Beyond Greed and Grievance* (Boulder: Lynne Rienner, 2003): 225-258; and Felbab-Brown: 165-170.

on illegal logging and other illegal economies in insurgent areas, as a mechanism to reward compliant separatist groups and deprive the rebellious ones of revenues.<sup>64</sup>

## CORRUPTION INTENSIFICATION

As with other illegal economies and often other economies that generate large profits, illegal logging also

fuels corruption. Since the profits are often enormous and the numbers of actors involved in illegal logging in places like Indonesia, Papua New Guinea, or Cambodia are extensive, the levels and prevalence of corruption grow significantly. Of course, the emergence of illegal logging alongside legal timber extraction or in violation of a ban is often predicated on preexisting corruption, as has been the case in Cambodia and Indonesia.

---

<sup>64</sup> For details, see Global Witness (2009).

# THE STRUCTURE OF THE INDUSTRY

---

Since there is an extensive legal supply of timber, one can ask why illegal logging and extensive illegal logging enterprises and activities emerge in the first place in many of the world's most intense areas of legal logging. To some extent illegal logging functions as many other illegal economies, supplying the species of timber that are endangered and prohibited for trading, such as ramin, Korean pine, or big-leaf mahogany, and hence not available through a legal supply.

But the trade in exotic wood often comprises only a small portion of illegal logging. The illegal timber trade mostly supplies species of timber that are also available through legal supply. The answer for why this larger component of illegal logging emerges alongside legal logging is that illegal logging can significantly undercut prices of legal timber while still generating sufficient markup to allow companies engaged in illegal logging to reap very large profits on the order of millions of dollars. Taxation policies can inadvertently encourage the development and expansion of illegal logging. Governments, especially in developing countries with dependence on raw materials for their budgets and fiscal policies, often try to impose relatively high taxes on legal logging—both to generate higher revenues and sometimes also to limit the scale and speed of deforestation. Yet the desire to avoid the high taxes (as well as often

complicated permits paperwork) often drives the emergence of illegal logging. In Indonesia, for example, where taxes can add as much as 50% to the cost of timber, both factors play an important role in the dynamics of illegal logging.<sup>65</sup>

Prices for illegal timber are highly variable, contingent on many local and global factors, sometimes considerably surpassing prices for legal timber, and thus generated large profits for illegal timber traders. Surprisingly, however, sometimes, illegal timber sells for as little as one half the price of legal wood.<sup>66</sup> But profit markups can remain high. In the early 2000s, for example, illegal loggers in Indonesia's Kalimantan,<sup>67</sup> one of the largest areas of illegal logging, received approximately \$2.2 per cubic meter of cut wood while logging companies sold the processed timber for about \$1000 on the international market.<sup>68</sup> In the mid-2000s in Papua New Guinea, a local community in area of illegal logging received about \$11 for a cubic meter of its hardwood. By the time the wood arrived in China, it was worth \$240 per cubic meter.<sup>69</sup> The illegal extraction of timber from the Russian Far East, one of the world's most intense areas of logging and illegal cutting whose timber is often smuggled to China, provides another example of the profit generation and spoils division among the various actors involved in the illegal timber trade. Although it is a one-time study of a

---

<sup>65</sup> See, for example, Richard Dudley, "Dynamics of Illegal Logging in Indonesia," in Carol J. Pierce and Ida Anju Prandja Resosudarmo, eds., *Which Way Forward? People, Forests, and Policymaking in Indonesia* (Baltimore: Resources for the Future, 2001): 358; and ICG: 8.

<sup>66</sup> ICG: 14.

<sup>67</sup> I used the term Kalimantan when referring to Indonesia's province located on Borneo and the term Borneo when referring to the whole island.

<sup>68</sup> EIA, *Timber Traffickers: How Malaysia and Singapore Are Reaping a Profit from the Illegal Destruction of Indonesia's Tropical Forests*, <<http://www.illegal-logging.info/uploads/EIAmalaysia.pdf>>.

<sup>69</sup> Forest Trends: 16.



particular Russia-China commodity chain for one particular type of wood (softwood), it nonetheless serves as a useful illustration of profit markups. From the time the timber is cut in the Primorskii Krai in Russia and brought to the border with China at Suifenhe, the timber is worth \$140 a cubic meter. Out of this amount, \$23 goes to the illegal loggers who actually wielded the chain saws and the truckers and their bodyguards, with another \$5 spent on fuel. \$5 goes to the environmental inspector who launders the wood by falsely certifying its legal origin, \$5 to the forest leaser, and \$10 to operators of timber depots. Forestry officials are paid off \$3 and regional administrators \$9 while customs officials get \$10. The remaining \$70—half of the price—goes to the Chinese wholesaler in Suifenhe.<sup>70</sup>

## ILLEGAL LOGGERS

At the bottom of the supply chain are illegal loggers. They receive only a small percentage of the final revenue and often remain poor. Sometimes a small chainsaw gang will involve about three loggers with chainsaws, with another five or so to transport the felled logs, often existing in very unpleasant conditions in the forest for weeks on. In some cases, such as in the Russian Far East or in Papua New Guinea, loggers have been found to work “for a pittance for criminal gangs in slavery-like conditions.”<sup>71</sup> Nonetheless, loggers choose to participate in the illegal timber economy because at least in the short term, they can reap significantly larger economic revenue than they would from participating in the legal economic opportunities available to them.<sup>72</sup> As many local populations that participate in illegal logging exist in underdeveloped areas of limited economic opportunities and great physical isolation, even the small portion of the economic revenues from illegal timber tends to dwarf legal economic opportunities. At the same time, illegal loggers are highly transient, moving throughout a country to a new logging area as the forest becomes depleted in one area or even

coming from abroad, such as, for example, Chinese loggers who tend to dominate illegal logging in Burma (even though the situation there has been changing rapidly due to ethnic unrest in Burma and China’s crackdown on illegal timber smuggling in Yunnan).

Unlike, for example, the cultivation of illegal crops, illegal logging is not particularly labor-intensive. A group of 400 illegal loggers can shave the forest in large areas, thus the employment and other economic opportunities that illegal logging brings to a local economically marginalized community are often limited, especially if loggers come from the outside. At the same time, however, illegal logging does generate some spillover economic effects, giving a spur to local retail and service industries, such as restaurants. It also often brings lawlessness and possibly even social conflict, as discussed above.

## LOGGING AND WOOD-PROCESSING COMPANIES

Spontaneous “disorganized” illegal logging by small groups of individuals occurs, especially in Africa, such as Ghana, but also in Brazil’s Amazon and the Asia-Pacific region. Often, however, the real movers and shakers of illegal supply are logging and wood-processing companies. Via a series of middlemen, they contract for illegal loggers and pay for their chainsaws and transportation trucks, thus driving the intensity of logging in any particular area. Mom-and-pop illegal logging operations often lack the initial start-up capital to cover equipment and transportation needs to operate beyond subsistence and small-scale extraction.

The logging and processing companies vary in size and (il)legality: some are small and operate entirely without a license, such as many saw mills in Cambodia or Indonesia, but many are large legal even state-owned companies that participate in illegal logging and timber processing alongside their legal logging

<sup>70</sup> Ibid.

<sup>71</sup> Paula Vandergert and Joshua P. Newell, “Illegal Logging in the Russian Far East and Siberia,” *International Forestry Review*, 5(3), 2003: 303-306.

<sup>72</sup> For revenues of Indonesia’s loggers and bearers, see, for example, John F. McCarthy, “Wild Logging: The Rise and Fall of Logging Networks and Biodiversity Conservation Projects on Sumatra’s Rainforest Frontier,” *Center for International Forestry Research (CIFOR) Occasional Paper No. 31*, October 2000: 10.

activities, by violating restrictions regarding the area and intensity of logging or other management plans. Some of the worst offenders include Indonesia's Asia Pulp and Paper group, for example, whose notorious malfeasance has been documented in many NGO reports.<sup>73</sup> Many of these Asian timber companies, especially Malaysian ones, operate throughout the region and in fact increasingly the world, dominating logging decisions in Africa and Latin America. As timber extraction has been diminishing in Southeast and East Asia due to timber depletion, many of these logging and processing companies have expanded their reach throughout the world.

With many timber-supply countries in Southeast Asia seeking to reap higher benefits from timber extraction by moving up the value-added chain of the global timber trade, governments throughout the region have encouraged to a varying degree the development of the timber processing industry in their territories. In some countries, such as Malaysia and Indonesia, the timber processing industry expansion vastly outpaced sustainable legal logging. In Indonesia, for example, in the late 1990s, Indonesian domestic demand for wood was nearly four times larger than Indonesia's legal supply.<sup>74</sup> The resulting processing capacity of these national timber industries, sometimes burdened by debt, greatly surpassed the available legal supply of wood. To satisfy their capacity, the timber companies have coped by processing illegal timber, often driving its extraction. With vested political and economic interests often preventing the downsizing of the timber processing industry, especially as timber companies are often owned by the state, the timber industry has remained bloated in many parts of the Asia-Pacific region, such as in Indonesia and Malaysia. Instead of reducing their size and capacity, the resulting coping mechanism for many timber companies has been to relocate their operations to new areas, countries, or continents,

once logging—whether legal or not—exhausted the forest in their original area of operation. Thus Malaysian timber companies have first moved to Indonesia once Malaysia's forests were exhausted and a ban on logging was imposed, then to Papua New Guinea. Chinese timber traders similarly have expanded their operations from East and South East Asia to Brazil and tropical Africa. In the early 2000s, by some estimates, around 90% of the global tropical timber trade was controlled by Asian logging companies, with 80% of all tropical timber exports going to China, Japan, Malaysia, Indonesia, Taiwan, and South Korea for processing and, increasingly, final consumption.<sup>75</sup> Processing capacity significantly in excess of legal demand continues in many producer and processing countries in the region.<sup>76</sup>

Since then, India and Middle East have acquired significant portion of the market. Often even local companies have foreign backers and underwriters in the form of multinational timber processing companies and sometimes destination-country retailers. In some cases, timber companies also shift to other resource extraction, such as mining, as has been the case of many Indonesian timber companies that could no longer generate enough wood for their operating capacity.

## TIMBER BARONS

The vast profits that illegal (and also legal) logging generates gives rise to wealthy economic entrepreneurs who behave just like business elites in other industries and legal economies and like entrepreneurs in other illegal economies. By distributing economic handouts and other patronage, they seek to buy popular support with local communities and acquire political capital as charismatic benefactors. They also seek to develop similar patronage networks among the country's governing entities, regulatory

<sup>73</sup> See, for example, Tom Wright and Jim Carlton, "FSC's 'Green' Label for Wood Products Gets Growing Pains," *The Wall Street Journal*, October 30, 2007.

<sup>74</sup> ICG: 7.

<sup>75</sup> Mark Jaffe, "Large Firms Dominate Logging Trade," *Philadelphia Inquirer*, May 26, 2001.

<sup>76</sup> Lawson and MacFaul: 19.

bureaucracies, and law enforcement agencies and often directly seek positions of power to influence laws and change the legal and regulatory requirements to perpetuate their profit accumulation. But unlike uncorrupt businessmen in legal economies, timber barons engaged in illegal logging often also do not shy away from using corruption and coercion to deflect law enforcement. To the extent that such timber barons operate legal companies that engage in illegal logging alongside or within their legal concessions, such cooptation of the country's governing and regulatory institutions becomes all the easier. In Indonesia, one of the most powerful timber barons in the 1990s and early 2000s, for example, was Abdul Rasyid who made his riches by illegal logging in one of Indonesia's most sensitive biodiversity hotspots, the Tanjung Puting National Park, where he organized the extraction of the endangered ramin wood. Having developed extensive contacts with Indonesia's political elites and law enforcement, Rasyid ultimately ran successfully for parliament, which allowed him to escape prosecution.

## LOCAL INTEREST GROUPS

As a result of the acquired political capital and also local business and political culture, many of the timber companies throughout Asia, but also in Latin America, exist in a complex web of patron-client relations. Such arrangements characterize the politics of many of the East and Southeast Asian countries and often foster corruption and illegal practice. These patron-client relations are central to decisions on timber concession allocations and protection of illegal logging and processing. In Southeast and East Asia, the timber sector seems particularly pervaded by corruption underpinned by such patron-client relations.<sup>77</sup>

In many countries of the Asia-Pacific region, the patron-client relations extend to the country's police and military, which become key stakeholders in the

illegal logging enterprises. Just like in the case of other illegal economies, policemen and park rangers often make only meager salaries, making them highly susceptible to bribery. In addition, however, occasionally entire powerful law enforcement institutions depend on illegal logging or timber extraction more broadly for their budgets. In Burma, profits from logging—whether legal or not—are a key component of the junta's and the Burmese military's (Tatmadaw) income. In Indonesia, similarly, profits from illegal logging fund a large portion of the budgets of the police and the military.<sup>78</sup> Unless such powerful actors can develop alternative sources of income and not be dependent on illegal extraction, generating sufficient will in national governments to take the organizations on and mounting effective law enforcement action often become close to impossible. Without being able to pay these institutions otherwise, governments in fragile countries where the government is weak relative to the military, such as in Indonesia will be reluctant to challenge their military and police for the sake of halting illegal logging. Often the only mechanism available for national governments in such circumstances is to seek to develop ally subgroups within the military and police forces, but such a strategy risks fracturing the armed and law enforcement forces of a country, mostly an unpalatable prospect for a government.

## NATIONAL GOVERNMENTS

Local and national governments are often deeply complicit in illegal logging. Often the very concept that some logging is illegal is imposed on national governments from abroad, as a result of environmental NGO and Western government insistence. Governments that depend on logging for important parts of their income—whether for the national budget or personal enrichment of the governing elite—often sponsor and encourage unrestrained, unsustainable, and even outright rapacious timber extraction and deforestation. Papua New Guinea today and

---

<sup>77</sup> For details, see, Peter Dauvergne, *Shadows in the Forest: Japan and the Politics of Timber in Southeast Asia* (Cambridge, MA: MIT Press, 1997).

<sup>78</sup> ICG: 3. The military's practice of extorting illegal loggers goes back to the Suharto era. See, for example, Joyotee Smith, Krystof Obidzinsky, Sumirta Subarudi, and Iman Suramenggala, "Illegal Logging, Collusive Corruption, and Fragmented Governments in Kalimantan, Indonesia," *International Forestry Review*, 5(3), 2005: 293-302.

Cambodia and Liberia in the 1990s represent some of the most notorious cases. Even when the timber profits actually go toward supporting the national budget (as opposed to the elite's private coffers), short-term imperatives often override long-term sustainability needs. Consequently, regulatory and law enforcement actions are often adopted merely to deflect international criticism, or avoid sanctions or jeopardizing economic aid from the West. As a result of course, regulatory and enforcement actions become utterly ineffective.

The problem is further complicated by the fact that many subnational governments are dependent on illegal logging for operating budgets. In Indonesia, for example, as a result of post-Suharto decentralization, provincial and local governments are tasked with generating their own revenues to a large extent. As their other resources of revenue are often meager, they need to find other ways to finance their operations, while their constituencies, often systematically participating in illegal timber extraction, demand some provision of public goods or patronage. Thus local-level governments become deeply tempted by and often dependent on illegal extraction. As a result, they are reluctant to enforce regulations from the national government even when the national government develops a stake in or commitment to limit illegal logging. To the extent that they have the power to grant logging concessions, often thought advisable to give local communities a voice in the management of their resources, they become even more reluctant to scale down logging and crackdown on its illegal aspects.<sup>79</sup> Indonesia is a prime example: rapidly approaching the depletion of its forests and seeking to obtain financial transfers under the global climate REDD+ program, the national government in Jakarta has sought to limit illegal logging, but local governments throughout the archipelago often have been reluctant to enforce the new bans and regulations meaningfully.

## ORGANIZED CRIME

Unlike in many other illegal economies, organized crime is not always present in the illegal logging business. Often, the weaker the law enforcement and the more local and national governments are complicit in illegal logging, the smaller the presence of organized crime. Among Asia-Pacific countries, for example, organized crime—at least defined as separate from institutionalized corruption—is present only in Russia. In the Russian Far East, much of the illegal logging enterprise is run and protected by *de facto* mafia, often with good connections to organized crime in other parts of Russia and other illegal rackets.

## TIMBER LAUNDERERS

Illegal cut timber often needs to be laundered, especially if it is ultimately heading for Western countries that require certification, such as the United States or Western Europe. Laundering takes place at many stages, starting with processing companies in supply countries—once the wood is cut or processed into pulp and mixed with legal wood, its origin often becomes impossible to determine. Laundering also takes place along route, via customs officials who fake documentation, or at processing companies abroad, such as in China. Laundering is facilitated by a rapid turnover in suppliers, with many being simply one-time front companies for a particular shipment.

## PROCESSING & RETAIL COMPANIES IN DEMAND COUNTRIES AND FINAL CONSUMERS

Processing and retail companies in countries of high demand play a critical role in the illegal timber trade. They can serve as timber launderers by mislabeling or mixing wood, and they set the demand for particular species of timber and timber volume. In the United States and Western Europe, retail companies tend to

---

<sup>79</sup> See, for example, Luca Tacconi, Krytof Obidzinski, and Ferdinandus Agung, *Learning Lessons to Promote Forest Certification and Control Illegal Logging in Indonesia*, Center for International Forestry Research, Jakarta, Indonesia, 2004; and McCarthy.

face far greater oversight from environmental NGOs and far greener consumers who are willing to pay greater premiums for the knowledge that their wood came from legal and sustainable sources. Which is not to say that Western consumers are not sensitive to price or highly diligent in buying only wood certified to have been logged legally and sustainably. A customer demanding certification in Home Depot or Lowe's for the timber he or she is buying is still a rather rare phenomenon. Nonetheless, overall customers in Western countries tend to be far greener than in emerging and developing countries, even if their own shade of green is still rather pale for what would be required for significant reduction in the demand for illegal timber. In the United States, since the 2008 amendments to the Lacey Act, the U.S. retail companies can be illegal held liable for buying illegal wood. Nonetheless, U.S. retail companies previously violated other sanctions and certification requirements, such as by buying Burmese timber even though the United States had placed sanctions on Burma.<sup>80</sup> European retail companies have often been equally negligent in following other regulatory

procedures to minimize illegal timber consumption. In China, Southeast and East Asia, India, Brazil, and many other emerging or developing countries, both processing and retail companies are often far less sensitive to shaming strategies of interested environmental groups. Nor do these countries often have any legal regulatory requirements to prohibit dealing in illegal timber. At the same time, consumers in these places are often far more interested in the low price of wood products than in their legality or environmental impact, and hence far more tolerant of illegal timber use. As demand for timber is rapidly expanded in these countries and will continue to do so for a long period, the pressure on forests and demand for illegal timber are likely to intensify greatly. Currently, China's per capita wood consumption is only about one fifteenth of U.S. per capita wood consumption. However, if China's use of paper, for example, ever reaches U.S. paper consumption, China alone would end up using double the planet's current levels of paper production, if such demand could be satisfied at all. India's paper consumption too is expected to double by 2015.<sup>81</sup>

---

<sup>80</sup> See, for example, Global Witness (2009): 7, and EIA, *Behind the Veneer: How Indonesia's Last Rainforests Are Being Felled for Flooring*, 2006, <<http://www.eia-international.org/cgi/reports/reports.cgi?t=template&a=117>>.

<sup>81</sup> Khatchadourian: 20.

# ILLEGAL LOGGING AREAS AND TRAFFICKING ROUTES IN ASIA-PACIFIC

---

In the Asia-Pacific region, illegal logging is often pervasive throughout logging production areas as well as in protected areas. Typically wherever there is forest, there is logging. National parks are often magnets for illegal loggers, since their designation as reserves indicates great biodiversity, and hence suggests presence of timber species logged out elsewhere. To the extent that illegal (and legal) logging has abated in a particular country or region, it is frequently the result of the forest being depleted rather than greater law enforcement effectiveness.

In the Asia-Pacific region, Indonesia, Cambodia, Burma, Malaysia, Russia, and Papua New Guinea are or at one point were significant sources of illegal timber. Vietnam, Thailand, Malaysia, and China are major processors and consumers of illegal timber. Intense legal and illegal logging significantly depleted the forests of several of these countries, which now can be divided into two categories. Category I includes countries that produce timber on a large-scale at historically peak levels, while having relatively limited plantation areas and little processing. These include Burma, Russia, and Papua New Guinea. Category II, by contrast, includes countries such as Malaysia, Cambodia, Vietnam, Laos, Thailand, and China that have already passed their peak harvesting periods, sometimes having depleted

their timber resources and having instituted bans on logging. These countries often have extensive wood processing industries that are buying timber from abroad, including from the first group.<sup>82</sup> Indonesia is trending toward the second category. Illegal logging is present in both groups, but its prevalence and intensity is often higher in the first group. When category II countries used to be category I countries—in the 1980s and early 1990s—the intensity of illegal logging was often as significant or greater than in current category I countries.

## COUNTRIES WITH TIMBER PRODUCTION NEAR HISTORICALLY PEAK LEVELS

### Burma

Rich in natural forest area (84.75 million acres in 2002)<sup>83</sup> that in the 1990s covered as much as 50% of the country's total land and containing more than half of Southeast Asia's undisturbed mainland forest,<sup>84</sup> Burma is currently a major source of timber throughout Southeast Asia and the world. Teak is one of Burma's most sought-after timber species. The vast majority of logging has been concentrated in a 50-150km belt around Burma's borders with China and Thailand, parts of which are now completely clearcut. Throughout much of the 2000s, over 90% of the timber exports were illegal—in

---

<sup>82</sup> This categorization comes from Eugenia Katsigris, Gary Bull, Andy White, Christopher Barr, Keith Barney, Yati Bun, Frederick Kahrl, Timothy King, Alexey Lankin, Anatoly Lebedev, Phil Shearman, Alexander Sheingauz, Su Yufang, and Horst Weyerhaeuser, "The China Forest Products Trade: Overview of Asia-Pacific Supplying Countries, Impacts, and Implications," *International Forestry Review*, 6(3-4), 2004: 239.

<sup>83</sup> Frederick Kahrl, Su Yufang, and Horst Weyerhaeuser, *Navigating the Border: An Analysis of the China-Myanmar Timber Trade*, Asia Pacific Partners Working Paper No. 1, Forest Trends, Washington, D.C.: 2004.

<sup>84</sup> Zhu Chunquan, Rodney Taylor, and Feng Guoqiang, *China's Wood Market, Trade and Environment*, WWF International, 2004.

violation of Burma's own laws<sup>85</sup>—and headed across the border to China. Thailand and India constitute other important legal and illegal markets. A series of measures by the government of China in the late 2000s decreased the intensity of illegal logging and timber smuggling in Burma, but both persist. The same is true of the border with Thailand. Although in 1992 the Burmese junta cancelled Thai logging concessions, illegal traffic continues at an intense rate. Deforestation is severe, resulting in great environmental degradation and biodiversity loss.

The Myanmar Timber Enterprise, operated by the junta, officially controls all commercial forestry. However, as discussed above, many of the ethnic resistance groups participate in (il)legal logging. While both the junta and the ethnic resistance groups collect highly profitable “taxes” on logging and sanction logging malpractices in their territories, logging concessions operating in Burma are primarily Chinese. Most are staffed exclusively by Chinese loggers and managers,<sup>86</sup> with little economic benefit trickling down to the ethnic minority populations, and this mainly indirectly via boosted retail and service markets. At times, local minority groups, such as the Kachin, have lacked wood for personal use.<sup>87</sup> Although the Chinese companies are often required by contract to provide some benefits to local communities in Burma, such as to distribute electricity, they frequently renege on such obligations.

Despite the junta's reliance on resource extraction for revenue generation and its use of extraction concessions as a mechanism to appease separatist groups, it decided to impose a ban on logging in Kachin state, the locale of much logging in Burma, in 2005 and maintained it through 2009. Accompanied by a Chinese ban on importation of timber from Burma (described in detail below in the section

on China's role), the ban resulted in a 70% decline in illegal logging in Burma and traffic into China.<sup>88</sup> The motivations of the junta are not entirely clear: Its forests near the border with China are approaching depletion levels, and perhaps the junta has sought to improve its image abroad. Although many of the ceasefires it brokered with separatist groups were underpinned by “licenses” the junta granted to the groups to trade in timber, wildlife, gold, gems, and drugs, the ban may have served its intention to redefine the ceasefire deals by further demobilizing the ethnic insurgencies and incorporating their armies into the Burmese border force. Regardless of the motivation, the action in conjunction with the Chinese crackdown resulted in a significant contraction of supply and (at least temporary) a spike in teak prices.

However, illegal logging has continued in other parts of Burma, such as in Shan state where a similar crackdown did not occur. Some Chinese logging companies have managed to continue operating Burma after the 2005 ban, by moving deeper into the country where law enforcement was weaker or nonexistent (frequently with the connivance of local Burmese authorities and separatist groups). New forms of illegal logging have also emerged: although timber could no longer be transported with ease across the border, deforestation has continued with the purpose of clearing land for agricultural plantations. This new deforestation has been accompanied by land grabs by both the Bamar, Burma's majority ethnic group, and the Chinese at the expense of Burma's ethnic minorities.<sup>89</sup>

### **Papua New Guinea (PNG)**

A unique and highly sensitive biodiversity hotspot with high rates of endemism, Papua New Guinea has been experiencing devastating rates of logging

---

<sup>85</sup> Burmese laws mandate that all timber be transported to Yangon, and then shipped by seas abroad. In practice, the vast majority of traffic heads overland into China (and also Thailand), as this mode of transportation faces far smaller transportation costs. Although the Burmese junta and military fully participate in this timber extraction and traffic by charging fees for it, by Burmese law, all of this traffic is illegal.

<sup>86</sup> Kahrl et al.

<sup>87</sup> See, for example, Global Witness, *A Choice for China: Ending the Destruction of Burma's Northern Frontier Forests*, October 2005, <[http://www.globalwitness.org/media\\_library\\_detail.php/492/en/a\\_choice\\_for\\_china\\_ending\\_the\\_destruction\\_of\\_burma](http://www.globalwitness.org/media_library_detail.php/492/en/a_choice_for_china_ending_the_destruction_of_burma)>; and Global Witness (2009): 56.

<sup>88</sup> Global Witness (2009): 5-7, 9.

<sup>89</sup> Ibid: 95.

over the past fifteen years with profound damage to its unique and fragile ecosystem, ranging from canopy destruction to soil erosion and river siltation and extensive biodiversity loss.<sup>90</sup> Production of 2 million cubic meters per year (from its 26.5 million ha of natural forests) in the middle of the 2000s brought it near peak levels, with an estimated depletion of forest for commercial logging within less than 10 years.<sup>91</sup> During much of the 2000s, almost 70 to 90 percent of logging was believed to be illegal.<sup>92</sup> Logging concessions, largely held by foreign companies, regularly and on large scale violate concession terms, harvesting far beyond sustainable rates, and seek to avoid the high tax on log exports. In many ways, logging in PNG in the 2000s resembled the anarchic logging of Cambodia of the 1990s. After Japan curtailed its imports of PNG timber in order to combat illegal logging, the majority of timber exports were rerouted to China, with 70% of all log exports heading there in 2003.<sup>93</sup> Greater efforts during the 2000s to suppress illegal logging in countries such as Burma and Indonesia appear to have further boosted illegally-sourced timber exports from Papua New Guinea, at least in relative terms.<sup>94</sup> Overall, deforestation greatly increased during the 2000s compared to the 1990s.<sup>95</sup>

As foreign-owned logging companies in PNG staff their concessions predominantly with foreign workers from Malaysia, Indonesia, China, and the Philippines (countries that have to a large extent depleted their own forests), little of the logging profits trickle down to local communities. Although local communities bear the environmental costs of destructive

logging and nominally claim 97% of PNG's forest under customary and tribal laws and the PNG constitution, the national government routinely ignores their land rights (often mired in land disputes between communities) and hands out concessions without informed consent of the community. As communities become squeezed from land and restricted in their access to forest products, conflicts over land only intensify.<sup>96</sup>

Facing extensive international criticism and eager to obtain financial benefits from the carbon-for-forest REDD+ scheme, the government of PNG has taken a series of steps to quiet complaints against its logging practices. Logging practices, however, have shown little improvement.

### Russia

Since the 1990s, the Russian Far East and Siberia have become one of the world's largest suppliers of high-value oak, ash, linden, and the now almost-extirpated and illegally-traded Korean pine. In the Asia-Pacific region, Russia is the country with the most extensive forests, covering 1900 million acres and amounting to one quarter of the world's timber stock and one fifth of the world's forested area.<sup>97</sup> Between 2000 and 2005, 14% of the Russian forest—some 35.6 million acres—was incinerated or felled, often illegally.<sup>98</sup> Estimates of illegal logging in Russia vary widely—from a mere 0.5% to as much as 50%,<sup>99</sup> with the vast majority of both legal and illegal traffic flowing across its border with China. Greater efforts during the 2000s to suppress illegal logging in countries such as Brazil, Burma, and

---

<sup>90</sup> A.L. Cameron and Thomas Vigus, *Papua New Guinea Volume and Growth Study*, Report for the World Bank, Commonwealth Scientific and Industrial Research Organization, Brisbane, 1993 and Paul Chatterton, Yati Bun, Colin Hunt, Kathy Whimp, and Peter Eddowes, *A Future for Our Forests: Strategies for Community-Based Forestry and Conservation in Papua New Guinea*, WWF, 2000.

<sup>91</sup> Tamara Stark and Sze Pang Cheung, *Sharing the Blame: Global Consumption and China's Role in Ancient Forest Destruction*, Amsterdam, Greenpeace International, 2006: 28.

<sup>92</sup> Andreas Scholenhart, *The Illegal Trade in Timber and Timber Products in the Asia-Pacific Region*, Research and Public Policy Series Paper No. 89, Canberra, Australian Institute of Criminology, 2008: 70.

<sup>93</sup> Zhu et al: 45.

<sup>94</sup> Lawson and MacFaul: 104.

<sup>95</sup> FAO 2010: 233.

<sup>96</sup> Yati Bun, Timothy King, and Phil Shearman, *China's Impact on PNG's Forestry Industry*, Asia Pacific Partners Working Paper No. 5, Forest Trends, Washington, D.C., 2004.

<sup>97</sup> Sholenhart: 65.

<sup>98</sup> FAO 2010; and *The Economist*, September 25, 2010: 4.

<sup>99</sup> Seneca Creek: 99; and Paula Vandergert and Joshua P. Newell, *Illegal Logging in the Russian Far East and Siberia*, *International Forestry Review*, 5(3), 2003: 303-306.



Indonesia have elevated the importance of Russia as the source of illegal timber for major consuming countries.<sup>100</sup>

Regardless of the actual magnitude of illegal logging in Russia, only about a third of the country's allowable annual quota is being logged. Although the extent of damage caused by illegal logging is smaller than in Burma, Cambodia, Indonesia, or PNG—largely because its relative extent is smaller—it has caused substantial forest degradation, exacerbated forest fires, caused irreparable damage to logged permafrost, and caused other environmental damage. It also jeopardizes the livelihoods of forest-dependent people ranging in the tens of thousands; and it results in a loss of revenue for the Russian government.<sup>101</sup> Moscow has been cognizant of the problem and tried to intensify law enforcement and certified timber custody chains, such as a barcode for every tree,<sup>102</sup> but the size of the area in which illegal loggers operate makes law enforcement difficult and Russian forestry institutions and customs are pervaded by corruption.

### Indonesia

A country fast approaching those with post-peak production and itself an epitome of illegal logging, Indonesia has faced intense deforestation through legal and illegal logging, including traffic in banned species, such as ramin,<sup>103</sup> and logging in excess and outside of concession permits. At the same time, Indonesia has the most valuable timber resources in the Asia-Pacific region; its 275 million acres of

tropical forests are surpassed only by Brazil's.<sup>104</sup> In the 1990s, it experienced a deforestation rate of 1.25 to 4 million acres a year in natural forests—an area of the size of Massachusetts. At that time, Indonesia accounted for one quarter of the world's tropical timber production.<sup>105</sup> During much of the 1990s, its very intense legal and illegal industrial roundwood (logs cut into smaller pieces) production amounted to 47 to 75 million cubic meters annually. Its annual log harvest often reached 78 million cubic meters.<sup>106</sup> This logging rate surpassed up to three times the country's sustainable yield, pushing Indonesia to the verge of past-peak production, with logging declining precipitously in more accessible forests.<sup>107</sup> At such logging levels, the only remaining extensive forests in Sumatra, Kalimantan, and Sulawesi within a few years could be mountain forests, with lowland non-swampy and swampy forests having been extirpated.<sup>108</sup>

A consequence has been devastating biodiversity losses in one of the world's biological hotspots with some of the last remaining critical habitat for and occurrence of large mammal species, such as tigers, orangutans, numerous species of monkeys, and Sumatran rhinoceroses, to name just a few of the most emblematic ones. Kalimantan's forest has more tree species per acre than any other forest. It is also packed with carbon: close to a 1000 tons per acre.<sup>109</sup> Thus deforestation made Indonesia the world's fourth largest emitter of carbon. Other ecological harms caused by illegal and excessive logging include forest fires, flooding, and decrease in drinkable water

<sup>100</sup> Lawson and MacFaul: 104.

<sup>101</sup> See, for example, Anatoly Kotlobay and Andrey Ptichnikov, *Illegal Logging in the Southern Part of the Russian Far East*, WWF Russia, Moscow, 2002; Anatoly Lebedev, *The Wild East—the Timber Trade between Siberia, the Russian Far East and China*, Bureau for Regional Outreach Campaigns, Friends of the Siberian Forests, Forest Monitor, Vladivostok, 2001; and Alexander Sheingauz, Anatoly Lebedev, and Natalia Antovna, *Russian Far East-China Softwood Log Commodity Chain and Livelihood Analysis*, Forest Trends, Forest Trends, 2005.

<sup>102</sup> Alexander Sheingauz, *Overview of the Forest Sector in the Russian Far East: Production, Industry, and Illegal Logging*, Asia Pacific Partners Working Paper No. 2, Forest Trends, Washington, D.C., 2004.

<sup>103</sup> For a detailed study on the ramin traffic, see, EIA (2001): 11-12 and 28.

<sup>104</sup> ITTO 2006: 149.

<sup>105</sup> EIA, *Illegal Logging and the International Trade in Illegally Sourced Timber: How CITES Can Help and Why It Should*, 2002: 2; Seneca Creek: 65; and Katsigris: 240.

<sup>106</sup> EIA (2001): 11.

<sup>107</sup> Katsigris et al: 240.

<sup>108</sup> Derek Holmes, *Indonesia: Where Have All the Forests Gone?* Environment and Social Development, East Asia and Pacific Region, Discussion Paper, The World Bank, Washington, D.C., 2002.

<sup>109</sup> *The Economist*, September 25, 2010: 8.

as a result of water siltation. Financial losses for Indonesia's government resulting from illegal logging have been estimated at \$3.5 to 4.3 billion.<sup>110</sup>

Until the early 2000s, about 75% of logging in Indonesia was estimated to be illegal.<sup>111</sup> Indonesia also had one of the world's highest volumes of illicit wood exports, mainly to China and Malaysia and also to Japan, with about 55-100% of its hardwood exports considered suspect, if not outright illegal.<sup>112</sup> 84% of concession holders failed to obey the concession terms, with logging running at times 75% above the allowable cut.<sup>113</sup> The extensive overcapacity of the logging and processing industry—encouraged by a government ban on log exports in 1985, and periodically renewed since, burdened by debt and unable to downsize as a result of vested interests—has driven much of the illegal production.<sup>114</sup>

Facing depletion of its forests, intense international pressure, and the promise of international payments for its forests, Indonesia has since taken a number of steps to reduce deforestation and illegal logging. By some accounts, estimated illegal timber volumes fell 75% by 2006 from its peak levels, while the illegal logging rate fell from a peak of over 80% to as low as 40%.<sup>115</sup> How much of that decline has actually resulted in the increase of desirable practices and forest preservation is another question. Indonesia's custody-chain verification system has multiple vulnerabilities and can be abused to launder illegal wood.<sup>116</sup> The lack of transparency of Indonesia's forestry laws and their enforcement also raises questions about the reliability of the data. A large percentage of the illegal logging volume decline can be attributed to the Indonesian government's increase of its

plantation production estimates,<sup>117</sup> which could be manipulated to claim success. Forest exhaustion and the global recession of 2008 also contributed to declines in logging in Indonesia—both legal and illegal. Deforestation slowed down in the first half of the 2000s, but has significantly increased again between 2005 and 2010,<sup>118</sup> despite moratoria on certain types of logging.

The decline in illegal logging, however, does not mean that forest degradation, deforestation, and illegal logging are no longer taking place. Intense, and often perfectly legal, deforestation continues, driven by large-scale conversion of forests into agricultural crops, such as African oil palm for the production of cooking oil and biodiesel, and ironically, into timber plantations. At the same time, licenses for African oil palm and other agribusiness often serve only as a cover for timber companies to log; especially as getting a logging license has become more difficult.

A panoply of actors in Indonesia are involved in illegal logging with pervasive corrupt patron-client relations permeating all levels of government. These include poor communities that engage in so-called “wild” (i.e., unauthorized) logging, to timber barons who buy themselves political support from local communities and governing and regulatory entities, to domestic and foreign companies, to the police, military, and local governments that depend on proceeds from illegal logging for financing a large portion of their operating budgets.<sup>119</sup> Many of these actors have their roots in the Suharto regime that owned extensive forests and logging operations and awarded concessions to its cronies.<sup>120</sup>

---

<sup>110</sup> EIA (2006): 1; and Khatchadourian: 16.

<sup>111</sup> See, for example, EIA (2002): 2.

<sup>112</sup> Scholenhart: 93. The smuggling to China has fallen in the latter part of the 2000s, but as of 2008, still at least 120,000 cubic meters of logs, worth an estimated \$U.S. 30 million, were smuggled from Indonesia to China annually. MacFaul: 111.

<sup>113</sup> EIA, *The Final Cut: Illegal Logging in Indonesia's Orangutan Parks*, 1999: 3; and David Brown, *Regulation, Law, and Illegal Logging in Indonesia*, WWF/World Bank Alliance for Forest Conservation and Sustainable Use, Jakarta, 2002.

<sup>114</sup> See, for example, Christopher Barr, *Profits on Paper: The Political Economy of Fibre, Finance, and Debt in Indonesia's Pulp and Paper Industries*, Centre for International Forestry Research and WWF Macroeconomics Programme Office, 2000.

<sup>115</sup> Lawson and MacFaul: 94.

<sup>116</sup> *Ibid.*: 24.

<sup>117</sup> Lawson and MacFaul: 94.

<sup>118</sup> FAO 2010: 230.

<sup>119</sup> ICG: 10.

<sup>120</sup> *Ibid.*: 3-4.

On paper, Indonesia has had an extensive system of conservation areas covering 13% of its forests to protect its biodiversity. Yet there often has been little enforcement, with some of the most valuable national parks, such as Gunung Leuser, Tanjung Puting, and Gunung Palung, becoming prime areas of illegal logging. Officials often turn a blind eye to illegal logging or issue fake licenses. The sheer extent of logging (Indonesia is believed to have between 2,300 and 3,500 operating sawmills, for example),<sup>121</sup> and the pervasiveness of regulation violations often overwhelm law enforcement, leaving under-resourced and unpaid officials highly susceptible to apathy, corruption, and coercion. Even when the police are actually motivated to attempt to act against illegal logging, they are often afraid of violent encounters with the illegal loggers, their home communities, and their backers, and are thus reluctant to use force; but they have little other authority to enforce the law with illegal loggers and sawmills.

Nevertheless, facing increasing international opprobrium, which by 2000 almost resulted in the World Bank and foreign donors completely withdrawing from Indonesia's forestry sector, and eager to cash in on REDD+ payment transfers,<sup>122</sup> the government of Indonesia has taken progressive steps to clean up its logging industry. At the beginning of the 2000s, it banned extraction and sales of the endangered ramin and committed itself to cracking down on illegal loggers, downsizing the timber industry, developing a certification process for its timber, and imposing a moratorium on converting natural forests for other uses.<sup>123</sup> Yet implementation of these measures has been slow and often subverted by pervasive corruption and the short-term profit-maximization horizons of many key vested actors, such as logging companies, poor loggers and local communities, and

local governments. Many ostensible law enforcement measures have been undertaken just to impress the conservation community, such as when police seize illegal logs only to hand them back later to the perpetrators for a cut of the profits.<sup>124</sup>

In early 2005, the government of President Susilo Bambang Yudhoyono nonetheless launched an unprecedented crackdown on illegal logging, especially in Papua, one of the largest of such law enforcement actions in the world to date. The increased law enforcement effort resulted in arrests of close to 180 people and the seizure of timber and logging equipment worth \$.25 billion.<sup>125</sup> A constriction of timber supply resulted in a significant increase in Indonesia's merbau from \$278 per log before the crackdown to \$732 shortly after.<sup>126</sup> Within months, however, illegal loggers adapted by transferring their operations deeper into the forests and away from areas of law enforcement action and gradually resumed trade. Nonetheless, the national police now appears to be playing an increasing role in supporting efforts to suppress illegal logging, with a seizure rate of one in ten illegal logs.<sup>127</sup> Such a seizure rate is considered high. But even in the late 2000s, only between a quarter and a third of logging offenses resulted in convictions.<sup>128</sup> Moreover, the greater enforcement of obviously unauthorized legal logging motivated at least some logging companies to better hide their problematic logging by logging in excess of permits in authorized areas or obtaining logging permits through corruption. Similarly, when extensive smuggling of timber between China and Indonesia became the focus of international attention, smugglers altered their route from Indonesia to Malaysia.<sup>129</sup> Overall, Indonesia's logging laws continue to be weak, incoherent, and often not enforced. At the same time, the sensitivity of its timber exporters to concerns in Western

---

<sup>121</sup> Katsigris et al: 243.

<sup>122</sup> According to *The Economist*, Indonesia expects to collect perhaps as much as U.S. \$10 billion a year from REDD+. *The Economist*, September 25, 2010: 16.

<sup>123</sup> ICG: 8-9.

<sup>124</sup> EIA (2001): 21.

<sup>125</sup> EIA (2006): 2.

<sup>126</sup> Ibid.

<sup>127</sup> Lawson and MacFaul: 34.

<sup>128</sup> Ibid.

<sup>129</sup> Environmental Investigation Agency and Telepak, *The Last Frontier: Illegal Logging in Papua and China's Massive Timber Theft*, 2005.

markets has increased, with certification of timber legality or sustainability increasing threefold between 2006 and 2009.<sup>130</sup>

The policy of Indonesian government has thus become to increasingly call on the international community to stop buying undocumented timber from Indonesia, while the government's capacity and will to enforce its regulations and commitments domestically has been inadequate. Important improvements in regulations often exist only on paper. In May 2010, in anticipation of a billion-dollar grant from Norway, the Indonesian government imposed a new two-year moratorium on certain types of logging, this time on the issuance of *new* permits to clear virgin forests. But its enforcement remains doubtful and other legal and illegal logging continues at a still-fast pace.

## COUNTRIES WITH TIMBER PRODUCTION PAST HISTORICALLY PEAK LEVELS

### Cambodia

During the 1990s, Cambodia became the prototype of a “conflict-timber” country, with its unrestrained, anarchic logging perpetuating military conflict and funding both the Khmer Rouge (at a rate of \$10-\$20 million per month)<sup>131</sup> and the Cambodian military and government of prime minister Hun Sen. The Thai military and logging companies also participated in the logging and destruction of the forests, while traffic flowed through Thailand, Vietnam and Laos, with the collusion of local authorities. Many of the same actors in Cambodia participated in both legal and illegal logging in violation and vastly in excess of concession terms, with the outright connivance of the Cambodian government, such as when in 1995 the government secretly issued 32 logging concessions for 35% of Cambodia's land.<sup>132</sup> All of the country's internally powerful actors as well as

its neighbors profited from the illegal logging and the civil war that prevented meaningful law enforcement actions against illegal logging.

The result was a razing of Cambodia's forest. In 1997, illegal logging in Cambodia stood at over 4 million cubic meters annually, ten times the legal production,<sup>133</sup> while its sustainable yield was estimated at only one half to a million cubic meters a year.<sup>134</sup> Within ten years—between 1992 when Cambodia first entered the global timber market and 2002—Cambodia lost close to 20% of its forest cover and most of the remaining forests were damaged.<sup>135</sup>

Facing intense international criticism for the destruction of its forests, and to a large degree dependent on foreign aid, the government of Cambodia undertook several measures to deflect international opprobrium. In 1997, the government issued a ban on exporting logs, an act that did not slow down logging but encouraged the emergence of unregistered saw mills, domestic and foreign. In 2002, it further suspended large-scale industrial logging operations due to non-compliance with new forest management requirements designed with international oversight and meant to ensure sustainability. However, and perhaps not incidentally, the government ban came too late, as its natural forests were already greatly depleted. But logging in Cambodia continues in the form of illegal logging, in privately-owned forests, for conversion of land to agriculture, local village harvesting, etc.

Since the early 2000s, Cambodia has operated below its peak rate of natural forest logging. While illegal logging continues at a rate far smaller than in the 1990s, little of Cambodia's remaining forests are commercially viable, and legal timber export also has fallen precipitously.<sup>136</sup> Although poor Cambodians participate in illegal logging, and fees on extraction

<sup>130</sup> Ibid.: 73.

<sup>131</sup> Global Witness (1999): 3.

<sup>132</sup> Global Witness, *Deforestation without Limits: How the Cambodian Government Failed to Tackle the Untouchables*, July 2002: 3.

<sup>133</sup> Global Witness, *The Untouchables: Forest Crimes and the Concessionaires—Can Cambodia Afford to Keep Them?* 1999.

<sup>134</sup> William Magrath, *Law Enforcement and Control of Illegal Activities in Forestry and Natural Resource Management*, (Washington, D.C.: World Bank, 2000).

<sup>135</sup> Zhu et al: 42.

<sup>136</sup> Katsigris et al: 240, and International Tropical Timber Organization (ITTO), *Annual Review and Assessment of the World Timber Situation 2006*, Yokohama, 2007: 75.

are paid to commune chiefs, forest degradation has negatively impacted the livelihoods of most of the country's rural communities, forcing villagers dependent on forest products to meet their needs from forests further out, sometimes causing internal displacement of communities.<sup>137</sup> Conflict over land—in both deforested and still-forested areas—has been intensifying, especially between villagers and plantation companies, such as Asia Pulp and Paper. Environmental degradation has been severe, destroying rich and vital ecosystems and intensifying damaging flooding.<sup>138</sup>

## Laos

Laos is yet another country in Southeast Asia facing a significant depletion of its forest after years of unsustainable and illegal practices and continuing deforestation.<sup>139</sup> Although various regulations to improve forestry management have been adopted during the 2000s,<sup>140</sup> undesirable practices continue.<sup>141</sup> Illegally and problematically sourced timber continues to be exported to Vietnam and Thailand.

The “New Economic Mechanism” policy introduced in 1986 encouraged the forestry industry to become export-oriented, and the associated high-intensity logging with little post-harvest management led to extensive degradation of Laotian forests and a corresponding decline in the volume logged and exported. A ban on export of logs failed to halt forest depletion; and domestic processing has failed to take off.<sup>142</sup> At the same time, efforts to prevent slash-and-burn practices have resulted in new

poverty and food insecurity, as villagers—often ethnic minorities—have been squeezed from crucial swidden farmland.<sup>143</sup>

Vietnamese companies dominate both timber extraction and processing in Laos. Although they nominally exist as joint ventures with Lao companies, in practice, the vast majority of their staff is Vietnamese, with little opportunity for employment for local communities. Such a distribution of forest revenues negatively impacts over 80% of Laos' population, who are poor and rely on forest resources for their livelihoods.<sup>144</sup>

In the early 1990s, illegal logging in Laos was approximately one sixth of the volume of legal extraction, with much illegal logging focused on the extraction of banned teak and rosewood, which is still highly desired in Asian markets.<sup>145</sup> Due to loopholes in the legal forestry framework, and an extensive tendency by the Lao government to issue exemptions from forestry prohibitions to reap timber royalties that amount to 11% of tax revenues,<sup>146</sup> it is not always clear whether logging is legal or illegal in Laos.<sup>147</sup> But it is often unsustainable, even though such practices appear to continually receive implicit support from the governments of Laos and Vietnam, where much of the timber is exported.<sup>148</sup> Other problematic practices include the pervasiveness of bribery throughout the production and export chains, felling and burning small diameter trees, and obtaining permits ostensibly for other economic purposes, such as mining, hydropower, or

---

<sup>137</sup> See, for example, Bruce McKenny and Prom Tola, *Natural Resources and Rural Livelihoods in Cambodia: A Baseline Assessment*, Cambodia Development Resource Institute Working Paper #23, Phnom Penh, 2002.

<sup>138</sup> See also, Niels Strange, Ida Theilade, So Thea, Arvid Sloth, and Finn Heles, “Integration of Species Persistence, Costs, and Conflicts: An Evaluation of Tree Conservation Strategies in Cambodia,” *Biological Conservation*, 137 (2007): 223-236.

<sup>139</sup> FAO 2010: 230.

<sup>140</sup> FAO 2010.

<sup>141</sup> Ben Hodgson, “Frontier Country: The Political Culture of Logging and Development on the Periphery of Laos,” *Kyoto Journal*, 69, 2008: 58-65.

<sup>142</sup> Zhu et al: 43.

<sup>143</sup> Katsigris: 250.

<sup>144</sup> Food and Agriculture Organization and Nature Conservancy, *Analysis of Key Trends in Forest Policies, Legislation, and Institutional Arrangements: Asia-Pacific Forestry Sector Outlook Study II*, 2008, <<http://www.fao.org/docrep/013/i1722e/i1722e00.pdf>>.

<sup>145</sup> EIA (2001):9.

<sup>146</sup> Global Development Solutions, *Integrated Value Chain Analysis of Selected Strategic Sectors in Lao People's Democratic Republic: A Report Prepared for World Bank*, 2005.

<sup>147</sup> FAO and Nature Conservancy.

<sup>148</sup> Forest Trends, *Timber Markets and Trade Between Laos and Vietnam*, January 2010, <<http://www.illegal-logging.info/uploads/TimberMarketsTradeLaosVietnam.pdf>>: 3.

agriculture, even though the objective is to log out the land.<sup>149</sup> Although large areas are declared protected, such designation has often little meaning and law enforcement is sporadic at best.

## Vietnam

Sixty percent of Vietnam's forest was destroyed during the war with the United States. Subsequent commercial logging and rural deforestation for fuel has further decimated Vietnamese forests, with another 78% of its primary forest destroyed between 1990 and 2005.<sup>150</sup> By the mid-2000s, forest covered only about 20% of the country's land, with less than one percent of its forest cover remaining old-growth forest.<sup>151</sup> The government's effort to impose a ban on slash-and-burn campaigns by poor rural communities has often resulted in violent confrontations between the police and the locals and has failed to provide the affected communities with alternative livelihoods that are commercially viable, culturally acceptable, and ecologically sustainable.<sup>152</sup>

Vietnamese regulations prohibit the use and export of Vietnamese timber from natural forest under most circumstances (with the exception of "fine art" timber products), and are designed to restore forests and develop plantations. Thus, legal logging fell off from 3 million cubic meters in 1998 to 300,000 cubic meters in 2003.<sup>153</sup>

While Vietnam has a generally lower-value-added processing sector than Malaysia or Thailand, it does have significant production of sawnwood (lumber cut at 30-degree angle to accentuate grain patterns), wood chips, pulp, paper, and especially furniture, its number one timber export. In fact, Vietnam's

export-based wood furniture-manufacturing industry has become one of the largest in the world and an important contributor to the country's income.<sup>154</sup> 80% of timber for Vietnamese furniture manufacturing is imported.<sup>155</sup> During most of the 2000s, Vietnam's import of illegal timber increased steadily, tripling between 2000 and 2007.<sup>156</sup> Amounting to 1.5 million cubic meters of roundwood equivalent (RWE), illegal imports constituted about 17% of Vietnam's timber imports at the end of the 2000s.<sup>157</sup> Major suppliers of illegally sourced wood include Laos and Burma.

After environmental NGOs revealed that much of Vietnamese furniture is supplied from suspicious, if not outright illegal, timber sources, Vietnam's logging and furniture industry made some effort to secure certification for the legality, and sometimes also sustainability, of their wood, including from FSC, for Western, environmentally-sensitive markets. In 1996, for example, Vietnam imposed a ban on Cambodian logs, but the illegal traffic persisted robustly into the 2000s. Large-scale companies that export to the United States and the European Union report having dropped Laos as a source for those markets, but illegally and problematically-sourced timber in Laos continues to be imported by Vietnam. In the late 2000s, Vietnam also established a working group with the European Union to explore possibilities for action on the illegal timber trade.<sup>158</sup>

At the same time, other companies have shifted their markets to less environmentally sensitive ones, such as Russia, the Middle East, and Asia. As of 2010, less than 7% of 2,500 processing companies have obtained chain-of-custody certification assuring the

<sup>149</sup> Ibid.: 6.

<sup>150</sup> Vietnam, <<http://rainforests.mongabay.com/20vietnam.htm>>.

<sup>151</sup> Ibid. For deforestation rate trends in Vietnam, see also, WWF, *Borderline: Report on Illegal Wildlife Trade in Vietnam*, 1998.

<sup>152</sup> For details, see, Claudio O. Delang, "Indigenous Systems of Forest Classification: Understanding Land Use Patterns and the Role of NTFPs in Shifting Cultivators' Subsistence Economies," *Environmental Management*, 37(4): 470-486; and LeMinh Giang, "Community Forest Management: A Case Study of Tay People at Tat Village, Tan Minh Commune, Da Bac District, Hoa Binh Province, Vietnam, Master's Thesis, (Uppsala: Swedish University of Agricultural Sciences, 2004).

<sup>153</sup> Scholenhart: 84.

<sup>154</sup> Le Khac Coi, *Wood Processing in Binh Dinh Province: Survey Report*, GTZ Report, 2008.

<sup>155</sup> Vietnamese government statistic cited by Forest Trends, January 2010:1.

<sup>156</sup> Lawson and MacFaul: 106.

<sup>157</sup> Ibid.

<sup>158</sup> This working group is a part of EU's FLEGT structure to reduce illegal logging described in detail below.

legality or sustainability of their timber.<sup>159</sup> Some companies appear to subcontract imports of Lao timber through China to hide its problematic origin.<sup>160</sup>

### Thailand

Thailand experienced intense logging that damaged and depleted its forests in the 1980s. Following the 1988 disastrous flooding associated with deforestation and the resulting soil erosion, which killed 400 people and caused extensive damage, the government of Thailand banned all commercial logging in 1989. The government also promoted extensive timber plantations, such as of eucalyptus.

No legal logging in natural forests has taken place since the ban, but relatively small-scale illegal logging has emerged, such as for rosewood and teak, both in Thailand's national parks and its timber plantations.<sup>161</sup> A highly contentious issue has been the effort of the Thai government to prevent upland hill minorities from practicing slash and burn policies, often through forced relocation, violent coercion, and human rights abuses. Unlike its highly successful efforts to suppress the illegal cultivation of opium poppy by the hill tribes through its effective alternative livelihoods program, the government's alternative livelihoods efforts to prevent swidden agriculture have failed to a great degree. Fewer resources with less appropriate designs often resulted in the latter alternative livelihoods programs' inability to generate sufficient economic resources for the community, and relocation has often taken place without profitable assured jobs being available to the tribal communities.<sup>162</sup>

Like Malaysia and other Asian countries with large timber industries but exhausted forests and bans

on logging, Thailand became a net importer and a major processing center for legal and illegal timber from the rest of Southeast Asia, often for re-export into China or final destination markets in the United States and Europe. In the 1990s, the participation of the Thai military and logging companies in the rapacious felling of Cambodia's forest became especially notorious. Thailand also imported illegal timber from Indonesia, Burma, Laos, and Malaysia.<sup>163</sup> As Cambodian and Laotian forests have become exhausted, illegal timber imports into and smuggling through Thailand have also tapered off in the 2000s, and their current extent—though clearly smaller than in the 1990s—is unclear.

### Malaysia

Malaysia is a prototypical example of a country that, through unsustainable legal and illegal logging, largely depletes its forests. Although logging for common Asian tropical species—merbau, meranti, keruing, mersawa, and kapur—continues mainly in Sarawak and Sabah in Borneo, Malaysia's annual production of 20 million cubic meters per year is far smaller than it was in the 1980s and 1990s.<sup>164</sup> Concerns over deforestation led the government to place 9.5 million acres of its remaining 47.5 million acres of forest under protection from commercial logging,<sup>165</sup> but questions about the sustainability of logging in Malaysian Borneo continue to be raised<sup>166</sup> and deforestation in the country continues, albeit at a smaller rate.<sup>167</sup> Legal clearance of forests for agriculture, such as the cultivation of African oil palm and, paradoxically, timber plantations, drives much of the deforestation in Malaysia.

In the 1990s, illegal logging comprised as much as one third of overall logging, but as all logging fell off,

---

<sup>159</sup> Forest Trends, 2010: 8.

<sup>160</sup> Ibid.: 32.

<sup>161</sup> EIA, 2001: 10.

<sup>162</sup> See, for example, Hares; Sureeratna Lakanavichian, *Forest Policy and History in Thailand*, Working Paper No. 9, Research Centre on Forest and People in Thailand, 2001; and Mark Poffenberger, ed., *Communities and Forest Management in Southeast Asia: Forests, People, Policies, and a Regional Profile WG-CIFM* (Gland, Switzerland: IUCN: 2000); and Mark Poffenberger, Rowena Soriaga, and Peter Walpole, eds., *Communities and Forest Stewardship: Regional Transitions in Southeast Asia* (Honolulu: University of Hawaii Press, 2007).

<sup>163</sup> See, for example, Asia-Pacific Forestry Commission, *Forests Out of Bounds: Impacts and Effectiveness of Logging Bans in Natural Forests in Asia-Pacific* (Bangkok: FAO Regional Office for Asia and the Pacific: 2001): 18; and EIA (2001): 10.

<sup>164</sup> ITTO 2006: 161.

<sup>165</sup> Seneca Creek: 81-3.

<sup>166</sup> World Rainforest Movement (WRM) and Forest Monitor, *High Stakes—The Need to Control Transnational Logging Companies*, 1998.

<sup>167</sup> FAO 2010: 230.

so did illegal logging.<sup>168</sup> Today illegal logging persists on a far smaller scale, though some estimates put it as high as 25% since a large portion of illegal logging in Malaysia involves irregularities inside licensed areas by licensed companies.<sup>169</sup> The government of Malaysia has made some effort to crack down on it inside the country, one means being a log tracking system, even if an imperfect one.<sup>170</sup> However, as the government does not believe that illegal logging is an extensive problem, it assigns anti-illegal logging measures limited priority.<sup>171</sup>

Malaysia remains an important processing center and smuggling and laundering hub for illegal timber from Indonesia, Papua New Guinea, other parts of Asia, and increasingly Africa and Latin America,<sup>172</sup> even though some studies suggest that the trade in illegally sourced wood has decreased.<sup>173</sup> The government of Malaysia has undertaken modest efforts to combat the illegal timber imports. To a large extent, the government's reluctance to intensify enforcement action against illegal imports and the pervasiveness of the import problem are the result of the Malay timber industry's extensive dependence on foreign timber. Encouraged to grow its processing sector in the 1980s and 1990s to increase the industry's value added, the industry's capacity vastly exceeds domestic supply, but the industry has been unable to downsize.<sup>174</sup> Instead, it perpetuates unsustainable and often illegal logging practices abroad. The limited interest on the part of the processing industry and government in Malaysia to clean up its import chain at least partially reflects the fact that only 14% of Malaysia's timber exports are destined for sensitive markets.<sup>175</sup> *Singapore* too, while lacking

its own forests, is an important transportation and processing hub for illegal timber from the region due to its large timber processing industry and centrality as a transportation hub.<sup>176</sup>

## China

China sits at the hub of the global timber trade, including its illegal component. The world's largest wood workshop, featuring the production of furniture, plywood, wood moldings, and flooring, China is also the second largest producer of paper and paperboard (the United States being the largest) in addition to being an international economic powerhouse with a steadily and rapidly expanding timber processing sector.

China's forest-product imports more than tripled between 1997 and 2005 and are expected to double again by 2015.<sup>177</sup> Given its relatively limited forest resources and a ban on logging following decades of deforestation, China is a massive importer of timber, competing with Japan for the title of the world's No. 1.<sup>178</sup> China exports almost as much as it imports, though not necessarily the same timber. Its major export markets—the United States, the European Union, and Japan—to a large extent determine the global demand for timber, including illegal timber. But China's domestic consumption has been also growing robustly, in particular after the fiscal stimulus packages by the government in 2009.<sup>179</sup> Some 75% of its timber imports come from the Asia-Pacific countries, but China is increasingly having a significant impact on logging and the timber industry in Africa and Latin America, both in terms of foreign investment and volume of trade. Moreover,

---

<sup>168</sup> WWF Malaysia, *Overview of Forest Law Enforcement in East Malaysia*, September 2000.

<sup>169</sup> Lawson and MacFaul: 84.

<sup>170</sup> *Ibid.*: 24.

<sup>171</sup> *Ibid.*: 13-14.

<sup>172</sup> Sarawak has a ban on log imports from Indonesia that has been relatively well enforced, but a thriving illegal trade in sawnwood continues across the border. See, EIA, *Stemming the Tide: Halting the Trade in Stolen Timber in Asia*, undated; and Zhu et al: 37.

<sup>173</sup> Krystof Obidzinski, Agus Andrianto, and Chandra Wijaya, *Timber Smuggling in Indonesia: Critical or Overstated Problem? Forest Governance Lessons from Kalimantan*, CIFOR, September 2006.

<sup>174</sup> Hin Keong Chen, *The Role of CITES in Combating Illegal Logging—Current and Potential*, TRAFFIC, 2006.

<sup>175</sup> Lawson and MacFaul: 66.

<sup>176</sup> EIA, 2001: 7.

<sup>177</sup> *Forest Trends* (2006): 6-7.

<sup>178</sup> See, for example, Amy Kazmin, "China Accused of Illegal Logging in Burma," *Financial Times*, October 18, 2005.

<sup>179</sup> *Forest Trends* (2006): 4.



many of China's competitors in the wood processing sector are losing out to Chinese firms (though Vietnam is increasingly a prominent player).<sup>180</sup>

Vast quantities of wood that arrive in China are sourced illegally. In the middle 2000s, at least a third of China's imports involved suspicious, likely illegal, timber, with an equal volume of illegal timber re-exported, sometimes after being deliberately laundered.<sup>181</sup> By the late 2000s, imports of illegal timber appeared to have declined by 16% to about 20% of its overall imports, largely as a result of a reduction in illegal timber imports from Malaysia, Indonesia, and Burma.<sup>182</sup> In 2008, China was estimated to have imported 20 million cubic meters RWE, worth about \$3.7 billion.<sup>183</sup> Highly privatized, Chinese timber processing companies operate in a cut-throat business environment with very large numbers of competing firms and little regulatory oversight focused on the legality and "greenness" of timber entering China (the fact that wood is sourced illegally abroad does not make it illegal in China). The scene has thus been one of a race toward the bottom in terms of corporate responsibilities for the effects of firms' behavior abroad. Greater international focus on illegally-sourced wood has also encouraged timber laundering through third-party countries, such as China. Nonetheless, as discussed below, Chinese firms have increasingly faced greener consumers and tighter regulatory requirements in the United States and EU that are beginning affect their corporate policies.

Following devastating floods around the Yangtze River in 1998, as a result of decades of intense deforestation, the government of China announced its Natural Forest Protection Program (NFPP), often

referred to as the logging ban. Later supplemented by similar programs, such as the Forest Ecosystem Compensation Program, the effort was meant to promote soil and water conservation and prevent future disastrous floods, but not necessarily to protect China's biodiversity (it is the world's 8<sup>th</sup> most biodiverse country).<sup>184</sup> NFPP banned logging in the forests of the upper and middle reaches of the Yellow River and the upper reaches of the Yangtze and restricted logging in the state-owned forests of Hainan and north China and imposed restrictions on grazing.<sup>185</sup> The policy was slated to expire at the end of 2010, and although the government of China has as yet to make a formal announcement, the ban is expected to be renewed. A key component of the forest restoration policy has been intensification of timber plantation development.

The effects of the forest restoration program have been mixed. Since the ban, forest cover in China has increased, from 325 million acres in 1998 to over 427 million acres (or 18.2% of its landmass) in the mid-2000s, with further substantial increases expected by 2050.<sup>186</sup> Overall, in the past twenty years, China has planted an average of 4.7 million acres of plantations per year.<sup>187</sup> But the afforestation rate, i.e., growing any timber, such as on low-quality monocropping plantations, has far outpaced forest regeneration rate, i.e., the restoration of the natural forest,<sup>188</sup> the former compromising both the quality of available timber and the quality of the ecosystem.

Although China has one of the world's largest total areas of plantations (133 million acres),<sup>189</sup> outcomes of the plantation drive have often been disappointing. Containing mainly fast-growing species, such as eucalyptus, plantations do not produce large, high-

---

<sup>180</sup> Ibid.: 5.

<sup>181</sup> Seneca Creek: 15-16; and Stark and Cheung: 15, 18.

<sup>182</sup> Lawson and MacFaul: 105-106. In some cases, this was the result of law enforcement action, in others of the overall decline of imports from those countries as their forests have been exhausted. Illegal imports from new areas, such as Mozambique, appear to have grown since.

<sup>183</sup> Ibid.

<sup>184</sup> Xi Wang, "The Protection of Wildlife and Endangered Species in China," *Georgetown International Environmental Law Review*, 14, 2002: 491.

<sup>185</sup> For a detailed breakdown of the NFPP by region, see, Zhu et al: 2-3.

<sup>186</sup> Xiaoli Wang, *China's Forest and Forest Land Tenure*, World Forest Institute, January 2006, <<http://www.cof.orst.edu/cofi/international/XiaoliWang.pdf>>. For slightly lower numbers from the early 2000s, see also Asia-Pacific Forestry Commission: 6; and Zhu et al: 12.

<sup>187</sup> FAO 2010: 262.

<sup>188</sup> Zhu et al: 12.

<sup>189</sup> Xiaoli Wang: 9.

grade logs that are in demand, and China needs to continue importing those from abroad where they are mainly logged in natural forests. Despite heavy government subsidies, plantation targets have not been met, often as a result of low tree-survival rates and inappropriate plantation design and placement, with ensuing high transportation costs.<sup>190</sup> Moreover, as many replanted forests are monocultures, often with non-native timber species, they are of limited biodiversity value.<sup>191</sup>

Chinese authorities have made considerable effort to enforce the logging restrictions. Nonetheless, illegal logging<sup>192</sup> has emerged in some parts of China, such as in Yunnan, driven mainly by local wood shortages. By some estimates, illegal logging amounts to 100-116 million cubic meters a year.<sup>193</sup> Efforts to develop alternative livelihoods for forest-dependent communities, such as by encouraging tourism, have failed to offset the socioeconomic hardships resulting from the logging restrictions, and many rural communities face a severe drop in income.<sup>194</sup> This illegal logging may have even worse environmental impact than legal logging since it involves no forest management at all. Since local communities have no stake in protecting the forest from which they cannot officially log, but cannot satisfy their wood requirements, they resort to illegal logging.<sup>195</sup> Because forest guards have been recruited from the local community, they often have been reluctant to enforce to the ban.<sup>196</sup>

Although China is dependent on timber imports (partly reflecting Beijing's restrictions on domestic logging and partly growing demand from abroad),

it has increasingly exhibited at least an increasing recognition of the illegal logging problems abroad and some willingness to encourage greener practices by its timber companies. Even though its legislation does not prohibit the import of illegally-sourced timber, China is nonetheless, for example, exploring the possibility of developing a national legality verification system for its imports.<sup>197</sup> Although much of this more responsible approach has taken place only on paper, some has actually resulted in action.

The “greening” of Chinese timber industry, small and slow as it has been, has, to a large extent, been driven by increasing legal requirements in the United States and countries of the European Union, China's two big markets. The United Kingdom's, and similar European Union public procurement policies, requirement that only legal or sustainable timber is used in public projects (a sizable part of UK and EU procurement) resulted in UK timber traders cancelling several million pounds worth of Chinese contracts in 2005.<sup>198</sup> One of the most significant pieces of legislation has been the 2008 expansion of the Lacey Act in the United States. It holds U.S. timber importers and retail firms liable and subjects them to prosecution if they use illegal timber. (But the onus is still on the U.S. government to identify the illegality of the timber.) Unless China develops secure timber custody chains and certification, the expansion of the Lacey Act threatens—at least to some extent—a key market for Chinese firms. A small number of forest management units and wood processing companies in China have become interested in adopting practices that qualify them for certification under the Forest Stewardship

---

<sup>190</sup> Zhu et al: 29; and Forest Trends: 8, 18.

<sup>191</sup> See, for example, Andrew Wilson, “Forest Conversion and Land Use Changes in Rural Northwest Yunnan, China: Implications for the ‘Big Picture’,” *Mountains Resources Development*, 26, 2006: 227-236.

<sup>192</sup> Some researchers have argued that the NFPP ban itself is illegal as it contradicts land and forest laws that require respect for owner's harvesting rights, due process, and proper compensation.

<sup>193</sup> Forest Trends: 8.

<sup>194</sup> See, for example, David Melick, Xuefei Yang, and Jianchu Xu, “Seeing the Wood for the Trees: How Conservation Policies Can Place Greater Pressure on Village Forests in Southwest China,” *Biological Conservation*, 16, 2007: 1959-1971.

<sup>195</sup> Zhu et al: 29.

<sup>196</sup> See, Daniel Winkler, “Forest Use and Implication of the 1998 Logging Ban in the Tibetan Prefectures of Sichuan: Case Study on Forestry, Reforestation and NTFP in Litang County, Ganzi Tap, China,” *Inform Bot Ital*, 35 (2006): 116-125; and Salenne Taveau and Wei Wang, “Value of Forest Resources in a Miao Community of Jindou Natural Village, Yunlong County, Yunnan Province,” Research Report for Community Livelihood Program, Centre for Biodiversity and Indigenous Knowledge, Kunming, China, 2005.

<sup>197</sup> Lawson and MacFaul: 44.

<sup>198</sup> Forest Trends: 12. Between 20-40% of UK's timber procurement is estimated to be for public projects and about 20% of EU's procurement, according to Global Witness (2009): 108.

Council (an independent NGO) system, the gold standard of certification currently available.<sup>199</sup> The Chinese Ministry of Environmental Protection also drafted mandatory environmental measures for Chinese companies involved in projects abroad, including a requirement to complete a priori assessment of the project's expected environmental impact and a requirement to abide by international environmental treaties that China has signed. Whether the draft law will be adopted and have any substantial effects remains to be seen.

China has also become rather active in numerous inter-governmental processes aimed to combat illegal logging and associated trade. In the early 2000s, Ministerial Forest Law Enforcement and Governance (FLEG) processes produced Ministerial Declarations—non-binding declarations and guidelines, often with little impact on existing practices or their enforcement. Nonetheless, China has publicly committed itself to crack down on illegal timber imports, such as those from Russia, Indonesia, and Burma.

Indeed, following a highly critical report by Global Witness (a leading NGO specializing in the monitoring of the use of natural resources) about illegal logging of Chinese companies in Burma in 2005, the government of China undertook an unprecedented crackdown on the importation of timber from Burma—an extensive and highly profitable business in Southwest China. Accompanying a logging ban and crackdown by Burmese authorities across the border, Beijing shut down the border between the two countries, undertook extensive confiscation of Burmese timber from Chinese wood processing companies in Yunnan, deployed the Border Defense Brigade to enforce the ban, and arrested some traders.<sup>200</sup>

The motivation of the Chinese government for the crackdown is not entirely clear, as China has rarely demonstrated great ecological sensitivity to the effect of its economic policies, domestically and

especially internationally, despite its on-paper greening; and it would be premature to assign strong weight to the effects of international NGO shaming policies. There are several possible explanations, ranging from seeing the timber crackdown as a fairly low-hanging environmental fruit before the 2009 Copenhagen negotiations (since much of the Burmese border area was becoming logged out anyway and the ecological damage was spilling into the Chinese forests across the border), to seeking to please or stabilize Naypyidaw that used the crackdown as a mechanism to punish unruly ethnic separatist groups, to striving to impose order on the timber industry in the region and rein in overly independent timber businessmen, in the same way it cracked down on other businessmen in illegal and semilegal commodities in the region at that time. Regardless of the motivation, the costs of the crackdown for both Beijing and the region were significant. Many of the counties that experienced the crackdown were dependent on the trade in and processing of Burmese timber for as much as 80% their income, with drastic effect on local government revenues and the local economy.<sup>201</sup> Local unemployment increased dramatically, and many timber companies went out of business. Local markets saw the price of timber increase by 20–40%, a price hike that lasted into 2007.<sup>202</sup>

Chinese traders reacted in two ways: First, they started lobbying both Naypyidaw and Beijing to ease the ban, and by July 2006, several Chinese towns began receiving allowable quotas for imports of timber from Burma, and parts of the border were reopened.<sup>203</sup> Second, the illegal timber economy and its entrepreneurs adapted to the new law enforcement environment. New smuggling routes from Burma away from official border crossings soon developed, often with far more destructive environmental impact as they were cut through relatively untouched ecosystems, even though transport now took the form of donkeys, instead of trucks. Bribery

---

<sup>199</sup> Zhu et al.: 9. See also Lawson and MacFaul: 77.

<sup>200</sup> For details, see, Global Witness (2009).

<sup>201</sup> *Ibid.*: 39, 42.

<sup>202</sup> *Ibid.*: 40, 45.

<sup>203</sup> *Ibid.*: 43.

also expanded on the Chinese side, with big-time corruption emerging in the form of fake certificates and inflated quota permits involving local Chinese authorities. Thus, although the overall timber traffic between China and Burma declined by 70%, the majority of the remaining trade continues to be illegal.

## OVERALL GOVERNMENT RESPONSE TO ILLEGAL LOGGING IN THE ASIA-PACIFIC REGION

Over the past twenty years, governments in the Asia-Pacific region have progressively recognized the threats posed by unrestrained logging. Laws and regulatory policy regarding anarchic and illegal logging in the Asia-Pacific region have been progressively tightened, and many countries in the region now have rather stringent laws on the books. However, few of the laws and policies are diligently enforced. Law enforcement agencies and other key stakeholders, governmental and nongovernmental, often adopt regulatory policies or undertake one-time enforcement actions merely in response to foreign and environmentalist pressure or lured by the prospect of cash-for-forest transfers, while their own commitment and capacity to implement the regulations in a systematic way remain limited. Key stakeholders, including government officials, often benefit from short-term profit and power maximization that direct or indirect participation in undesirable logging practices brings, and law enforcement in the region is often overwhelmed by the sheer size of the illegal activity and pervaded by corruption.

To the extent that governments have been genuinely committed to upholding restrictions on the timber trade, including bans on logging, they have applied such measures mainly toward the domestic components of the trade. Many such measures, such as

bans and reforestation drives, have taken place only after their own forests have been depleted, often in environmentally devastating ways, and the country stopped being a viable timber exporter. Stimulated often by environmental disasters, such as flooding, such measures, including timber plantations, have been geared toward restoring timber supply and alleviating water and soil erosion, while biodiversity considerations have been neglected.

Such internal policies have resulted in logging moving into new areas, mostly in an unsustainable and environmentally destructive manner and often driven by logging companies from countries that have moved past peak production or instituted logging bans. While commitments by national governments to crack down on illegal imports in the Asia-Pacific region have become more frequent, no country in the region has laws that *prohibit* the import of illegally-sourced timber.

Nonetheless, the greening of crucial markets in the United States and Western Europe, and the promise of international payments for forest preservation, such as REDD+, has had important positive impacts on the logging and processing industry in many countries of the Asia-Pacific region. Many have been at least nominally adapting their practices to Western sensitivities and begun exploring various certification mechanisms to assure access to the West's lucrative markets. How deeply and pervasively effective such measures to combat illegally and unsustainably harvested timber will become in the Asia-Pacific will to a great degree depend on the monitoring and enforcement of the compliance mechanisms and on the size of dirty markets elsewhere in the world to which companies in the Asia-Pacific can switch.

# POLICY CONSIDERATIONS: THE TRADEOFFS AND COMPLEMENTARITIES OF SECURING DIFFERENT ECONOMIC AND ENVIRONMENTAL OBJECTIVES

---

Clearly, the current state of logging and the extent of unsustainable, environmentally damaging, and illegal practices that still characterize the timber industry in the Asia-Pacific region cry out for better forms of regulation and more effective law enforcement. Unfortunately, however, there are no easy solutions to the problem, and almost every single possible regulatory action is either extraordinarily hard to implement or entails difficult tradeoffs and dilemmas. The concept of “sustainable yield with a people-centric approach”<sup>204</sup> that has emerged as the gold standard of forestry practices in the early 2000s often remains a distant goal in practice.

## MANAGING THE SUPPLY

### Regulatory Design

There is no easy one-shoe-fits-all model to even the basic question of how tight the overall regulatory design of the timber industry in a country or region should be. Much of the analysis above showed that loose regulatory designs encourage rapacious and unsustainable looting of forests and irreparable damage to ecosystems. However, even apart from the question of whether the country will have the will and capacity to enforce a stringent regulatory design, too many regulatory obligations may encourage precisely the bad practices that they are meant to combat.

High taxes, for example, are often imposed to secure revenues for the state, limit the number of logging companies in a country for easier regulatory oversight, and reduce the volume of timber logged to achieve sustainability. Yet high taxes are often a key driver of logging companies’ desire to escape the financial burden of licensed activity and move timber through the illegal trade. Differential customs duties also often drive the emergence of illegal traffic. China’s desire to promote the development of its timber processing industry near the border with Russia led Beijing to impose no import duties on Russian lumber and reduce the VAT on logs imported across the border by 50%. This policy not only stunted the development of the timber processing industry in Russia, but also encouraged smuggling with timber.<sup>205</sup> Similarly, if permit requirements become too onerous, such as in Indonesia where in the late 1990s a logging company was obligated to present 1,599 documents each year and a host of other data to 16 state agencies in Jakarta and another eight in the region,<sup>206</sup> companies tend to opt for shifting operations into illegal versions of the economy.<sup>207</sup>

At the conceptual level, a regulatory design should be stringent and enforceable, but not onerous. What that actually means when such principles are being operationalized for a specific country needs to be evaluated on a case-by-case basis, but is often very

---

<sup>204</sup> See, for example, Martin K. Luckert and Tim Williamson, “Should Sustained Yield Be Part of Sustainable Forest Management?” *Canadian Journal of Forest Research* 35, 2005: 356-364.

<sup>205</sup> Katsigris: 251.

<sup>206</sup> ICG: 8.

<sup>207</sup> See, for example, Vito Tanzi, “Corruption Around the World: Causes, Consequences, Scope, and Cures,” *IMF Working Paper No. 98/63*, May 1998, <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=882334](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=882334)>.

difficult to gauge. Similarly, although ideal regulatory designs would involve a great deal of flexibility and the ability to correct and adjust particular components, such flexibility rarely exists in fact in political systems and policy bureaucracies in lucrative economies with many vested interests.

A critical component of effective regulatory designs for logging is secure property rights, including land tenure. In their absence, legal liability for illegal logging cannot be established and it becomes very difficult to develop stakeholders with a strong interest in sustainability. In the absence of secure property rights, long-term gains become uncertain, and the structure promotes short-term profit accumulation regardless of sustainability and externalities. However, developing land cadastres and establishing land property rights is often extraordinarily difficult for governments, especially in countries where resource extraction has generated powerful political actors. Moreover, even purely in the context of illegal logging, governments often have as much interest in not establishing secure property rights as in doing so, since loose property rights allow the government to manipulate the timber industry or even local communities when it comes to encouraging unrestrained logging or imposing logging bans.

### **Greater Law Enforcement**

Neither industry self-regulation nor even a strict regulatory design have proven to be sufficient mechanisms to combat illegal logging in the absence of effective law enforcement.

Addressing corruption of law enforcement institutions is critical. Some of the common corrective mechanisms include reducing the temptation of law enforcement officers to participate in the illegal activity, such as providing them with greater salaries to wean them off dependence on illicit profits or extortion, punishing corrupt officials, and eliminating the dependence of key stakeholders, such as military and police forces, on illegal profits for their budgets. Other important measures focus on addressing capacity deficiencies of law enforcement,

such as increasing the numbers of law enforcement officials, and improving technical capacity to investigate and apprehend violators as well as making sure that the judicial system is capable of effectively and speedily prosecuting and punishing them. Many of such measures are resource and time-intensive, and often require many years if not decades of effort—by which time forests are destroyed.

Beyond corruption, there are other structural obstacles to improving the effectiveness of law enforcement against illegal logging and some difficult externalities to greater effectiveness in a particular locale.

Checking logged timber is very resource intensive and often technologically complex. During its crackdowns on illegal logging, China has often been able to mobilize a million forest enforcers for a particular law enforcement action.<sup>208</sup> Few other governments can mount operations of a similar size even on a one-time basis. More often than not, one official is charged with patrolling tens to hundreds of square kilometers. Crackdowns in particular smuggling hubs are less resource-intensive, but often by the time of a crackdown the forest is already cut; moreover, traffickers tend to adapt by shifting hubs to locales that do not have the intensive monitoring.

Law enforcement officials are often poorly trained, do not fully understand complex forestry laws, and often do not even have the capacity to identify which species of timber they are examining. Characteristically, too little intelligence-gathering and data collection is conducted to facilitate and strategize law enforcement action. Raids also often capture only poor loggers, who in the developing world are easily replaceable from within a broad pool of the poor. The timber barons, often major economic magnates who own legal logging businesses, have great political influence, and are able to hide their participation in illegal logging behind a series of intermediaries, thus escaping detection and prosecution. Unlike in the case of drug traffickers, for example, who often operate solely and fully in an illegal economy, establishing the liability of such timber barons and developing

---

<sup>208</sup> “10 Illegal Loggers Punished in Bid to Save Forests,” *China Daily*, November 9, 2007.

the political will to prosecute them is often far more difficult for many countries. Instituting the degree of law enforcement needed sometimes completely overwhelms local judicial systems that then react by throwing out cases of illegal logging.

Raids sometimes do result in short-term shocks to the illegal logging industry and produce immediate positive outcomes, diminishing or even suspending illegal logging in particular locales. However, maintaining similar law enforcement intensity and spreading it throughout the forest area to prevent the displacement of logging and smuggling to new locales and the emergence of new smuggling methods can be difficult to develop and maintain. Often such displacement is even more environmentally damaging than very intense logging in a limited area, as it fragments the forest and eliminates all pristine primary growth, further compromising biodiversity. Cutting a new road through a forest has been consistently shown to generate a cascade of negative effects, often unleashing not only illegal logging in new areas, but also uncontrolled invasions by colonists, hunters, and land speculators.<sup>209</sup> To the extent that large segments of a local community are involved in illegal logging, enforcers may fear violent clashes and become reluctant to undertake action.

Unlike in the case of other illegal economies, such as, for example, the illegal trade in wildlife, which often is invisible, detection of illegal logging and smuggling is far easier and new technologies are increasingly being adopted that facilitate law enforcement.<sup>210</sup> Satellites can detect that areas off limits to logging are being logged, and sometimes even that in permitted areas the intensity of logging is greater than sanctioned. However, there is often a considerable gap between satellite detection and on-the-ground law enforcement action. To the extent that poor land cadastres prevent the establishment of

ownership and liability, the problem is further compounded. And as illegal logging often involves land invasion by outsiders, establishing legal liability and prosecuting perpetrators becomes more difficult yet.

DNA testing and electronic tags for logs again increase the chance of detecting illegal wood. But the effectiveness of DNA testing depends on the availability of a matching sample database: often DNA varies down to a particular tree, and given the sheer volume and size of the world's areas being logged, current DNA databases often cover only a tiny percentage of the timber being traded.

Electronic tags tend to be more secure and easier to monitor than other versions of tagging trees and timber products, but often a separate illegal economy in profitable fake tags and other documentation develops along with illegal logging as a result of law enforcement action—a common problem with CITES certificates, for example.<sup>211</sup> Moreover, once illegal logs are cut or shredded and mixed with legal wood, even with DNA testing, establishing that a portion of the wood came from illegal sources becomes extraordinarily difficult if not impossible. Thus, preventing such mixing involves constant monitoring of all mills and processing facilities—again, extremely resource intensive.

And as in other illegal economies, increased law enforcement tends to weed out the most obvious and least competent criminals, resulting in illegal activity being more hidden, but no less detrimental. Logging companies that have faced prosecution for illegal logging outside of their concession areas have, for example, shifted to more intense, illegal logging within their concession areas to hide their illegal activities. They have also resorted to acquiring licenses through bribery, with the resulting logging being licensed, but still undesirable. Another increasingly

---

<sup>209</sup> See, for example, William Laurence, “Deforestation in Amazonia,” *Science*, 304, 2004: 1109-1111; and P Philip Fearnside, “Brazil’s Cuiabá-Santarém (BR-163) Highway: The Environmental Costs of Paving a Soybean Corridor through the Amazon,” *Environmental Management*, 39, 2007: 601-614.

<sup>210</sup> For details about such technologies and their scope, see Dennis Dykstra, George Kuru, Rodney Taylor, Ruth Nussbaum, William Magrath, and Jane Story, *Technologies for Wood Tracking—Verifying and Monitoring Chain of Custody and Legal Compliance in Timber Industry*, Environment and Social Development East Asia and Pacific Region Discussion Paper, World Bank, Washington, D.C., 2003; <[http://www.illegal-logging.info/item\\_single.php?it\\_id=30&it=document](http://www.illegal-logging.info/item_single.php?it_id=30&it=document)>.

<sup>211</sup> Brack, Gray, and Hayman 2002.

prominent strategy is to acquire a license for other purposes, such as mining or agribusinesses, with the objective of deforesting or logging the acquired land.

### **Border Control**

Border control often is even more difficult than controlling logging and processing locales. At official ports and checkpoints, officials frequently lack the technical capacity and law enforcement intensity to check whether the traded wood is legal. Illegal wood is often mixed with legal wood and accompanied by fake certificates, tags, and other documentation. Moreover, checking each and every single log often causes such delays at borders and consequent extensive economic losses that governments are often reluctant to move beyond random checks. Moreover, border officials often tend to prioritize law enforcement against other illegal commodities toward which law enforcement action is deemed more important or more prestigious, such as drugs.

Even when official checkpoints do not allow traffic in illegal timber, such as when a checkpoint or the entire border becomes shut down, traffickers often develop their own smuggling routes that bypass official checkpoints. To the extent that they cut routes through forests or deserts that have been previously undamaged by human action, the resulting environmental damage may be even greater. This balloon-effect problem does not take place only on a local level, but increasingly on a global one. As logging has been depleting forests in Southeast Asia, or a particular country's law enforcement has shut down the sourcing of wood from a particular country, destructive and illegal logging has been displaced to Latin America and Africa.

### **Managed Logging versus Bans on Logging**

Logging often depletes the forest to the point that governments feel the need to resort to bans on logging. In environments with poor regulatory frameworks and meager enforcement, neither the timber

industry nor governments have the capacity to regulate the logging and trade in wood sufficiently to assure sustainable conservation. Although local communities, logging firms, the national government, and the world would benefit from the adoption of best practices, problems of uncertainty, lack of trust, short-term horizons, freeriding, and coordination difficulties all too often drive people to violate forest management plans. A logging company's long-term best interest may be to log in a sustainable way, but uncertainty about the future and short-time horizons encourage behavior that causes the industry to eat its own tail. The mere anticipation that some logging companies are violating the rules drives many to adopt such behavior since, unlike illicit drugs, timber is depletable, often rapidly so. In fact, the immediate harvest of best trees and next best remaining trees generate the greatest profits—all the more so in the case of rare and endangered species. Often financial returns from "liquidation logging" greatly exceed those from sustainable logging.<sup>212</sup>

Thus, although forest regeneration often requires 50-year logging cycles, and concessions for political and immediate economic reasons are often granted under 30 to 40-year cycles, companies sometimes fell trees at 10 to 15-year logging rates. Moreover, timber industries that have experienced significant collapse of timber supply as a result of unsustainable practices have often learned that instead of facing severe costs from downsizing and learning to behave responsibly, they can simply shift their unsustainable and damaging practices abroad and overseas. Thus, especially in the absence of a strong buyer's demand for certified wood (discussed below), the regulation and self-regulation of the timber industry in the Asia-Pacific region (as well as Africa and Latin America) tend to be very poor.

Blanket bans, however, can also encourage illegal logging and entail their own problems. As examples from Thailand, Indonesia, and China have shown,

---

<sup>212</sup> See, John Reid and Richard Rice, "Assessing Natural Forest Management as a Tool for Tropical Forest Conservation," *Ambio*, 25, 1997: 382-386; Richard Rice, Raymond Gullison, and John Reid, "Can Sustainable Management Save Tropical Forests?" *Scientific American*, 276, 1997: 44-49; and Richard Rice, Cheri Sugal, Shelley Ratay, and Gustavo A. B. da Fonseca, "Sustainable Forest Management: A Review of Conventional Wisdom," *Advances in Applied Biodiversity Science* No. 3, CABS/Conservation International, Washington, D.C., 2001: 1-29.



in the absence of having a stake in managing forests sustainably and being able to profit from legal trade, local communities and logging companies often engage in illegal logging and have few incentives to invest in reforestation. To the extent that logging bans significantly squeeze the income of the local community, pressure toward illegal logging intensify. Bans on the export of logs tend to be particularly ineffective in controlling illegal logging and illegal timber traffic as traders adapt by cutting logs near the source if they face law enforcement action. Often adopted once few big trees are left in a country anyway, the ban-on-log-export policy may be motivated not by the desire to preserve the forest, but rather to encourage the development of domestic value-added chains. Such a policy can even encourage the bloating of the timber industry in a country, which in turn encourages further unsustainable and illegal logging. The more countries have such bloated logging industries, the greater the demand for timber throughout the world.

### **Involving the Local Community**

Forest management frameworks developed in the late 1990s and early 2000s, often spurred by NGOs fighting illegal logging, have emphasized involving the local community and developing it into a key stakeholder in forest management. As a result, the amount of forest partly or wholly controlled by local communities has more than doubled over the past 20 years, to more than 988 million acres, or 27% of the total.<sup>213</sup> Such land transfers usually involve a prohibition on selling or clearing the forest combined with permission to log and otherwise exploit it, but with emphasis on conservation. From human rights, resource, and environmental conservation perspectives, such an approach makes eminent sense, since the local community often bears the brunt of the

environmental and economic costs of forest destruction while reaping little benefit from forest felling. The local community is also in a position to directly monitor the forest and report encroachment and invasion by logging or agribusinesses.

Some such initiatives in India, where each household was given the right to a few acres of agricultural land and a share in local forest produce, resulted in brilliant examples of cooperation between organized communities and committed officials.<sup>214</sup> Similarly, in the Amazon, research has shown that indigenous reserves are particularly effective in slowing down forest-clearing in high-deforestation regions, even once they come in contact with civilization.<sup>215</sup>

Often, however, the results of local community involvement have been very mixed for a variety of reasons. Governments are inclined to transfer the degraded forests, while keeping the valuable ones to themselves. Local communities frequently need technical assistance and access to credit to generate sufficient profits from the forest that are not easily forthcoming for them.<sup>216</sup>

Moreover, not all local communities are good forest preservers. Governments (as has been the case of the Thai government's attitude to its forest hill minorities) sometimes exaggerate the environmentally damaging effects of human settlements and slash-and-burn and hunting practices in the forest. But especially in protected areas, such as national parks, the gold standard of environmental conservation that best assures biodiversity preservation is often considered to be no, or very limited, permanent human presence. Even indigenous human settlements often ultimately lure in roads, other business, or high-impact, ecologically damaging ecotourism.

---

<sup>213</sup> *The Economist*, September 25, 2010: 10.

<sup>214</sup> *Ibid.*: 12.

<sup>215</sup> Daniel Nepstad, Steve Schwartzman, Barbara Bamberger, Márcio Santilli, David Ray, Peter Schlesinger, Paul Lefebvre, Ane Alencar, Elaine M. Prinz, Greg Fiske, and Alicia Rolla, "Inhibition of Amazon Deforestation and Fire by Parks and Indigenous Reserves," *Conservation Biology* 20(1) 2006: 65-73.

<sup>216</sup> For the highly diverse effectiveness of such local community forest programs in Mexico, the country usually considered very successful with programs, see David Barton Bray, Elvira Duran, Victor Hugo Ramos, Jean-Francois Mas, Alejandro Velazquez, Roan Balas McNab, Deborah Barry, and Jeremy Radachowsky, *Tropical Deforestation, Community Forests, and Protected Areas in the Maya Forest*, Center for International Forestry Research, 2008.

And even when the local community's environmental footprint is limited and consistent with biodiversity preservation, the community often turns out to be unable to resist or even effectively inform governing authorities of the presence of illegal loggers. Nor do the local governing authorities in such communities, such as in Burma or India, necessarily have an incentive to stop illegal logging. Corruption of government institutions compounds the problems. Although forest activists tend to emphasize traditional forest regulatory mechanisms of local communities, such processes are easily overwhelmed by the new economic system of illegal logging the community now faces.<sup>217</sup>

Moreover, as with other regulatory and law enforcement practices, the traditional forest enforcement and dispute resolution processes tend to be socially embedded, reflecting the economic and political order of the community. Illegal logging and associated profits can undermine the previous local political and economic arrangements, overwhelming existing mechanisms or making them obsolete, leading toward a renegotiation of local community rules that incorporates the illegal logging practices. Norms and behavior change, sometimes as a result of major economic shocks, including from the new presence of logging, and not always for the good.

Poor and marginalized local communities with a paucity of other livelihoods often eagerly participate in unrestrained and illegal logging. Poor communities typically tend not to focus on long-term economic and environmental costs and prioritize short-term profits. Although some members of a

local community may want to preserve their forests, many will opt to participate in the illegal logging to cash in on the financial windfall and improve their family's conditions. To the extent that powerful businesses with an interest in unrestrained logging, or outright corrupt timber barons, can dominate the voice of the local community or buy off the community through economic handouts, the local community may be an all-too-willing conspirator in forest slaughter. Thus, merely involving a local community does not necessarily lead to its ecological benevolence or the sustainability of logging.

### **Alternative Livelihoods Efforts**

Moreover, efforts to wean local communities from logging through the alternative livelihoods efforts have been ineffective. Often, efforts to create livelihoods from the sustainable use of other forest products have generated profits that are too low, compounded by the costs of transportation and the lack of ready markets, created too few jobs, required long-term investment with little immediate cash flows for the community, and proved technically too complex.<sup>218</sup> Many of such "integrated conservation and development projects" (ICDPs) suffer from weaknesses in design and implementation,<sup>219</sup> including because many areas of logging which such projects targeted are simply too far and isolated to be viable locales for non-extraction economic projects. Such alternative livelihoods approaches also often encounter the problem of local communities using ICDP funds to supplement their income, rather than replace the profit from logging.<sup>220</sup> Yet communities have been reluctant to move, and relocation programs have often been forced on the community

---

<sup>217</sup> For an detailed analysis of how local communities at first resented, but were not able to resist illegal logging and ultimately became coopted into the illegal logging system in Indonesia, see, McCarthy: 7, 9. For a comparative perspective on local communities interactions with forests and the outcomes of efforts to involve local communities in forest management in Southeast Asia, see, Poffenberger et al.

<sup>218</sup> See, for example, McCarthy for Aceh's and more broadly Indonesia's experience. A recent initiative in Aceh is to hire former insurgents and illegal loggers as park rangers. But sufficient resources for the program as well the numbers of jobs it will generate remain in question. See, for example, Peter Gelling, "Former Rebels Turned Forest Rangers in Aceh," *The New York Times*, March 4, 2010.

<sup>219</sup> See, for example, Jeffrey McNeely, *Economics and Biological Diversity: Developing and Using Incentives to Conserve Biological Resources*, (Gland, Switzerland, IUCN: 1988).

<sup>220</sup> See, for example, Katrina Brandon and Michael Wells, "Planning for People and Parks: Design Dilemmas," *World Development*, 20, 1992: 557-570; Paul Ferraro, "Global Habitat Protection: Limitations of Development Interventions and a Role for Conservation Performance Payments," *Conservation Biology*, 15, 2001: 990-1000; A Anne Johannesen and Anders Skonhoft, "Tourism, Poaching, and Wildlife Conservation: What Can Integrated Conservation and Development Projects Accomplish?" *Resource and Energy Economics*, 27, 2005: 208-226; and Thomas T. Strusaker, Paul J. Strusaker, and Kirstin S. Siex, "Conserving Africa's Rain Forests: Problems in Protected Areas and Possible Solutions," *Biological Conservation*, 123, 2005: 45-54; and Randall Kramer, Carel van Schaik, and Julie Johnson, *Last Strand* (Oxford: Oxford University Press, 1997).

without adequate compensation and assured and sufficiently profitable livelihoods in areas into which the community was relocated.

### **Plantations and Reforestation**

Many countries throughout Southeast Asia, especially those with depleted forests, including Vietnam, Thailand, and Malaysia, have ambitious timber plantations and reforestation plans, often with strong foreign investment by China. However, plantations have showed themselves to be a highly imperfect solution. First of all, plantations and reforestation are often far more expensive than cutting native forests and require heavy state subsidies. Second, assuring tree survival on a plantation at an economically-profitable rate is often also challenging. Third, the productivity of plantations established in the Asia-Pacific more broadly to date has been poor, and ambitious targets often lack specificity and actionable plans.<sup>221</sup>

Environmentally too, plantations bring only very modest, if any, biodiversity benefits. Not all tropical timber species can be grown on a plantation, including some highly desirable ones, such as ramin, and even natural forest once logged only rarely and over many centuries tends to recover the biodiversity it once had as primary forest. If deforestation or intense logging results in other knock-on effects, such as water evaporation and water siltation, the ecosystem may be lost regardless of what trees are later replanted. Thus, both forest structure and the biodiversity are inevitably hurt by logging. Also since many tropical timber species tend to reach maturity and sufficient heights and diameters only in fifty or more years, timber plantations and reforestation programs tend to be monocultures of fast-growing, often non-native species, such as pine and eucalyptus, with little value for ecosystem regeneration and species preservation, known as “the empty-forest phenomenon.”<sup>222</sup> (Yet there may be indirect biodiversity benefits if eucalyptus is grown

on previously deforested land to replace the felling of native forests for fuel.) If reforestation is driven by other objectives, such as preventing soil erosion, the temptation grows to choose the highly profitable African oil palm, often resulting in further deforestation as businesses become addicted to its profits and want to expand its area of cultivation. Once again, such plantations of African oil palm have close to no biodiversity value. Finally, if plantations cause the destruction of high-value native forest to start with and/or drain the water table in an area, they may not only fail to bring ecological value, they may actually be environmentally damaging.<sup>223</sup>

Plantations and other policies discussed above, including bans on logging, tend to focus on forest cover or timber preservation, not biodiversity conservation. Biodiversity loss is an externality mostly not factored into calculations of logging companies, nor is its avoidance often a priority interest for many governments in the Asia-Pacific and other parts of the world, as the economic and ecological benefits of biodiversity are far more elusive than timber profits, and governments and populations in Southeast Asia and elsewhere in the developing world often place little intrinsic (and altruistic) value on species preservation.

### **Certifying Wood**

A favored approach to combat illegal logging is the use of timber certification to designate that the logged and traded timber has been sourced and transported in a legal or sustainable way and that illegal timber has not been mixed into the legal timber. Ideally, such certification examines and approves the entire custody chain: the traded timber would be certified from the moment it is carefully, legally, and sustainably selected for cutting in the forest to the moment a customer buys a piece of furniture in a Western furniture store: Any gap in controls in the custody chain increases the chance that illegal timber enters the trade and is effectively laundered.

<sup>221</sup> Keith Barney, “Vietnam’s Forest Sector and Supply to China,” Asia Pacific Partners Working Paper No. 8, Forest Trends, Washington, D.C., 2004.

<sup>222</sup> For discussion of the intensity of the empty-forest phenomenon, see, for example, “Second Life,” *The Economist*, 390(8614): 79, and Rosenthal.

<sup>223</sup> Tim Ecott, *Forest Landscape Restoration—Working Example from 5 Ecoregions*, WWF, Gland, Switzerland, 2002.

The Forest Stewardship Council (FSC, an independent, international NGO) certification which tracks timber from forest to the shelf is often considered the current gold standard of certification labels for timber. However, by the end of the 2000s, the FSC still certified only approximately 220 million acres, of which 110 million (or one half) are in North America, while there are 10 billion acres of forested land on Earth.<sup>224</sup> Less than 2% of tropical timber was covered by FSC certification.<sup>225</sup> Getting certified is expensive, costing about \$50,000 per concession, and customers are not always eager to absorb the higher costs. Tests by Home Depot, the largest purveyor of FSC-stamped products, suggest that less than a third of customers would pay a 2% cost premium for certified products.<sup>226</sup>

Given the size of the trade and the complexity of certification—as wood changes many hands along trade routes and is processed into many, often minute pieces, over extensive periods of time—the reliability of the process is frequently problematic, with many opportunities for fake certificates, falsification, or timber laundering along the way. The more timber will be subject to certification, the more challenging will it be to maintain quality and reliable certification.

Beyond the sheer volume and the previously discussed challenges of law enforcement intensity, fake documentation, and the amount of time it takes to check a sufficient amount of timber to discourage laundering and smuggling, certification schemes are plagued by other problems as well. The most important one is that timber may be certified as legal, but may not be harvested sustainably and in an environmentally sensitive way. Some of the legality verification is very limited, confirming only that timber originated in a particular concession area and that the company had the necessary permits. Other legality certification can involve more rigorous evidence

of compliance with harvesting regulations and other operational matters.<sup>227</sup> Even then sustainability may not necessarily be a part of the certification evaluation. Since most legislation mandating certification of wood and wood products, including the Lacey Act and EU's DDR requirements, centers on its legality, as opposed to its sustainability, suppliers have concentrated on precisely assuring timber's legality but not necessarily sustainability. Moreover, getting a certification for sustainability takes considerably longer and is far more expensive than the legality certification.

Certification problems often start with forest management plans. Both the design and implementation of forest management are often pervaded by serious problems, even though the mere existence of such a plan can qualify the logged timber for certification. Not all forest management plans ensure sustainability and minimal environmental damage, including measures to protect biodiversity. Often forest engineers, large numbers of whom are required to design programs for all the logging operations, are incompetent and corrupt. Moreover, since natural forest regeneration often takes upward of fifty years in the tropics, there is not necessarily any easy way at present to see whether the management programs are effective and to correct policy if they are not. And certification does not always involve all three components: legality, timber sustainability, and biodiversity protection. And certificates are issued only for one or two components of desirable practices, with law enforcement officials and customers having no idea what exactly is being certified and whether the certified timber in fact reflects optimal practices.

In addition, consumer preferences and regulatory requirements for certified wood have given birth to some certification schemes of dubious quality. Many of these certification labels represent simply cases of “greenwashing,” i.e., illegal and unsustainable wood

---

<sup>224</sup> Pervaze A. Sheikh, *Illegal Logging: Background and Issues*, Congressional Research Service, June 9, 2008: 5. Even the FSC is not infallible as was revealed with respect to illegal and unsustainable timber from Laos the FSC nonetheless certified. See, for example, World Rainforest Movement, “Laos: FSC Certified Timber Is Illegal,” <[http://www.illegal-logging.info/item\\_single.php?it\\_id=1683&it=news](http://www.illegal-logging.info/item_single.php?it_id=1683&it=news)>; and Wright and Carlton.

<sup>225</sup> *The Economist*, September 25, 2010: 13.

<sup>226</sup> *Ibid.*

<sup>227</sup> Lawson and MacFaul: 77.

being certified as legal and sustainable. In other cases, major retailers—even in the United States and Western Europe where customers are overall greener and the regulatory oversight greater—have appropriated and advertized green labels, including that of FSC, without ever being certified.<sup>228</sup> At other times, timber and wood products suppliers have obtained FSC's chain-of-custody certification indicating that they have adequate capacity to check their supply chains without actually handling any FSC certified timber.<sup>229</sup> Extensive unreliability of certification can undesirably whitewash consumer conscience and encourage greater, and undesirable, consumer demand. Large numbers of certification schemes also make law enforcement more difficult. Watching the watchdogs, or in this case certificate issuers, and establishing lists of reliable certifiers is essential for certification to reduce illegal logging.

### Carbon-for-Forest Payoffs

One of the greatest hopes given to the world's forests has been the adoption of REDD+ mechanisms at the December 2010 Cancun climate change summit. Under the plan, parties to the UN Framework Convention on Climate Change (UNFCCC) have agreed to slow and perhaps reverse forest loss and related carbon-emissions in developing countries by establishing a framework under which rich countries seeking to reduce their carbon emissions can pay poor countries not to deforest. Cancun established rules for calculating how much carbon is stored in forests vulnerable to logging or burning, along with safeguards for forest dwellers. Already, the development firm InfiniteEarth is poised to issue internationally-approved forest carbon credits on a 250,000-acre rain and peat forest land in Borneo slated to be cut down for African oil palm cultivation. Providing habitat for the endangered orangutan, the Rimba

Raya Biodiversity Preserve project has already sold carbon credits to Gazprom in Britain, and several other companies.<sup>230</sup> Similar conservation efforts underwritten by the prospect for carbon markets have taken place in Sumatra and Aceh in Indonesia. With its \$300-million Forest Carbon Partnership Facility, which builds capacity for countries to qualify for REDD+, the World Bank is helping to start similar projects in more than two dozen countries.<sup>231</sup> At Cancun, carbon-for-forest payoff schemes have thus overcome a major objection from some environmentalists and developing countries that the carbon-for-forest payoffs allowed the biggest offenders to reduce their carbon emissions too easily, without having to undertake any of the hard efficiency and emissions reduction measures, while preventing poor countries from industrializing.<sup>232</sup> After all, America cleared almost half of its forests in the 19<sup>th</sup> century, and Europe and China slashed most of theirs much earlier.<sup>233</sup>

Underlying the carbon-for-forest payoff mechanisms is the increasing awareness that natural environments and the ecological services they provide have been massively undervalued by the market, causing their often devastating degradation. TEEB has sought to redress this market failure by showing how negative externalities, such as coral reef or forest degradation, could be priced and conservation could be greatly enhanced by the pricing of ecological services of the natural environment, such as carbon and pollution capture, hydrological functions, etc.<sup>234</sup> Subsequently, new markets based on payments for ecological services (PES) could open up and induce businesses to conserve. Many of the world's existing reforestation schemes, paying farmers to reforest or not deforest to prevent flooding, for example, are instances of PES. Landowners or communities are rewarded for

---

<sup>228</sup> See, for example, EIA (2006).

<sup>229</sup> Lawson and MacFaul: 75-76.

<sup>230</sup> Juliet Eilperin, "Pact Could Near to Save Tropical Forests," *The Washington Post*, December 7, 2010.

<sup>231</sup> Rhett Butler, "How to Save the Amazon Rainforest," *Mongabay.com*, January 4, 2009, <[http://news.mongabay.com/2009/0104-saving\\_the\\_amazon.html](http://news.mongabay.com/2009/0104-saving_the_amazon.html)>.

<sup>232</sup> A part of the Cancun accomplishment has been a commitment by rich countries to share technologies with poor countries to produce energy in less-environmentally damaging ways as well as to help poor countries to adapt to the inevitable changes to the climate.

<sup>233</sup> *The Economist*, September 25, 2010: 4.

<sup>234</sup> See TEEB 2010.

practices that keep forests intact by funding from polluters or general taxation. In India, landowners who convert forests to other uses are required to pay compensation based on the forest type and its services, such as timber value, non-timber forest products, ecotourism, bioprospecting (notably for medicines), flood prevention, soil erosion, carbon sequestration, biodiversity values, and values of preserving charismatic species, such as tigers. Those payments go into a public fund to improve India's forest cover.<sup>235</sup> Since avoiding deforestation is among the cheapest ways to reduce emissions<sup>236</sup> and sometimes counter other environmental problems, such as watershed degradation or water pollution, it can be an attractive economic option. In the United States and Australia, where wetlands degradation is regulated by law, developers who cannot avoid draining an acre of wetland can engage in habitat banking, i.e., pay to restore a bigger area of wetlands elsewhere.<sup>237</sup> But whether such markets develop depends on the existence of secure land titles and property rights to particular ecosystems, such as the forests or wetlands, and often on preexisting government regulation to protect and price the natural environment and prohibit environmentally destructive practices. And before such environmental laws can be passed, they need to overcome the classic Mancur Olson problem of businesses, facing concentrated costs from environmental regulation, often being far better lobbyists of their governments than the environmentally-conscious publics facing diffuse benefits from environmental conservation.<sup>238</sup> Tightening environmental laws is rarely easy.

Critical issues that will determine the effectiveness of REDD+ are yet to be worked out. First, Cancun

left unanswered how REDD+ would be funded. To get it jump-started, the governments of Norway, the United Kingdom, and several other rich countries have pledged \$4.5 billion.<sup>239</sup> But some studies estimate that at least \$25 billion a year would need to be devoted to cut deforestation in half by 2020.<sup>240</sup> Moreover, the assumption that REDD+ will be funded through carbon markets, via the carbon-for-forest payments, has yet to materialize. It hinges on legislation in the United States unlikely to pass during the next two years and on the European Union emission-trading scheme being revised to accept forest-carbon credits, which it currently does not.<sup>241</sup> Without a sufficient and reliable demand for carbon buyers, dependent on ambitious emission reduction requirements and the ability to use forest credits on the carbon market, the mechanism is unlikely to be effective in reducing either carbon emissions or preserving forests.<sup>242</sup>

Second, carbon offset programs often face the multiple-stakeholders problem: the payments are transferred to national governments, but do not necessarily trickle down to logging companies, local governments, and local communities who have a stake in logging but not in conservation. REDD+ could potentially even enhance land grabs by governments, carbon traders, and others from poor communities to secure the now-valuable land.

Third, the current popularity of biofuels as part of the solution to global warming often also encourages extensive deforestation, including of critical tropical forests such as in the Amazon, as do other agricultural practices, such as cattle ranching and, soy, African oil palm, and other agricultural crop cultivation.<sup>243</sup>

---

<sup>235</sup> TEEB: 17. Although the scheme seems to have helped conserve India's forests—compared to many other countries in the Asia-Pacific region, India's forest loss have been comparatively smaller, it has not succeeded in dramatically reversing the tigers' decline which continues at a critical rate.

<sup>236</sup> Johan Eliash, *Climate Change: Financing Global Forests*, UK Government, London: 2008, <<http://www.illegal-logging.info/uploads/Floater.pdf>>.

<sup>237</sup> TEEB: 23.

<sup>238</sup> Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge: Harvard University, 1965).

<sup>239</sup> *The Economist*, September 25, 2010: 6.

<sup>240</sup> Union of Concerned Scientists analyses cited by Eilperin.

<sup>241</sup> For other funding mechanisms under discussion, see Florence Davier, "From Copenhagen to Cancun: Forests and REDD+," World Resources Institute, November 23, 2010, <<http://www.wri.org/stories/2010/11/copenhagen-cancun-forests-and-redd>>.

<sup>242</sup> Butler, January 4, 2009.

<sup>243</sup> On the frequently detrimental effects of biofuel production on forest preservation, see, for example, Smeraldi and May, *The Cattle Realm: A New Phase in Livestock Colonization of Brazilian Amazonia*, Friends of the Earth, Amazonia, Brasileira, 2008.

Fourth, without accurate and transparent monitoring, cheating could undermine the effectiveness of the entire scheme, with countries taking money for clandestinely logging forests anyway, even if not completely deforesting them. Even with current technologies, partial, but still detrimental, logging is far harder to detect than deforestation. Moreover, Cancun left it undefined what “degraded forest” and “sustainable management of forest,” mean, thus making evaluations of the scheme’s effectiveness impossible. The lack of guidance on reference emissions levels poses a similar problem.<sup>244</sup> Other critical baselines needed for the evaluation of effectiveness are the size and density of forest in any particular area, but they are often lacking.

Fifth, there is the problem of moral hazard, with countries intensifying their deforestation to make themselves likely targets for the carbon payments. Finding a way to compensate them before they start logging will be important. Avoiding the displacement of deforestation and illegal logging to previously less affected countries is all the more urgent since studies have found that countries who reduce either often do so by importing illegal wood or precipitating net deforestation elsewhere.<sup>245</sup>

Finally, the price structure of the payoffs schemes will be of critical determinant to their effectiveness not only for capturing carbon, but also of preserving the world’s biodiversity. Surprisingly, a certain price structure could have a negative effect on the preservation of natural forests, and the failure to incorporate biodiversity considerations in forest management designs could be compounded by emerging carbon-for-forest payoff schemes. In some countries and under some circumstances, where there is strong government commitment, successful cooptation of key logging

industry stakeholders, and effective law enforcement, such financial transfers can halt deforestation or even expand existing forest cover.<sup>246</sup> But for that to be likely, the compensation payments need to be far greater for preserving natural, and especially primary, forests than for capturing carbon by degraded forests or replanted forests or timber plantations. And these differentials—with by far the most compensation going for primary forests, smaller amounts for secondary forests, and the least for non-native monoculture plantations—need to be sufficiently great to steer government decisions toward keeping forests intact. Without such a price structure in place, with any tree accorded an equal or similar carbon-capture value, governments could be tempted to maximize profits by intensely logging their forests first and then signing up for carbon offsets for halting further deforestation, including from forests that are no longer viable for commercial logging or through biodiversity-poor reforestation and plantations. Even if the logged forest regenerates timber through replanting or natural recovery, it often cannot do so in a manner that will restore its original biodiversity. Without a far greater unit price for carbon captured by intact natural forests rather than by forest plantations and other reforested area, the carbon schemes thus encourage the preservation of any forests—including monocultures—rather than native primary forests.<sup>247</sup> With current price structures in place (which do not factor in the forest’s ecological services), the FAO calculates that out of \$121.9 billion of the total value of forest product removal in 2005, 71% comes from timber, 15% from non-timber forest products, and 14% from fuelwood.<sup>248</sup>

Such problems with government compensation to local forest owners for preserving natural forests have been experienced even outside of the carbon schemes.

---

<sup>244</sup> For further details, see Kemen Austin, Florence Daviet, and Fred Stolle, “The REDD+ Decision in Cancun,” *World Resources Institute*, <<http://www.wri.org/stories/2010/12/redd-decision-cancun>>.

<sup>245</sup> See, for example, Patrick Meyfroidt, Thomas Rudel, and Eric Lambin, “Forest Transitions, Trade, and the Global Displacement of Land Use,” *Proceedings of the National Academy of Sciences*, 10.1073 (1014773107): November 15, 2010.

<sup>246</sup> See, for example, Raymond Gullison, Peter Frumhoff, Joseph G. Canadell, Christopher B. Field, Daniel C. Nepstad, Katharine Hayhoe, Roni Avissar, Lisa M. Curran, Pierre Friedlingstein, Chris D. Jones, and Carlos Nobres “Tropical Forests and Climate Policy,” *Science*, 316, 2007: 985-986; and William Laurence, “Can Carbon Trading Save Vanishing Forests?” *Bioscience*, 58, 2008: 286-287.

<sup>247</sup> For how carbon offsets support such undesirable behavior in Papua New Guinea, for example, see Colin Filer, Rodney J. Keenan, Bryant J. Allen and John R. Mcalpine, “Deforestation and forest degradation in Papua New Guinea,” *Annals of Forest Science*, 66 (8), December 2009: 813-25.

<sup>248</sup> FAO 2010: 138.

If monitoring and law enforcement is poor and the local community places little intrinsic value on forest and biodiversity preservation, local communities have tended to collect the money and log anyway, or in other cases face invasion by logging companies from outside. Similarly, if payments are set too much below the value of logging the forest, even compensated owners can be tempted to participate in illegal logging even while collecting no-cutting rents.<sup>249</sup> And making sure that the money reaches the forest-dependent communities and is not usurped by corrupt powerbrokers is often a challenge.

## MANAGING DEMAND

Demand reduction efforts consist of two separate but related activities: encouraging demand for certified timber and reducing demand for timber overall. The complexity of the demand structure—which includes logging companies, retailers, and final consumers—on the one hand generates multiple points of entry for demand reduction strategies, but on the other hand entails difficult challenges.

### Encouraging Demand for Certified Wood: The Greening of Customers

Facing more aware and environmentally-conscious customers, intense lobbying by environmental NGOs, and progressively tighter regulatory settings, retailers in Northern America and the European Union, such as IKEA, Home Depot, and Walmart, have increasingly adopted greener practices. They have adopted requirements that their suppliers from China and elsewhere use certified wood and avoid endangered species, but they conduct few inspections of whether suppliers are in fact complying with

their instructions.<sup>250</sup> Lobbying by environmental NGOs occasionally has led to big financial institutions dropping loans and investments in problematic logging projects (such as when the Rainforest Action Network successfully pressured Goldman Sachs, Citigroup, JP Morgan Chase, and Bank of America to change their funding policies for forestry projects).<sup>251</sup> Under pressure from Greenpeace, the giant food company Nestle, for example, stopped buying palm oil from its main Indonesian supplier with a reputation for destroying native forests, Sinar Mas, and promised to purge from its supply chain any producer linked to illegal logging, as well as to buy 50% of its palm oil from sustainable sources.<sup>252</sup> Such lobbying, as by the Environmental Investigation Agency, has also led to the expansion of regulatory requirements, including the expansion of the Lacey Act in the United States, the first legislation in the world that prohibits the import and transshipment of illegally-sourced timber. The law also applies to a broad range of predicate offenses in the country of the timber's origin and entails serious penalties. (Unlike the United Kingdom and several other European countries, the United States, however, does not mandate that government procurement is with legally-certified timber.)

The European Union has also increasingly adopted a set of key laws and mechanisms to assure the legality of the wood it imports. In addition to policies mandating that public procurement uses legally-verified wood adopted by some national government in Europe,<sup>253</sup> in July 2010, the EU adopted what is commonly known as EU Due Diligence Regulation (DDR) mandating that timber imported into the European Union be legal.<sup>254</sup> Other mechanisms

<sup>249</sup> For examples of such compensation policies and their shortcoming in particularly institutional and regulatory settings in China, see, for example, Forest Trends (2006): 20. For an effective, but expensive compensation scheme that increased the amount of land protected from certain kinds of environmentally-damaging land in Colorado, the United States from just under 350,000 acres in 2000 to almost one million in 2005, see “Mountains for the Centuries,” *The Economist*, 382(8514): 35.

<sup>250</sup> See, for example, Peter Goodman and Peter Finn, “Corruption Stains Timber Trade,” *The Washington Post*, April 1, 2007.

<sup>251</sup> Nicola Graydon, “Rainforest Action Network: The Inspiring Group Bringing Corporate America to Its Senses,” *The Ecologist*, February 16, 2006, <<http://ran.org/content/rainforest-action-network-inspiring-group-bringing-corporate-america-its-senses/>>. Such greening effects among businesses have taken place even regarding legal deforestation.

<sup>252</sup> *The Economist*, September 25, 2010: 13.

<sup>253</sup> The United Kingdom and the Netherlands have been among EU's best-performing countries on wood procurement. Lawson and MacFaul: 63.

<sup>254</sup> Since unlike the Lacey Act, EU's DDR legislation is not written as a general prohibition on the import or sale of illegal timber but instead imposes minimum requirements for “due diligence” by all operators placing timber or wood products on EU markets and several other potential flaws, it has been criticized by some environmental NGOs and forestry experts. See, for example, Duncan Brack, *Controlling Illegal Logging: Consumer Country Measures*, Chatham House, 2010.



include the Forest Law Enforcement, Governance, and Trade (FLEGT). FLEGT voluntary partnership agreements (VPAs) with binding commitments by bilateral partners designed to motivate and facilitate their efforts to tackle illegal logging and promote responsible forestry practices. These have been developed so far mainly with African countries, such as the Democratic Republic of the Congo and Ghana, but negotiations with several Southeast Asian countries, such as Malaysia, Indonesia, and Vietnam, are under way.

Cumulatively, the various laws adopted in the United States, Europe, and Australia are sending strong market signals for the cleaning and perhaps greening of the logging industry. They have the potential to vastly reduce the prevalence of illegal timber in these consumer markets. Prior to their adoption, even in the more environmentally conscious markets of the United States, Canada, European Union, and Australia, certified wood often represented only a small portion of the available wood and often sold at greater prices than uncertified wood, thus motivating many even relatively affluent customers to buy uncertified wood.

But major challenges remain. Although the Lacey Act enables prosecution of illegal timber imports, the onus is still on U.S. enforcement to identify and prove the timber's illegality, which given the complexity of processing and value chains and trading routes is often very difficult. Thus it yet remains to be seen to what extent the new regulatory policies indeed give rise to the reduction of illegal, and also unsustainable and environmentally-damaging logging or to what extent they will merely generate more intense greenwashing practices.

The extent to which decreases in illegal wood consumption in Western consumer markets also result in the increase in sustainably harvested forests and improved biodiversity conservation is further

contingent on several factors, one of which is where timber policies defined as legal are in fact also broadly environmentally sound. Not always, is that the case. Source-country governments have been known to decrease their illegal timber supply while at the same time expand forest degradation or even deforestation. Thus, improved compliance focused on legality, but it did not improve sustainability and biodiversity protection. To the extent that wood certified for sustainability, in addition to its legality, is hard to obtain and relatively expensive, many customers will forgo the effort to obtain certified wood. Even in the West, consumer awareness is still far from adequate.<sup>255</sup> Moreover, consumers often face a bewildering array of labels supposedly catering to “responsible consumerism,” with the consumers themselves having the burden of assessing the quality of labels and/or prioritizing among “green” and “fair trade” and other positive labels to such an extent that it is questionable whether they will make the correct choices.

Undeniably, some of this new consumer and regulatory environment has already had positive knock-on effects upstream. As noted before, some Chinese, Vietnamese, and Indonesian timber processing companies, for example, have begun to adopt certification schemes to preserve access to U.S. and EU markets. However, how much such policies will result in the greening of China and other suppliers remains to be seen. The effects will be crucially dependent on the level of monitoring and enforcement in the United States, Europe, and Japan and the penalties retail firms face for violating the new law and regulations, including whether the penalties will result in Western and Japanese firms dropping “dirty” Chinese timber suppliers.<sup>256</sup>

The strength of the greening effect will also depend on how many new “dirty” markets logging and processing companies can hope to generate. Even though some surveys indicate that environmental

<sup>255</sup> For details on consumer awareness, see, for example, White et al: 22.

<sup>256</sup> Knowing engaging in a prohibited activity is a criminal felony with penalties of up to U.S. \$500,000 for a company, U.S. \$250,000 for individuals or twice maximum gain from the transactions, forfeiture of the illegal timber, and up to five years imprisonment. The key question is under what circumstances U.S. firms will be able to claim a lack of knowledge and what kind of due-diligence procedures will be required.

awareness is increasing in Asia and other developing countries and emerging markets, consumers in China, India, and the developing world often exhibit little environmental conscience.<sup>257</sup> But many of these markets, such as China, India, and the Middle East, are precisely the ones that are likely to experience significant growth over the next two decades. For example, as a result of NGO pressure, Japan, one of the world's largest importers and processors of timber, decided to crack down on illegal timber imports by dropping imports from Papua New Guinea, instead increasing domestic logging and shifting to imports from countries of more sustainable and legal supply even at the cost of higher prices. But Chinese companies immediately stepped into the vacated PNG supply market, and illegal timber traffic has continued.<sup>258</sup> To the extent that major logging companies can hope to replace greener and more regulated markets with new dirty ones, they may not bother to alter their undesirable practices. Occasionally, suppliers maintain two forms of supply—the green, certified one for Western customers, and another, sourced-illegally and unsustainably for customers in emerging and developing countries. Moreover, since most tropical timber is consumed locally, producers often do not face green signals.

The demand for certified wood would be greatly encouraged and demand for illegal timber discouraged, if China adopted a policy mandating that its timber imports be legal—i.e., consistent with the source-country regulatory requirements, and placing the liability burden on Chinese import companies.<sup>259</sup> Similarly, it would also be of great help if China set up timber tracking systems within China. Inducing the government of China, preoccupied with its country's economic growth and assured flows of raw materials, to legally mandate such requirements is of course a very difficult task. Then too, even if China should adopt such a policy, the effectiveness of its en-

forcement would of course critically determine how large a positive effect such a policy in China would have. If law enforcement is loose—whether as a result of limited will or an inevitable consequence of the structure of the trade—and regulatory requirements stringent, timber industries in many countries may paradoxically be encouraged to bypass legal channels altogether and fully resort to illegal trade, thus negating altogether the purpose and any positive benefits of tighter regulation. If penalties for illegal behavior—even at a countrywide level—are strong, but the ability to enforce the law is limited, countries may be motivated to weaken their laws to be formally in compliance with the requirement of exporting only legal wood and with regulatory requirements in import markets, an outcome that once again undermines the purpose of tighter regulation.

Even more worrisome, if every country adopted a regulatory requirement that only legal timber may be imported and traded, there may not be enough legal sustainable timber to go around, and countries may once again be motivated to weaken domestic restraints on logging. Thus even if timber legality increases, timber sustainability and ecosystem conservation may not. Even in countries with well-managed forestry practices (albeit after centuries of intense logging), such as North America and Western Europe, timber consumption is often satisfied by the import of timber from countries with unsustainable and environmentally damaging, if not outright illegal, sourcing practices. If that supply fell off and legal sustainable timber supply was not sufficiently extensive to cover demand, even well-managed forests may come under pressure to weaken sustainability requirements.

### **Decreasing Demand for Wood**

Critical for forest and biodiversity preservation, decreasing demand for wood is extraordinarily difficult.

---

<sup>257</sup> Bettina Wassener, "Concern over the Environment Rises in Asia," November 7, 2010. Often the environmental awareness that increases most strongly pertains to environmental degradation resulting in visible health effects, such as mercury poisoning and air pollution, and far less for less tangible environmental concerns, such as biodiversity preservation.

<sup>258</sup> See, for example, ITTO (2007): 54.

<sup>259</sup> See, for example, Paul Toyne, Cliona O'Brien, and Ro Nelson, *The Timber Footprint of the G8 and China: Making the Case for Green Procurement by Government*, WWF International, Gland, Switzerland, 2002; and Chantal Marijnissen, Saskia Ozinga, Beatrix Richards, and Sebastien Riso, *Facing Reality—How to Halt the Import of Illegal Timber in the EU*, FERN, Greenpeace, and WWF, Brussels, 2004.

Despite all the political challenges and the need to overcome influential vested interests, developing policies to shrink bloated logging and processing companies, and downsize the timber industry, is still the easier part.

The far more difficult challenge is to reduce wood consumption by individual consumers. Unlike in the cases of wildlife or drug consumption, wood consumption is not a niche or luxury commodity consumed by a small segments of any country's or the world's population. Rather it is an essential component of everyone's direct or indirect and almost daily consumption in housing, infrastructure building, energy production, furniture, paper, etc. With China, India, Brazil, and other countries developing economically and increasing their timber consumption intensity, assuring adequate timber supply, and specially assuring the preservation of natural, biologically rich forests will present a severe challenge.

Efforts to increase efficiency through recycling and waste-reduction measures have so far not halted the steady increase of demand for wood, even if they may have slightly reduced the rate of its growth. Efforts to encourage the use of other materials, such as metal, bricks, or plastic, have also resulted only in modest changes to consumer behavior. Moreover, encouraging such changes in consumption only makes sense if the use of other materials is in fact less environmentally damaging—a very complex assessment in each individual case and in the aggregate. The production of plastics may not release less carbon than logging even if in the short term it may save more of the forest. In the medium term, the forest may be negatively affected by global warming. Unlike wood, plastic is not biodegradable and can cause long-term pollution. Metal mining may decimate the forest as much as logging. Combating illegal logging, halting deforestation, and preserving ecosystem is thus a race against time.

## CONCLUSION

---

There is increasing recognition around the world of the threats that forest loss and degradation, and illegal logging pose. There have been some salutary efforts internationally, and in particular countries, to ameliorate these serious threats. Yet the question remains whether the corrective measures, even augmented by the policies recommended in this article, can be developed and implemented rapidly enough to prevent the world's natural forests from experiencing major collapse and irretrievable species loss.

The notable positive developments include:

- The total amount of deforestation in tropical countries since the year 2000 has slowed somewhat compared to the 1990s, with important reductions taking place in some of the major areas of tropical forest loss, such as Brazil and Indonesia.
- Various measures to address illegal logging and maintain forest biodiversity, such as certification of sustainably and legally logged timber and forest management plans, are increasingly being adopted throughout the world, including in the Asia-Pacific region.
- In December 2010, at the Cancun climate change summit, parties to the UN Framework Convention on Climate Change (UNFCCC) agreed to slow, and perhaps reverse, forest loss and related carbon-emissions in developing countries. Countries and entities concerned with reducing carbon emissions and preserving forests will pay

developing countries to reduce cutting down their forests and to reforest.

- Legal requirements in the West, prohibiting the import of illegal timber or mandating government procurement of legally-certified timber, are increasingly sending strong market signals to decrease the availability of illegal timber in Western countries with strong sensitivity toward timber legality.

The plan agreed to at Cancun, known as Reducing Emissions from Deforestation and Degradation (REDD+), is perhaps the most dramatic manifestation of the increasing trend to price previously undervalued ecological services provided by forests, such as carbon capture, and possibly one of the greatest hopes for natural forest and biodiversity preservation. Although the details are yet to be worked out, the adoption of market pricing mechanisms for natural forest ecosystems, including carbon market pricing mechanisms, will finally place a value on natural forests and perhaps their biodiversity, as opposed to merely timber or land. Thus, they could reduce the contradiction many countries with intense deforestation are experiencing, between economic imperatives and environmental preservation.

But the problems yet to be overcome are massive if there is to be a timely arrest of the global deforestation calamity and extensive biodiversity loss.

Deforestation and illegal logging still continue at a critically environmentally damaging pace. Southeast Asia, one of the world's most important hotspots of

biodiversity, and the Asia-Pacific region more broadly—a principal focus of this article—are also areas of intense deforestation, with devastating and irreparable effects on the world’s forests and ecosystems. With illegal logging accounting for a very large portion of forest destruction in the region, Southeast Asia continues to have a high rate of deforestation, forest degradation, and illegal logging.

Moreover, many of the new trends and policy developments that are giving hope for the world’s forests need to overcome serious obstacles to implementation and could entail hidden dangers. In many of the policy designs seeking to mitigate illegal and problematic logging, for example, the forestry plans often problematically prioritize the sustainability of economic revenues over environmental concerns, such as biodiversity preservation.

At the core of some of the surprising contradictions and tradeoffs is the paradoxical fact that the loss of timber and the loss of forests are not identical. Thus solving the problem of sustainable supply of timber does not equal solving the problem of sustained forest ecosystems and their biodiversity. The economic bias toward preserving a sustained supply of timber, rather than natural ecosystems and biodiversity, has been the dominant concern for many countries in the Asia-Pacific region. So the measures adopted have been geared primarily toward assuring a sustained supply of timber or mitigating other detrimental environmental effects, such as flooding, but not the preservation of natural, primary forest and its biodiversity.

Nor would effectively addressing the problem of illegal logging, as difficult as it is, necessarily preserve sustainability, biodiversity, or enhance other desirable logging practices. Measures to reduce demand for wood and for agricultural land obtained by deforestation have so far not achieved much success; in fact, demand throughout the world continues to grow.

With global population expected to increase to 9 billion over the next four decades, mostly in developing countries, demand for food is also rising, often satisfied by the deforestation of remaining forest instead of better utilization of already deforested land.

That the devil and angel are in the details also applies to REDD+. Whether such mechanisms will really result in a happy coalition of the “green and the greedy”<sup>260</sup> that preserves natural forests remains to be seen, and depends on many factors, not the least of which is the actual price structure and design of REDD+, and other payments for ecosystems pricing mechanisms.

Furthermore, the effects of critical measures to enhance demand for certified timber, such as the 2008 amendments to the Lacey Act in the United States and the 2010 adoption of due diligence requirements on timber legality by the European Union, continue to be far less pronounced in Asia and other emerging markets, and developing countries where environmental sensitivities tend to be far lower. Nonetheless, the increasing Western focus on mandating timber legality is starting to reverberate, even in those less sensitive markets. It is crucial to expand such certification requirements to other global consuming and processing countries, such as China.

A significant reduction in still high-existing rates of deforestation and illegal logging will require overcoming these and many of the other obstacles outlined in the article. Law enforcement can be tightened, regulatory regimes improved, markets for ecological services promoted, demand for certified timber encouraged, and demand for timber overall reduced, but whether these measures can be developed and adopted on a sufficient scale to preserve the world’s natural biodiversity-rich forests remains to be seen. If ecosystems are not preserved, the future is one of monoculture forest plantations with few surviving species.

---

<sup>260</sup> The term “the green and the greedy” was coined by Kenneth Oye and James Maxwell in their seminal work on the politically-effective coalitions of profit-motivated businesses and environmental advocates as key drivers of environmental regulation—“Self-Interest and Environmental Management,” *Journal of Theoretical Politics*, (6), October 1994: 593-624.

Improvements will not come about without an unprecedented reduction in the global demand for illegal and environmentally-unsustainable timber, and perhaps timber in general. Both will require new commitments and leadership on the part of the major consuming countries, including the United States.

# RECOMMENDATIONS

---

The above discussion of policy considerations reveals the profound dilemmas of regulatory design and the absence of any clear-cut solutions to the problems of illegal logging and deforestation. The recommendations below pull together some key elements of a potentially effective regulatory design that minimizes value losses with respect to each objective of forestry regulation, including biodiversity preservation. But getting them adopted and enforced will, in many cases, be excruciatingly challenging, since many involve politically-difficult and complex aspects of state-making, such as police reform, or the altering of social mores and behavior, such as the development of environmental awareness in China. Many of such measures will take a long time to be implemented. Even with many of these reforms in place, there is no assurance the world's appetite for wood will not overwhelm the Earth's forests and devour their ecosystems.

## SUPPLY-SIDE MEASURES

### Regulatory Design

- I. *Develop regulatory requirements that are stringent and enforceable, but not too onerous.* As much as possible, build flexibility into policy design to be able to adjust ineffective policies, determined by outcome-based monitoring. Adapt regulatory practices to local conditions, but do so while preserving best practices learned domestically and from abroad.
- II. *Design regulatory systems in a way that gives local actors a sufficient stake in protecting natural and restored forests.* Carefully monitor logging bans, and reduce prohibitions on logging if forests have sufficiently recovered to permit local logging once again. Develop loans and micro-loans for forestation, especially with native and diverse timber species.
- III. *Build the explicit goal of biodiversity protection into regulatory design.*
- IV. *Encourage the establishment of secure and clear property rights, including land tenure.* Simplify and increase transparency of land titling. Without them, neither law enforcement and prosecution of illegal logging, nor alternative livelihoods efforts, will be highly effective.
- V. *Integrate exploration of different land-use patterns, rural-urban development, agriculture, energy, and infrastructure policies into forestry policy discussions.* Mandate improving efficiency of land use, such as in agriculture. Locate new agribusiness on land that has already been deforested instead of on forested land. Support techniques to increase efficiency of land use in agribusinesses, for example by improving veterinary quality in cattle ranching.
- VI. *Expand the use of payoffs-for-not-logging schemes, whether these are REDD+ or local versions of such payoffs.* But insist on careful monitoring, and reduce (and possibly suspend altogether) payoffs if recipients have not significantly diminished their participation in illegal logging, or if their legal logging practices continue to

degrade natural forests and biodiversity. Monitor that such programs do not result in moral hazard.

- VII. *Design REDD payoffs and other compensation schemes on a graded scale*, with the preservation of intact natural forests receiving far greater compensation than regenerating logged forest, and the reforestation of deforested land, especially with non-native timber species, receiving the least compensation. To be effective in halting and not just supplementing illegal logging, payoffs need to be commensurate with illegal logging profits.
- VIII. *Increase data collection on logging practices and land use patterns*. Develop an international database to monitor logging, including logging, maintained and verified by a third-party, such as an international body or an NGO.

#### **Law Enforcement**

- I. *Sufficiently resource law enforcement to discourage apathy and susceptibility to bribes and coercion*. Provide law enforcement and justice officials with adequate training in forestry laws. Enable the judicial system to effectively prosecute illegal logging cases. Undertake and maintain anticorruption measures in law enforcement and the judicial system, while building up their capacity.
- II. *Maintain law enforcement on a steady basis, instead of focusing on one-time raids*.
- III. *Diligently prosecute timber brokers*. Interdiction operations against them need to be maintained consistently since brokers are easily replaceable.
- IV. *Focus law enforcement action especially in biodiversity hotspot areas*.
- V. *Adopt technologies for tracking timber from the moment the tree is felled through the final customer, i.e., full custody chains*. Use temper-

proof technologies to decrease the prevalence of fake certificates.

- VI. *Increase data collection by law enforcement and strategic intelligence analysis of patterns of violations to prioritize and systematize law enforcement actions*.

#### **Timber Certification**

- I. *Increase the prevalence of wood certification in supply and processing countries*.
- II. *Insist that certification expands from timber legality to certification that timber was extracted in ways consistent with biodiversity preservation*.
- III. *Adopt technologies for tracking timber from the moment the tree is felled through the final customer, i.e., full custody chains*.
- IV. *Carefully monitor the quality of certifications*. Environmental NGOs should serve as watchdogs, publishing lists of reliable certification labels and constantly monitoring them to prevent their corruption. Insist on certification, including assessments of biodiversity impact, not merely the legality of wood and sustainability of timber supply. Widely denounce cases of “greenwashing.” Monitor the quality of forest management plans and forest engineers who design them.

#### **Involving Local Communities and Addressing Interest Groups’ Incentives**

- I. *Undertake and maintain anti-corruption measures in the timber sector*, such as insisting on the publication of invitations to bid, awarding contracts to the selected bidder without demanding reductions in price or side payments, frequently rotating personnel in charge of bids, and prosecuting and blacklisting contractors who violate the regulations.
- II. *Develop other sources of funding for powerful stakeholders, such as the police, the military, or*



*local governments, who are dependent on illegal logging revenues for large portions of their budgets.* Such a compensation approach is often believed to be problematic, since it can be seen as paying the police for not being corrupt, and rewarding extortion and other bad behavior. But the reality is that if the state does not have the power to coerce influential stakeholders that can subvert logging regulations, it needs to co-opt them. Otherwise, regulation will be ineffective.

- III. *Involve the local community, including potentially local armed non-state actors, but understand that the local community will have to be carefully monitored, and often persuaded to enforce logging regulations and forgo participating in illegal logging.*
- IV. *Carefully design alternative livelihood programs so that they can be economically viable.* If, despite the availability of new sufficient alternative livelihoods income, the local community persists in illegal logging, law enforcement will need to step in. In some cases, the only way to assure economically viable livelihoods may be to relocate the community, but such a move has to take place through community consultation, and with adequate compensation and assured livelihoods in place for the community in the area of relocation.
- V. *Limit the pernicious growth of the timber industry by mandating that loans are only extended if the timber firms can demonstrate an assured long-term supply of legal and, ideally, environmentally-certified wood.* Encourage downsizing bloated timber industries.

## DEMAND-SIDE MEASURES

### Increasing Demand for Certified Timber

- I. *Encourage China to adopt legislation prohibiting the import of uncertified timber, with legal liability placed on Chinese logging firms, or mandating stringent due diligence requirements.*

Encourage the development of adequate law enforcement structures in China to effectively enforce the regulation.

- II. *Encourage the adoption of similar legal requirements and law enforcement structures throughout the world, especially in major markets, such as Japan, India, and the Middle East.* Build considerations of timber legality and sustainability into trade agreements.
- III. *Move to expand desirable certification to ascertain that timber was extracted, not only legally, but also in ways that optimize biodiversity preservation.* Encourage the adoption of such broader certification requirements in public procurements in the United States, Europe, and China.
- IV. *Expand the use of payments for ecological services schemes, such as imposing a tax on timber extracted in legal, but environmentally damaging ways.* Develop markets for PES through environmental regulation. Integrate and routinize ecological services valuations into decision-making.
- V. *Build environmental awareness in areas of China, Brazil, and other countries where natural environments are undervalued compared to the economic benefits of development.* Encourage local NGOs and governments, rather than Western environmental NGOs, to be at the forefront of such awareness programs.
- VI. *Teach consumers in the developing countries, as well as the West, to demand certification for timber and wood products whenever they buy any timber products.*
- VII. *Carefully monitor timber and retail companies, including in North America and Europe, where currently green-sensitivities are the greatest.* Publicly reward those which are diligent in not purchasing illegal timber or timber cut in environmentally damaging ways (even if it is legal). Shame those which are not diligent and encourage consumer boycotts of

their products. In countries with legislation prohibiting the import of illegal timber, demand that violators are prosecuted and subject to meaningful penalties.

*VIII. Establish publicly-available databases of world-wide suppliers of legal and environmentally-certified timber, and of green retailers.*

*IX. Establish forums and mechanisms, such as FLEG and FLEGT, to share best practices, including the most effective verification systems, other law enforcement measures, and reforestation practices, and provide technical assistance to help local governments, especially in developing countries, adopt such best practices.*

## **Decreasing Demand for Timber**

*I. Adopt environmental awareness programs, which teach recycling and other everyday conservation practices, early on in school.*

*II. Encourage demand for alternatives to timber, but only after careful assessments that such replacements are indeed less environmentally damaging than timber use in each particular product or other form of timber use.*

*III. Widely publicize such guidelines to green living since individual consumers are otherwise unlikely to make informed judgments on their own and can become overwhelmed by the amount of different “quality” labels emerging on the market.*

## ILLEGAL LOGGING IN SOUTHEAST ASIA BREAKDOWN

	Estimated level of deforestation/ illegal logging	Export/Import destinations	Common species	Extent of Forest (1,000 ha) and % of land that is still forested (**)
Burma	Prior to the government ban in 2005, over 90% of Burma's timber exports were estimated to be illegal (1).	China, Thailand, and India (2).	Teak (3). Daeng, yang (Keruing), kanzo (Mengkulang), kaung-hmu (Merwasa) (*).	31,773 48%
Cambodia	Cambodia's levels of illegal deforestation rates continued to escalate between 1992 and 2002, with an estimated 20% of its forest cover lost (4) and almost 30% between 2000 and 2005 (5). As of 2007, illegal logging has continued at a rate far smaller than in the 1990s, thus little of Cambodia's remaining forests are commercially viable. Legal timber export has also fallen precipitously (6).	Thailand, Vietnam, and Laos (7).	Rattan, safrole trees, and a variety of plants including camphor, and schima (8). Daeng, dau (Keruing), don chem (Mengkulang), phdiek (Mersawa), koki (Merawan), ching (Red balau) (*).	10,094 57%
Malaysia	During the 1990s, illegal logging comprised as much as one third of overall logging, but as overall levels of logging fell off, so did illegal logging (9). Although illegal logging persist on a smaller scale in comparison to the 1990s, Malaysia serves as a key processing center and smuggling and laundering hub for illegal timber throughout the world (10).	Indonesia, Taiwan, China, Vietnam (11).	Merbau, Ramin, Meranti, Keuring, Mersawa, and Kapur (12). Bitangor, taun (Kasai), kauri, kwila, mengkulang, balau (Red Balau), white batai, white seraya (*).	20,456 62%
Thailand	Relatively small-scale illegal logging has emerged since the government's ban on all commercial logging in 1989 (13).	China, United States, Indonesia, Burma, Laos, and Malaysia (14).	Teak (15). Gmelina, krabak (Mersawa), red balau, poon (Bintangor) (*).	18,972 37%
Vietnam	During the war with the United States, Vietnam lost 60% of its forest. Subsequent commercial logging and rural deforestation for fuel has further decimated Vietnamese forests with another 78% of its primary forests destroyed between 1990 and 2005 (16).	Cambodia and Laos (17). Vietnam is also a large producer and supplier of wood-containing furniture. Most of its wood products are produced from wood that is imported from neighboring countries such as Malaysia, Thailand, China, Laos, Cambodia, and possibly Myanmar (18).	Rosewood, keruing, teak, and yellow balau (19). Cong (Bintangor), daeng, gmelina, chiay (Red balau) (*).	13,797 44%
Laos	In 2008, Laos government estimated forest cover in the country had declined to 40% from 70% back in the 1970s (19). Slash-and-burn agriculture, uncontrolled fires, commercial and illegal logging, and fuelwood collection resulted in the loss of 6.8% of the country's forests between 1990 and 2005 (20).	Thailand and Vietnam (21).	Teak and rosewood (22). Daeng, red balau (*).	15,751 68%

	Estimated level of deforestation/ illegal logging	Export/Import destinations	Common species	Extent of Forest (1,000 ha) and % of land that is still forested (**)
China	China's imports of illegally sourced wood increased dramatically during 2000-2004, but declined 16% from their peak by 2008. Nonetheless, it currently still remains the world's largest importer of illegal wood as 20% of overall imports are estimated to be of illegal origin (23), thus China's forest-products imports are expected to double again by 2015 (24).	A fast-growing share of the wood grown in China or imported into the country is exported in the form of finished or semi-finished manufactured products, paper and wood chips (25). Russia, Indonesia and Malaysia are among China's biggest suppliers of timber (26).	Softwoods, larch, Mongolian pine, and Korean pine (27). Gmelina (*).	206,861 22%
Papua New Guinea	As of 2000, devastating logging rates in Papua New Guinea had caused profound damages to its ecosystem (28). In 2008, 70% to 90% of logging was estimated to be illegal (29).	In 2003, 70% of all log exports headed into China after Japan cut down timber imports from Papua New Guinea in order to combat illegal logging (30).	Merbau is the main specie illegally logged (31). Calopylium, kamarere, mersawa, white albizia (*).	28,726 63%
Russia	Between 2000 and 2005, 14% of the Russian forest was incinerated or felled, often illegally (32). Estimates of illegal logging vary widely—from a mere 0.5% to as much as 50%, with the vast majority of both legal and illegal traffic flowing across its border with China (33).	The vast majority of both legal and illegal logging traffic flows between Russia's border with China (34).	Pine, spruce, fir, ash, and oak (35).	809,090 49%
Indonesia	Until the mid-2000s, about 75% of logging in Indonesia was estimated to be illegal (36). Intense legal and illegal logging and industrial roundwood (logs cut into smaller pieces) production of 47 to 75 million cubic meters each year since the mid-1990s, has often caused Indonesia's annual log harvest to reach 78 million cubic meters (37).	China, Malaysia, and Japan (38).	Ramin (39). Gmelina, kapur, kauri, keroeing (*).	94,432 52%

- (1), (2), (3) Chunquan, Zhu, Taylor, Rodney, and Guoqiang, Feng, "China's wood market, trade and environment," WWF International, (2004) and Kahrl, Fredrich, Yufang, Su, and Weyerhaeuser, Horst, "Navigating the border: an analysis of the China-Myanmar timber trade," Forest Trends, (Washington, D.C., 2004).
- (4) Chunquan, Taylor, and Guoqiang: "China's wood market, trade and environment"
- (5) "Cambodia," available from <[www.rainforests.mongabay.com/20cambodia.htm](http://www.rainforests.mongabay.com/20cambodia.htm)>, accessed May 17, 2010.
- (6) Eugenia Katsigris, Gary Bull, Andy White, Christopher Barr, Keith Barney, Yati Bun, Frederich Kahrl, Timothy King, Alexey Lankin, Anatoly Lebedev, Phil Shearman, Alexander Sheingauz, Su Yufang, and Horst Weyerhaeuser, "The China Forest Products Trade: Overview of Asia-Pacific Supplying Countries, Impacts, and Implications," *International Forestry Review*, 6(3-4), (2004), pg. 240.
- (7) Global Witness, "Deforestation without limits: how the Cambodian government failed to tackle the untouchable," (July 2002), p. 3.
- (8) "A Field Guide of the Rattans of Cambodia," (2008); available from <[www.assets.panda.org/downloads/rattan\\_of\\_cambodia\\_guide.pdf](http://www.assets.panda.org/downloads/rattan_of_cambodia_guide.pdf)>, accessed on May 17, 2010, and UNODC Regional Centre for East Asia and the Pacific Project, Essential Oils Rich in Safrrole, "Survey on production, trade and use in east and south east Asia," (Bangkok, 2006).
- (9) WWF Malaysia, Overview of Forest Law Enforcement in East Malaysia, September 2000.
- (10) Environmental Investigation Agency, "Stemming the tide: halting the trade in stolen timber in Asia," undated; and Chunquan, Taylor, and Guoqiang: "China's wood market," p. 37.
- (11) Environmental Investigation Agency: "Steaming the tide: halting the trade in stolen timber Asia."
- (12) International Tropical Timber Organization (ITTO), "Annual review and assessment of the world timber situation 2006," (Yokohama, 2007), p. 161.
- (13), (14) See, for example, Asia-Pacific Forestry Commission, "Forests out of bounds: impacts and effectiveness of logging bans in natural forests in Asia-Pacific," (Bangkok: FAO Regional Office for Asia and the Pacific: 2001), p. 18 and Environmental Investigation Agency (EIA) and Telepak, "Timber trafficking: illegal logging in Indonesia, southeast Asia, and international consumption of illegally sourced timber," (2001).
- (15) Environmental Investigation Agency (EIA) and Telepak: "Timber trafficking: illegal logging in Indonesia."
- (16) "Vietnam," available at <<http://rainforests.mongabay.com/20vietnam.htm>>, accessed January 31, 2011.
- (17) Illegal Logging Info available at <[http://www.illegal-logging.info/approach.php?a\\_id=84](http://www.illegal-logging.info/approach.php?a_id=84)>, accessed on November 7, 2010.
- (18) R. Juge Gregg and Amelia Porges, "Amendment to the U.S Lacey Act: implications for exporters of Vietnam's forest products," Forest Trends, (October, 2008).

- (19) Lovgren, Stefan, "U.S. major importer of illegal Asian timber, study says," *National Geographic*, May 13, 2008, available at <<http://news.nationalgeographic.com/news/2008/05/080513-asia-logging.html>>.
- (20) Available at <<http://rainforests.mongabay.com/20laos.htm>>, accessed on November 8, 2010.
- (21), (22) Environmental Investigation Agency (EIA) and Telepak: "Timber trafficking: illegal logging in Indonesia."
- (23) Lawson, Sam and MacFaul, Larry, "Illegal logging and related trade-indicators of the global response, country report cards," Chatham House, (July 2010).
- (24) Forest Trends, "China and the Global Market for Forest Products: Transforming Trade to Benefits Forests and Livelihoods," March 2006, pp. 6-7, available at <[http://www.illegal-logging.info/uploads/China\\_and\\_the\\_Global\\_Market.pdf](http://www.illegal-logging.info/uploads/China_and_the_Global_Market.pdf)>.
- (25) Chunquan, Taylor, and Guoqiang: "China's wood market, trade and environment," p.18.
- (26) Chunquan, Taylor, and Guoqiang: "China's wood market, trade and environment," p.22.
- (27) Chunquan, Taylor, and Guoqiang: "China's wood market, trade and environment," p.32.
- (28) A.L. Cameron and Thomas Vigus, Papua New Guinea Volume and Growth Study, Report for the World Bank, Commonwealth Scientific and Industrial Research Organization, Brisbane, 1993 and Paul Chatterton, Yati Bun, Colin Hunt, Kathy Whimp, and Peter Eddowes, A Future for Our Forests: Strategies for Community-Based Forestry and Conservation in Papua New Guinea, WWF, 2000.
- (29) Andreas Scholenhart, The Illegal Trade in Timber and Timber Products in the Asia-Pacific Region, Research and Public Policy Series Paper No. 89, Canberra, Australian Institute of Criminology, (2008), p. 70.
- (30) Chunquan, Taylor, and Guoqiang: "China's wood market, trade and environment," p.45.
- (31) "The Last Frontier: Illegal Logging in Papua and China's Massive Timber Theft," Telepak and the Environmental Investigation Agency (EIA), March 2005, p. 22.
- (32) Food and Agriculture Organization of the United Nations (FAO), Global Forest Resources Assessment, 2010, available at <<http://www.fao.org/docrep/013/i1757e/i1757e.pdf>> and *The Economist*, "The world's lungs: Forests and how to save them, A Special Report," September 25, 2010, p.4.
- (33), (34) Paula Vandergert and Joshua P. Newell, "Illegal Logging in the Russian Far East and Siberia," *International Forestry Review*, 5(3), (2003), pp.303-306.
- (35) Charlie Pye-Smith, "Logging in the Wild East: China and the Forest Crisis in the Russian Far East," *Forest Trends*, (2006), p.1.
- (36) Environmental Investigation Agency (EIA), "Illegal Logging and the International Trade in Illegally Sourced Timber: How CITES Can Help and Why It Should," (2002), p.2.
- (37) Environmental Investigation Agency (EIA), "Illegal Logging and the International Trade in Illegally Sourced Timber."
- (38) Scholenhart, p.93.
- (39) Environmental Investigation Agency (EIA) and Telepak: "Timber trafficking: illegal logging in Indonesia."
- (\*) Tree species that are frequently harvested and traded illegally (Source: Timber Development Association 2007). Scholenhart, pp. 157-159.
- (\*\*) "Global forest resources assessment 2010-main report," Food and Agriculture Organization of the United Nations (Rome 2010), Table 2, p.225.

