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Study on China's Timber Resource Shortage and Import Structure: NFPP Outlook 1998–2008

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Abstract

The state of China's ecological environment has improved to some extent since the Chinese government initiated the Natural Forest Protection Programme (NFPP) in 1998. The logging prohibition and limitation policies adopted by the NFPP, however, have reduced domestic timber supply. Decreasing domestic timber supply, together with the thriving economy, continues to widen the gap between supply-and-demand. Importation is considered the primary solution to this issue, making China the world's largest timber importer. China's import origin structure indicates that its major timber suppliers are Russia, Malaysia, Papua New Guinea, New Zealand, and Gabon, among which Russia accounts for more than 61% of China's total timber imports. Data regarding imported timber categories show that the relatively cheaper conifers imported from Russia account for more than 60% of all imported timber, with volumes continually increasing because of the rapid pace at which China has been implementing its infrastructure projects. Furthermore, as living standards continue to improve, requirements for home decor and furniture also grow, bringing about an increase in the demand for tropical to temperate timber. In the long term, import will remain the main solution to the insufficient domestic timber supply in China.

Introduction

China began importing timber in the 1960s; in 2008, it set up trade relations with more than 160 countries (China State Forestry Administration 2009a). China's average annual Gross Domestic Product (GDP) growth for the past 10 years has reached 9.1%. In 2008, the GDP, measured on a purchasing power parity basis that adjusts for price differences, was estimated at US$7.8 trillion, making China the world's second largest economy after the US (Group of Companies Limited 2009). The rapid growth of China's economy has engendered a drastic increase in resource demand but its domestic timber supply is limited, hindering the country from satisfying demand. Before 1998, domestic timber supply from natural forests could meet market demands, and timber exports and imports were kept balanced. Since the inception of the Natural Forest Protection Program (NFPP) in 1998, however, timber logging prohibition and limitation policies have been applied to the Southwest, Northeast, and Inner Mongolia forest areas, thereby causing domestic timber supply to decline. In addition, the supply-and-demand gap has been widened further on account of the rapid growth of the national economy. For the past 10 years, timber importation has served as the primary solution to the issue of timber shortage (Yang and Nie 2008).

China's timber supply is inadequate in terms of both resource and sustainable ecological variety, with resources lacking both in quantity and quality. Overall, the forest resources in China are limited. The seventh national forest survey (2004–2008) shows that the national forest area is 0.19 billion ha and the forest coverage rate is 20.36%—only two-thirds of the world average. The general forest reserve is 13.71 billion cubic meters -- 10.15 cubic meters per capita, or only one-seventh of the world average. The Chinese government has adopted two measures to address timber supply shortage: 1) encouraging the growth of man-made forests and stimulating timber importation to close the timber supply-and-demand gap, and 2) rejuvenating forests through the NFPP for the sustainable growth of these resources (China State Forestry Administration 2009a).

Situation of China's Forest Resources and Introduction to the NFPP

Situation of China's Forest Resources

Given its large land area and a population of over 1.3 billion people, China is relatively forest-poor, its per capita forest coverage is estimated at only 0.12 hectares, about one-fifth of the global average **(Table 1)** (Zhu et al. 2004).

According to the China State Forestry Administration (SFA) (1999), the majority of suitable lands for forests are located in Inner Mongolia and Northwest China, among which, high-and low-quality lands account for 13.1% and 52.3%, respectively. The quality of domestic timber supply also is poor; the high-forest reserve averages only 85.88 cubic meters per ha, about 78.2% of the world average, while the man-made high-forest reserve is as low as 49.0 cubic meters per ha. China's forest resources are located in three main areas (**Fig. 1**): Northeast China and Inner Mongolia (28% of forest area); Sichuan and Yunnan Provinces in Southwestern China (19%); and 10 other provinces in Southern China (36%) (Zhu et al. 2004). Nearly 50% of the forest area is in the provinces of Inner Mongolia, Heilongjiang, Sichuan, Yunnan, and Tibet. The northeast and southwest are home to most of the remaining natural forests almost all of which are managed by state forest enterprises. The majority of plantations, primarily run by collectives, are located in the south[1].

Introduction to the NFPP

China instituted the NFPP in late 1998 soon after devastating floods occurred along the Yangtze River in the south and the Songhua and Nen Rivers in the northeast. The Programme became one of the Six National Key Forest Programmes approved in 2000. The government allocated funding totaling 96.2 billion RMB (US$11.6 billion) for programme implementation

[1] Which includes 10 provinces as Guangdong, Hainan, Hunan, Hubei, Jiangxi, Fujian, Guizhou, Zhejiang，Guangxi and Anhui.

(SFA 2001).

Within the Yangtze and Yellow River catchments, the objectives of the NFPP include:

- a ban on logging on approximately 30 million ha of natural forests, 27 million of which are collectively owned, until 2010;
- permanent protection of an additional 31 million ha of existing forests, shrub forests, and newly planted forest lands;
- creation of nearly 13 million ha of restored forests and grasslands by closing access to over 3 million ha of mountain lands, seeding over 7 million ha, and replanting on 2 million ha.

For Inner Mongolia and Northeast China, as well as the northwest provinces of China and Hainan, the objectives of the NFPP are:

- permanent protection of 33 million ha of existing, but over-logged natural forests; and
- a 40% reduction in production of commercial timber by 2003, with production to be maintained at this level until 2010 (Zhu et al. 2004).

In 2003, China issued a directive that sets targets for increased forest cover of total land area in China: 19% by 2010, 23% by 2020, and 26% by 2050 (China State Council 2003).

The data suggest that production was declining in these regions before the logging ban policies were launched in 1998. In the Southwest, production peaked in 1994 and declined thereafter, but the region saw the most rapid drop beginning in 1998. In northeast China and Inner Mongolia, production began a slow decline in 1988, with the rate increasing slightly after that year. Declining production in these areas has resulted in a smaller supply of high-grade logs. For example, between 1997 and 1999, the annual production of high-grade logs decreased from 1.4 million cubic meters to 0.9 million cubic meters (Zhu et al. 2004).

China's Timber Resource Shortage

The implementation of the NFPP generated different impacts on domestic timber supply in different stages. From 1998 to 2002, the NFPP reduced timber production by 7.0% on average per year, that is, 5 million cubic meters per year. In 1999, the rate of decline of timber production reached 12.2%; in the same period, timber imports increased by 97.8% **(Table 2)**. From 2003 to 2008, as the achievements of the forest protection policy were gradually presented, timber production increased on average by 10.7% in comparison with the average GDP growth rate of 10.2%.

The NFPP has placed 0.108 billion ha of forest lands under protection – roughly the equivalent of 1.5x the size of the U.S. state of Texas or 1.9x the size of France -- and cultivated 0.016 billion ha within these reserved lands. This has gradually improved the ecological environment in China. Partly, because of the implementation of logging prohibition and limitation policies, however, domestic timber supply has failed to meet increasing demand, causing the supply-and-demand gap to widen year after year. In 2000, domestic supply fell behind demand by 36 million cubic meters and by 109 million cubic meters in 2004. It is expected that by 2015, the demand for timber for use in construction will reach 480 million cubic meters, and 190 million cubic meters of this amount will have to be imported (Yang and Nie 2008). Referring to the yearly rate of increase (3.7%) of average timber demand in the past 10 years enables us to forecast that timber demand in China will reach 678 million cubic meters by 2020. The supply-and-demand gap will widen further and timber importation will be the key solution to addressing this shortage (Yang and Nie 2008). Although timber imports in 2008 decreased by 16% because of the worldwide financial crisis, these still accounted for 37% of China's overall timber supply from 2003 to 2008. Insufficient domestic timber supply has been and will remain a serious problem.

China's Timber Trade Policy and Structure

Trade Liberalization

China's trade policies have changed significantly over the last 10 years. The country formally joined the World Trade Organization (WTO) in December 2001. China's increasing wood supply gap has prompted it to loosen controls over most wood-product imports. Tariffs on wood products have been reduced several times in the last 10 years. Tariffs for logs, sawn wood, wastepaper, and pulp have been eliminated. Plywood tariffs, which were 32.5% in 2001, were reduced to 12% in 2009. The current tariff rates for wood-based products are shown in **Table 3**. The import permit requirement for wood products was also relaxed in 1999, causing the number of companies with importing authorization to increase considerably.

The changes in tariff levels, non-tariff barriers, and domestic policy reforms have resulted in significant shifts in the trade flows of major forest products. From 1998, wood products became the largest single import group for China. By 2000, China had become a net importer in all major categories of forest products.

China has adopted a preferential import policy toward Russia, Vietnam, and Myanmar since 1996. Imports from these countries have been subject to only half of the regular charge for tariff and value added tax. The policy, which was originally designed to be a temporary measure to encourage border trade, remains in place today (Zhu et al. 2004).

Timber Import Origin Structure of China

Trade data were obtained from the United Nations (UN) Comtrade database using 1998 to 2008 Standard International Trade Classification (SITC) Rev. 3 data. The UN Comtrade database is considered to be the most comprehensive trade database available, containing annual international trade statistical data detailed by commodities and partner countries. A sufficient time series of data enables the identification of longer term trends[2]. The data show that China's sawn timber imports are less significant in comparison with log imports, which accounted for 81% of

[2] UN Comtrade database does not include the statistics of the illegal timber trade.

overall imported timber products from 1998 to 2008.

During this period, the timber imports of China, Japan, India, Finland, and Korea combined accounted for 57% of the world timber imports; China accounted for 24% with an accumulated import amount of USD 30 billion, ranking it at the top of the list **(Fig. 2)**.

Since the initiation of the NFPP in 1998, China's timber imports have continued to increase consistently year after year, even during the 2007 to 2008 financial crisis. China's imports accounted for 31% of the world timber imports during the recent worldwide economic downturn. From 1998 to 2008, China's timber was mainly imported from Russia, Malaysia, Papua New Guinea, New Zealand, and Gabon. The Russian share was 61%, or 153 million cubic meters, and figures for Malaysia and for New Zealand and Gabon combined, were 8% and 4%, respectively **(Fig. 3)**.

Although the volume of growing stock per ha in the world remained at a level of 110 cubic meter per ha from 2000 to 2005, the decrease in the overall volume of world forestry resources has become a unambiguous fact（FAO 2006）. During this period, the reduction in worldwide forest area was 7.3 million ha -- a rate of 0.18% per year **(Table 4)**. The most notable decreases have occurred in developing countries **(Table 5)**. It's no doubt that China's import of timber resources faces a severe challenge from the reduction of global timber resources.

For China, the majority of imported timber is from fewer than 10 countries. For example, in 2008, 80% of China's imported timber was from seven countries, namely, Russia (49%), Gabon (8%), Papua New Guinea (7.9%), New Zealand (4.7%), Myanmar (3.5%), Malaysia (3.3%), and the Congo (3%) **(Fig. 4)**. These figures have raised worldwide concern. International trade has increased the global supply of illegally harvested timber by more than 70% (Dieter 2009). The latest trade data show that of the imports of logs and sawn wood across the land along the Myanmar-China border, more than 90% was illegal (Global Witness 2009). Thus, as the World's top-ranked timber importer, China should shoulder the responsibility of ensuring legal timber

trade and ecological compensation for import origins, particularly for underdeveloped countries such as Papua New Guinea, Gabon, and Myanmar.

The Chinese government is actively implementing bilateral and international communications and cooperations. China and Russia signed the Agreement on Sustainable Running of the Forestry Resources in the Far East in 2000, and signed the Cooperation Memo on the Regulation of Illegal Timber Trade with Indonesia in 2002. In 2005, China and the European Union (EU) signed the Sino-EU Summit Joint Declaration, with the aim of mitigating illegal logging and timber trade in Asia through cooperation. In 2007, China-EU held the conference on "Forest Law Enforcement and Governance", which strongly endorsed sustainable forest management and the mitigation of illegal timber logging and trade (Qian and Cheng 2010).

Imported Timber Category Structure of China

Principal timber species are categorized in the SITC (Rev. 3) list of the UN Comtrade database (**Table 6**). This study analyzed the amount of timber from different categories imported by China from 1998 to 2008 **(Fig. 5)**.

From 1998 to 2008, the main timber species group imported by China was conifer (440320), with total imports amounting to 148 million cubic meters,r 60% of all imported timber. Conifer species were imported mainly from Russia (84%), New Zealand (10%), and other countries, including Australia, Canada, and the USA. In 2008, the average price paid for conifer logs was USD 129.8 per cubic meter **(Table 7)**. Imported conifer is used mainly in infrastructure projects such as in the construction of roads, bridges, and houses. Although conifer is relatively cheap, it is the most needed timber resource for China's economic construction, and the increasing conifer importation is closely related to the rapid growth of infrastructure construction in China.

From 1998 to 2008, the total amount of imported tropical to warm-temperate broad leaf timber (SITC 440399 and 440349) totaled 89 million cubic meters, accounting for 35% of overall imported timber. The imported amount of this type of timber, including nanmu, camphorwood,

rose wood, and teakwood, was less than that of conifer. These were relatively more expensive than conifers, at a price of USD 231.6 (SITC 440399) and price of USD 324.4 (SITC 440349) per cubic meter in 2008. Warm-temperate broad leaf timbers were imported mainly from Papua New Guinea (30%), the Russian Federation (29%), and Solomon Islands (16%). The average prices (by unit price) of warm-temperate broad leaf timber from Vietnam, the USA, and the Congo reached USD 925, USD 648, and USD 647 per cubic meter **(Table 7)**, respectively. This type of timber is primarily intended for household use, including as floor decoration and furniture. Increased consumer spending is a significant driver for its rising importation. China has maintained rapid economic progress, making it the second largest economic entity in the world in 2010 (ESCAP 2010). The country's average GDP is expected to exceed USD 4000 (Ru and Lu 2009). The improvement in the spending capacity of the Chinese will further encourage household consumption of tropical to warm-temperate broad leaf timber.

China gained the trade balance against the large volume of its timber resources import mainly by exporting processed products. Financial crisis greatly reduced the consumption of US and EU and so as the import from China. In order to encourage export, China adjusted the export rebate seven times since 2008. In April, 2009, the export rebate ratio of 36 kinds of forest products went up, among which, some paper products' export rebate ratios increased to 13%. In June, 2009, the export rebate ratio of furniture increased to 15%. In August 2009, the ratio of bamboo products increased to 11%. By increasing the export rebates of forestry products (MOF 2009), China overcame the trade imbalance caused by imports of large volumes of timber resources to some extent.

Summary and Conclusions

The NFPP has been implemented for 10 years now and its achievements in terms of national environmental protection continue to be realized. The logging prohibition and limitation policies

have nevertheless reduced domestic timber supply. Although timber resource reservation in China continues to grow and its capability for sustainable development has improved, timber production lags behind domestic timber consumption. The supply-and-demand gap has widened considerably and timber import has become a primary result. After joining the WTO, timber imports in China have also risen because of trade liberalization and China's policies encouraging timber imports. From 1998 to 2008, timber imports in China accounted for 24% of the world overall timber imports, making China the world's largest timber importer.

China's imported timber (1998-2008) originates mainly from Russia, Malaysia, Papua New Guinea, New Zealand and Gabon, accounting for 80% of overall timber imports. Relying on the timber supply of a small number of countries, many of which have very poor environmental and social practices, has raised global concern over the excessive use of the forest resources of other countries. Thus, in order to relieve the pressure of environmental degradation of those developing countries, China should improve the diversification of its import origins by increasing the import of timber products from other areas, such as the countries in north Europe, which are rich in forestry resources.

Among all the imported timber, conifers imported from Russia accounted for 60%, and its import is encouraged largely by the rapid implementation of infrastructure projects. Improvements in the spending and consumption capability of the Chinese have enabled tropical to warm-temperate broad leaf timber to become the chief imported timber category.

Insufficient forest resources, as well as the logging prohibition and limitation policies adopted by the NFPP, have caused China's timber supply-and-demand gap to widen. China's rapid economic development will further increase this gap. Timber import will continue to serve as the primary solution to the issue of domestic timber supply shortage.

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