

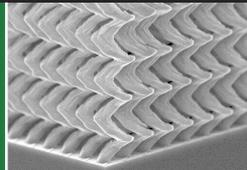
A process observed

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Angling for new materials

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LETTERS

edited by Jennifer Sills

The Need to Cut China's Illegal Timber Imports

IN THE POLICY FORUM "CHINA'S FORESTRY REFORMS" (7 DECEMBER 2007, P. 1556), G. Wang and colleagues describe laudable steps to improve forest management and increase wood production in China. However, they fail to even mention China's burgeoning consumption of imported timber—much of it illegally harvested—and its profound implications for Chinese forestry and the global environment.

How has China managed to double its forested area while meeting its escalating domestic demands and becoming the world's largest exporter of timber products? The answer is that it relies massively on timber imports. Chinese imports quadrupled over the past decade from an estimated 12.5 to 45 million m³ (1). Half of all traded timber in the world is now destined for China (2). China's timber supplies come from developing countries around the world, and it is overwhelmingly the biggest consumer of southeast Asian and Russian timber (3, 4).

Unfortunately, the timber-exporting nations reap only modest benefits. Nearly all of the growth in Chinese timber imports has been in unprocessed logs, which provide few opportunities for local employment in timber-exporting nations (1). Moreover, most logs imported into China are effectively stolen, with no payment of government royalties to exporting nations or environmental control over harvest operations. At least 80% of Chinese timber imports from Brazil, Cambodia, Cameroon, Congo-Brazzaville, Equatorial Guinea, Gabon, Indonesia, Myanmar, Papua New Guinea, and the Solomon Islands are illegal, according to recent estimates, with somewhat lower values (50 to 60%) for Malaysia and Russia (2, 3). Unprocessed logs are easy to acquire and smuggle, and corruption in the log trade is far more prevalent than that for processed forest products (1).

The rampant trade in illegal timber is promoting large-scale forest destruction, especially in the tropics. Poorly regulated timber operations degrade forests and provide a key economic impetus for road building (5), which greatly increases access to forests for slash-and-burn farmers, hunters, and land speculators that in turn destroy or severely degrade forests and their wildlife (6). This problem is especially severe in Indonesia, a biodiversity-rich nation that is currently losing ~2 million hectares of forest each year (6).

Of course, China is far from solely culpable for its insatiable appetite for imported timber (7). Its enormously profitable wood-products industry is largely driven by exports, which have



Timber imports. Logging trucks ferry timber from Myanmar to China.

grown 3.5-fold in the past decade (2). Exports to the United States and Europe have risen even faster over this period—by eight- and fivefold, respectively (2)—with the United States alone importing about \$3.5 billion in illegal timber products (mostly furniture) from China annually (3). Such illegal imports will increase further if pending free-trade agreements are finalized between the United States and Asian countries (8). Chinese wood-products corporations will have little incentive to alter their predatory behavior so long as consumers in wealthy nations blithely continue buying their products.

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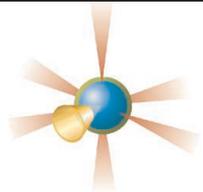
References

1. R. Kozak, K. Canby, *Forest Trends*, issue 9 (October 2007).
2. T. Stark, S. P. Cheung, *Sharing the Blame* (Greenpeace International and Greenpeace China, 2006); www.illegal-logging.info/uploads/SHARING_THE_BLAKE1.pdf.
3. Globaltimber, *China: Illegal Imports and Exports* (www.globaltimber.org.uk/Chinaillegalimpexp.htm, accessed 12 December 2007).
4. A. L. Mayer *et al.*, *Science* **308**, 359 (2005).
5. T. K. Rudel, *Tropical Forests: Regional Paths of Destruction and Regeneration in the Late Twentieth Century* (Columbia Univ. Press, New York, 2005).
6. W. F. Laurance, C. A. Peres, Eds., *Emerging Threats to Tropical Forests* (Univ. of Chicago Press, Chicago, 2006).
7. W. F. Laurance, *Tropinet* **18**, 1 (2007).
8. EIA/Telepak, *America's Free Trade for Illegal Timber* (Environmental Investigation Agency, Washington, DC, 2007); www.eia-international.org/files/news/312-1.pdf.

Response

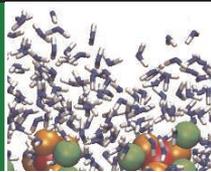
LAURANCE CHARGES THAT CHINA—AS A major timber importer—should play a role in mitigating the global problem of illegal logging. Illegal logging is widespread and extends far beyond the capabilities or responsibilities of a single country to resolve. For this reason, a number of international Forest Law Enforcement and Governance processes have been established. China is participating actively in these initiatives and is also working bilaterally with several countries (such as Indonesia) to help strengthen their forest law enforcement and governance.

The Chinese government recognizes that international wood smuggling is a major issue and has responded in a variety of ways, both nationally and internationally. As we



Plasma snapshots

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Salt and water

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mentioned in our Policy Forum, the commercial plantation program is one measure intended to reduce China's heavy reliance on wood imports by supplying 200 million m³ of logs annually by 2015 (1). However, implementation of this program has been slow, plagued by inconsistent application of land-use laws and local corruption.

China is developing a national Forest Certification Standard and Chain of Custody process. This system should help ensure that those wishing to purchase wood products from China will be able to trace the origins of the wood. In 2007, the State Forestry Administration intensified its enforcement of national forest laws, fining or dismantling 3277 timber processing and trading venues involved in illegal activities (2).

Internationally, the Chinese government has worked jointly with its main trading partners to combat illegal logging and trade, signing several multi- and bilateral agreements in this area (3). China has also taken steps to reduce the smuggling of logs: It has banned direct imports of wood across the Myanmar border; issued Guidelines for Sustainable Forestry Management by Chinese Enterprises Operating Overseas (4); proposed an Asia-Pacific Network on Forest Rehabilitation and Sustainable Management (5); and imposed high taxes on solid wood products (such as a 5% tax on solid floor panels) to discourage the overconsumption of hardwood resources. On-the-ground action is also occurring at customs points. For example, in March 2006, Taiping Customs in Guangdong Province launched the "Woodpecker Action" against wood smuggling, which netted 53,592 m³ of illegal wood and led to the arrest of 24 people in a single month (6).

Arguably, major responsibility rests with those nations exporting to China to regulate and monitor their own forests. These exporting countries are also developing countries, with local corruption, poor forest monitoring, and the need to raise export revenue. Illegal logging is most prevalent in developing countries, but even in more developed countries with stronger laws and monitoring, regulating for illegally imported logs is relatively new and difficult. Some sources estimate that as much as 10% of U.S. log

imports are from illegal sources (7), and it was only in 2007 that the United States passed the Legal Timber Protection Act to regulate the importation of illegal logs (8).

The illegal wood trade is a global problem and requires coordinated regional and global responses. Continued expertise, funding, and constructive criticism are necessary to keep the pressure on China and other countries to make progress on environmental benchmarks. But vilifying China for its "predatory" behavior fails to recognize that the Chinese wood-products industry is only one part of a chain that extends from producer to consumer. It would be more constructive to recognize that as a developing country trying simultaneously to raise its people's living standards and improve its natural resources, China needs all the help it can get.

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References and Notes

1. State Forestry Administration, *China Forestry Development Report* (China Forestry Publishing House, Beijing, 2001-06).
2. C. Zhiyong, "Going green good for global forest business," *China Daily*, 25 September 2007, p. 12 (www.chinadaily.com.cn/cndy/2007-09/25/content_6131309.htm).
3. These agreements include (i) the China-Russia cooperation agreement on Development of Forest Resources and Sustainable Forest Management; (ii) the MOU between SFA of China and MoF Indonesia to Combat Illegal Logging; (iii) The Third China-United States Strategic Economic Dialogues; and (iv) the China-EU Forest Enforcement and Governance Conference, Beijing, September 2007.
4. X. Lei, "China's efforts to make globalization green," *China Daily*, 2 November 2007, p. 10 (www.chinadaily.com.cn/opinion/2007-11/02/content_6224982.htm).
5. "Hu Jintao expounds China's stance on climate change at APEC meeting," *China View*, 9 September 2007 (http://news.xinhuanet.com/english/2007-09/09/content_6692083.htm).
6. Guangdong Anti-Smuggling Office, *Study on Smuggling Wood in Furniture Industry* [in Chinese] (www.dsb.gd.gov.cn/ruizheng/Article/ShowArticle.asp?ArticleID=2152).
7. Environmental Investigation Agency, *No Questions Asked* (EIA, Washington, DC, 2007); www.eia-global.org/noquestionsasked_web.pdf.
8. H.R. 1497-110th Congress (2007): Legal Timber Protection Act, GovTrack.us (database of federal legislation); www.govtrack.us/congress/bill.xpd?bill=h110-1497.

Minding Controls in Curriculum Study

THE EDUCATION FORUM ON EARLY CHILDHOOD executive functions by A. Diamond *et al.* ("Preschool program improves cognitive control," 30 November 2007, p. 1387) reported an educational intervention congruent with the views of clinicians who believe that intellectual ability emerges from early emotional growth (1). Unfortunately, the conclusions drawn by Diamond *et al.* suffer from evidentiary weaknesses.

A study of this type must reduce differences between groups to those essential to the experimental intervention. Diamond *et al.* reported that teachers trained to use the executive function techniques (EFs) needed almost a year of work before they were proficient; it was not stated how long the comparison teachers took to achieve their criterion. Anxiety about an unfamiliar curriculum might have motivational effects, causing the EF teachers to be more attentive to children's behavior than a less anxious group, as the long-established inverted U-shaped motivational function predicts (2).

The evidence is also weakened by a vague description of the comparison intervention. It is possible that more frequent adult-child interactions occurred in the EF condition than in the other group. More frequent interactions could foster the attachment relationships within which young children are thought to do their best learning. This possibility is reminiscent of the "common factors" concept in the study of psychosocial interventions; some researchers have suggested that common factors influence efficacy more than specific techniques do (3). In the Diamond study, the common factors might be adult-child interactions, and such factors might be the effective causes of changes the report attributes to specific EF techniques.

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References

1. S. I. Greenspan, S. Wieder, *Infant and Early Childhood Mental Health* (American Psychiatric Publishing, Arlington, VA, 2006).
2. R. M. Yerkes, J. D. Dodson, *J. Comp. Neurol. Psychol.* **18**, 459 (1908).
3. A. D. Reisner, *Psychol. Record* **55**, 377 (2005).

Response

IN HER LETTER, MERCER OFFERS TWO ALTERNATIVE explanations, couched as criticisms, for the findings we reported in our Education Forum (30 November 2007, p. 1387).

Mercer proposed that until teachers became proficient at the Tools of the Mind (Tools) curriculum, anxiety about an unfamiliar curriculum might have caused them to be more attentive to children's behavior than teachers in the comparison program. Our data do not support that hypothesis. By Year 2, teachers in both curricula were proficient, and we found virtually no differences between children who were with these programs in both Years 1 and 2 or only in Year 2. If teacher anxiety accounted for any of the differences, one would have expected a difference in performance between children in Tools who were exposed to anxious teachers (in Year 1) and children in Tools who were not (children who only attended Year 2), but such differences were minor.

Teacher anxiety would likely have increased classroom stress levels, impairing children's ability to master executive function skills or academic content (1). Research on the "long-established inverted U-shaped motivational function" referred to by Mercer has consistently shown that although increased anxiety makes individuals more vigilant and attentive to danger signs, it

impairs thinking, problem-solving, and interpersonal sensitivity (2, 3).

Mercer also speculated that perhaps more frequent adult-child interactions occurred in Tools classrooms, which could have fostered attachment relationships. There is no evidence, however, that Tools increased the frequency of adult-child interactions, although it did improve their quality, possibly promoting close positive teacher-student relationships as Mercer suggests. We do not consider that a weakness of our study. Indeed, in supporting online materials (SOM), we said that such intermediate variables might mediate, or contribute to, the observed effects.

Mercer's second suggestion somewhat contradicts her first, for if teachers' anxiety were heightened, that would impair the development of positive relationships with students. A stressed or anxious teacher is less likely to be emotionally present for the children and more likely to snap at children for small transgressions.

I would also like to correct a possible misconception left by the first paragraph of Mercer's letter. As we stated in the SOM,

pages 14 to 15, the beneficial effect of Tools on academic performance might be mediated by its beneficial effects on emotional growth, but we did not investigate, and have no evidence on, its effect on emotional development.

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References

1. J. J. Blase, *Am. Educ. Res. J.* **23**, 13 (1986).
2. A. F. T. Arnsten, *Science* **280**, 1711 (1998).
3. S. J. Lupien et al., *Brain Cognit.* **65**, 209 (2007).

Letters to the Editor

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