

Forest Resources

Sēnlín zīyuán 森林资源

In the distant past, the vast majority of China's territory was forested, but much was lost due to over-use and neglect—especially during the past hundred years. Only now are efforts underway to correct decades of abuse, and only because environmental problems such as wind and water erosion, dust storms, and desertification grew so severe that action had to be taken.

Few natural resources are as important to a nation's industrial production and environmental quality as forests and their products. Recent attention to China's environmental problems has understandably focused on the negative effects of three decades of double-digit economic growth and the growing resource demands levied by 1.33 billion persons. Simply feeding such a population presents the government with a staggering responsibility, one with grave consequences to the nation's land and water resources. Growing consumption of wood, especially roundwood (timber, as compared to processed or chipped wood products), has been driven by China's ever-expanding role as the "world's factory" and by the rise of a new middle class seeking better-quality wood housewares and furniture. In 2006 Chinese factories turned out a staggering 130 million pieces of furniture worth \$60 billion. In short, few materials are as essential to China's "economic miracle" as wood, and as

a consequence China, a major player in the global market both as importer and exporter, is establishing a strong regional presence within the roundwood markets of Southeast Asia and Africa.

Despite significant increases in imports since 1978, demand for wood and other forest products has placed considerable pressure on China's forest areas, estimated in 2003 to be fifth among all nations at 284.9 million hectares. About 60 to 65 percent of this area is estimated to be "natural" forest. Estimates of China's forest coverage range from 15 to 18.2 percent of national territory. The figure represents marked improvement over 1949 and 1962, when the percentages of national territory covered by forest were estimated at 8.6 percent and 11.81 percent, respectively. The State Forestry Administration (SFA) reported that in 2006 China's forest sector earned 900 billion yuan (\$118 billion). The reported 2010 goal is 1.2 trillion yuan (\$150 billion), and evidence suggests that this goal may be surpassed.

Since 1950 successful efforts to protect and restore forest environments throughout China have been occurring with little foreign recognition. The National Natural Forest Protection Project (NNFPP) initiated in 2000 will see 96.2 billion yuan (\$12.6 billion) invested in a ten-year project with two major goals. The first is to "protect 61.1 million ha. [hectares] of natural forest in the upper and middle reaches of the Yangtze [Chang] and Yellow [Huang] Rivers by reducing 12.4 million m³ of commercial logging each year and by afforestation of 8.67 million ha. by 2010. The second major goal of this project is to effectively control and protect 33 million ha. of targeted state-owned forests by reducing annual commercial



A man uses rafts to transport lumber on a river. PHOTO BY JOAN LEBOLD COHEN.

logging on these lands by 7.52 million m³” (Cohen, Lee, and Vertinsky 2001, 7).

In China logging in traditional but slow-growth northern forests is declining in importance, and the management of old-growth forests (virtually all now protected to some extent) has improved dramatically. At the same time new commercial forest areas and tree plantations are being developed throughout southern China, an area with a longer growing season and greater water resources characteristic of commercial forest areas in other nations. New commercial varieties of trees have been introduced—not only for roundwood but also for low-cost paper pulp. China is second only to the United States in book publishing—and many U.S. publishers now have books printed in China because of lower labor and paper costs.

Beyond commercial forests, ecologically important forests that serve as shelterbelts and future buffers against

encroaching deserts and degraded grassland have also received massive increases in both forested area and investment. Forests are made up of more than trees, and hundreds of forest biopreserves have been established throughout China, particularly in west-central and southwest China. The subtropical mixed evergreen/deciduous broadleaf forests and complex rain forests of these regions are home to a greater number of endangered flora and fauna. The growing importance of tourism in “natural areas” throughout China, particularly in the southwest, has been an important argument sustaining local support for the protection of forested areas. Given China’s huge rural population, local promotion of the economic benefits of preservation and sustainable forestry has been an important propaganda challenge to ecologists, forest ministry officials, and others seeking to protect forests from unsustainable practices and to gain local support for new programs and techniques.

National Planning, Local Action

Forest protection in China is in constant competition with economic interests because of demand not only for products but also for employment. Many of China's major forest areas are located in remote areas with few alternative job opportunities. Gaining genuine local support for forest protection and reforestation in China depends on promoting strategies that offer the promise of some economic return for participation in these efforts.

Controlling point-source pollution (pollution discharged or emitted from an identifiable source) resulting from unscrupulous factory managers, municipal waste water plants, or power stations that lack the resources to properly treat waste water or airborne particulate matter, by no means the most complex factor in forest protection and reforestation, is still an important aspect. Solving such pollution problems often depends on garnering the support of political factions and enforcing regulations. In controlling point-source pollution the middle class also plays a role, especially in urban areas where citizens are increasingly demanding cleaner, healthier environments. In addition to the large numbers of government personnel, at least 2,500 nongovernmental organizations have been formed in response to environmental concerns. Most of these organizations are located in urban areas with more educated and wealthier activists who are quickly learning how to “work the system” and get results.

In contrast, the most severe land-extensive environmental problems (deforestation, desertification, arable land degradation, erosion) are largely found in rural areas—especially those throughout China's dry northern and northwestern provinces and autonomous regions. The idea of excluding economic use of forests on the basis of environmental protection is a relatively recent concept in China, where high population density historically assured that all environments were viewed largely (some would say “only”) as economic resources to be exploited. Most locations in China simply don't have enough surplus land or a sufficient workforce to set these areas aside as “uneconomic” national parks or biopreserves. As a consequence, one of the greatest challenges in forest restoration and protection is squaring the circle between local and regional economic and environmental issues.

Locally reforestation is recognized as an excellent means to moderate wind and water erosion and to moderate local microclimates while providing additional sources of income through the sale of “thinned” lumber or mature stands of trees.

All too often discussions of China's environmental problems, including those related to forestry, lack a “human face.” Although rural residents of many areas with degraded or disappearing forest areas are not always poor, many are. In contrast to the urban residents in east and southeast China, these residents face different, and sometimes more immediate, environmental and economic challenges. They face them with fewer resources, less political capital, and arguably fewer options. Farmers and herders in these dry areas are no less capable; they comprehend that unsustainable activities conducted in the short term will have costly long-term effects both locally and regionally. Rural families understand the ecological messages promoted by the government, but hard lives make for hard choices. On the high, dry Loess Plateau farmers coerced to plant trees to satisfy corvee requirements (unpaid labor extracted by local governments) for a local reforestation drive may surreptitiously cut down these same trees under the cover of darkness only a couple years or even months later when the farmers lack fuel to boil water or provide heat. (Not boiling water to kill parasites could result in illness or even death for farmers and their children.)

When the World Wildlife Fund (WWF) got much of the old-growth forest within the Xiaoxing'an Mountains in northern Heilongjiang Province declared a national forest preserve, people had much to celebrate. Unfortunately, the logging ban supported by Beijing conspired with an essentially bankrupt local government, which previously derived most of its revenues from taxes on forest-product industries, to create a human tragedy—it surfaced far from the foreign press and the representatives of international environmental nongovernmental organizations (NGOs) that were party to the ban. Protection of some of China's last old-growth forests is important, but this decision offered little solace or fiscal support to the sixty thousand laborers in Yichun who had no work, little savings, and fewer prospects. Scott Rozelle and colleagues in 2000 estimated that the nationwide logging ban that was part of the NNFPP program will cost the government \$22 billion from 2000 to 2013 to reemploy or retrain 1.2

million workers shed by the shift in forest-management priorities.

China's major forest issues can be classified as two types: commercial forestry activities and environmental protection related to forested areas.

Commercial Forestry Activities

Forest land in China is owned by the state but managed by county, township, or village collectives or increasingly by individual households signing twenty- to fifty-year contracts. In contrast to the land, the actual trees can be owned by the household or, if the trees are present on the land at the time of contract, are jointly owned in proportional terms by the farm household and the collective. The radically different ownership and incentive systems of the commune era (from approximately 1951 to 1976) and the reform era (from 1978 on) have left a great deal of uncertainty in the commercial forest sector that is slowly being worked out. Policies related to forestry and agro-forestry (cultivating both field crops and trees) vary dramatically by location. Crop land can be planted and harvested each year so that usufruct contracts (that ensure the legal right to use the land while the state owns it) and land transfer issues are less complicated than for forestry. Highest value trees take decades to mature, so those contract periods extend longer than for cropland, and the potential debt burden on farmers can be greater. Credit for the household can be hard to find in some areas and easily available in others. In some places seedlings are free, and fertilizer is subsidized. In Jiangsu Province a farmer willing to grow trees gets a generous stipend from the local government beyond free inputs—just so the county or township can meet its reforestation quota.

China is a major importer of forest products, particularly roundwood, plywood, and particleboard, but also exports equally significant volumes of wood-based finished products such as furniture, household products, wood and bamboo flooring, paper, and related materials. In 2006 imports of wood, wood products, paper, and paper products including paper pulp were valued at \$18.4 billion, but exports were \$16.8 billion; thus, imports outpaced exports by only 8.7 percent. Plywood, particleboard, and other construction-lumber imports are

significant in China's market where the domestic quality of such goods remains inferior to those of major exporters such as Canada and the United States. As more of China's forests in the northeast are protected or limited by production quotas required by environmental regulations, many factories in Heilongjiang and Jilin Provinces were closed, but wood is now purchased from nearby Russia, a nation lacking these strict regulations.

The fastest growth has occurred in labor-intensive forest products (natural rubber, pine resin, lacquer, walnuts), the harvesting of which China's massive rural workforce affords comparative advantage. Perhaps the most important recent trend is China's growing role as a major importer of lumber, often high-end hardwoods, from the forest-rich nations of Southeast Asia. Natural-wood exports to China from Indonesia, Malaysia, and Thailand have grown exponentially in the last quarter century and raised prices significantly for these products. Much of this high-quality wood is re-exported as increasingly high-end furniture. The growth in the wood-products trade mirrors increases trade in many products between China and near neighbors.

Environmental Protection Related to Forested Areas

Activities related to environmental and ecological protection of forested areas could be grouped into two macropategories: protection of existing forested areas and reforestation of degraded areas, particularly those in ecologically sensitive environments. Progress has been made in both areas, not only in terms of increases in protected or replanted areas but also in terms of technical support provided from the nation's network of forestry universities, agricultural universities, and ecological research institutes associated with the Chinese Academy of Sciences and Chinese Academy of Social Sciences. More than seven hundred experimental or approved national ecological demonstration zones are charged with developing appropriate cultivation techniques and the mass production of appropriate tree species. Legislation protecting existing natural forests has also been expanded, and prosecution of violators has increased. Geographically, efforts to protect existing forests has benefited the tropical and semitropical forests of southwest China, including Sichuan Province, the Tibet-Qinghai Plateau,

the high-elevation boreal forests of far northwest China's Altai and Tian Mountains, and the boreal forests of the northeast (Jilin and Heilongjiang provinces).

In 2006 China had 2,395 nature reserves, accounting for 15 percent of the country's total area. In 1997, only 7.64 percent of the country's total area was protected. Of course, not all of these areas are forested, but aside from some coastal reserves, virtually all of these reserves have significant portions in forests. The rapid increase in protected areas represents the government commitment to environmental protection of forests and grasslands. Much remains to be done because the majority of protected areas are in the west. Of the 151.5 million hectares protected nationwide, 65 percent are located in Tibet, Qinghai Province, Xinjiang Autonomous Region, and Inner Mongolia.

Reforestation of degraded forest areas has received the lion's share of both attention and investment. Reforestation is complex, and again, even after extensive work

and investment, it can fail. Areas are sometimes reforested two or three times as natural disasters (particularly droughts) render efforts inconsequential.

From 2000 to 2006 38 million hectares of forests were planted or replanted. This represents 13.3 percent of China's total area of forested land (of 285 million hectares). Most of these forests are planted by hand—often through corvee requirements. Of particular interest are the 4.5 million hectares planted by air. Aerial planting in China dates back to the early 1950s. Of the total area reforested, 69.3 percent is classified as protected forests.

In partial contrast to the efforts to protect China's remaining natural forests, a significant portion of which is in southwest China, much of the nation's reforestation effort is centered on a wide band across northern China. Halting the spread of western and northern deserts, creating windbreaks on the great plains of northeast China, or reforesting land foolishly brought under cultivation during the first three decades of "new" China in Inner

A Chinese village amidst forested mountains. PHOTO BY JOAN LEBOLD COHEN.



Mongolia or Gansu require more than the enforcement of regulations, the fining of violators, or the closing of illegal operations.

Positive Signs

China's rapid economic growth resulted in environmental damage of many types. The nation's forests did not escape this damage. Still, because of the paramount attention that forest protection and sustainable forestry have received in China, progress is being made in many areas, including the protection of natural forests, the reforestation of degraded or historic forest areas, and the development of a modern commercial forestry sector. The revenues from China's unprecedented economic growth are now increasingly used to pay for efforts to mitigate the environmental destruction of the past. This good news seems to be an overlooked aspect of foreign assessments of China's recent environmental history. China's forest sector, although still facing challenges, has been the recipient of massive government investment and efforts by thousands of researchers, extension personnel, rural government agencies, and officials. Far more has been achieved than most could have imagined in the mid-1980s.

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Further Reading

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