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State Forest Reform in Northeastern China

Issues and options

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SUMMARY

The reform of the state forest enterprises (SFE) in Northeast China has challenged policy makers for many years. The forests of the Northeast, once the primary source of timber for the country's development, suffered from years of overextraction, causing serious depletion; as a result, the communities that depend on these resources have lost their economic base. In response to the severe degradation, the government has restricted timber extraction and shifted toward ecological protection. Although this shift has seen some recovery in the resource base, there has not been an associated comprehensive reform of the institutional structures governing the forests, which essentially remain as before. The SFE provide the key functions of resource management and also social and economic benefits. The system is currently supported by the Natural Forest Protection Program, now in its second phase, which provides subsidies for social insurance and services, among other things. There is also an expectation among forest sector stakeholders that progress will be made on the institutional reform agenda.

A number of pilot reforms have been launched in recent years in the northeastern provinces, including the introduction of household-based forest management and restructured timber processing plants. Although ad hoc in nature, these reforms can give useful guidance for advancing the reform process and can demonstrate both opportunities and challenges for more comprehensive reform efforts. The barriers to increasing reform center on the competing roles of central and local governments and the burden of social responsibilities, which currently falls on the SFE. Maintaining the status quo is not a viable option and the reform needs to be tackled head on, involving both institutional reform of the administrative and management structures and a market-oriented reform of the SFE.

This paper considers three options for institutional reform: (1) the centralization of state forest management; (2) the decentralization of local management responsibilities to the province; and (3) a combination of the two, with clearly delineated functions and responsibilities. Ultimately, whichever option is pursued requires current functions and control to be reallocated, and this issue remains divisive and politically sensitive.
These institutional reforms would need to be accompanied by the reform of the SFE, which should focus on separating public social service provisions and responsibilities from business operations. Options also exist for this, either (1) through transferring all public obligations to local government and having the current enterprises focus on forest operations, or (2) through formally transforming the enterprises into administrative entities for social services while forming independent business entities for profit-oriented aspects of the current enterprises.

The paper concludes by stressing the importance of consolidating stakeholders' interests to create a common vision for the reform. The assessment of the ongoing pilot reforms will provide a solid foundation to evaluate options for moving forward, though the reforms will need to be set in the context of the wider challenges of social service provision, infrastructure development, and achieving an appropriate balance between resource extraction and protection. There is considerable scope for the northeastern forests to support the local and national economies, through timber extraction as well as diversified uses including tourism and nontimber forest products. Achieving this requires central government leadership to reform the current system and put in place the necessary institutional framework and incentive structures.

ACRONYMS

EEPC	Environmental Economics Program in China
IIASA	International Institute of Applied Systems Analyses
NFPP	Natural Forest Protection Program
PROFOR	Program on Forests
SFA	State Forest Administration
SFE	State Forest Enterprises
Y	Yuan
ZGTJNJ	China Statistical Yearbook (*Zhongguo Tonji Nianjan*)

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1. Introduction

China has the fifth-largest forest area in the world with 207 million hectares (ha).[1] On the other hand, forests account for only 22 percent of its territory, below the 31 percent global average. Forests in China are unevenly distributed, with the majority— about 68 million ha—located in the South and about 43 million ha the Northeast (table 1). China's forest structure is diverse. While 83 percent of the forestland in the Northeast is natural forest, that ratio decreases to just 37 percent in the North. As a result of massive afforestation implemented by the government of China since the early 1900s, about one-third of China's forests are plantations, about half of which are located in the South.

Table 1: China Forest Area and Structure, by Region

Region	Forest (million ha)	Natural Forest (million ha)	Plantation Forest (million ha)	Natural Forest % of Total Forest
South	68.4	36.3	32.1	53
Northeast	43.6	36.8	6.8	83
Southwest	40.2	32.0	8.2	80
North	17.3	6.3	11.0	37
Northwest	11.8	8.4	3.4	71
TOTAL	**181.3**	**119.8**	**61.5**	

Source: World Bank (2010).

Since the 1950s, timber needs for China's economic and social development have been high. To supply the growing demand, the government has gradually established 135 state forest enterprises in forest-resource-rich regions of the Northeast, Northwest, and Southwest. The single focus on timber extraction defined the nature of the SFE, including their capital investments, infrastructure development, forest management, technology development, and staffing. Forest areas were sparsely populated and included few local communities, thus the SFE also became the dominant form of administrative and social organization. They often functioned as local governments, relied on revenues from timber extraction, and provided public and social services such as hospitals and schools to the employees and their families.

The need to address the growing demand for timber and generate revenue led the SFEs to adopt unsustainable timber extraction practices to maximize short- to medium-term production. These practices resulted in severe ecological degradation of forest areas. By 1981, total forested area covered only 110 million ha, of which 86 percent was designated Timber Forest or Economic Forest (World Bank 2010).

The government of China, recognizing the forest resource and economic crises caused by overexploitation, began in the mid-1980s to adopt a series of forest sector policy reforms, starting with the Forest Law to require reforestation after commercial harvests and including a logging ban established in 1998. Those

[1] According to FAO (2012), in 2010 Russia had 809 million ha, Brazil 520 million ha, Canada 310 million ha, and the United States 304 million ha.

reforms aimed at improving the quantity and quality of forests and striking a better balance between forests for production and conservation.

Those reforms resulted in an 88 percent increase in forest cover between 1981 and 2010, especially in forest conservation areas, which increased from about 6 percent to 46 percent in the same period. On the other hand, the necessary decrease in harvest as the forests recover (young and middle-aged forests represent about 66 percent of the forested areas; World Bank 2010) impacted the SFE, which lost their main source of revenue. Therefore, further reforms are needed to avoid or mitigate economic and social crises in areas operated mainly by the SFE.

Forest resources administrative structure

When the state forest enterprises were established, enterprise management was part of China's centralized economic command and control system. The Ministry of Forestry, the responsible authority of the central government, was allowed to directly intervene in the operation of the enterprises. Over time, administrative responsibilities gradually devolved to provincial authorities as part of broader reforms that decentralized administrative responsibility for state-owned enterprises. During this decentralization process, provincial authorities increasingly assumed decision-making power for such aspects as manager appointments, financial decisions, and production planning.

The central government, however, continued to play a dominant role through the State Forestry Administration (SFA). Although the Ministry of Forestry was downgraded to the SFA during a general government reform in 1998, it retained final decision-making authority in all key matters of forest enterprise management. To exercise this authority, the SFA established State Forest Resource Monitoring Offices to monitor timber production, forest protection, and the implementation of national forest policies and regulations. Today, the SFE are thus controlled by State Forest Resource Monitoring Offices of SFA and, at the same time, the provincial authorities, which have been handed management responsibilities from the central government.

These two key actors compete for the control of the SFE although they do not have the same focus. The State Forest Resource Monitoring Offices primarily monitor the ecological functions of the enterprises; that is, their ability to protect and use the forest resources sustainably. The provincial forest authorities focus on the social and economic aspects of enterprise management, including employment provision, social stability, and revenue generation, including revenue sharing with the provincial authorities.

In practice, the SFE generally prioritize economic performance over ecological protection. This is mainly because the contracts and arrangements between the enterprises and the provincial authorities are more binding and enforceable, because it is straightforward to assess performance on employment, social stability, and profit sharing, and these factors relate directly to the business interests of the enterprises. In contrast, ecological performance, which generally does not immediately affect people's welfare, is harder to measure, and, because of the accumulated impacts of resource degradation, performance of forest managers cannot easily be measured by ecological indicators.

Recent reform initiatives and developments

In response to the combined resource and economic crises and the institutional weaknesses in state forest management, various formal and informal reform experiments have been carried out over the past 30 years, and especially since the late 1990s.

Natural Forest Protection Program

The Natural Forest Protection Program (NFPP), created in 1998, is one of the key programs providing support to the SFE across China. In its first phase from 1998 to 2010, the NFPP introduced a logging ban in natural forest areas (including state forest areas), which was later lifted although harvest restrictions remained in place in many areas. The NFPP also provided support to forest protection and replanting, and the resettlement of redundant employees of the SFE. Although some central government agencies expressed a strong desire to include forest management mechanism reforms into the NFPP to create incentives for the SFE to adopt sustainable forest management practices, this proposal was not included. A second phase of the NFPP began in 2011 and will last until 2020.

Discussion of reforming China's state forest management system started in late 2003, during the government's midterm evaluation of the NFPP. Although the NFPP was seen as reasonably effective in reducing deforestation in the state forest regions, and there was evidence that forest resources had begun to recover, the evaluation indicated a lack of effort to reform actual management mechanisms and practices and to change the incentive system in the forest sector. Around this time, the SFA also conducted a formal study to put forward a road map for state forest reform.

The NFPP has been instituted to address forest resource degradation and the economic crisis, particularly in the Northeast. It has been criticized because of its primary focus on subsidizing the status quo and for the way subsidies are being provided, in particular, on the basis deforestation rates and numbers of laid-off workers. Because areas without major deforestation do not receive NFPP subsidies, the program is criticized for giving the wrong incentives and for contributing to poor ecological performance in the state-owned forest sector.

Other key policy decisions

Between 2003 and 2010, several decisions by the Communist Party of China Central Committee and State Council provided the basis for China's forest management system reform considerations, in particular, the SFE in the northeastern region. The most important ones are summarized below:

- In 2003, Central Policy Document No. 9: CPC Central Committee and State Council Decision on the Development of Forestry stated the determination to deepen institutional reform in key state forest regions and to establish a forest resource management system with consolidated responsibilities and interests as well as an incorporated mechanism for administering assets, personnel, and operational affairs.

- In 2003, the State Forest Region of the Northeast was included in the Revitalization Plan for the Old Industrial Base of the Northeast.

- In 2004, the State Council defined forest resource management reform tasks in its work plan.

• In 2010, Document No. 1: Several Comments on the Intensification of Rural and Urban Development and Further Consolidating the Foundation for Rural and Agricultural Development called for pilot reforms of state forest management systems and for the centralization of state forest resources management.

2. The State Forest Region of northeastern China

The State Forest Region of northeastern China includes the Heilongjiang and Jilin provinces and the Inner Mongolia Autonomous Region (figure 1). The provinces cover 61 million hectares, or 6 percent of China's total territory. The forest area is about 44 million hectares, which is 24 percent of the national forest area. The total volume of the standing forest stock is estimated at about 3.2 billion m^3, or 23 percent of the national timber stock. In 2010, timber production in the area was 13 million m^3, or 17 percent of the total national harvest. (Zhao, 2010). Today, the region's share of the national timber harvest is far below its levels in the 1950s to 1980s, when about half of the national timber supply came from this region.

Figure 1: Northeast China—Heilongjiang, Jilin, and Inner Mongolia (Nei Mongol)

The State Forest Region of northeastern China belongs to the boreal and temperate forest zones and is endowed with a humid climate. Geographically, it extends over the Greater Xing An, Lesser Xing An, and Changbai Mountain areas. The region is an important ecological shield for the major grain producing areas of the Songliao Plain, the Three Rivers Plain, and the grasslands of Hulun Buir. Following the foundation of the People's Republic of China in 1949, the region was designated as a key state forest region and placed under state ownership.

History and institutional development

The State Forest Region started out as an important component of the old industrial base of China's Northeast. Of the 135 SFE established by the government after 1949, 84 were set up in the Northeast to support industrial development and economic growth in the urban and industrial sectors through the extraction of timber. During their first 50 years, total timber production in the Northeast exceeded 1 billion cubic meters, accounting for more than half of the national total production over that period. The SFE also generated substantial public revenues from timber sales. Taxes and transfers from timber extraction to the government exceeded more than Y24 billion and contributed to China's early capital accumulation and economic development.

Resource and economic crises

The level of timber resource extraction was not sustainable. As a result of over-logging, negligence in replanting and forest management, and the institutional shortcomings in the organization of the SFE, ecological degradation became apparent in the 1980s. In the mid-1980s, the region and its SFE were confronted with shrinking resources and a financial crisis that persists today. And in the early 2000s, 60 of the 84 SFE in northeastern China had basically depleted their commercially harvestable forests.

Because their public service provision relied on timber revenues, the SFE were no longer able to pay for the public and social services they had been mandated to provide.

3. The impact of forest sector reform in Northeast China

In 2007–08, the multidonor partnership Program on Forests (PROFOR) sponsored an analysis of the timber supply potential in China's Northeast. The study found that sustainable timber supply in the Northeast could be significantly increased at relatively low cost through improved sustainable management.

In 2010, with support from PROFOR, the Environmental Economics Program in China of Peking University (EEPC), together with the Department of Policy and Legislation of the SFA, the Forestry Economics and Development Research Center, the Geographic Institute of the Chinese Academy of Sciences, and the conservation biology group of Peking University, began a formal study of the road map for state forest reform in the Northeast Key State Forest Region. The key observations and findings regarding the implementation of the NFPP that emerged from local surveys are summarized below.[2]

Improved stand structure of the area

The surveys observed changes in favor of the protection of forest resources. Forestland increased from 79 percent in 1980 to 90 percent in 2008 (figure 2). On the other hand, the main purpose of the forestland changed as the area of timber production decreased from 93 percent to 33 percent, while the forested area

[2] Full survey report is presented in Annex 1.

under protection increased from 6 percent to 56 percent (figure 3).

Figure 2: Change in the Forested-land Area in Northeast China

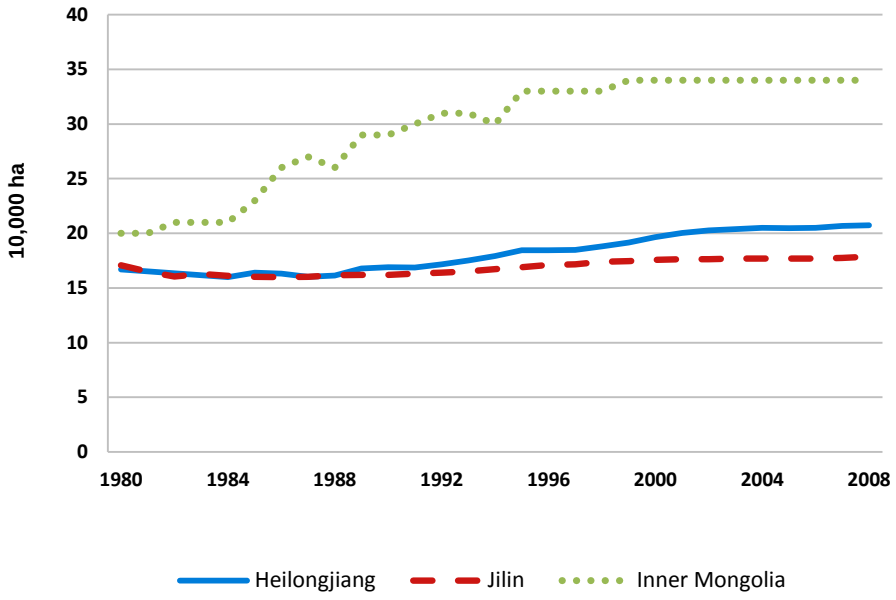
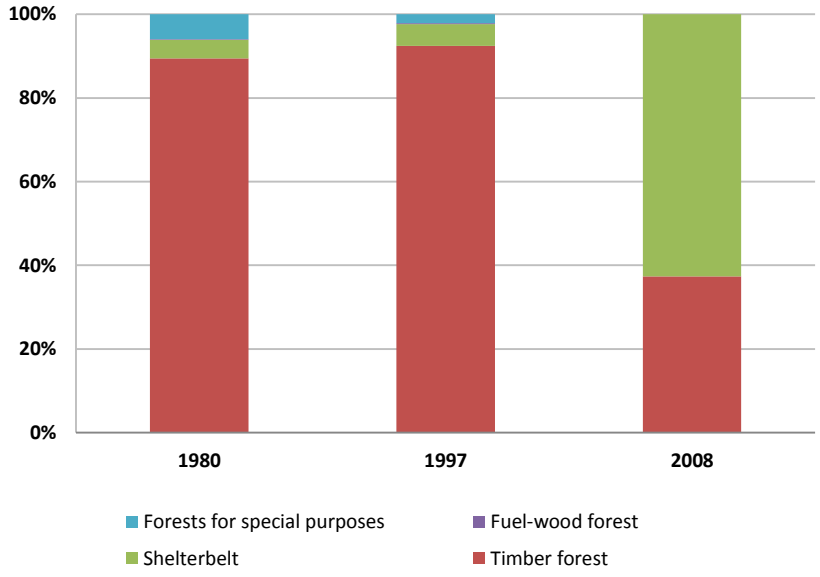


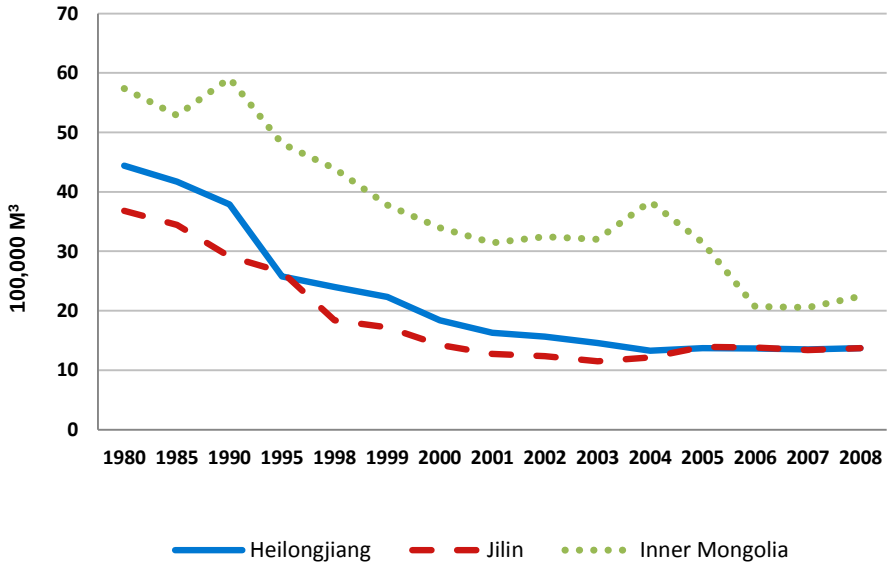
Figure 3: Change in the Structure of the Forested-land Area in NE China



Continued depletion of forest resources

Due to this change in structure, timber harvest of state-owned forest enterprises decreased by more than half (figure 4). Over 1980–2008, the average harvest in Inner Mongolia dropped from 5.7 to 2.2 million m^3, in Heilongjiang from 4.4 million to 1.4 million m^3, and in Jilin from 3.7 to 1.4 million m^3.

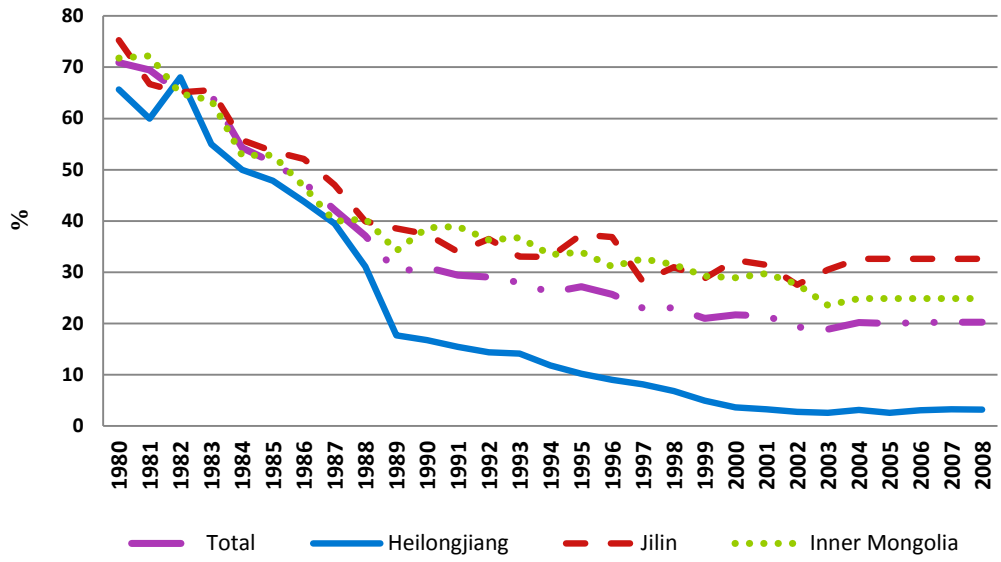
Figure 4: Change in Timber Production in Northeast China



Nonetheless, the changes in forest structure and the decrease in production did not impact the situation of resource depletion. The situation is especially severe in Heilongjiang Province, where the share of mature forest in total timber stock fell continuously, reaching 3.2 percent in 2008 (figure 5). There is almost no forest left to be harvested there. The situation is less critical in the other two provinces. Since the 1990s, the proportion of mature forest in timber stock in Jilin Province has been slowly increasing after continuous decline during 1980s, and this proportion has been maintained at approximately one-third since the implementation of the NFPP. Likewise, this ratio for Inner Mongolia has also always been kept above 20 percent, reaching 25 percent in 2008.

The problem in Heilongjiang is that the forest industry bureau that administers 40 state forest bureaus has an annual permitted logging volume of over 4 million m^3, which far exceeds its capacity. Although the resource situations are relatively better in Jilin and Inner Mongolia, their permitted logging volumes also exceed their ecologically sound capacities. The main reason to maintain such a large logging volume is to fulfill the needs for economic development of the forest area and subsistence living of its employees.

Figure 5: Changes in the Stock Proportion of Mature Forest in the Timber Forest



Household-based forest management and protection

Household-based forest management serves as the basic organizational form for the implementation of the NFPP. The surveys show that, by 2008, 73 percent of the area of natural forest farms under the state forest enterprises in Heilongjiang, 53 percent in Jilin, and 84 percent in Inner Mongolia have adopted household-based management and forest protection, as well as market-based measures for harvesting and afforestation to reduce cost and improve productivity. In Jilin, 51 percent of the forestland was transferred through auction, leasing to individual workers. In the other two provinces, the adopted mechanism was less direct. The mechanism of choice was a household responsibility system of forest resource management and protection, reaching 73 percent of the forest farm area in Heilongjiang and 84 percent in Inner Mongolia.

Economic restructuring of the timber industry and diversification

The output shares of various industries in each region's state forest areas have changed significantly over the past 30 years. The share of the production value of primary industry increased from less than 10 percent in 1980 to more than 50 percent in 2008 (figure 6a). During the same period, the production share of the secondary industry decreased from 80 percent to less than 40 percent, and the tertiary industry increased from less than 10 percent to 20 percent. In both cases, it seems that most of changes took place after the launch of the NFPP.

Figure 6a: Change in the Percentage of Production Value for Primary Industry in the Total Production Value of Society

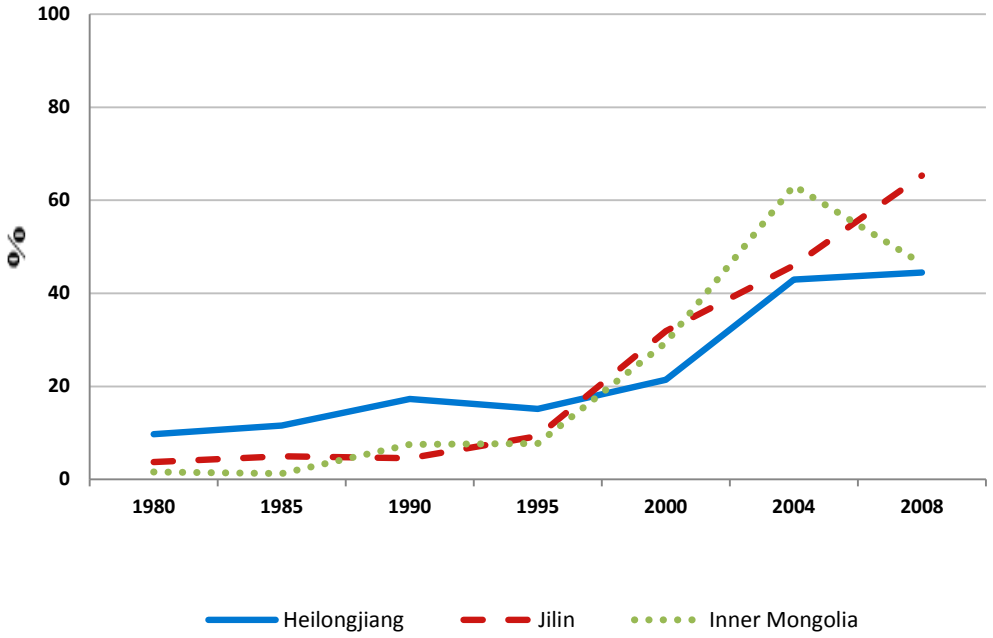


Figure 6b: Change in the Percentage of Production Value for Secondary Industry in Total Production Value of Society

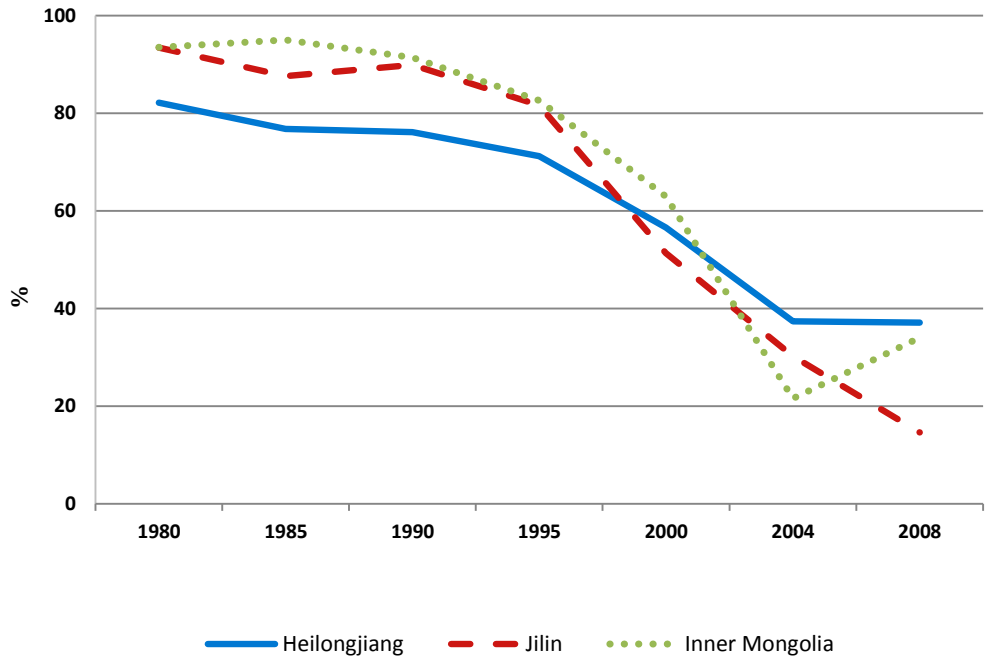
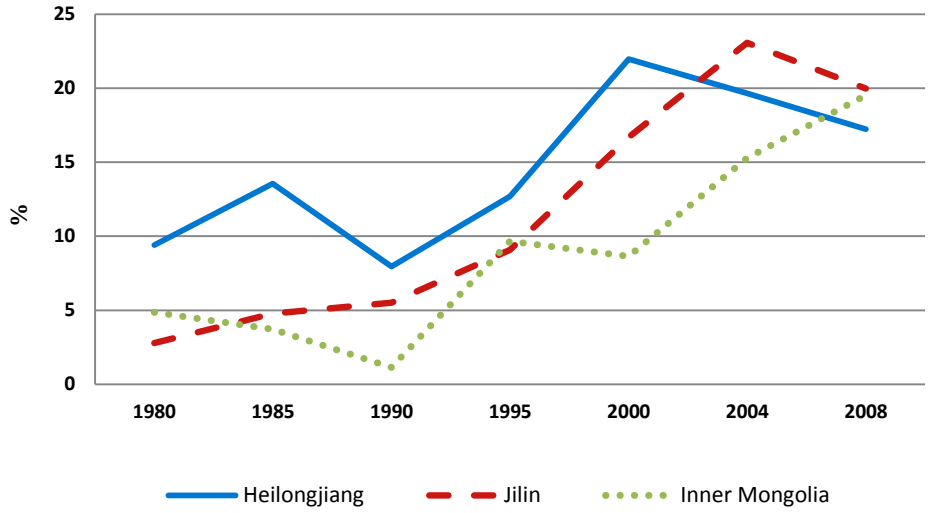


Figure 6c: Change in the Percentage of Production Value for Tertiary Industry in Total Production Value of Society



Timber processing plants, which have been unprofitable for many years, have undergone a process of corporatization with many plants being leased out to private investors. The survey found that, by 2008, 57 percent of the timber processing plants in northeastern China had been restructured, and many of them had become profitable.

Continued struggle with social service provisions

The SFE often function as local governments, relying on revenues from timber extraction to provide public and social services such as hospitals and schools for employees and their families. The decrease of revenue from timber production, the restructuring of the industry, and the increase of household-based management pose challenges to maintaining the social services, including staff, being provided by the SFE.

While the total number of hospitals has been decreasing (Inner Mongolia) or stable (Heilongjiang and Jilin) since the adoption of the reforms [figure 7]), their weight on the overall workforce has sharply increased since the mid-1990s (figure 8), from about 2 percent to 4 percent. The same trend was found for school staff, where the overall share of the workforce increased from about 7 percent in the mid-1990s to 10 percent in 2008 (figures 9 and 10).

Figure 7: Change in the Number of Hospital Staff

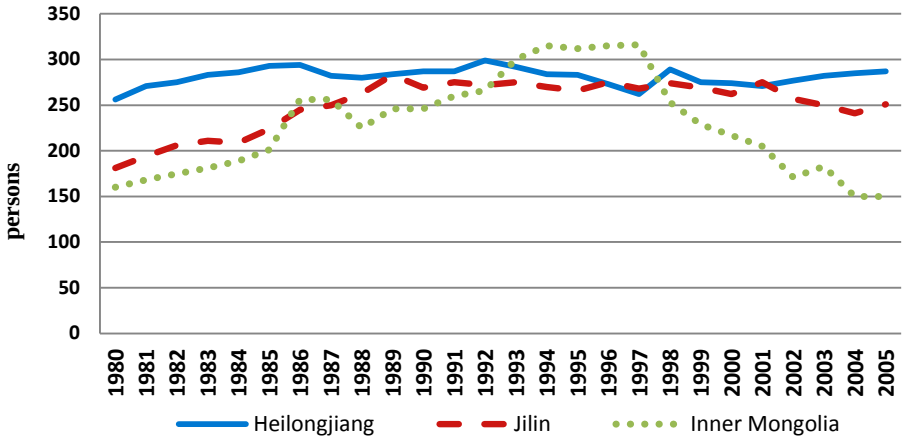


Figure 8: Change in the Percentage of Hospital Staff among Workers

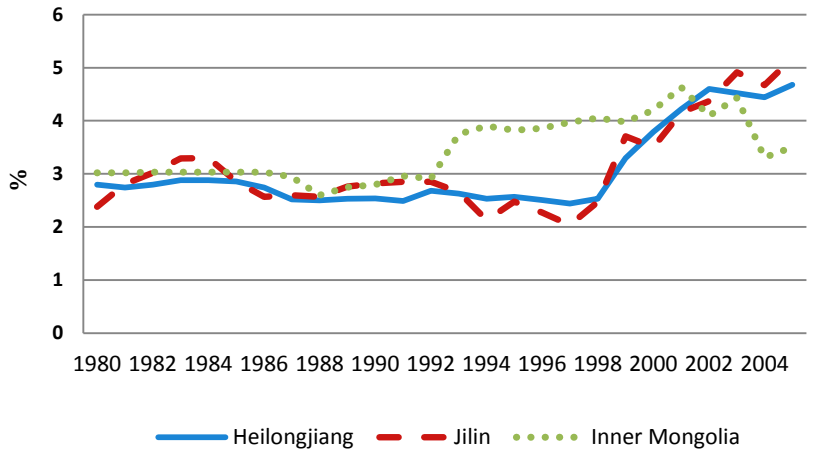


Figure 9: Change in the Number of School Staff

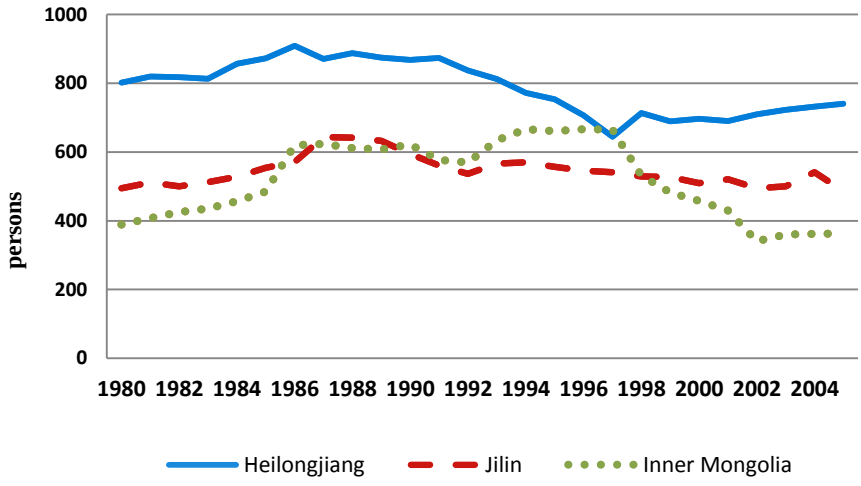
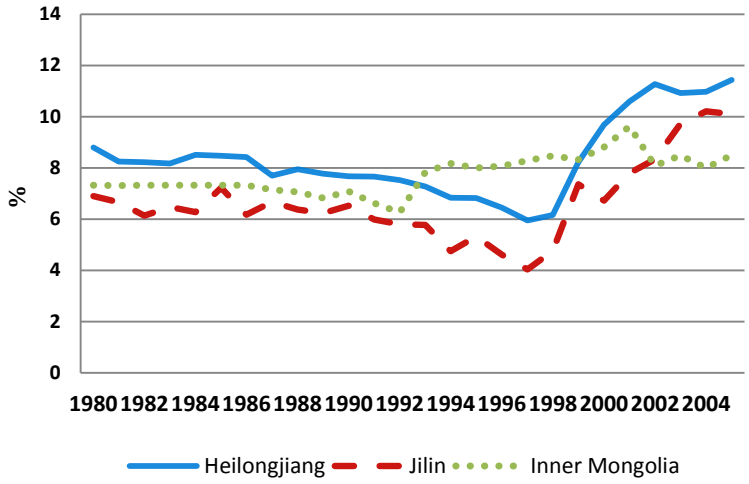


Figure 10: Change in the Percentage of School Staff among Workers



Increased economic diversification but also inequity

The regional economy has diversified over the past two decades and no longer relies solely on timber production. Forest recreational services and ecotourism have been developed by private investors, and the market of nontimber forest products has grown significantly. As a result, the weight of wages in household income decreased from 74 percent in 1997 to 58 percent in 2008. Most important, the share of wages from state-owned enterprises decreased from 60 percent in 1997 to 35 percent in 2008.

During the same period, household income per capita in state-owned forest enterprises increased substantially (table 2), with the annual growth rate in Jilin reaching (13 percent), followed by Inner Mongolia and Heilongjiang (12 percent each). Even with these growth rates, which are above the average annual growth rate of urban income per capita in the same provinces during the same period, in absolute terms, the household income per capita in urban areas continues to be significantly higher than in rural ones.

Table 2: Comparison of Per Capita Income (Y, %)

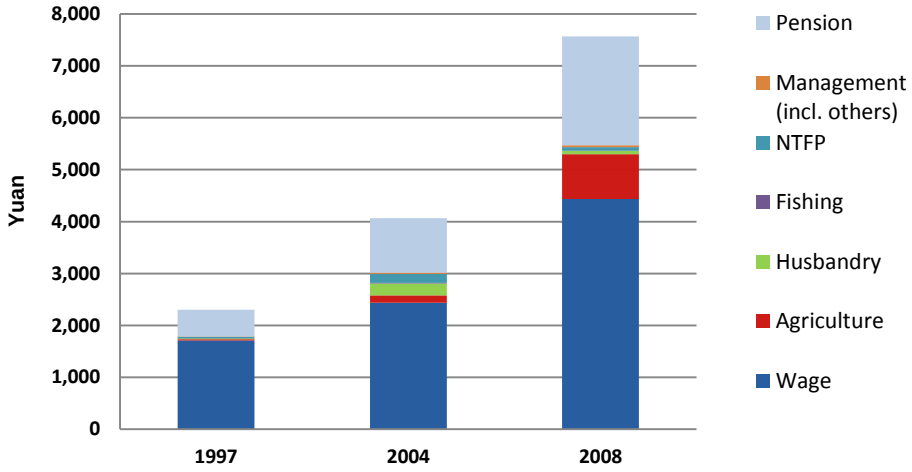
	Item	1997	2008	Average increase rate 1997–2008
Total	Per capita income of forest bureau household	2,304.8	7,567.7	11.4
	Per capita income of urban households	5,682.4	17,067.8	10.5
	Per capita income of rural households	3,397.5	6,700.7	6.4
	Per capita pure income of rural households	2,367.7	4,760.6	6.6
Heilongjiang	Per capita income of forest bureau household	1,955.1	6,678.4	11.8
	Per capita income of urban households	4,724.7	12,264.6	9.1
	Per capita pure income of rural households	2,653.5	4,855.9	5.6
Jilin	Per capita income of forest bureau household	3,004.0	11,668.6	13.1
	Per capita income of urban households	4,853.1	13,606.0	9.8
	Per capita pure income of rural households	2,522.6	4,932.7	6.3
Inner Mongolia	Per capita income of forest bureau household	2,662.3	9,521.9	12.3
	Per capita income of urban households	4,852.6	15,195.4	10.9
	Per capita pure income of rural households	2,177.0	4,656.2	7.2

Source: Per capita income of forest bureau from survey data. Per capita income of urban households, per capita income of rural households, and per capita pure income of rural households from ZGTJNJ, various years.
Notes: Income is adjusted to 2008Y using national and regional CPI (ZGTJNJ, various years). Income increase rate is a geometric average.

These changes seemed to correspond with the institutional changes in state-owned forest areas. Before the establishment of the NFPP, workers' income was determined by the internal division system in state-owned forest enterprises. Workers living on the lower parts of mountain areas were mainly governmental agency and processing company employees whose incomes were higher than those living on the upper parts of mountain areas and engaging in planting trees and harvesting. Since the implementation of the NFPP, a large number of workers changed functions associated with the breakup and ownership transformation of many economic organizations. As a result, workers' income sources were diversified. In the beginning, workers from upper levels had closer access to forestland and natural forest resources. After a series of reforms in the household contract system, their major sources of income grew rapidly from a variety of nonwood forest products, agriculture, and animal husbandry, exceeding the households who lived in lower mountain areas.

The overall income structures in all three provinces changed between 1997 and 2008 (figure 11). Wages continued to be a major source of income, but its relative share of overall income decreased from 74 percent in 1997 to 58 percent in 2008, while the proportion of agricultural income increased remarkably from just 1 percent to 11 percent in the same period. Meanwhile, pension share rose from 22 percent in 1997 to 27 percent in 2008, accounting for more than one-fourth of household total income, probably due to an aging workforce.

Figure 11: Change in Per Capita Income



Source: Income data are adjusted to 2008 using regional rural Consumer Price Index (c, various years).

On the other hand, by 2008, more than 8 percent of those living in these areas were below the poverty line. This was mainly due to the mass layoff of workers after the introduction of NFPP, industrial structure adjustment, and restructuring in processing industry. Poverty was not a big concern when the revenues generated from timber production and processing from natural forests were sufficient to cover the operating expenses and social welfare responsibilities of these forest industrial enterprises. However, in many cases, enterprise restructuring gave rise to increased poverty due to the underdevelopment of the social security system. Thus, establishing a comprehensive social security system in the forest areas is the key to

guaranteeing the success of the reforms and future sustainable development, and should also be the focus of future government support policies.

4. Progress of the Forest Reform: Lessons from Selected Pilot Programs

State forest reforms adopted since the mid-1980s provide a framework under which different models have been developed, with varied results. The different models attempt to promote the reforms as adapted to regional functions and context. The main characteristics and lessons from three different cases are summarized below (see Annex 2 for the full case studies).

Remove social functions from enterprises: the cases of Inner Mongolia and Jilin

The Inner Mongolia regional government decided that social functions such as education, medical care, television, newspaper, public security, fire control, social security, sanitation, birth control, drinking water, and heat supply would no longer be the responsibility of the SFE. The entire staff and assets related to the social functions were transferred to and then managed by local governments.

Inner Mongolia reform also resulted in the reorganization of the social security system. Staff pensions in SFE also became funded by local government instead of enterprises. Favorable policies for disabled staff and special types of workers were specified through coordination with regional and Hulunbeier governments during this reorganization. Since June 1, 2008, medical, duty injury, maternity, and unemployment insurance for 160,000 staff in forest areas are all being funded by local governments, with standards similar to those for the local residents. Residents of forest areas, including staff family members, laid-off workers, unemployed families, and freelancers, are also included in the social security system, so they receive the same social security services as local residents outside forest areas.

Debts and credits still belonged to the SFE. Costs of the reform were covered jointly by regional government and forest product enterprises for the first three years, and have been borne solely by regional government since then.

Similar action was taken by the Jilin government. All social functions of enterprises were transferred to the government, which helped enterprises become modern companies able to compete in the market. In the few years since the reform, 87 social institutions were separated from the SFE. As a result, the enterprises reduced their costs by more than Y40 million, 60 schools were handed over to local governments, and 24 public security institutions with 2,721 employees will soon be supported by local finance. In addition, forestry survey institutions and the forestry technology school were handed over to local forestry bureaus.

Diversify land use rights systems: the case of Yichun City

Yichun City explored new mechanisms for managing state-owned forest resources aimed at developing market-oriented systems of land use rights that focused on local workers and included trading forest rights. The framework was provided by policies encouraging forestland contract workers to develop a self-managed economy in Yichun City. The example of Yichun City can apply when an area is being

underutilized or abandoned due to the absence of an active state enterprise or other groups interested in forest cultivation and protection.

The city developed various user-right options and customized them according to target beneficiaries:

- *Family contracting and independent operating.* More than 6,000 workers' households were selected and became independent forest resource operation bodies.
- *Management associations.* To operate the areas collectively, nearly 500 workers' households were selected to establish associations, which enhanced productivity and lowered forest resources management costs.
- *Cooperatives.* Based on voluntary contracts, workers established cooperatives, co-sharing investments and revenues, and co-sharing risks.
- *Social use.* To ensure the rights of the poor forest households in the area, the SFE reserved about 5 to 10 hectares of forestland for each household. They could contract the forestland at any time before the forestlands went under trusteeship management by the SFE.

To protect workers' interests while these alternatives were being phased in, the policy ensured that workers had priority in contracting forestland. At the beginning of forestland contracted management, 80,000 hectares were contracted by ordinary forestry workers. In addition, buyers could receive a 20 percent discount on the transfer fee for buying natural forestland, and a 10 percent discount on a lump-sum payment; also, installment payments were allowed for workers who had difficulty paying all at once. The pilot program also provided interest-free loans for poor workers who wanted to contract forestland but lacked funds. The loan amount was capped at 70 percent of the total expenses incurred transferring of the forest asset.

To complement these measures, two financial mechanisms were developed:

- The city government set up a special fund for the reform and development of the state-owned forest property right system to support workers to manage forests and develop nontimber products.
- The government of Heilongjiang Province provided an afforestation subsidy of Y 2.5 million to workers involved in the Yichun City pilot program.

Streamlining forest administration: the case of the Shibazhan Forest Bureau

The functions of forest bureaus were redefined to clearly divide administration and business, in order to achieve simplification, unification, and efficiency. As a result, forest resource management was strengthened, and operational businesses flourished. The streamlining of the administration side led to a substantial decrease in the number of decision makers, managers, and operators due to department cancellations and personnel transfers. After the reform, the number of forestry bureau departments dropped from 24 to 13, and the number of officials decreased from 356 to 152.

Specialized companies were set up. According to the requirements of market economy, production and operational departments, which used to be subordinated to the forest bureau, were reorganized as separate new specialized companies and became independent market players.

After the reform, timber production was managed by one company, while afforestation and forest operations were the responsibility of another company. Five forest farms changed from logging farms into environmental protection administrations. Their functions included forest resource management, wildlife protection, forest pest control, fire prevention, and nontimber resource management. The main funding sources for these new protection-oriented institutions are NFPP forest conservation fees and forestry bureau timber production profits.

5. Barriers to reform

The surveys and case studies also identified barriers to deepening state forest sector reform, including competing roles of the central and local governments and difficulties in relieving the SFE of their social and administrative responsibilities.

Limited involvement of and reform guidance by the central government. Recent reforms in state forest management have been initiated and advanced primarily at the level of individual SFE or their subordinates. The central government has quietly accepted these efforts but has not explicitly supported the various local initiatives. In particular, it did not provide guidance through setting an overall objective for reform nor through setting specific reform milestones. The central government could also have shared more of the reform costs, for example, by tackling problems created by the absence of government-funded public services in the state forest areas, and by supporting the establishment and improvement of more efficient and better funded local government apparatus. As a result, reforms have remained incomplete and misguided in many aspects.

Limited central government support for social obligations. The SFE carry responsibility for pension and medical expenses for their retired workers as well as active staff, of which many are surplus staff. In addition, many timber processing facilities suffer from outdated technology and equipment and are not attractive for private-sector investments. Although the government has provided funds to address staffing problems, more systematic efforts to separate social obligations as well as secondary industries' state forest management has not progressed much.

Weak or absent local governments. A specific challenge to state forest reform in several parts of the Northeast lies in the absence of functioning local governments. Almost all the case studies were led by government initiatives. It is clear that for the SFE to be more business- and market-oriented, public and social service responsibilities should be transferred to local governments. For this to happen, local governments need to be established or strengthened and given adequate revenue and expenditure assignments to enable them to take on social responsibilities.

Lack of incentives to separate administrative from economic functions. The SFE are reluctant to give up control over forest resources, because these are seen as the enterprises' only remaining asset. As a result, institutional reforms to separate regulatory and control, planning and management, and business functions have not advanced much. Even pilot programs for institutional reform have not been successful in establishing forest resource management independent of the business enterprises because the

envisaged forestry administration bureaus were financially dependent on the enterprises they were supposed to monitor.

6. Strategies to advance forest reforms

To overcome the barriers presented above, state forest sector reform in China should be more comprehensive. Reform experiments conducted by individual forestry bureaus so far have not been fully successful because each attempt dealt with only limited aspects of the reform. Serious reform strategies must, therefore, involve both an institutional reform of the forest resource management system and a market-oriented reform of the SFE themselves. Reform efforts also need to be carefully sequenced and budgeted, ideally starting with the reform of the current forest resource management system in the state forest sector and moving toward the separation of policy and regulatory, resource management and planning, control and supervision, and business functions. Such institutional reform should then be followed by a reform of the enterprise system and the enterprises themselves.

Reform of the forest resource management system

Three proposals for institutional reforms have been considered, including: (1) the centralization of state forest management; (2) the establishment of local forest management systems through the decentralization of forest management responsibilities to the provincial governments; and (3) a combination of the centrally directed forest management system with a localized system.

(1) Centralize state forest management. The centralization of state forest management would involve the reestablishment of a system of vertical management led by the SFA on behalf of the State Council. Centralized management would reinforce state ownership over state forest resources in the Northeast. State forest management bureaus and sub-bureaus would be established at the provincial level as administrative sub-branches of the SFA and staffed with SFA personnel. The central government would assume responsibility of funding the operations of the SFA sub-branches, and all revenues generated at local levels would be transferred to and collected by the central treasury.

State forest management agencies would be responsible for forest protection and planning in the state-owned forests while commercial forest harvesting and replanting operations would be managed through market mechanisms, for example, through public bidding. The SFE would be reformed into business entities, such as shareholding companies or private enterprises, and would compete with other private businesses for management (i.e., harvesting, replanting) concessions or management rights.

The main advantages of centralized state forest management would include the consistent implementation of central policies and the assurance of adequate funding and financial support by the central government. On the downside, centralized forest management would put a significant fiscal burden on the central government and would imply a reversal of China's decentralization policies implemented over the past three decades. Specifically, the currently decentralized arrangements for personnel financial and material management would have to be adjusted to support a centrally managed institutional arrangement. Even in

the forestry sector, local governments have taken control over such aspects in line with general decentralization policies, and major efforts would need to be made to redress past decentralization.

(2) Decentralize forest administration to provincial governments. Alternatively, forest resource management could be decentralized and responsibility for forest administration devolved to the provincial governments. The central government would entrust the governments of the provinces, autonomous regions, and municipalities to function as state forest asset management principals. This is in fact already the main practice in the state sector. Local governments would become owners of the forest resources and assume full responsibility for personnel decisions as well as financial arrangements and, at the same time, enjoy the benefits of asset ownership.

The State Council would devolve forest administration to the provinces by allowing them to establish provincial state forest administrative agencies to be funded by provincial treasuries. Revenues generated from forestry operations would be received by the provincial treasuries. Central government inspection agencies could remain to exercise some oversight functions and ensure the proper behavior of local administrations. A particularly important element would be to ensure the adequate protection of the forests' ecological function, which could be achieved through an expanded compensation program for ecological benefits and incentives for local governments to balance local economic interests with national ecological interests.

The main advantages of the decentralized approach would be reduced costs for changes in the administrative structure as compared with the centralized approach and, more important, the likely stronger ownership and commitment of local governments to take on responsibilities and allow them to develop innovations for how to best manage and administer their forest estate.

The main disadvantage of this approach would be the central government's limited control over the direction of forest sector development in one of the most important forestry regions in China. The central government would have to rely exclusively on incentive policies rather than administrative directives to induce local governments to behave in line with central policy goals.

(3) Combine both approaches into a compromising strategy. The proposed approaches — centralization or decentralization — will involve the loss of power for either the central or the provincial governments, and thus will create reluctance for reform. A compromising strategy to accommodate both sites could involve the division of the Northeast forest estate into two parts. Forests with high national or international ecological importance could remain under the direct administration and control of the SFA. The SFA could utilize these forests to provide models for conservation and management and for scientific research. All other forests would be placed under provincial administrative responsibility to be developed into local public forests that meet the needs of the local population and government. This would still allow provincial governments to pursue innovative reform strategies.

Main characteristics of forest reform

Whichever reform approach is adopted, it should consider the key aspects summarized below.

*Improve land use planning***.** In state forest areas, only the forests that have substantial ecological value and significant national or cross-district ecological functions should be categorized as state-owned forests

and managed directly by the central forestry authorities. Doing so can, on the one hand, pool resources together and increase investment to ensure the protection of forests; on the other hand, also provide a demonstration or model for forest resource protection and management for local organizations and research institutes. These can then become the focus for the development of nontimber forest products, tourism, and other services that do not require timber harvesting.

Ensure cost sharing among different levels of government. The reform challenges confronting the state forest areas include the establishment or strengthening of local governments, resettlement and reemployment of redundant workers from the SFE, infrastructure development, debt management, and the payment of long-term management costs. The costs of these reform tasks should be shared between the central government and the provinces. The costs of business restructuring should be borne by the enterprises themselves.

Promote infrastructure development. Because of many years of underinvestment in infrastructure, the level of development in state forest areas lags behind the surrounding areas. A national infrastructure plan should be part of the reform and guide infrastructure development in the state forest areas. Infrastructure should be improved to enable social and economic development. Infrastructures not included in the national plan should be funded locally.

This was the case in Inner Mongolia, where infrastructure construction and forest area management were handed over to local government, and then planned and invested in by local government. This reform also allowed road projects in forest areas to be integrated into the local transportation investment plan.

Reform strategies for the state forest enterprises

Separate forest administration and business operation. The NFPP for Northeast China is promoting the transfer of public and social service provision and responsibility from the SFE to provincial governments. Such separation is seen as critical for the long-term recovery of the natural forests and for future sustainable management.

Two potential arrangements for this transition and separation of responsibilities are suggested in the regional NFPP implementation plan. The first arrangement involves the preservation of the existing form of the SFE and the transfer of all public and social service obligations to the local governments. Along with the transfer of those responsibilities, the enterprises would be transformed into modern corporations to operate on business principles. This approach has already been tried in Jilin and Inner Mongolia.

The second option would involve the separation of all profit-oriented business operations from the SFE and the formation of new and independent business entities to manage productive assets, which will be taken away from the SFE. The SFE would remain but be transformed into administrative entities or quasi-governments that concentrate on public and social service delivery as well as forest protection, monitoring, and control.

Such an approach has been followed in Heilongjiang, where, historically, general government functions have been embedded in the SFE. The provincial government of Heilongjiang has assumed the cost of

administrative reforms and has decided to spin off all business functions from the SFE. In the future, the SFE will no longer operate for profit but will expect to receive tax revenues, transfers from the provincial budget, and land lease revenues to fulfill their service delivery and forest protection functions.

Expand forest tenure reform. Reform experiences like the one in Yuchin City suggest that a well-designed and steadily implemented forest tenure reform can create a win-win situation among the state, collectives (or enterprises), and worker households. Individual worker households benefit most from tenure reform because they will change from pure laborers to asset owners and operators; thus, they can increase their earning potential through this transformation. They also can receive long-term gains through managing timber and other resources. The state should also provide complementary support to the tenure reform, such as technical assistance and credit, in order to accomplish the goals of expanding forest resources and achieving social stability and sustainable development of the forest area.

Ensure equitable personnel management. A major challenge in state forest areas involves personnel management and placement after the reform. Although the NFPP has provided funding for the resettlement of nearly half of the previous workforce of the state enterprises, management personnel—half of the remaining workforce—has remained in place and poses a major cost to the SFE.

The Heilongjiang approach, under which the SFE will be converted into forest administrations, presents a sustainable option for tackling personnel issues. In Xinjiang, three state-owned forest administrative offices and subordinated service centers and the retiree management centers were transferred to a regional finance system. Makehe Forestry Bureau (in Xinjiang) and forest farm staff were all transformed into civil servants and were paid with regional resources. Pension for retirees was also paid by regional finance, which helped equalize income between employees and retirees.

7. Conclusions

The government of China has, over the past 15 years, committed enormous financial resources to mitigate the impacts of the resource and economic crises in the state forest sector and to create opportunities for reform, development of sustainable management systems, and economic development.

Reforms have been partially successful in improving forest protection and decreasing land degradation. However, they have not been able to increase sustainable timber production.

At the same time, the current set of reforms is creating a large social service legacy that needs to be addressed. This shortcoming is also affecting the ability of businesses to succeed under a market-oriented approach as, in many cases, they are still responsible for covering the costs of those social services.

Further deepening the reforms will depend on the adequate separation of tasks, cost sharing, and giving due attention to the incentives and interests of the different entities involved. Existing institutional settings still give the SFA political power in terms of controlling harvesting quotas and forest rehabilitation, but reform initiatives seem to challenge the legitimacy of this power. The SFA's proposal regarding re-centralizing forest resource management can, in that sense, be seen as a counter-reaction of the central authority to the

challenges posed by provincial governments. Moving forward, it will be important to consolidate the interests of the various stakeholders, including central and local governments, the SFE, and employees, and assess and consolidate the various reform plans proposed by the different levels of government and forest authorities. Central government leadership reform, with attention for successful local experiences, should guide the way.

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ANNEX 1: Key state-owned forest areas in Northeast China: reform paths and policy implications[3]

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Introduction

China's state-owned forest sector has been progressing but still faces significant challenges. Since 1986, the State Council and forestry administrations of China have provided solutions specifically and repeatedly for SFE issues. In order to mitigate the severity of forest resource and economic crises, managers and employees have vigorously attempted a series of institutional changes in forest resource management, silviculture, management diversification, and forest products processing, from which valuable experiences have been accumulated. Since the 1998 NFPP, the Chinese government has changed its forestry policy to give pivotal support to main state forest areas, instead of more exploitation than investment. Hence, the long-standing contradiction in this sector has been eased. More important, this presents a great opportunity for state forest areas to explore new institutional and mechanism reforms, and to achieve sustainable development.

Peking University, with support from the SFA and provincial administrations, conducted a follow-up survey from June to August of 2009, based on the 2005 survey in key state forest areas in Northeast China. According to quantitative analysis, state-owned forest areas have shown new vitalities in both resource management and economic growth, while effectively reducing the formal implementation costs of reforms. This indicates that the time has come for deepening the state forest area reforms.

Resource management and economic growth in state-owned forest areas

Forest resources

It has been customary to consider the problems in key state forest areas in Northeast China as a resource crisis, specifically, a decrease in the abundance of forest resources and a general decline of quality. However, according to the survey results, both quantity and quality have improved in recent years.[4]

Growth in forest area and stock

Forest resources have shown upward trends in terms of forestland area and timber stock in key state-owned forests in Northeast China, while the growth rate varies across regions. Figures 1 and 2 show that, at the bureau level, the average forestland area and timber stock are higher in Inner Mongolia than in the other two provinces, and have seen positive growth since 1989. This is because its SFE are relatively larger in scale. Jilin Province has the smallest area of forestland among the three, but its average timber stock per bureau is much higher (about 30 percent) than in Heilongjiang during the entire surveyed period. This trend

[3] This background paper was translated into English from Mandarin. The original version is available on PROFOR's website at http://www.profor.info/node/2006

[4] Our data on forest resources are based on the second category of forest inventory from all levels of forest administrations in state-owned forest areas.

began to grow steadily in the 1990s, then sped up after 1998. In Heilongjiang, forest resources have declined since the 1980s, with its timber stock dropping to 13.97 million m^3 in 2002, the lowest point. It began to increase afterward, reaching 17.13 million m^3 by 2008. This implies that the NFPP has indeed provided state-owned forest areas an opportunity to recuperate their forest resources.

Figure 1: Change in the Forested-land Area[5]

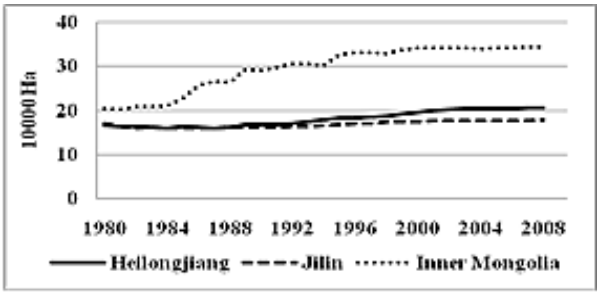
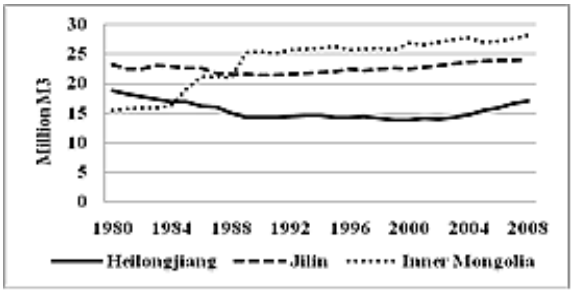


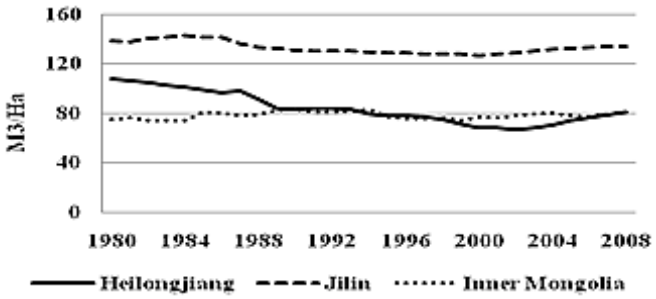
Figure 2: Change in the Forested-land Volume



Improved forest quality

The average timber stock per unit has increased in all three provinces since 2000 (figure 3). Jilin has the highest forest quality among the three, with an average of about 130 m^3/ha, and ranging from the lowest of 127 m^3/ha in 2000 to 134 m^3/ha in 2008. The average in Inner Mongolia has been stable at about 80 m^3/ha throughout the period. Timber stock varied greatly in the 40 bureaus of Heilongjiang. It decreased from 108 to 67 m^3/ha from 1980 to 2002, and then increased afterward, with 81 m^3/ha by 2008, reaching the level of Inner Mongolia. It can be inferred that, in all three provinces, the quality of forest resources has shown an upward trend since the implementation of the NFPP. This improvement bodes well for resolving the crisis facing the SFE. However, due to the small extent of improvement, there is still a long way to go.

Figure 3: Change in Volume per Hectare of the Forested-land



Rationalized resource structure

Changes in stand structure of forestland favor the protection of forest resources. The implementation of the NFPP resulted in a major adjustment of the share of forestland for timber production (figure 4). The forestland area of timber production decreased from 92.6 percent to 33.4 percent from 1997 to 2008, while the area of protected forests increased from 5.3 percent to 56.1 percent over the same period. This change

[5] Unless otherwise noted, the data used in all figures are survey data and express the average level of state forest bureau.

resulted in a significant decrease in timber harvest of the SFE, which had hardly any forest to cut, and thus forest resources are being effectively protected.

Additionally, the share of forestland for forestry use has increased (figure 5). Meanwhile, open forest, shrubland, afforestation for undeveloped forests, nursery land, and nonstocked land have declined. This outcome can be attributed to systematic afforestation over many years. For example, the share of forestland increased from 78.8 percent in 1980 to 90.0 percent in 2008.

The growth of forestland for forestry use, in association with the growth of protected forest in timber production forests, indicates that timber production is no longer the main premise for state-owned forests. The shift toward sustaining forest resources has not only rationalized the structure of forest resources but also provided favorable conditions for resolving the "forest resource crisis."

Figure 4: Change in Structure of Forestland Area

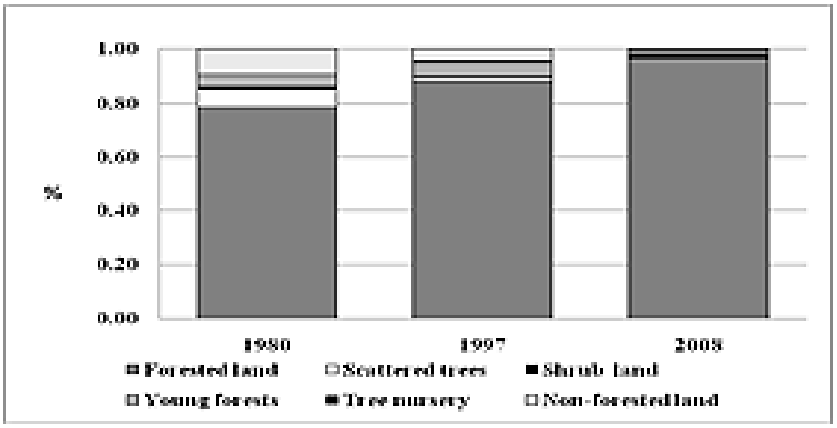
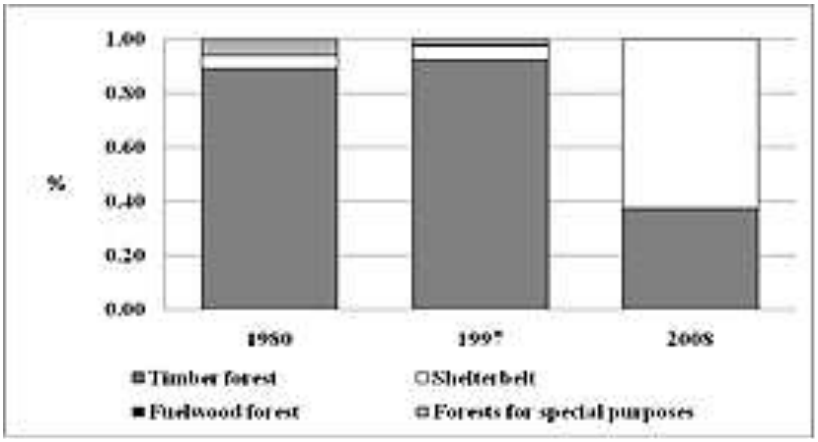


Figure 5: Change in Structure of Forest Stands Area

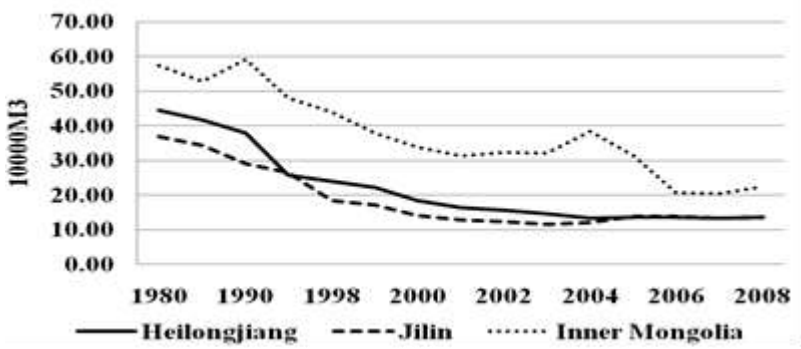


Further reduction in the scale of timber production

The average timber output in state-owned forests has been greatly reduced. The average felling volume in Inner Mongolia has dropped by more than half, from 0.57 to 0.22 million m^3 in 1980–2008 (figure 5). In Heilongjiang, the average timber output declined from 0.44 million in 1980 to 0.14 million m^3 in 2008. Jilin, which had always had the lowest timber output among the three, also declined, from 0.37 to 0.14 million m^3 during the same period.

A decline in harvest can be caused by many factors, the most important ones being a significant reduction in harvestable resources, adjusted structure of forest species, and control on logging bans. This decline has also resulted in a large drop in timber supply in the SFE. Therefore, state-owned forest areas now face the challenges of how to resolve forest resources crisis, and how to contribute to overall forestry development in China.

Figure 6: Timber Production (in 10,000 m3)



We investigated and analyzed the status of their economic conditions to evaluate whether the slight improvement in forest resources can drive the economic development in state-owned forest areas.

State-owned forest areas: Remarkable achievements of economic restructuring

Through many years of reform—restructuring industrial patterns, reorganizing processing industries, and developing diversified businesses—forest administrations in state forest areas have tremendously changed output shares of the various industries in the region. Figure 7 shows the growth rate of the primary industry, from less than 10 percent in 1980 to more than 50 percent in 2008, and its fast growth after that. Figure 8 shows the output share of the secondary industry, with a decline from more than 80 percent in 1980 to below 40 percent. Figure 9 shows the output share of the tertiary industry, which has increased from less than 10 percent in 1980 to 20 percent in 2008. Figure 7 also indicates that today's industrial structure is the outcome of long-term growth, and this trend of industrial adjustment accelerated in the late 1990s after the NFPP implanted.

Figure 7: Percentage of Production Value for Primary Industry in Total Production Value of Society

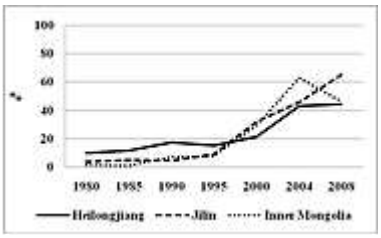


Figure 8: Percentage of Production Value for Secondary Industry in Total Production Value of Society

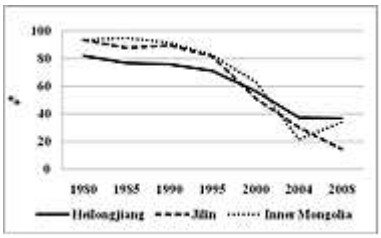


Figure 9: Percentage of Production Value for Tertiary Industry in Total Production Value of Society

Heavy social burden

Since the late 1990s, the structural change in forest communities' social burden has altered significantly. Figure 10 shows success in reorienting laid-off employees after 1998. In all three provinces, the average number of workers on the job has dropped a large degree; that is, there were basically half as many workers in 2008 as there were in 1998. Thus, the proportion of forest workers over the total population of forest communities has declined from more than 30 percent to about 20 percent (see figure 11).

Figure 10: "On-the-position" Workers

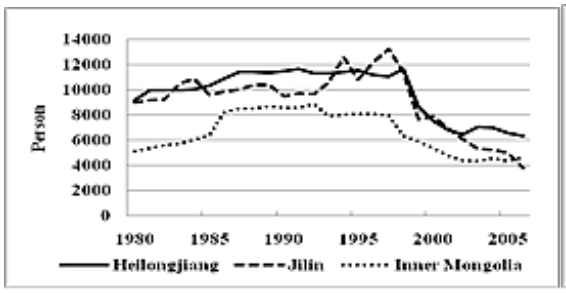
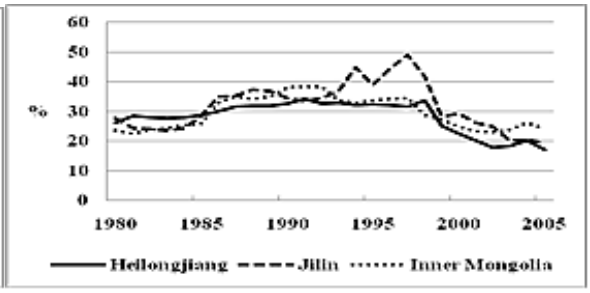


Figure 11: Percentage of "On-the-position" Workers in the Population



Compared with the decline in the number of fully employed workers, the number of workers employed by social service, paid by public expenditure of forest enterprises, has changed slightly (figures 12 and 14). This implies that, in spite of the weakened function of offering jobs by forest enterprises, the ratio of the major social service sector has maintained a growth trend. Moreover, retired workers account for more than 70 percent of employees on the payroll and actually on duty (so-called "on-the-position" workers, as opposed to workers who may be on the books but not working), reaching more than a 100 percent increase in Jilin (figures 16 and 17). Thus, during the process of the NFPP, workers' aging and social security needs have been highlighted.

Figure 12: Change in the Number of Hospital Staff

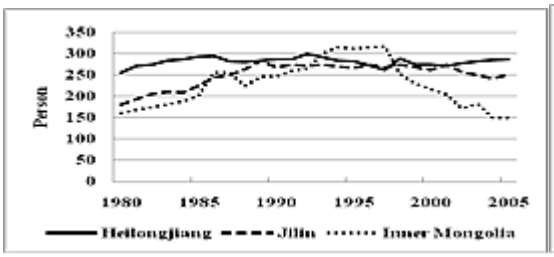


Figure 13: Change in the Percentage of the Number of Hospital Staff among "On-the-position" Workers

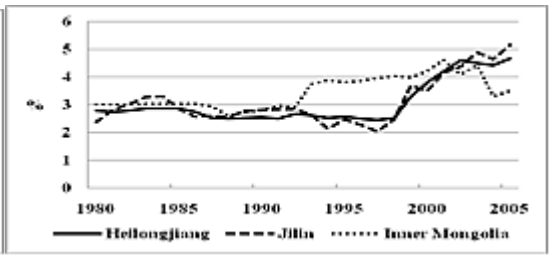


Figure 14: Change in the Number of School Staff

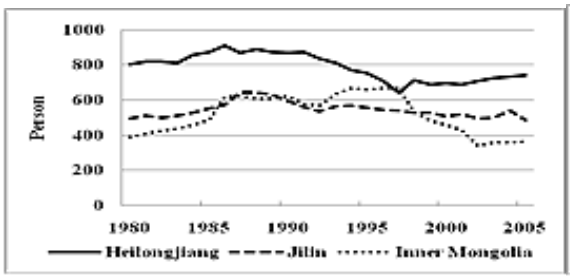


Figure 15: Change in the Percentage of the Number of School Staff among "On-the-position" Workers

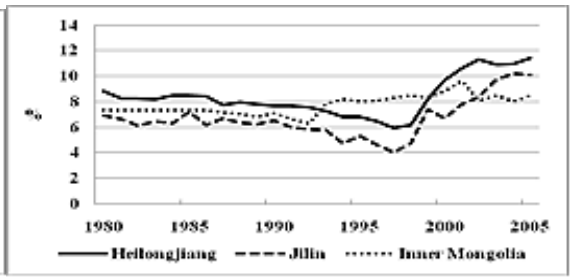


Figure 16: Change in the Number of Of Retirees

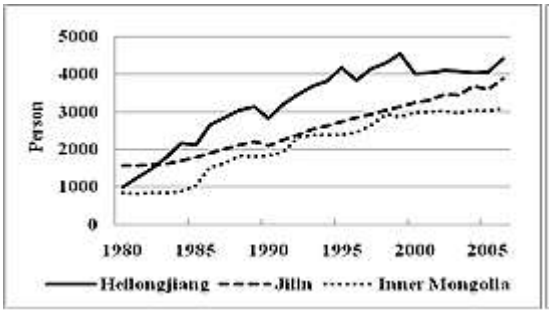
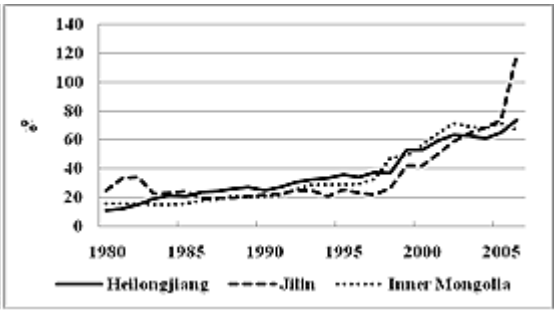


Figure 17: Change in the Percentage of the Number of Retirees among "On-the-position" Workers



Improved living standards of forest enterprises employees: Remarkable income increase

Since 1997, household income per capita in the SFE has continued to increase substantially (figures 18–21). Table 1 shows the annual growth rate from 1997 to 2008, which is above China's average. Total household per capita income in forest enterprises is far below the income level of urban residents. Meanwhile, the per capita income in forest enterprises was lower than the rural per capita income of China in 1997, and only 12 percent above that number by 2008. This result suggests that, although employees of

state-owned enterprises are holding urban registered residences, their actual living standard is not much different than rural residents in suburban areas, despite the abundance of forest resources.

The annual growth rate of household per capita income increased in all three provinces between 1997 and 2008, among which Jilin is the highest (13.3 percent), followed by Inner Mongolia (12.3 percent) and Heilongjiang (11.8 percent). This situation is consistent with each province's forest resources quality, indicating to a certain extent workers' high dependence on forest resources. Additionally, the overall annual growth rate increased across the country after 2004. During this period, it is higher in the SFE, above the average annual growth rate of urban income per capita. However, because of its lower base, in Northeast China, it is merely 44 percent of China's overall urban household per capita income. Jilin, the highest in income level and growth rate, is only 85 percent of the total urban household per capita income of Jilin, indicating that an income gap still exists.

Table 1: Comparison of Per Capita Income

	Item	1997 (Y)	2004 (Y)	2008 (Y)	Average % increase rate 1997–-2004	Average % increase rate 2004–2008	Average % increase rate 1997–2008
Total	Per capita income of forest bureau household	2,304.47	4,065.87	7,567.67	8.45	16.80	11.42
	Per capita income of urban households	5,682.39	10,795.17	17,067.78	9.60	12.13	10.52
	Per capita income of rural households	3,397.53	4,393.65	6,700.69	3.74	11.13	6.37
	Per capita pure income of rural households	2,367.72	3,193.76	4,760.62	4.37	10.49	6.56
Heilongjiang	Per capita income of forest bureau household	1,955.01	3,753.21	6,678.42	9.77	15.50	11.82
	Per capita income of urban households	4,724.66	8,956.61	12,264.06	9.57	8.17	9.06
	Per capita pure income of rural households	2,653.45	3,449.29	4,855.59	3.82	8.93	5.65
Jilin	Per capita income of forest bureau household	3,004.03	4,544.41	11,668.62	6.09	26.59	13.13
	Per capita income of urban households	4,853.11	9,326.05	13,606.03	9.78	9.90	9.82
	Per capita pure income of rural households	2,522.63	3,400.43	4,932.74	4.36	9.75	6.29
Inner Mongolia	Per capita income of forest bureau household	2,662.30	4,683.16	9,521.93	8.40	19.41	12.28
	Per capita income of urban households	4,852.61	9,754.04	15,195.44	10.49	11.72	10.93
	Per capita pure income of rural households	2,177.01	2,995.08	4,656.18	4.66	11.66	7.16

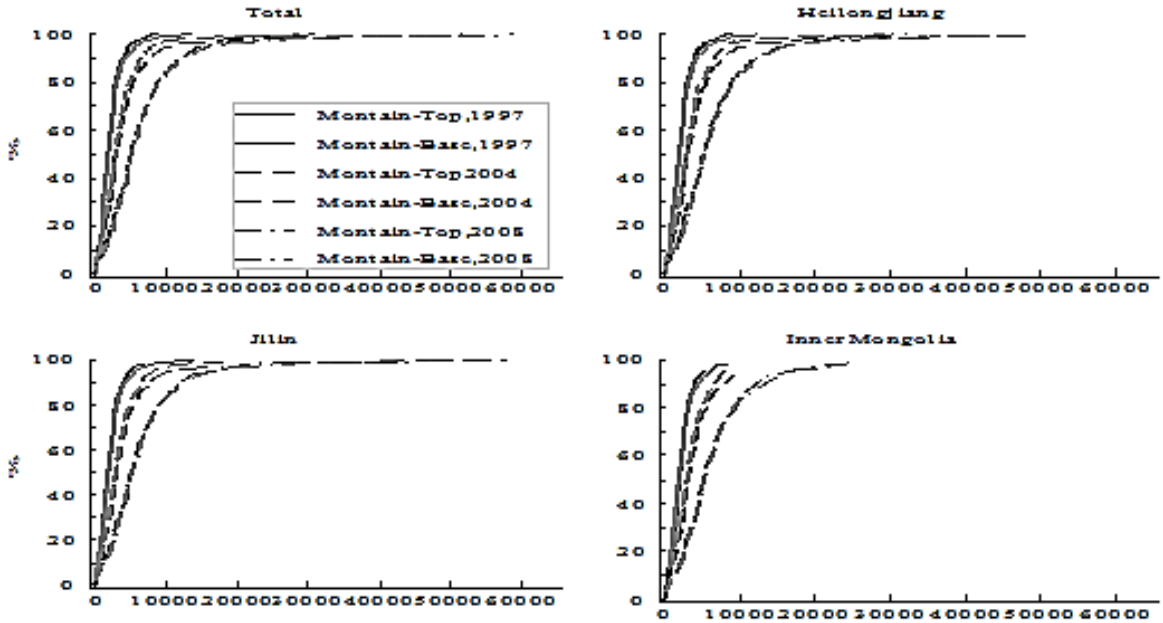
Source: Per capita income of forest bureau from survey data. Per capita income of urban households, per capita income of rural households, and per capita pure income of rural households from ZGTJNJ (various years). Notes: Income is adjusted to 2008 Y using national and regional CPI (ZGTJNJ, various years). Income increase rate is geometric average.

Comparing worker households according to their locations as upper or lower mountain areas indicated that their growth trends fluctuated and then reached gradual convergence. Workers from lower mountain areas earned more than workers from upper ones in 1997, before the implementation of the NFPP. In 2004, upper ones surpassed those from lower mountain areas in household per capita income. However, by 2008, these two trends converged.

In the context of institutional and environmental changes in state-owned forest areas, the following can be inferred from income changes between these two types of workers: In 1997, before the NFPP, workers' income was determined by the internal division system in the SFE. Workers living at lower levels of mountain areas were mainly employees of governmental agencies and processing companies, whose incomes were higher than those living at upper levels of mountain areas and engaging in planting trees and harvesting. Since the implementation of the NFPP, a large number of workers accepted seniority buyouts, associated with the breakup and ownership transformation of many economic organizations.

As a result, workers' income sources were diversified. In the beginning, workers from upper levels had closer access to forestland and natural forest resources. After a series of reforms in household contract systems, their major sources of income grew rapidly from a variety of non–wood forest products, agriculture, and animal husbandry, exceeding the households in lower mountain areas. However, the potential of managing land limited growth. Further development of private businesses and the market economy both inside and outside forest communities has extended job and income opportunities. Therefore, the household income level of workers living at lower mountain areas accelerated.

Figures 18-21: Empirical Distribution of Per Capita Income in 1997, 2004, and 2008 (in 2008 Y)



Significant change in income structure

Figures 22 through 24 show the overall income structures in all three provinces, where employees' major income sources were still from wages or pensions, while the proportion of agricultural income increased remarkably. Wage income accounted for 74.1 percent of the total household per capita income in 1997, dropping to 58.6 percent in 2008, but still representing more than half of total household income. Pension shares rose, from 22.2 percent in 1997 to 27.6 percent in 2008, accounting for more than one-fourth of a worker's total income.

Other income sources also increased. Agricultural share increased significantly and became an important source of workers' income, from merely 1.14 percent of the total per capita income in 1997 to 11.4 percent in 2008. Figure 23 shows that, for workers from lower mountain areas, wage or pension was the main source of their income, accounting for more than 90 percent of their total income. In Figure 24, agricultural income was the third main income source, in addition to wage or pension, for workers from upper mountain areas. This can be attributed to their closer access to forestland and resources, which is convenient for agricultural production. Agricultural land, in contrast to forestland, requires less land and resources, but returns are higher.

Figure 22: Change in Per Capita Income of Total Sample

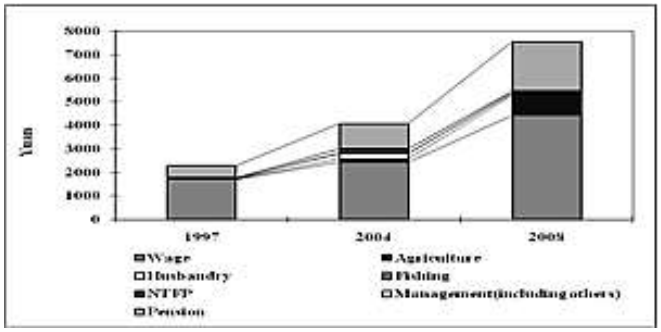


Figure 23: Change in Per Capita Income of "Lower-mountain" Households

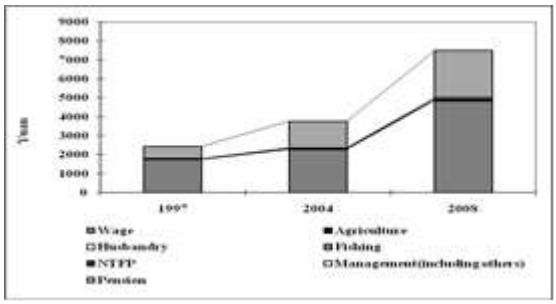


Figure 24: Change in Per Capita Income of "Higher-mountain" Households

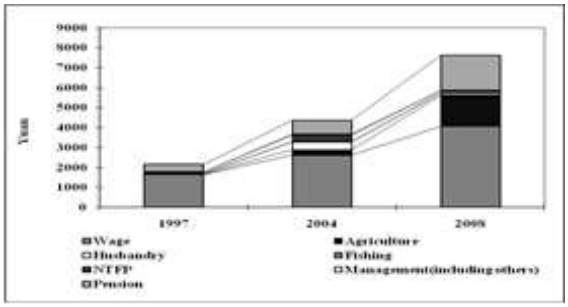


Figure 25: Change in Source Structure of Per Capita Income (Divided by State and Non-state Owned Departments)

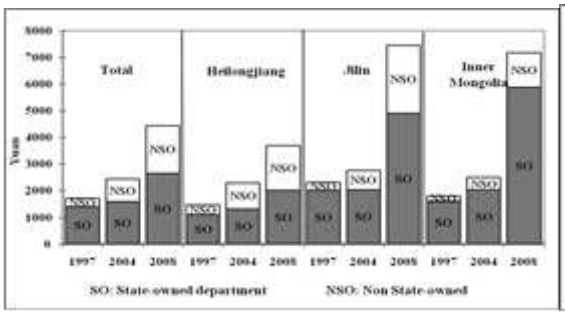
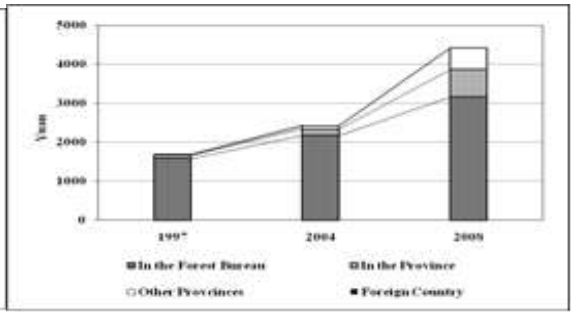


Figure 26: Change in Source Structure of Per Capita Income (Divided by Location)



The importance of wage as an income source increased, excluding wages from state-owned or local enterprises (see figures 25 and 26). Wage income from non-state-owned enterprises accounted for 18.4 percent of the total income in 1997, and increased to 40.2 percent in 2008, while wages from nonlocal enterprises increased from 6.8 percent in 1997, to 28.48 percent in 2008. Therefore, the proportion of wages provided by the SFE represented only about one-third of the total; that is, 35 percent in 2008, as it dropped from 60.50 percent in 1997.

The income structure change did show a transition from a mainly wage-based structure to a simultaneous development in wage, pension, and nonwage incomes. Workers' dependence on forest enterprises decreased to a certain degree, confirming the remarkable achievement of restructuring processing industries and diversifying employment channels.

In summary, according to a large amount of survey data, there was an improvement in forest resources as well as growth in forest area economies. Resources improved in terms of both area and timber stock. Forest resource quality improved, while its structure was further rationalized, and logging scale continued to decline. In forest areas, the economic development was embodied by great success in restructuring forest enterprises, although the enterprises were still heavily burdened with social responsibilities. Meanwhile, workers' income increased significantly, and their dependence on state-owned forest enterprises decreased to a certain degree. All of these improvements in state-owned forest areas can be attributed to both the government's large investment and years of reform efforts in local areas. In the following section, we summarize and analyze such reform efforts and practices.

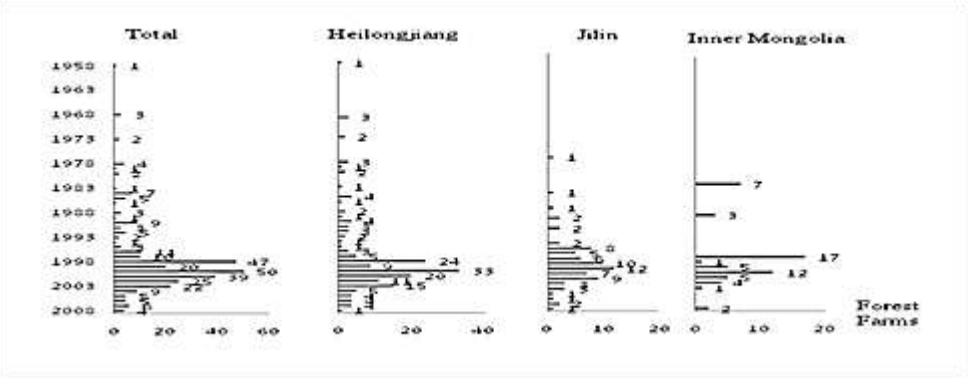
Reform efforts and practices in state-owned forest areas

Reform practices in key state-owned forest areas are numerous and have found success. However, the reforms need to be further deepened, with governments providing more care and support. Reforms need to be standardized and to generate new mechanisms in favor of forestry sustainability.

Reform practices on resource management

Innovations in forest resource management generally started in the 1980s, but a series of reform practices have taken place since the implementation of the NFPP in 1998 (figure 27). In this time, China's key state-owned forest areas have experienced an important historical period of reform and innovation.

Figure 27: Number of Forest Farms Initiating Reforms



Household management and market instruments have been widely used in state-owned forest areas and have become a basic institutional component of natural forest protection and sustainability.

Forest resource protection: contracted management led by private sector

Figure 28 shows that forest farms, primarily responsible for forest resource protection, were contracted by households in all the surveyed areas in 2008. The proportion of contracted area was 73 percent in Heilongjiang, 53 percent in Jilin, and 84 percent in Inner Mongolia. These large shares suggest that households played an important role in forest management. Regarding contracting mechanisms, 51 percent of the forestland in Jilin was transferred to individual workers through auction, leasing, and so on, while 5 percent of the total forestland had the management rights transferred to social groups, individuals, and companies through market instruments. In Inner Mongolia, 10 percent of the forestland was formed by workers' replantation, that is, non-state-owned or household forest farms (figure 29). Therefore, it can be inferred that household management developed well, while social groups, individuals, and companies' participation in forest management has been emerging, and in some areas is well formed.

Figure 28: Percentage of Forest Farm Areas Initiating the Reforms

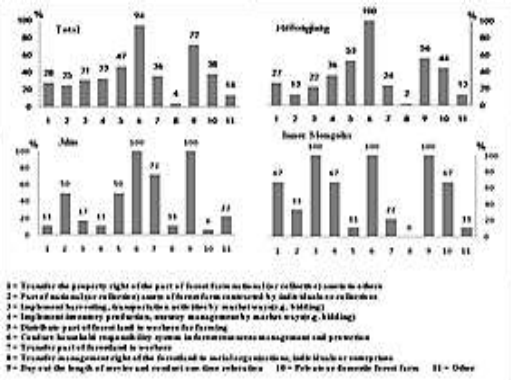
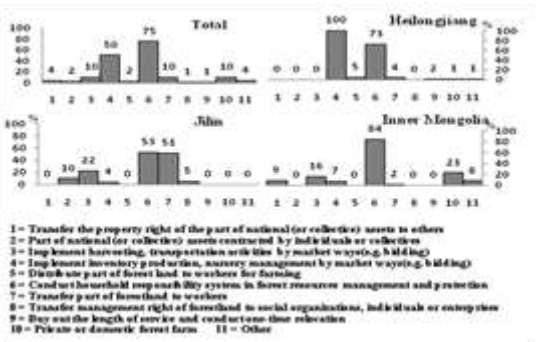


Figure 29: Percentage of Forest Farms Used in the Reforms



Harvesting and production: dominated by market instruments

With regard to timber harvesting and sivilculture, which are most prominently managed by planning, several market-oriented mechanisms such as bidding, contracting, and so on, were adopted (figures 28 and 29). Harvesting costs were largely reduced, while sivilculture performance significantly improved. By the end of 2008, the extent of marketization in harvesting and transporting the forest farms was 100 percent in Inner Mongolia, 22 percent in Heilongjiang, and 17 percent in Jilin. Regarding sivilculture and nursery, 67 percent of the forest farms in Inner Mongolia were using market-based instruments, as were 36 percent in Heilongjiang and 11 percent in Jilin.

Market-based instruments were also utilized by forest farms for harvesting, sivilculture, and nursery, through contracting or leasing to individual employees. In Heilongjiang, 27 percent of the total forest farms had fulfilled the transfer of ownership rights, as part of the state-owned or collective-owned assets. In Jilin this ratio was 11 percent, and 67 percent in Inner Mongolia. Regarding the transferring instruments, in Jilin, half of the forest farms contracted part of the ownership or management rights to individuals or collectives through market instruments, while in Inner Mongolia, this share was 33 percent, and 13 percent in Heilongjiang. This approach greatly improved efficiency while at the same time significantly reducing operation costs of forest farms.

The role of market-based economy is increasingly important, with great improvement in the efficiency in forest cultivation and logging, and in special forest resources management. This can guide future institutional reforms

Reform practices on economic growth:

Various forms of restructuring processing enterprises

Processing companies, which were widely suffering losses and characterized by high resource and energy consumption and low output and profit (if any), had laid heavy economic burden on forest communities. Since the mid-1990s, a large number of state-owned processing enterprises that presented deficits for many years followed the trend of reforming and restructuring, with relative success.

Of the total of 206 sample enterprises (125 in Heilongjiang, 50 in Jilin, and 31 in Inner Mongolia), 84 (41 percent of the total) had restructured by 2004, while 118 (57 percent) had done so by 2008, with some enterprises having to do it more than once. Figures 30 and 31 present the numbers and distribution of restructured enterprises, including those who restructured more than once. Figure 30 suggests that most of the restructuring of forestry enterprises occurred after 1998, peaking in 2003 and 2004. Figure 31 shows the major reform process in terms of ownership transfer, corporatization of forest enterprises, contracting, leasing or mortgage, and so on.

Through restructuring, many enterprises have turned in profits, due to decreased resource consumption, improved performance, worker's income growth, and so on. Currently, some processing enterprises in some areas have still not restructured due to limitations caused by the existing taxation system. However, restructuring is commonly recognized by the processing industry as the only path to survival in stated-owned forest areas. With the introduction of private capital and a modern corporate management system through restructuring, it is possible to actually improve processing industry efficiency and reduce resource consumption, and finally achieve sustainable development. A large amount of reform practices in this area have demonstrated that the state or government should withdraw completely from either direct investment or management related to forest process industry, and instead encourage private sector involvement and provide service and policy support. Policy support includes, for example, optimizing a forest credit and taxation system in favor of the emerging private sector forms on tax incentives and credit conditions.

Figure 30: Number of Forest Enterprises Transformed (207 Enterprises)

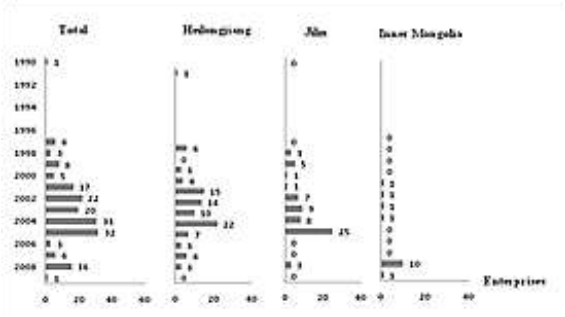
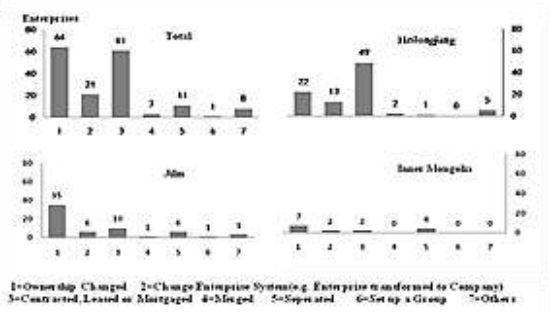


Figure 31: Distribution of Transforming Type of Forest Enterprises (207 Enterprises)



Opportunities from the adjustment of industrial structure

The adjustment of the industrial structure significantly affected the performance of forest enterprises. Restructuring the timber processing industry remarkably weakened its precious dominant position. The primary and tertiary industries were promoted and achieved rapid growth. They played a driving role in the forestry economy and also facilitated job creation in forest areas. The output shares of multiple businesses over the total value of social output increased (figure 32). Growth in Heilongjiang was the

largest, with the share increasing from 15.5 percent in 1980 to 47.6 percent in 2008, becoming a major source of social output. This share rose to 15.2 percent in Jilin and 24.4 percent in Inner Mongolia. In figures 33 and 34, multiple output sources were dominated by plantation and livestock as well as animal husbandry, and a variety of nonwood products and services.

Diversified businesses contributed largely to resolving problems related to employment. Figure 35 shows that the share of full- or part-time employees per forest enterprise increased from only 5 percent of the total population in 1980 to 20 percent in 2008. This is also consistent with the income changes reviewed in section 1. Income proportions of agricultural, nontimber forest products and non-state-owned jobs rose rapidly, becoming the main source of income. This also confirms the notable effectiveness of diversified channels for forest worker employment.

Figure 32: Change in the Percentage of Multi-industry Production Value in Total Social Production Value

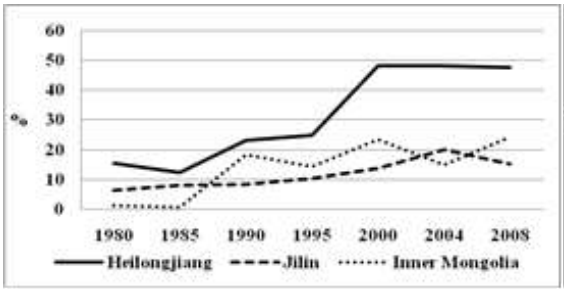


Figure 33: Change in the Percentage of Farming Production Value in Multi-industry Production Value

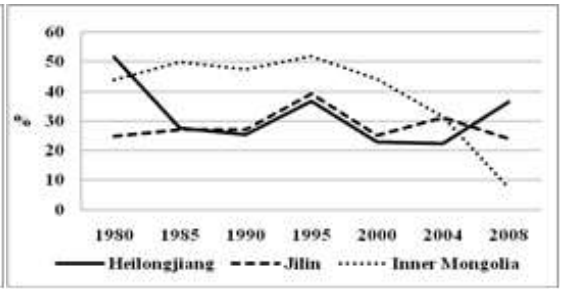


Figure 34: Change in the Percentage of Production Value of Aquaculture Industry in Multi-industry Production Value

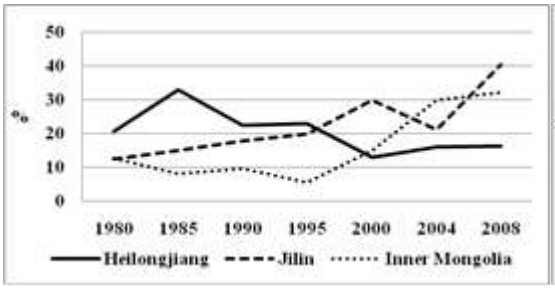
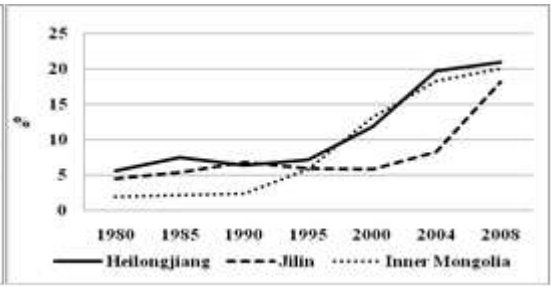


Figure 35: Change in the Percentage of People Working in Multi-industry in Population



Labor market: increasingly vibrant

The proportion of laid-off workers has been high—up to 50 percent after 1998 (figure 36), which constitutes the main part of labor market. The number of workers moving for other jobs accounts for more than 10 percent of the total population of each forest farm (figure 37). Both outgoing workers and laid-off workers are more than 100 percent in share (Figure 38). This indicates that not only are laid-off workers seeking reemployment, but also a considerable number of enrolled workers are seeking other employment. In addition, workers' income sources suggest that their employment has extended to other areas inside and outside their province, and abroad as well. A vigorous labor market has been gradually taking shape.

Figure 36: Change in Percentage of Laid-Off Workers

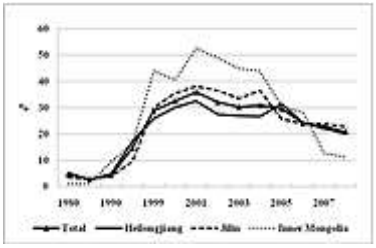


Figure 37: Change in Percentage of Migrant Workers in Laid-Off Workers

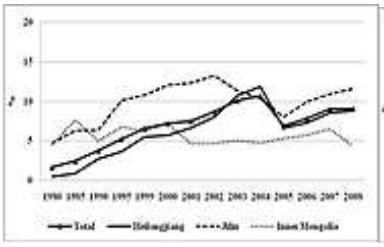
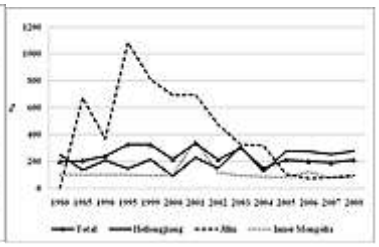


Figure 37: Change in Migrant Workers



In summary, the following trends can be generalized from all the reform practices: (1) new forest resources management models, (2) new products and market development, and (3) the establishment of new processing patterns. All these practices and trends have set the foundation for deepening the reform of state-owned forests.

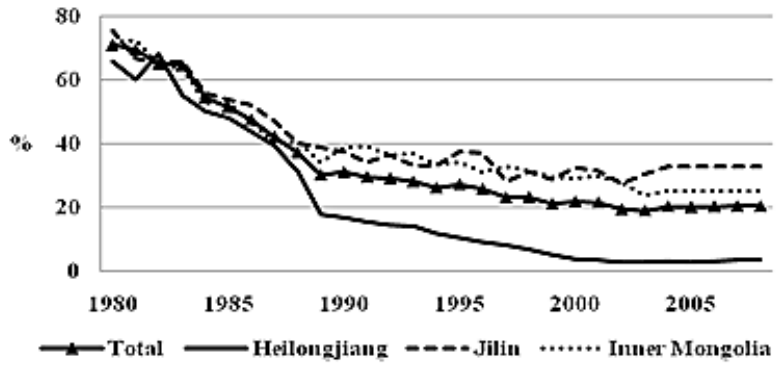
Existing problems in state forest areas

Resource management problems

There is no improvement in the situation of forest resource depletion

Forest resource conditions in state forest areas improved, but the situation of resource depletion did not change. Twelve years after of implementation of the NFPP, the problem of forest resource depletion still exists. It is especially severe in Heilongjiang Province. The share of mature forest in total timber stock fell continuously, reaching 3.2 percent in 2008. There is almost no accessible forest left to be harvested. The accessible forest resource situation is relatively less worrisome in Jilin Province, where the proportion of mature forest in timber stock began increasing in the 1990s after the continuous decline during 1980s, and this proportion has been maintained at approximately one-third after the implementation of the NFPP. This ratio in Inner Mongolia has also always been kept above 20 percent, reaching 24.9 percent in 2008 (figure 39).

Figure 39: Changes in the Stock Proportion of Mature and Matured Forest in the Timber Forest



Depletion of accessible resources is a serious problem, especially in Heilongjiang forest industry bureau, which administers 40 state forest bureaus with an annual permitted logging volume of more than 4 million cubic meters, which far exceeds its capacity. Considering the resource situation in Heilongjiang Province and the national requirements regarding forest management plans, permitted logging volume should be reduced. The main reason to maintain such a large logging volume is to fulfill the needs for economic development of the forest area and subsistence living of its employees. Hence, it is difficult to resolve the problem of depletion of accessible forest resources in Heilongjiang Province in the short term. Although the resource situations are relatively better in Jilin and Inner Mongolia, their logging volumes also exceed ecologically sound capacities. Therefore, when it is impossible to find reasonable solutions under current institutional arrangements, we will have to search for a breakthrough from the resource-dependent development model that leads to this situation, and find a way out for the institutional reform in the state forest area.

Forest tenure is unclear

Forest certificates in the state forest area are allocated to the SFE, but these enterprises do not pay to use the state-owned forest resources. This has laid the institutional foundation for discretional logging or even over-quota harvesting that the enterprises conducted according to their needs. Basically, resource management and monitoring of forest industrial enterprises were established within the enterprises, which performed practically no monitoring and led to the problem of excessive logging.

In fact, the SFA owns the forest resources in state forest areas. However, it lacks qualified organizations and personnel at the local level to manage state forests. Provincial and lower-level governments hold the real control over state forest management and personnel, finance, and taxation of the forest industrial enterprises. Thus, the central government is only the fund provider and nominal owner, whereas local governments are the real owners, users, and beneficiaries of the forest resources. Local governments are the agents of the central government in China. Due to the existence of asymmetric information, when interests are inconsistent between the principal and agents, agents have great incentives to maximize their own interests at the expense of the principal's. As long as the current institutions are at work, the problem of unclear forest tenure will not be addressed, and nobody will really care about the restoration of forest resources.

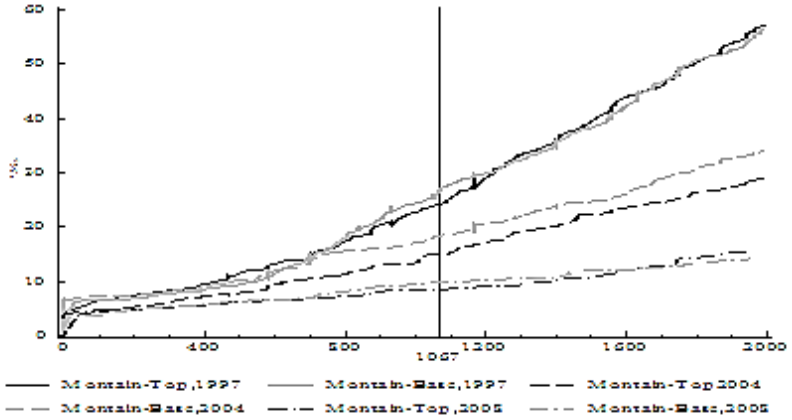
Therefore, a relatively long-term effective natural forest protection mechanism has not been created in the Northeast-Inner Mongolia state forest area, even with the implementation of the NFPP. Once the program stops, forest resources might be further destroyed. The state forest area has reached the point where it must undertake institutional reforms.

Problems in economic development

A high proportion of people in the forest areas are below the poverty line

Figure 40 shows the distribution of annual per capita income of forest worker households in various years. When compared with the 2009 Chinese poverty line, which is Y1067 per capita, 8 percent of the "upland" workers and 9 percent of the "lowland" workers lived below the poverty line in 2008. This is mainly due to the mass layoff of workers after the introduction of the NFPP, industrial structure adjustment, and processing industry restructuring. Poverty was less of a concern when the revenues generated from timber production and natural forest processing were generally sufficient to cover the operating expenses and social welfare responsibilities of these forest industrial enterprises. However, in many enterprises, restructuring gave rise to increased poverty due to underdevelopment of the social security system, and the poverty problem would become more severe in future tenure reforms. Establishing a comprehensive social security system in the forest areas is the key to guaranteeing the success of the reforms and the future sustainable development, and should be also the new focus of future government support policies.

Figure 40: Distributions of Per Capita Income and Poverty Line 1997, 2004, and 2008 (in 2008 Y)



State forest bureaus still shoulder various burdens

The special circumstances under which the Northeast-Inner Mongolia state forest area was established have resulted in the current situation of its mixed function of government administration, enterprise management, and social welfare provider. Because forest industrial enterprises function as governments in forest areas, they need to create departments and positions according to government functions and to support the government with their profits. In the meantime, state forest bureaus are required to turn over profits to maintain the corresponding higher managerial authorities. The establishment of the forest industrial enterprises led to the creation of schools, hospitals, and other organizations, so the enterprises

became social service providers. Currently, the proportion of retirees in the total workforce in the state forest areas is rising. Because forest industrial enterprises are fully occupied with meeting these social obligations, their principal functions in terms of responding to the market and organizing production have weakened.

In summary, the existing problems in state forest area are mainly caused by the mixed functioning of government administration and enterprise management and the highly centralized management system.

Conclusions and Policy Recommendations

Based on the analysis of the current situation, reform practices, and existing problems in the state forest area, the following conclusions can be drawn:

Above all, although the Northeast-Inner Mongolia state forest area reform has not formally started, achievements have already been made through grassroots-level innovation;

The Northeast-Inner Mongolia state forest area has made great progress in various ways, such as in household-oriented forest resource management, processing industry restructuring, operations diversification, forest production management marketization, and so on. However, reform achievements require more secure forest tenure.

The situation of forest resources has improved, but the problem of resource depletion still exists, making sustainable management impossible.

Workers' income has been increasing and income structure has been diversifying, but poverty is still a severe concern.

Achievements resulting from grassroots-level innovation will greatly reduce the cost of the formal reform.

The Northeast-Inner Mongolia state forest area has the advantages of abundant forest resources and an integral forest industrial system, which provide much potential for its future sustainable development. Hence, it should employ the newly created institutions and mechanisms and policies of the NFPP to boost the development of the old northeast industrial base.

Policy recommendations

Reforms to the resource management system

Looking at the process of reform and development of the Northeast-Inner Mongolia state forest area, the emphasis of institutional innovations so far has focused on processing industry restructuring, leasing and contracting forest resource management and protection, and small-scale operation marketization. The latter two components have been widely operationalized in the collection and cultivation of nontimber forest products, and gradually incorporated into harvesting and silviculture in some parts of the forest

area. The key next step in deepening the reform is reforming the tenure of the state-owned commercial forest resources.

The reform experience of collective forests suggests that a well-designed and steadily implemented forest tenure reform can create a win-win situation among the state, collectives (or enterprises), and worker households. The state can mobilize the initiatives of forest practitioners in afforestation and silviculture sectors through tenure reform to expand forest resources and achieve social stability and sustainable development of the forest area. Collectives (or enterprises) can collect rent (or contract fees) after the reform to enjoy landowner rights and therefore obtain a stable source of income for financing their economic development. Individual worker households are the biggest beneficiaries from the tenure reform because they will change from pure laborers to asset owners and operators, thus increasing their income potential. They also can receive long-term gains through managing timber and other resources; on the other hand, they can achieve short-term gains by franchising the forests. This will also reduce the risk bearing capacity of forest worker households.

Restructuring of processing enterprises and withdrawal of public investment

Reforms in this area have shown that the state can fully withdraw from direct investment in forest product processing and management. It can instead provide services and policy support for the development of private economy, such as improving the credit and taxation systems in the state forest area, so that newly developed private operators can enjoy the same tax deduction and favorable credit treatment that the former state-owned economy enjoyed.

Institutional arrangements envisaged for the state-owned forest industrial enterprises

The SFE function as both government and enterprises. This feature is built in the management of two types of state-owned productive assets—processing industry assets and commercial forest resources. Processing industry restructuring within the forest industrial enterprises has become an irreversible trend. The nature of state-owned forest industrial enterprises in the future depends critically on the direction of the change in the commercial forest resource management system.

The reform experiences of collective forest areas, state-owned agricultural reclamation systems, and state-owned forest farms to contract out the state-owned commercial forests to worker households indicate that the role of state-owned forest industrial enterprises as state-owned productive asset managers could gradually fade out, whereas their role as social services and support provider should be maintained and strengthened. Therefore, the forest industrial enterprises should be converted to pure government entities after tenure reform. Currently, forest industrial enterprises already perform most major government functions and institutions. After the transformation of productive assets, they will no longer receive direct profit from the operations, but they can continue to provide social services and public goods through tax and land rights (land rental or land contract fee) income. The reform can be accomplished by simply adjusting the current taxation system, which can achieve the transformation of enterprises to governments. This is probably the transition plan that bears the lowest cost and smallest risk of unrest.

It is worth emphasizing that according to the current division between public benefit forests and commercial forests, commercial forests account for less than 30 percent of the total area in the Northeast-Inner Mongolia key state forest area. If the tenure reform is kept within the scope of commercial forests, it will not change the situation that forest resources in the state forest area are directly controlled and managed by government authorities or state-owned enterprises. Thus, it is impossible to threaten the stability of the forest ecosystem in Northeast-Inner Mongolia key state forest area. Risks associated with tenure reforms are small, whereas the potential benefits are immeasurable.

Functional change and reform direction envisaged for the central forestry authorities

While the forestry authorities are promoting classification management, it is probably more urgent to redefine the purview of the administrative rights. The driving forces of the redefinition are to save administrative costs and align rights with responsibilities to provide appropriate incentives to administrators. This redefinition could be done as follows:

The local public forest system should be expanded, and most of the state-owned forests in the key state forest area should be decentralized entirely to local governments and with the assurance that they are no longer subject to the jurisdiction of central forestry authorities.

Only a small proportion of forests in the state forest area that have substantial ecological value and significant national or cross-district ecological functions should be categorized as state-owned forests and managed directly by the central forestry authorities. Doing so can, on the one hand, pool resources together and increase investment to ensure the protection of forests; on the other hand, it can also provide a model of forest resource protection and management for local organizations and research institutes.

The state forestry authorities should withdraw from direct management of the majority of public forests. They should instead focus on nationwide public goods provision such as research and extension services.

After withdrawing direct management of the forest sector, central forestry authorities can establish policy funds for forest projects according to the national forestry development plan, and implement such projects through bidding. They can mobilize individual and social resources in a way that accords with national interests to enhance forestry development.

Appendix to Annex I

Table1: Change in Forested-land Area (in ten thousand ha)

Year	Heilongjiang	Jilin	Inner Mongolia
1980	16.71	17.09	20.37
1981	16.53	16.48	20.24
1982	16.35	16.04	20.86
1983	16.17	16.29	20.89
1984	15.99	16.12	21.14
1985	16.41	16.02	22.74
1986	16.32	15.99	25.75
1987	16.02	16.01	26.50
1988	16.14	16.17	26.34
1989	16.78	16.19	29.26
1990	16.89	16.20	29.13
1991	16.87	16.32	29.73
1992	17.15	16.41	30.64
1993	17.51	16.53	30.53
1994	17.92	16.72	30.28
1995	18.44	16.89	32.80
1996	18.44	17.11	33.07
1997	18.48	17.17	33.04
1998	18.79	17.40	32.98
1999	19.17	17.47	33.77
2000	19.64	17.57	34.10
2001	20.04	17.62	34.09
2002	20.26	17.64	34.18
2003	20.39	17.69	34.16
2004	20.51	17.68	34.03
2005	20.48	17.69	34.13
2006	20.50	17.70	34.28
2007	20.69	17.74	34.36
2008	20.75	17.86	34.44

Table 2: Change in Forested-land Volume (in million m3)

Year	Heilongjiang	Jilin	Inner Mongolia
1980	18.76	23.20	15.42
1981	18.28	22.47	15.74
1982	17.80	22.49	15.92
1983	17.33	23.02	15.96
1984	16.85	22.92	16.33
1985	16.85	22.61	19.13
1986	16.16	22.64	21.16
1987	16.08	21.79	21.15
1988	15.03	21.62	21.10
1989	14.27	21.55	25.33
1990	14.27	21.50	25.38
1991	14.35	21.52	25.12
1992	14.42	21.62	25.75
1993	14.62	21.83	25.85
1994	14.58	21.96	25.96
1995	14.31	22.03	26.25
1996	14.35	22.43	25.72
1997	14.35	22.26	25.89
1998	14.20	22.44	26.05
1999	13.89	22.59	25.67
2000	13.80	22.52	26.84
2001	14.12	22.86	26.63
2002	13.97	23.10	27.12
2003	14.22	23.37	27.54
2004	14.71	23.60	27.79
2005	15.45	23.76	27.03
2006	15.90	23.91	27.16
2007	16.59	24.02	27.71
2008	17.13	24.12	28.26

Table 3: Change in Per-hectare Volume of the Forested-land (in m3/ha)

Year	Heilongjiang	Jilin	Inner Mongolia
1980	108.27	138.55	75.39
1981	106.38	138.21	76.34
1982	104.69	141.12	74.61
1983	103.08	141.77	74.49
1984	101.49	142.96	74.34
1985	98.76	141.61	81.19
1986	96.64	142.00	80.64
1987	97.92	136.45	78.34
1988	91.72	133.11	78.54
1989	84.32	132.58	82.40
1990	83.54	131.43	82.99
1991	84.13	130.25	80.89
1992	83.73	130.14	81.01
1993	82.97	130.31	81.62
1994	79.90	129.56	83.45
1995	78.06	128.63	77.55
1996	77.87	129.18	75.59
1997	77.25	128.16	76.20
1998	75.22	127.94	76.82
1999	71.44	128.02	74.12
2000	68.24	126.75	77.40
2001	68.38	128.16	76.66
2002	67.19	129.28	78.04
2003	68.31	130.65	79.43
2004	70.30	132.20	80.49
2005	74.20	133.00	77.78
2006	76.27	133.80	77.70
2007	79.04	134.52	79.45
2008	81.30	134.43	81.18

Table 4: Change in the Structure of Forestland Area (in percent)

Year	Forested land	Scattered trees	Shrub land	Young forests	Tree nursery	Nonforested land
1980	78.79	6.90	0.72	4.57	0.03	9.34
1997	87.33	1.32	0.32	5.16	0.03	4.51
2008	89.99	0.35	0.76	1.20	0.03	0.63

Table 5: Change in the Structure of Forest Stands Area (in percent)

Year	Timber forest	Shelterbelt	Fuelwood forest	Forests for special purposes
1980	92.00	4.57	0.13	6.15
1997	92.62	5.27	0.24	2.11
2008	33.44	56.07	0.00	0.00

Table 6: Change in Timber Production (in million m3)

Year	Heilongjiang	Jilin	Inner Mongolia
1980	44.38	36.83	57.36
1985	41.72	34.44	52.83
1990	37.90	29.10	59.08
1995	25.76	26.54	48.09
1998	24.00	18.39	43.91
1999	22.33	17.19	37.79
2000	18.40	14.23	33.94
2001	16.30	12.75	31.42
2002	15.66	12.38	32.43
2003	14.56	11.49	31.99
2004	13.25	12.16	38.37
2005	13.69	13.90	31.46
2006	13.65	13.84	20.72
2007	13.47	13.36	20.53
2008	13.68	13.68	22.44

Table 7: Change in the Percentage of the Production Value of the Primary Industry in Total Production Value of Society

Year	Heilongjiang	Jilin	Inner Mongolia
1980	9.76	3.72	1.64
1985	11.58	4.95	1.25
1990	17.32	4.59	7.50
1995	15.20	9.29	7.73
2000	21.42	31.92	29.40
2004	42.98	45.97	63.14
2008	44.46	65.34	46.42

Table 8: Change in the Percentage of the Production Value of the Secondary Industry in Total Production Value of Society

Year	Heilongjiang	Jilin	Inner Mongolia
1980	82.19	93.48	93.51
1985	76.81	87.66	95.04
1990	76.15	89.91	91.46
1995	71.21	81.69	82.62
2000	56.62	51.39	62.97
2004	37.38	30.25	21.57
2008	37.11	14.67	34.05

Table 9: Change in the Percentage of the Production Value of the Tertiary Industry in Total Production Value of Society

Year	Heilongjiang	Jilin	Inner Mongolia
1980	9.40	2.79	4.85
1985	13.55	4.78	3.71
1990	7.96	5.50	1.14
1995	12.68	9.08	9.65
2000	21.96	16.69	8.65
2004	19.64	23.07	15.29
2008	17.22	19.98	19.53

Table 10: Change in the Number of "On-the-position" Workers

Year	Heilongjiang	Jilin	Inner Mongolia
1980	9,214	9,022	5,155
1981	9,958	9,184	5,391
1982	9,955	9,251	5,610
1983	9,971	10,522	5,748
1984	10,051	10,899	6,046
1985	10,326	9,601	6,426
1986	10,871	9,855	8,196
1987	11,408	10,045	8,512
1988	11,432	10,424	8,497
1989	11,390	10,415	8,733
1990	11,481	9,470	8,589
1991	11,654	9,712	8,562
1992	11,288	9,682	8,901
1993	11,284	10,556	7,924
1994	11,434	12,609	8,049
1995	11,584	10,816	8,120
1996	11,206	12,240	8,128
1997	11,072	13,244	7,985
1998	11,682	11,460	6,339
1999	8,672	7,702	5,929
2000	7,569	7,902	5,375
2001	6.828	6,947	4,746
2002	6,477	6,074	4,388
2003	7,066	5,305	4,323
2004	6.979	5,275	4,576
2005	6.609	4,994	4,357
2006	6,354	3,784	4,666

Table 11: Change in the Percentage of "On-the-position" Workers in Population

Year	Heilongjiang	Jilin	Inner Mongolia
1980	26.17	27.67	23.48
1981	28.42	24.29	22.62
1982	27.98	24.12	23.78
1983	27.78	23.60	24.40
1984	27.98	24.28	25.31
1985	28.73	28.44	25.93
1986	30.14	35.04	32.92
1987	31.73	35.23	35.07
1988	31.88	37.26	34.27
1989	31.89	36.90	35.08
1990	32.81	34.55	38.12
1991	34.21	33.52	38.28
1992	32.80	34.49	38.32
1993	33.03	36.79	33.64
1994	32.28	44.92	33.07
1995	32.55	38.97	33.85
1996	32.14	44.31	34.31
1997	31.53	48.97	34.53
1998	33.77	41.67	28.82
1999	25.06	28.30	27.31
2000	22.52	29.18	25.01
2001	20.15	26.19	23.20
2002	17.93	24.82	23.05
2003	18.31	20.18	23.96
2004	20.29	20.39	26.27
2005	17.20	19.40	24.24

Table 12: Change in the Number of Hospital Staff

Year	Heilongjiang	Jilin	Inner Mongolia
1980	256	181	160
1981	271	194	168
1982	275	206	175
1983	283	211	181
1984	286	209	189
1985	293	224	201
1986	294	245	256
1987	282	250	256
1988	280	263	225
1989	284	283	246
1990	287	269	246
1991	287	275	260
1992	299	272	266
1993	292	275	300
1994	284	270	315
1995	283	266	312
1996	273	275	315
1997	262	268	316
1998	289	274	253
1999	275	269	229
2000	274	262	217
2001	271	275	205
2002	277	257	171
2003	282	250	183
2004	285	241	150
2005	287	251	150

Table 13: Change in the Percentage of the Number of Hospital Staff Among "On-the-position" Workers

Year	Heilongjiang	Jilin	Inner Mongolia
1980	2.80	2.38	3.02
1981	2.74	2.81	3.02
1982	2.80	3.02	3.03
1983	2.88	3.29	3.03
1984	2.88	3.30	3.03
1985	2.86	2.86	3.03
1986	2.74	2.57	3.03
1987	2.52	2.60	2.94
1988	2.50	2.57	2.60
1989	2.53	2.76	2.75
1990	2.54	2.82	2.80
1991	2.49	2.85	2.96
1992	2.68	2.85	2.91
1993	2.63	2.66	3.75
1994	2.53	2.13	3.90
1995	2.57	2.48	3.82
1996	2.51	2.27	3.86
1997	2.44	2.04	3.97
1998	2.53	2.47	4.05
1999	3.30	3.71	3.98
2000	3.79	3.50	4.20
2001	4.22	4.16	4.63
2002	4.60	4.37	4.09
2003	4.52	4.91	4.43
2004	4.44	4.67	3.31
2005	4.68	5.18	3.50

Table 14: Change in the Number of School Staff

Year	Heilongjiang	Jilin	Inner Mongolia
1980	802	495	389
1981	820	511	408
1982	818	500	425
1983	813	512	436
1984	857	528	457
1985	873	554	485
1986	909	571	620
1987	871	644	624
1988	888	642	612
1989	875	633	608
1990	868	594	622
1991	874	561	577
1992	837	537	570
1993	812	566	634
1994	772	570	667
1995	754	557	661
1996	707	546	667
1997	645	541	666
1998	714	529	532
1999	689	527	482
2000	697	510	458
2001	690	521	430
2002	710	495	341
2003	723	500	360
2004	732	541	362
2005	741	486	363

Table 15: Change in the Percentage of the Number of School Staff among "On-the-position" Workers

Year	Heilongjiang	Jilin	Inner Mongolia
1980	8.80	6.90	7.32
1981	8.25	6.66	7.31
1982	8.23	6.14	7.32
1983	8.18	6.47	7.32
1984	8.51	6.28	7.32
1985	8.48	7.22	7.32
1986	8.43	6.18	7.32
1987	7.70	6.68	7.15
1988	7.95	6.37	7.06
1989	7.77	6.24	6.82
1990	7.68	6.53	7.09
1991	7.66	5.99	6.63
1992	7.53	5.80	6.26
1993	7.28	5.78	7.84
1994	6.84	4.75	8.17
1995	6.83	5.33	8.00
1996	6.45	4.61	8.08
1997	5.95	4.04	8.29
1998	6.16	4.76	8.47
1999	8.22	7.36	8.32
2000	9.69	6.72	8.81
2001	10.60	7.80	9.63
2002	11.27	8.34	8.09
2003	10.92	9.73	8.49
2004	10.98	10.21	8.00
2005	11.44	10.10	8.50

Table 16: Change in the Number of Retirees

Year	Heilongjiang	Jilin	Inner Mongolia
1980	990	1,565	838
1981	1,240	1,576	827
1982	1,490	1,587	841
1983	1,780	1,620	835
1984	2,163	1,706	892
1985	2,131	1,799	1,036
1986	2,652	1,904	1,532
1987	2,860	2,010	1,647
1988	3,058	2,115	1,844
1989	3,147	2,220	1,817
1990	2,838	2,105	1,843
1991	3,204	2,253	1,913
1992	3,467	2,397	2,322
1993	3,696	2,541	2,377
1994	3,828	2,640	2,383
1995	4,169	2,739	2,395
1996	3,841	2,840	2,453
1997	4,162	2,942	2,641
1998	4,304	3,043	2,930
1999	4,545	3,145	2,868
2000	4,016	3,246	2,979
2001	4,033	3,320	2,993
2002	4,116	3,460	3,032
2003	4,092	3,442	2,958
2004	4,032	3,678	3,043
2005	4,056	3,593	3,026
2006	4,406	3,882	3,089

Table17: Change in the Percentage of the Number of Retirees among "On-the-position" Workers

Year	Heilongjiang	Jilin	Inner Mongolia
1980	10.84	24.75	15.78
1981	12.47	33.59	15.53
1982	14.99	33.88	15.52
1983	18.90	22.43	15.03
1984	21.63	23.41	15.06
1985	20.68	24.53	15.95
1986	23.74	19.07	18.05
1987	24.44	19.78	18.65
1988	26.10	19.97	21.13
1989	27.44	20.95	20.13
1990	24.72	22.02	20.69
1991	27.25	22.87	21.71
1992	30.51	24.90	25.22
1993	32.58	24.85	29.13
1994	33.49	20.72	29.15
1995	36.03	25.39	29.00
1996	34.25	23.08	29.70
1997	37.53	21.97	33.07
1998	36.76	26.43	47.30
1999	52.94	42.25	48.91
2000	53.34	42.24	56.49
2001	59.48	49.96	64.32
2002	63.40	58.84	71.31
2003	62.89	64.44	69.37
2004	61.27	68.57	67.86
2005	65.02	73.53	71.45
2006	73.74	119.23	66.93

Table 22: Change in Per Capita Income of Households (yuan, Y)

	1997	2004	2008
Wage	1,708.19	2,435.42	4,434.71
Agriculture	26.17	144.95	862.25
Husbandry	17.78	228.38	65.23
Fishing	0.26	8.25	3.89
Nontimber Forest products	34.10	173.46	70.52
Management (including others)	5.60	24.61	37.58
Pension	512.37	1,050.79	2,093.47
Total	2,304.47	4,065.87	7,567.67

Table 23: Change in Per Capita Income of "Mountain-base" Households (Y)

	1997	2004	2008
Wage	1,768.96	2,269.64	4,852.75
Agriculture	3.39	19.85	80.44
Husbandry	18.42	54.48	11.56
Fishing	0.53	0.13	8.22
NTFP	2.18	8.77	4.56
Management (including others)	6.71	16.49	79.32
Pension	656.06	1,400.18	2,473.59
Total	2,456.25	3,769.53	7,510.43

Table 24: Change in Per Capita Income of "Mountaintop" Households (Y)

	1997	2004	2008
Wage	1,647.09	2,602.11	4,058.21
Agriculture	49.07	270.74	1,566.37
Husbandry	17.13	403.25	113.57
Fishing	0.00	16.42	0.00
NTFP	66.19	339.07	129.94
Management (including others)	4.49	32.78	0.00
Pension	367.87	699.48	1,751.13
Total	2,151.84	4,363.84	7,619.22

Table 25: Change in the Source Structure of Per Capita Income of Households (Divided by the State- and Non-state-owned Departments; Y)

		1997	2004	2008
Total	State-owned Department	1,394.13	1,583.24	2,652.46
	Non-state-owned Department	314.06	852.18	1,782.25
Heilongjiang	State-owned Department	1,104.30	1,318.04	2,003.45
	Non-state-owned Department	345.15	974.65	1,682.97
Jilin	State-owned Department	2,014.99	2,037.61	4,908.65
	Non-state-owned Department	294.81	722.19	2,529.26
Inner Mongolia	State-owned Department	1,616.48	2,027.73	5,886.17
	Non-state-owned Department	185.90	469.10	1,291.26

Table 26: Change in the Source Structure of Per Capita Income of Households (Divided by the Location; Y)

Location	1997	2004	2008
Forest Bureau	1,592.46	2,175.40	3,171.89
Local Province	81.31	155.05	695.07
Other Provinces	16.35	89.16	555.52
Foreign Country	18.07	15.81	12.24
Total	1,708.19	2,435.42	4,434.71

Table 27: Number of Forest Farms Initiating Reforms

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1958	1	1	0	0
1959	0	0	0	0
1960	0	0	0	0
1961	0	0	0	0
1962	0	0	0	0
1963	0	0	0	0
1964	0	0	0	0
1965	0	0	0	0
1966	0	0	0	0
1967	0	0	0	0
1968	3	0	0	0
1969	0	3	0	0
1970	0	0	0	0
1971	0	0	0	0
1972	0	0	0	0

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1973	2	2	0	0
1974	0	0	0	0
1975	0	0	0	0
1976	0	0	0	0
1977	0	0	0	0
1978	4	3	1	0
1979	1	1	0	0
1980	2	2	0	0
1981	0	0	0	0
1982	0	0	0	0
1983	1	1	0	0
1984	7	0	0	7
1985	5	4	1	0
1986	1	1	0	0
1987	0	0	0	0
1988	3	2	1	0
1989	1	1	0	0
1990	9	4	2	3
1991	3	3	0	0
1992	5	3	2	0
1993	2	2	0	0
1994	1	1	0	0
1995	3	1	2	0
1996	11	3	8	0
1997	10	5	5	0
1998	47	24	6	17
1999	20	9	10	1
2000	50	33	12	5
2001	39	20	7	12
2002	25	11	9	5
2003	22	15	3	4
2004	9	5	3	1
2005	5	4	1	0
2006	5	4	1	0
2007	6	4	2	0
2008	4	1	1	2

Table 28: Percentage of Forest Farms Initiating the Reforms

	Reform	Total	Heilongjiang	Jilin	Inner Mongolia
1	Transfer the property right of the part of forest farm national (or collective) assets to others	28	27	11	67
2	Part of national (or collective) assets of forest farm contracted by individuals or collectives	25	13	50	33
3	Implement harvesting, transportation activities by market ways (e.g., bidding)	31	22	17	100
4	Implement inventory production, nursery management by market ways (e.g., bidding)	33	36	11	67
5	Distribute part of forestland to workers for farming	47	53	50	11
6	Conduct household responsibility system in forest resources management and protection	94	100	100	100
7	Transfer part of forestland to workers	36	24	72	22
8	Transfer management right of the forestland to social organizations, individuals, or enterprises	4	2	11	0
9	Buy out the length of service and conduct one-time relocation	72	56	100	100
10	Private or domestic forest farm	38	44	6	67
11	Other	14	13	22	11

Table 29: Percentage of Forest Farms' Area Used in the Reforms

	Reform	Total	Heilongjiang	Jilin	Inner Mongolia
1	Transfer the property right of the part of forest farm national (or collective) assets to others	4	0	0	9
2	Part of national (or collective) assets of forest farm contracted by individuals or collectives	2	0	10	0
3	Implement harvesting, transportation activities by market ways (e.g., bidding)	10	0	22	16
4	Implement inventory production, nursery management by market ways (e.g. bidding)	50	100	4	7
5	Distribute part of forestland to workers for farming	2	5	0	0
6	Conduct household responsibility system in forest resources management and protection	75	73	53	84
7	Transfer part of forestland to workers	10	4	51	2
8	Transfer management right of the forestland to social organizations, individuals or enterprises	1	0	5	0
9	Buy out the length of service and conduct one-time relocation	1	2	0	0
10	Private or domestic forest farm	10	1	0	23
11	Other	4	1	0	8

Table 30: Number of Forest Enterprises Transformed (207 Enterprises)

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1990	1	1	0	0
1997	6	6	0	0
1998	3	0	3	0
1999	8	3	5	0
2000	5	4	1	0
2001	17	15	1	1
2002	22	14	7	1
2003	20	10	9	1
2004	31	22	8	1
2005	32	7	25	0
2006	3	3	0	0
2007	6	6	0	0
2008	16	3	3	10
2009	1	0	0	1

Table 31: Distribution of Transforming Type of Forest Enterprises

	Transformation type	Total	Heilongjiang	Jilin	Inner Mongolia
1	Ownership Changed	64	22	35	7
2	Change Enterprise System (e.g., enterprise transformed to company)	21	13	6	2
3	Contracted, Leased, or Mortgaged	61	49	10	2
4	Merged	3	2	1	0
5	Separated	11	1	6	4
6	Set Up a Group	1	0	1	0
7	Others	8	5	3	0

Table 32: Change in the Percentage of Multi-industry Production Value in Total Social Production Value

Year	Heilongjiang	Jilin	Inner Mongolia
1980	15.48	6.32	1.23
1985	12.34	7.99	0.79
1990	23.18	8.39	18.19
1995	24.99	10.37	14.23
2000	48.15	13.90	23.42
2004	48.02	19.93	15.00
2008	47.58	15.22	24.36

Table 33: Change in the Percentage of Farming Production Value in Multi-industry Production Value

Year	Heilongjiang	Jilin	Inner Mongolia
1980	51.75	24.78	43.82
1985	27.74	27.03	49.91
1990	25.51	26.97	47.49
1995	36.87	39.11	51.90
2000	22.94	25.03	44.23
2004	22.51	31.20	31.54
2008	36.47	24.13	7.60

Table 34: Change in the Percentage of Production Value of the Aquaculture Industry in Multi-industry Production Value

Year	Heilongjiang	Jilin	Inner Mongolia
1980	20.78	12.56	12.76
1985	33.13	15.00	8.12
1990	22.43	18.02	9.81
1995	22.95	19.86	5.57
2000	12.99	30.08	15.07
2004	16.06	21.22	29.94
2008	16.29	40.47	32.22

Table 35: Change in the Percentage of People Working in the Multi-industry in the Population

Year	Heilongjiang	Jilin	Inner Mongolia
1980	5.54	4.51	1.87
1985	7.49	5.33	2.10
1990	6.37	6.79	2.39
1995	7.09	5.85	5.80
2000	11.75	5.84	13.14
2004	19.74	8.20	18.23
2008	20.87	18.10	20.00

Table 36: Change in the Percentage of Laid-off Workers from Enrolled Workers

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1980	4.69	5.31	3.46	0.95
1985	2.73	2.68	2.77	0.97
1990	4.31	4.89	3.74	9.49
1995	14.60	17.14	9.51	16.26
1999	28.82	25.79	29.83	43.95
2000	32.56	30.16	35.49	40.52
2001	35.97	32.46	38.02	52.62
2002	32.07	27.43	36.46	49.01
2003	30.31	26.83	33.59	44.84
2004	30.90	26.72	36.57	43.88
2005	29.60	31.54	25.71	30.55
2006	24.12	24.29	23.81	28.32
2007	22.79	22.15	23.85	12.64
2008	20.91	19.99	22.60	11.26

Table 37: Change in the Percentage of Migrant Workers Among Enrolled Workers

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1980	1.67	0.51	4.72	4.60
1985	2.44	0.91	6.27	7.64
1990	3.78	2.72	6.35	5.01
1995	5.27	3.68	10.15	6.77
1999	6.60	5.48	10.82	6.33
2000	7.21	5.68	12.08	7.19
2001	7.51	6.65	12.30	4.63
2002	8.70	8.04	13.25	4.62
2003	10.12	10.74	11.34	5.06
2004	10.64	11.84	10.41	4.74
2005	6.87	6.63	8.03	5.33
2006	7.85	7.27	9.95	5.68
2007	8.99	8.57	10.92	6.52
2008	9.08	8.81	11.56	4.33

Table 38: Change in the Percentage of Migrant Workers among Laid-off Workers

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1980	200.00	250.00	0.00	100.00
1985	206.75	134.44	675.00	100.00
1990	239.07	207.65	369.21	100.00
1995	327.37	145.07	1086.58	100.00
1999	324.92	215.89	808.97	96.00
2000	216.92	92.69	692.02	96.00
2001	336.58	228.53	697.25	353.68
2002	212.67	150.80	473.23	120.21

2003	303.19	311.87	324.76	95.45
2004	149.07	122.36	317.71	87.79
2005	211.48	276.54	103.51	80.00
2006	203.16	275.40	74.50	123.33
2007	189.81	252.44	82.21	76.90
2008	210.99	277.58	99.80	85.56

Table 39: Changes in the Stock Proportion of Mature and Matured Forest in the Timber Forest

Year	Total	Heilongjiang	Jilin	Inner Mongolia
1980	70.89	65.64	75.27	71.75
1981	69.47	60.00	66.74	72.20
1982	64.96	68.00	65.10	64.82
1983	64.53	55.00	65.54	63.52
1984	54.29	50.00	55.80	52.79
1985	51.45	47.88	53.63	52.83
1986	47.54	43.79	52.09	46.73
1987	42.16	39.51	47.06	39.91
1988	37.15	31.10	39.95	40.40
1989	30.15	17.68	38.56	34.20
1990	30.94	16.74	37.43	38.66
1991	29.45	15.45	33.97	38.91
1992	29.04	14.36	36.47	36.30
1993	27.99	14.15	33.04	36.77
1994	26.09	11.85	32.98	33.43
1995	27.17	10.23	37.39	33.91
1996	25.69	9.05	36.90	31.12
1997	22.98	8.12	28.21	32.60
1998	23.10	6.85	30.99	31.48
1999	20.99	4.93	28.81	29.24
2000	21.68	3.66	32.40	28.97
2001	21.48	3.30	31.42	29.73
2002	19.33	2.78	27.55	27.67
2003	18.88	2.61	30.47	23.56
2004	20.22	3.15	32.60	24.89
2005	20.03	2.61	32.60	24.89
2006	20.20	3.11	32.60	24.89
2007	20.25	3.26	32.60	24.89
2008	20.25	3.24	32.60	24.89

ANNEX 2: An evaluation of state forest reforms of Northeast China

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Introduction

Since the foundation of the People's Republic of China, when timber needs for economic and social development were high, the Chinese government has gradually established 135 state forest enterprises (SFE) in forest resource–rich regions of northeast, northwest, and southwest China. Thus timber production has been a main business of these SFE, and represents the core of China's forest sector. After almost half a century of predatory exploitation of forest resources, state forest areas now face the situation of "two crises"—a forest resource crisis and an economic crisis. Meanwhile, along with the development of China's socialist market system, the timber production–driven structure and its corresponding institutional mechanisms in the SFE have become increasingly unsuited to the realities of forestry development. Economic stagnation and intensified social conflicts became constant issues in the state forest areas. In the 21st century, the entire world is paying much attention to forest resources and ecological protection, and the main task of China's forestry development has been historically shifted from timber production to ecological restoration and construction. The timber production–driven mode has been facing increasingly severe challenges on its lagged production system and institutional mechanism.

This study summarizes and compares different models of China's state forest reforms, aiming to learn experiences and lessons from these different models, thus contributing to the process of establishing a sustainable economic and resource management system in state forest areas.

Evaluation parameters of reform performance

At present, China's reform of its state forest sector is in a critical stage. Reforms at different levels and in different modes have taken a crucial step, but there is still a long way toward the expected target of "the establishment of a new forest management system with clarified property rights, separated enterprises functions, flexible mechanism, and scientific management." This study uses a series of evaluation parameters to analyze the performance of state forest area reforms, so as to provide references for follow-up measures as follows

- *Whether it is conducive for forest resource growth and protection, economic development, and social stability*

[6] This background paper was translated into English from Mandarin. The original version is available on our website at http://www.profor.info/node/2006

Any state forest sector reform faces the challenge of balancing interests of various parties in order to maintain social stability in forest areas, because the country needs ecological conservation, localities need economic growth, enterprises need to survive, and workers need income.

Specifically, first of all, any reform measure should be conducive to increasing forest resources in both quantity and quality, and to improving the relationship between resource use and protection; second, it must protect the interests of vulnerable groups from poverty exacerbation due to reform; third, it needs to promote corporate restructuring for the SFE, to enhance their competitiveness; finally, local governments' functions of forest services and management, as well as ensuring social welfare, need to be improved to maintain social stability, because stability is seen as a prerequisite for economic and social development. Therefore, on the basis of such social harmony and stability, the core reform targets can be progressively fulfilled.

- *Whether it facilitates streamlining the relationship among the government, enterprises, the society, and natural resources*

One of the biggest challenges facing state forest reform is the rationalization of the forest management system, the core task of which is to separate government and enterprise; enterprise and society; and enterprise and investors. Enterprises should return forest resource management rights to regional governments and transfer their social responsibilities back to society. The burdens of the SFE can be relieved by transferring rights and giving up benefits.

The government functions need to be separated from those of enterprises, to build "efficient, diligent, honest, and comprehensive governments at all levels." The government and enterprises should reach an agreement to share reform costs. The social functions need to be separated from enterprises, through the establishment of a relatively sound social security system, including social insurance, special care and placement, social assistance, and so on. Currently, one primary task is to build up or improve old-age, unemployment, medical, injury, and maternity insurance. The separation of business and resources asks enterprises to transfer forest resource management functions to governmental agencies specifically set up by the central government, to exercise the functions of managing state forests, to fulfill the responsibilities as investors, and to enjoy the ownership rights.

- *Whether it helps build up an in-place government with management functions and to nurture competitive enterprises*

China's state forest areas are a rigid mechanism that lags behind forestry and economic development demands. The long-standing absence of governmental functions has led to a declining ability to respond to markets and generate profits for the SFE. After the separation of forest enterprises and government, social, and natural resources, the next step of state forest reform is to focus on the establishment of a market-oriented system for state forest areas, and thus to improve local governmental functions and restore the competitiveness of the SFE.

Critical for a new state forest management system is to establish and improve local governmental functions as the basis on which to build a market economy. At an early stage of state forest reform, local governments should take on the separate from enterprises, and improve their role as services provider; subsequently, a

sound social security system needs to be built and constantly improved, and reform costs must be shared; finally, local governments should adapt to reform needs at different stages, by means of adjusting corporate policies and regulations, and optimizing market competition environment for enterprises. Through restructuring and transforming, the SFE need to establish a modern enterprise system that follows a corporate governance structure of management, to promote the diversification of investment and business forms. Hence, they would no longer rely on the exploitation and free use of natural forest resources, nor be saddled with the social burdens of managing forest areas.

- *Whether it helps promote ecological, forestry industrial, and eco-cultural systems development in forest areas*

State forest areas are thought to be a main challenging area for forestry development, and China's long-term commitment of ecological construction, forest products supply, and eco-cultural bases. One long-term reform goal should focus on building a modern forestry system, on the basis of ecological and environmental construction, and driven by industrial development. Hence, forest resources, the environment, and the forestry industry can be developed, with a high degree of combined forest ecological, societal, and economic benefits.

In the long run, whether ecological, forestry industrial, and eco-cultural systems development is being promoted will be an important parameter in determining the performance of reform. The forestry ecological system depends on the overall increase of forest resources in both quantity and quality. Thus, state forest reform should always target this. A developed forestry industrial system includes not only rich forest resources but also strong, competitive SFE; thus, restructuring such enterprises should be targeted. Building a prosperous eco-cultural system requires the "people-oriented" principle throughout the whole process when dealing with the relationship between people and nature.

Characteristics of reforms in major state-owned forest areas

In recent years, major forest areas are exploring reform possibilities according to their regional functions, and providing useful experience to carry out reform in various ways.

Reform of Forest Products Group Company of Inner Mongolia: eliminate social functions of enterprises

Forest product mills reform in Inner Mongolia firstly helped enterprises eliminate certain social functions and modify other social systems. According to the reform plan approved by the regional government, social functions such as education, medical care, television, newspapers, public security, fire control, social security, sanitation, birth control, drinking water, and heat supply were removed from Forest Products Group Company. The reform involved all staff registered before November 30, 2007, and considered the assets at the end of 2007. Staff and assets split from enterprises were then managed by local governments. Debts and credits still belonged to Forest Products Group Company. Reform costs were covered jointly by the regional government and Forest Products Group Company for the first three years, and since then have been borne solely by regional government. Compared with regulations of past governmental documents, the

reform made great strides in terms of the scope of separation, staffing, transition period, costs distribution, mechanism to raise funds, and follow-up goals.

Secondly, Inner Mongolian reform reorganized the region's social security system. After the great achievements of the reform's first step, the social security system needed reorganizing in regard to enterprise staff and local residents. Resident pensions had been funded by the provincial (regional) government before the reform. Staff pensions in forestry enterprises also changed to be funded by the local government instead of the SFE. Favorable policies for disabled staff and special types of workers coordinated with regional and Hulunbeier governments in the meantime. Since June 1, 2008, medical, duty injury, maternity, and unemployment insurance for 160,000 staff in forest areas have all been funded by local governments, with standards similar to those for local residents. Residents of forest areas, including staff family members, laid-off workers, unemployed families, and freelancers, are also included in the social security system and enjoy the same social security services as local residents outside forest areas. Beneficial policies for the elderly and the disabled were tested in Mogadaoer, where about 30,000 elder or disabled workers were examined, rated, and subsidized.

Thirdly, infrastructure construction and forest area management were also handed over to the local government. After coordination with the Hulunbeier and Xing'an governments, the reform allowed the integration of road projects in forest areas into local transportation investment plans. Forestry administrations compiled supporting policies for road improvement. Road construction in forest areas accelerated in 2008. Several roads began to be constructed including the Genhe-Mohe, Dayangshu-Wuerqihan, and Niaonuer-Chaihe lines. Blacktopping of the Yakeshi-Yilituhe and Genhe-Bailudao lines, which were built by forest products Group Company, were also handed over to local government for future maintenance and management. Communication networks were developing quickly. More than 80 percent of major scenic areas Aershan and Moerdaoga were covered by communication network signals, and control of the communication network in forest areas was given to Unicom Company. The reform also specified that infrastructure construction of forestry cities and counties would be managed and maintained by local governments after being built up by forestry enterprises. The electricity supply for faraway forest farms would be included in the "Connection for Every Village" project of local government. Yakeshi forestry thermal power plant and the heat supply contract associated with the Aershan Forestry Bureau were the first two to be handed over to local government, and would be managed according to market rules. Property management of forestry residential quarters would gradually be paid for by local government financing. Infrastructure construction in forest areas would be improved simultaneously with other nonforest areas.

Forest Products Group Company caught the last opportunity from the state policy regarding excess labor. It spent four months dividing secondary business from major business in order to strengthen the forestry work and build a modern enterprise mechanism suited for a market economy. The essence of this step was property system reform. Secondary businesses to be divided included all support businesses, forest products industries, and multiple operational businesses except forest harvest. The goal of the division was to separate state-owned capital and state-owned staff from forest product mills.

Measures of the reform at this stage can be summarized as follows: (1) Forest product mills would be transformed into shareholding companies, and state-owned staff would be given shares from the

state-owned assets, signing new contracts with new companies and becoming both shareholders and employees; (2) those not willing to continue work in forest product mills would be compensated with a lump-sum payment, requiring them to leave the mills and find new jobs themselves; (3) for surplus state-owned capital, private investors would participate through public auction to establish shareholding companies; and (4) some state-owned forest product mills would be sold to private investors.

Reform of Jilin Forest Products Group Company: reorganization and ownership change

Reforming the ownership of forest product mills and withdrawing all state-owned capital. Jilin reform targeted the low utilization rate of the forest processing industry after the NFPP and economic difficulties of the SFE. Jilin reform pushed state-owned capital separation from forestry and forest product processing industries in several ways, such as policy-induced bankruptcy, property sale, management buyout, and an employee stock ownership plan, to activate stock assets and induce capital growth. Ninety-six forest product processing enterprises valued at Y 305 million changed ownership through these measures.

Streamlining major businesses, helping secondary businesses to become privately owned. To improve the competitiveness of forest product mills, and to enhance major businesses, the reform took advantage of the opportunity provided by the NFPP to change the ownership of 95 secondary business institutions to private owners. About Y 340 million and 15,591 employees were involved in the reform.

Removing social burdens of enterprises and handing them over to local governments. The Jilin government took over all social burdens of the enterprises and helped them become modern companies able to compete in the market. In the few years since the reform, 87 social institutions were separated from the forest enterprises. Enterprises reduced their costs by more than 40 million yuan. Sixty schools were transferred to local governments, and 24 public security institutions with 2,721 employees will soon be supported by local finance. Forestry survey institutions and the forestry technology school were handed over to local forestry bureaus.

Reforming the labor system and transforming state-owned staff into employees of enterprises. Taking advantage of the NFPP, the reform aimed to streamline staff to reduce managerial costs. Particularly, the Lump-Sum-Settlement Policy was used to help place many employees with private businesses. From the second half of 2005, the reform compensated all registered forestry staff with cash, assets, or favorable state policies, and helped them change labor relations from state-owned staff to companies' employees. The reform focused on both labor relations changes and proper arrangement of staff. Staff reemployment was addressed to the greatest extent by encouraging private enterprises to reemploy staff, developing multiple operational industries, and organizing labor output and tour services. Thus, social security and harmony of the forest areas were well preserved.

Reform of northwestern state-owned forest areas (Xinjiang, Qinghai): reorganization of the state-owned logging bureau

Set up new subordinate institutions to manage state-owned forests. According to the change of forestry operation goals and functions, three state-owned forest administrative offices set up new subordinate institutions, including the Department of Resource and Forest Management, the Department of Natural

Forest Protection Program Supervision, the Department of Fire Prevention, and the Department of Wildlife Protection. Traditional timber production administrations no longer exist. Forestry staff became forest protectors instead of loggers. Forest farms and processing areas became forest conservation stations.

Taking managerial fees into the provincial finance system. In Xinjiang, three state-owned forest administrative offices and subordinated service centers and the retiree management centers, were taken over by a regional finance system. Makehe Forestry Bureau and forest farm staff were all transformed into civil servants and were paid through regional financing. Pensions for retirees were paid by the regional finance system, which helped equalize income between employees and retirees.

Addressing conflicts in transition. Tianshan's state-owned forest administrative office had 108 staff, but assigned only 69 civil service positions. Artaishan's state-owned forest administrative office had 103 staff, but only assigned 69 civil service positions. The regional government issued a transition policy that allowed all existing staff into the ranks of civil service for the first three years, but the number should be reduced to 69 due to retirement. Artaishan's state-owned forest administrative office set up two subordinate institutions, an environmental conservation management center at two river basins and a pest quarantine station with 18 civil service positions and 9 civil service positions, respectively, which basically smoothed the transition process. Tianshan's state-owned forest administrative office took similar measures during the transition.

Re-establishing ecological forests. Based on the logging restriction plan set by the NFPP, the Artaishan and Tianshan state-owned forest administrative offices incorporated 3.8 percent and 4.7 percent of their commercial forests into protected ecological forests. Capacity building of forest protection groups was also enhanced and several protection measures were put in place.

Reform of Qinghe and Shibazhan Forestry Bureaus: management system reform of forest areas

Qinghe Forestry Bureau

Innovations of forest area administration and management were mainly to set up administrative committees at the bureau and forest farms levels. The bureau-level administrative committee was based on streamlining the previous bureau department . As a governmental agency, the bureau administrative committee had similar governmental functions, supervising forests and society. Meanwhile, the administrative committee carried out regional management in the forest area, supervising environmental, economic, and social development. The measure improved administration efficiency and reduced costs.

Innovations on the relations between government and enterprises were mainly to divide administrative functions from business within the Qinghe Forestry Bureau. Administrative committees at the bureau and forest farm levels took on administration, social undertakings, and forest resource and production supervision in order to promote social development in the forest area. Forest operation companies were set up and became autonomous market players to take on previous forestry bureau operational functions, mainly timber production and forest operation. Administrations and enterprises were separated in terms of function, institution, staff, capital, cost, and budget. Forest operation companies had to pay a silviculture fund, resource compensation, and social insurance to the administrative committee according to related policies.

Innovations of forest resource management mainly were to divide resource supervisors and resource users. The bureau-level administrative set up a subordinate resource management department to supervise and regulate forest resources in state-owned forest areas. The resource management department sent timber production and forest operation supervisors, and determined the forest resource compensation fee and silviculture fund according to market prices. Forest operation companies (resource users) took on the responsibilities of harvesting and afforestation after harvest. Such reorganization rectified the relationship between forest resource supervision and cultivation. In terms of forest resource protection, the responsibility system was generally promoted. Staffs were allowed to use nontimber resources when protecting forests.

Innovation of enterprises was mainly the shareholding reorganization started in 2002. The state share was various investments and corresponding profits of the forestry bureau belonging to the public. The collective share was enterprise assets collectively owned. The private share was privately owned staff investments. A forest products limited company was set up and jointly owned by the state, persons, and private legal entities. Previous enterprises became branches of the new company, which is a market player and makes independent decisions on employment, profit allocation, and operations. For example, enterprises can decide to send out dividends or increase production, minus the fixed extraction fee submitted to the state and the forestry bureau.

Innovation of labor allocation was mainly the contracting management in the Qinghe forest bureau. A labor market was set up for the forest area. Enterprises followed the principle of "double-way choices and self-selection" to hire employees. Staff without labor contracts entered the labor market automatically and the previous employer cut labor ties with them. Labor relations for these staff would be managed uniformly by the bureau's labor and human resource department. Staffing of schools was also reformed. Administrators and teachers were all hired based on competition and capabilities. In terms of allocation, a series of regulations have been made since 2000, such as *Implementation Plans and Rules of Forest Resource Protection and Management Responsibilities System* to account costs and profits of different kinds of businesses and then determine how they should be allocated. Responsibilities and profits were more closely connected after the reform.

Innovations in the operating styles of social undertakings followed market principles, to operate like enterprises and serve like markets. The Qinghe forestry bureau had been reforming subordinate institutions since 2001 and made them independent from the bureau. Roads, water supply, heat supply, power plants, hospitals, and broadcasting bureaus were all opened to the market. Administrative committee was responsible for inflation-proofing of state-owned assets and their appreciation. As long as profit extraction goals were fulfilled, operational business was decided independently by reorganized institutions.

Shibazhan Forest Bureau

Clarified functions and streamlined forest administrations. The functions of forest bureaus were redefined to meet the requirement of dividing administration and business and based on the principles of simplification, unification, and efficiency. As a result, forest resource management was strengthened, and operational businesses took off. The number of decision makers, managers, and operators decreased as departments were eliminated and personnel were transferred. After the reform, the number of departments

of the forestry bureau dropped from 24 to 13 and the number of officials from 356 to 152, reduction rates of 46 percent and 56 percent, respectively.

Pre-division of social administration and businesses. Forest bureau departments that provided governmental functions, such as education, health care, broadcasting, civil administration, municipal administration, and infrastructure, were combined in a new department of social undertakings, with a total staff of 535 and one vice chief in charge. Such pre-division helped complete the final division of administration and businesses. Food supply administration and food enterprises were handed over to Tahe county government.

Division of secondary business and promotion of market operation. The goals of secondary business institution reform were to diversify ownership, ensure market-type operations, improve social services, and ease economic burdens for enterprises. Different measures were taken according to the characteristics of different enterprises. Trade Company and Material Company were reformed as a whole. The two companies were merged into one and state-owned staff were compensated by state-owned assets; the department of road construction was sold to previous managers and became an enterprise; water supply and heat supply departments that were subsidized by the forest bureau were combined as a property management company and independently operated; other departments of social services that could not be reformed quickly were subsidized and would be handed over to local governments or the market until conditions are appropriate.

Set-up of specialized companies and simulated independent operation. According to the requirements of market economy, production and operational departments that used to be subordinated to the forest bureau were reorganized as separate new specialized companies and became independent market players. Forest Operation Company was the first to be set up and was composed of a production technology department, forest products Sale Company (timber department), timber test team, timber storehouse, and Transportation Company. Capital Management Company was the second to be set up and was composed of an industry development department, Coal Company, oil company, Huaduo (forest products industry) Company, and green industry company. Forest Operation Company was the third and was reorganized by the department of forest operation. Plantation tasks were assigned to the department of development and design and afforestation tasks were assigned to the forest survey team. The forestry bureau's forest operation and afforestation work was contracted by Forest Operation Company. Oversea Logging Company was scheduled to be set up, with the Forest Operation Company temporarily in charge of preparatory work. Domestic registration has been completed. The new company would unite professional companies within and outside the province to explore overseas timber markets.

Reformed forest farms and simulated management as social services departments. After reform, timber production was managed by Forestry Operation Company, while afforestation and forest operations were the responsibility of the Forest Operation Company. Five forest farms all changed from logging farms into environmental protection administrations. The names of the forest farms were kept for the convenience of communication with outside institutions, while new names were given to the forest resource conservation area. The forest resource conservation area is an institution subordinated to the forestry bureau. Its functions included forest resource management, wildlife protection, forest pests control, fire prevention, and nontimber resource management. The sources of funds of the new institution are mainly NFPP forest conservation fees and forestry bureau timber production profits. The forest resource conservation area built

up a conservation system, composed of a conservation area, conservation centers, and household conservation stations. Household conservation stations, with 1,114 conservators, is central to the conservation system. Forestry bureau resource supervision stations were removed from forest farms and handed over to the forest resource conservation area.

Innovated labor allocation system and promoted reform with comprehensive measures. Shibazhan Forestry Bureau also improved the labor and salary allocation system to adapt to the institutional reform. After the reform, all staff should be hired on a competitive basis and leaders should also compete for positions. Workers were given contracts and those who refused to sign would enter the labor market automatically. So far, all registered staff is on the job. New contracting salaries were adopted, by job. Forestry bureau officials adopted job capability salaries, while enterprise employees adopted job performance salaries. Average salaries significantly increased after reform.

Reform of six pilot forestry bureaus: innovations of forest resource management

In 2004, the State Forestry Administration decided to conduct a forest resource management reform pilot in six representative forestry bureaus in Inner Mongolia, Jilin, Heilongjiang, and Great Khingan. The main reform measures were:

Set a forest resource management system vertically led by provincial government on down. Pilot forestry bureaus were set up in the state-owned forest administrations. The new administrations derived from previous forest resource management and forest resource supervision departments of forestry bureaus. State-owned forest administrations, which are at the same level as departments, were led vertically by provincial government on down. The Jilin forestry bureau, Great Kingan forestry administrative office of Inner Mongolia, Heilongjiang forestry bureau, and Great Kingan forestry administrative office became the direct leaders of the new state-owned forest administrations.

Assign forest resource management functions to state-owned forest administrations by law. State-owned forest administrations are responsible for: carrying out inventory survey and supervision, designing and submitting of the forest operation and utilization plan, implementing the plan, analyzing the forest operation plan in administrative areas, designing and submitting the logging quota, examining and submitting the logging survey and design, checking logging areas, transporting timber and supervising timber processing, managing forestland and forest tenure, charging fees stipulated by the state such as forest recovery fees, carrying out afforestation after harvest and forest cultivation, supervising the utilization of nontimber forest resources, exercising administrative penalties according to the law, and other assignments of higher forestry administrations.

Determine staffing properly and raise funds for state-owned forest administrations. State-owned forest administrations set up subordinate departments and staffed them properly according to their functions and responsibilities. In the pilot stage, basically no additional staff was hired, no additional position was createds and no additional funds were used. The establishment of state-owned forest administrations could be transferred to enterprises. Enterprise establishment could be managed as administrative establishment. Funds to support the work were raised by the Jilin forestry bureau, Heilongjiang forest bureau, Great Khingan forest administrative office of Inner Mongolia, and Great Kingan forestry administrative office. Major

sources of funding are NFPP forest conservation fees, silviculture funds, and administrative fees of upper administrations.

Set up a scientific operation mechanism. In pilot forestry bureaus, state-owned forest resources were operated through contracts. State-owned forest administrations assigned operation rights to forest enterprises and supervised them. In order to build a scientific and efficient forest resource protection and management mechanism, capability building of state-owned forest administrations must be strengthened, institutional arrangement must be improved, human resource management must be regulated, and supervision measures and contracting processes must be specified.

Yichun -- state-owned forest tenure reform

Follow the five principles, and ensure the right direction of reform. The first principle is to ensure stability and correctly handle the interaction of reform, development, and stabilization. Through implementing various policies, problems such as fluctuation, repeat and shock have been effectively avoided in the whole trial reform process. The second is to give environment the first priority, preserve forestland, and support the relationship between ecological construction and economic development. The third is to ensure the maintenance and appreciation of state-owned forest assets, and correctly handle the relationship between worker benefit and national benefit. The fourth is the principle of public fairness and justice by handling correctly the relationship between the scientific decision-making and democratic decision-making. The public needs to be kept informed of the policies, procedures, content, methods, and results of reform. The fifth principle is to promote the reform actively and orderly, correctly handling the relationship between leading reform and supporting reform, and establishing the sub-bureau of forest resource management in five pilot forestry bureaus.

In accordance with the requirement of modern property rights systems, explore a new management mechanism of state-owned forest resources. The first step is to carry out a comprehensive investigation and division of forestland and confirm the property rights to forest resources. The second is to define the rights and duties for the main body that possesses these property rights. On the one hand, under the prerequisite of maintaining ownership of forestland by the state, contract workers should be empowered to manage forestland. On the other hand, the responsibility of the contract workers regarding ecological protection and construction must be defined: the contracting terms must ensure that (1) forestland not be reversed to nonforest, (2) barren hills, wasteland, and cleart-cut areas are afforested, and (3) forest fire, pests, and diseases are controlled and prevented. The third step is to strictly protect the interests of contracted workers, guide them to establish a cooperative organization, and ensure that their rights and interests are not being violated. The fourth is to establish a trading platform of property rights for the stated-owned forest resources. The forestry property right trading center was established in Yichun City, and forest tenure reform service centers were set up in various pilot forestry bureaus to carry out “the management regulations of trading forest property right between the workers in pilot bureaus in Yichun City.”

Explore various management and operation modes of the state-owned forestland realistically. The first is family contracting: 6,149 worker households were selected and became independent forest resource operation bodies. The second is partnerships for contracting and operating jointly: 474 worker households were selected and became an operation and management association that has clear advantages in

enhancing productivity and lowering the cost of forest resource management. The third is a joint-stock cooperative: based on voluntary contract, workers establish the joint-stock cooperation organization with equal investment, common management, revenue sharing, and risk sharing. The fourth is trusteeship: to ensure the rights of poor forest households to the land, the forest enterprise reserved some forest land for them, about 5 to 10 ha per household. They can contract the forestland any time (before, forestlands were under trusteeship management by the forest farm).

Carry out preferential policies and maintain the interests of contract workers. The first is the policy that ensures ordinary workers have priority in contracting forest land. At the beginning of forestland contracted management, 80,000 ha of forestland were contracted by ordinary forestry workers. Outside investors and leaders at all levels are not allowed to participate in contracted operation.

The second is the preferential policy to lower transfer fees of forest assets. During the pilot, buyers could get a 20 percent discount of the transfer fee for buying natural forest, and a 10 percent discount for lump-sum payment; payment by installment was allowed for workers who had difficult with a one-time payment.

The third is the preferential policy of lower contracted fees of forestland. The contracted fees of forestland are Y 45 per hectare per year for workers who make a one-time, up-front payment; Y 60 per hectare per year for workers who pay year by year; and Y 75 per hectare per year for workers who pay only after getting the benefit from the forestland.

The fourth is the interest-free loan policy. The pilot forestry bureau provides interest-free loans for the workers who will contract forestland but lack funds. The loan amount should be less than 70 percent of the total expenses incurred for the transferring of forest assets; interest-free loans will be provided for workers in poverty.

The fifth is the policy that all workers who contract forestland can use their base salary defaulted by forestry enterprise as contracted fees.

The sixth is special funds to support policies. The government of Yichun City set up a special fund for the reform and development of the state-owned forest property rights system. The fund mainly supports contract workers to manage forest and develop nontimber products.

The seventh is the afforestation subsidy policy. The government of Heilongjiang province provides an afforestation subsidy of Y 2.5 million to contract workers in the Yichun pilot forest tenure reform, and the pilot forestry bureaus also provide afforestation subsidies to contract workers.

Carry out the corresponding measures and ensure good performance of the follow-up service for the forest property right reform. The first is to strengthen the afforestation service: establish the forest management service organization and the forest technical service team for forest property right system reform; provide effective help for the contract workers to increase afforestation; and improve sapling quality and pest control.

The second is to strengthen the forest management service. Each pilot forestry bureau established a joint management organization composed mainly of contract workers, particularly to strengthen forest resource

administrative management in the pilot forestry bureau. At the same time, contract workers will set up a management association or management centers for carrying out the management responsibility.

The third is to strengthen the operating service. The government of Yichun City promulgated "The preferential policies encouraging the contract workers of forest land to develop self-management economy in Yichun City," and supports them to develop nontimber products and explore the intercultivation model of forest and medicine and forest and fruit, and consider the short-, medium-, and long-term benefits. Finally, let the workers play an important role in information, technology and marketing service provision, and develop a self-managed economy.

Evaluation of current state-owned forest reform

The forest management system, operation mechanisms, and logging enterprise reform have been explored at different levels in the above reform models. Thus, initial results were achieved, valuable experience accumulated, and solid foundation for further deepening of reforms established. But with many problems and high costs in state-owned forest reform, the road of reform is still a long one.

Inner Mongolia State Forest Enterprise — social functions taken out smoothly, but management system reform not completed

The Inner Mongolia Logging Group took social functions out, paving the way for completely separating functions among enterprise, government, and society. The social insurance of forestry industry enterprises has been fully straightened out, forestry workers and forest region residents gradually moved under the management of local government. The reform promoted the economic development of the forest region, promoted improvement of people's livelihoods, promoted equalization of basic public services and maintained social stability, and laid a good foundation for constructing the management system of the state-owned forest region that is suitable to the requirements of developing modern forestry.

The difficulty of reform in the Inner Mongolia Logging Group was that the cost of reform was too high to be independently paid by the forestry industry enterprises. The government of the Inner Mongolia Autonomous Region gave the Logging Group full support for reducing the reform cost; this was the major reason why the reform of the Inner Mongolia Logging Group could be smoothly implemented. In the process of removing social functions from the Logging Group, all its assets were transferred to the local government according to the final accounts at the end of 2007, including all creditor's rights and debts belong to the Logging Group. The funds required by the Logging Group were undertaken in proportion by the Finance Department of the Inner Mongolia Autonomous Region and the Logging Group in the transitional period in the first three years. After that all funds required by the Logging Group shall be undertaken by the Finance Department of the autonomous region. Because of the assistance provided by the autonomous region government and all levels of government, the reform cost undertaken by the Logging Group was greatly reduced. The problems that troubled reform for many years have been smoothly resolved, and social stability in the forest region has been maintained.

Even though the Inner Mongolia Logging Group pushed forward the reform of separating functions among enterprise， government, and society, all other reform progress was slow. First, the separation between the

government and enterprise has not been completely accomplished yet: the forestry administration and logging group were combined together. On behalf of the state, the forestry administration exercises the functions of forest resource management; at the same time, the Logging Group was an enterprise and a main body of the market. The second area that has been slow is the decentralization of the management of forest resources. Therefore, the local forestry administration lacks the authority of the central forestry administration. The third problem relates to the community government functions of the forestry administration. People's livelihoods in the forest region still lag. The fourth was a lack of reform measures and incentives to encourage market innovation in forest land management and forest product processing enterprise development.

Jilin State Forest Enterprise — logging industry competitiveness elevated, but the gap between rich and poor widened and risk of resource damage exists

The Jilin Logging Group took the reform of the forestry industry enterprises as a breakthrough, separating government and society functions from enterprise management to drive the reform of the whole forest region. At present, various reform policies have been implemented and achieved obvious effect. The first achievement was to diversify and lay out a management system with clear property rights and defined power and responsibility. This laid the foundation to further straighten out the reform of the resource management system. The second benefit occurred when restructured forest industry enterprises went from losses to small profits and eventually growth. This helped to strengthen the SFE's main business and enhance the competitiveness of its products. The third area relates to the change in worker status. Revenue is now distributed to workers both according to their work and their stock share, meaning workers are not only employees but also their own boss. The forest region maintained social stability after the reform, the logging group improved operations and efficiency, and the introduction of the market competition mechanism laid a good foundation for deepening the reform.

Current problems of the reform include the following. First, the management of social affairs and the construction of a social security system undertaken by the local government have not received enough attention; the widened gap between the rich and the poor added instability and subsequent reform could face more resistance. Second, enterprises and resources have not been separated. Forestry industry enterprises still use free resources. State-owned forest management agencies cannot separate from the economic interests of the forestry industry enterprises. Third, enterprise, government and society are still united at the forestry bureau level, and the separation of functions is still not complete. Fourth, the logging group retained the most excellent workers when it downsized. But the workers who lost their jobs still live in the forest region; their future livelihood could directly impact reform results, as well as the safety of forest resources.

Northwest (Xinjiang, Qinghai) state-owned forest region — reform orientations are accurate, but should be connected with ecological forest management system

The reform focus of the northwestern state-owned forest region was to form the management institution of the state-owned forest and cut excessive personnel. Because pressure of personnel was very small in Qinghai and Xinjiang state-owned forest regions, the difficulty of pushing public institution reform was not great. Because the newly state-owned forest management institutions got full support from provincial and

autonomous regional governments, they were able to operate normally and quickly and the achievements of the reform were significant.

At present, Xinjiang Autonomous Region and three forestry bureaus in Qinghai Province have completed the restructuring of public institutions. The funds of state-owned forest management institutions were brought into the provincial public finance budget. But the problems of how to treat the original retired workers in the restructuring forestry bureau have not been solved yet, and the income gap between them and on-the-job personnel is very wide. In addition, before transformation, the forestry bureau extracted the funds for forest fire prevention, road maintenance, power supply, water supply, and other infrastructure from timber production. Now there are no funds to support those important functions in the forest region.

Restructuring of public institutions should be the main direction for state-owned forest regions that are the sources of large rivers and important ecological regions. Currently this was successfully implemented only in Xinjiang and Qinghai Provinces, where further reform perfected the functions of the state-owned forest management institutions and broadened the reform to state-owned forest farms. First, consider management of the northwestern state-owned forest region as a whole and formulate a unified policy for the ecological forest. Second, empower law enforcement functions to the management institution of state-owned forests so it can truly become the main body of managing state-owned forest. Since in the Northwest the state-owned forest enterprise was not responsible for social functions, the pressure of surplus employees was not big and the cost of restructuring the state-owned forest bureau was smaller. Lastly, the management of state-owned forest should coincide with the management of ecological forest. Merging concentrated ecological forest and state-owned forest helps to establish unified ecological forest management institutions, expands its management scope and authority, and facilitates the construction of ecological systems in important locations.

Qinghe Forestry Bureau, Shibazhan Forestry Bureau — reform direction correct, but lacked comprehensive reform

The common characteristic of the Qinghe Forestry Bureau of Heilongjiang Logging Group and the Shibazhan Forestry Bureau of Heilongjiang DaXinganling Group was that they shared the same goal of separating governmental function from the enterprise function and production management from forest resources management. In order to realize the separation of enterprise from administration, within the Qinghe Forest Bureau administrative region, the Qinghe Forest Management Committee was established and undertook the social functions. Also, as the bureau was renamed the Qinghe State Owned Forest Management Bureau, and undertook the administrative functions. The agencies above operate autonomously and with independent accounting. Because no local government undertook enterprise social management functions, the Qinghe Forestry Bureau established government agencies. The reform of Shibazhan Forestry Bureau that began in 2008 can be organized into three steps. First, to devolve functions and integrate and rationalize administrative entities. The second step was to transfer forestry procurators and courts, and units and departments that belonged to the social affairs department and had social functions to local governments. The third step was to completely separate forest resource management from business use in the system when the time was right; to establish the forest resource administration (or the state-owned forest administration) that prioritized ecological protection; unified rights, duties, and benefits; and combined the management of human resources and financial assets.

The difference of the reforms was that the Qinghe management committee social function was established by the Qinghe Forestry Bureau, with funding from the forestry industry enterprise. Whereas the Shibazhan forestry administration hoped to establish a local government to whom it could transfer government and social functions.. Because the forestry administration belonged to the forestry industry enterprise, this separation model was not complete.

Reform of Qinghe Forestry Bureau started early, and has produced social and economic benefits; the Shibazhan Forestry Bureau began to implement the reform measures in 2008, and it has now completed the function decomposition and agency separation, entering the stage of implementation. The successes of both depend on introducing the market competition mechanism: Qinghe Forestry Bureau pushed the public institutions to the market; Shibazhan Forestry Bureau pushed the auxiliary industry to market-oriented operation. Regarding labor and distribution system, the Qinghe Forestry Bureau carried out contract management for all employees, and combined responsibility with interests by using the innovation of share distributions; the Shibazhan Forestry Bureau introduced job competition for all employees, carried out a post wage system, and ensured a fair and reasonable income distribution system.

Because there was no real local government department, the government management function of the two forestry bureaus still existed within the forestry bureau. The institutions bearing the social functions did not have independent sources of funds, also had to depend on the enterprise fees. Therefore, when forest region lacked local government and financial support from the local government, the forestry bureau cannot implement the reform of separating enterprise from administration. This is the current biggest problem in the reform of the two forestry bureaus.

In the state-owned forest region, the core of the management system reform was separation of government and enterprise, separation of society and enterprise, and separation of enterprise and assets

The reform tasks of the Qinghe Forestry Bureau and Shibazhan Forestry Bureau were as follows: First, to establish independent local governments and transfer the social undertaking departments and the units and departments possessing government functions in the forestry bureau to the local governments. Second, to establish management institutions of the state-owned forest, and exercise the functions of managing state-owned forest. Finally, the enterprises became the main body of the market economy with independent operation and responsibility for profit and loss. This was the expansion of reform in Qinghe Forestry Bureau and Shibazhan Forestry Bureau and also the key point of national support policies.

Pilot reform of forest resource management systems — captured reform breach, but did not empower functions of forest resources management

The pilot reform of forest resources management systems achieved the separation of ownership and management rights. In the enterprise, an internal special forest resource management department was set up, external forestry administration supervision entities were accredited by the forestry administration, and resource supervision offices were set up in forest farms and log yards by forest bureau, which formed a comprehensive supervision and management system of forest resources.

The reform of forest resources management systems followed the premise of not touching the deep-rooted problems of the state-owned forest, trying to separate out the forest resource management function and establishing a top-down, vertical management system of forest resources. But the reform failed. Even after six years, most key problems such as institutions properties and funding sources remain. Salaries and employee benefits in six sub-management bureaus were paid according to the enterprise standard; while enterprises paid more, the forest employees got more, but some sub-bureau leaders still enjoy the treatment as high as enterprise leader and funds were unconditionally provided by the enterprise. The state-owned forest management bureau did not have administrative authority; as a result it was difficult to bear the management functions of forest resources.

State-owned forest reform was a comprehensive reform. It clarified the relationship among government, enterprises, society, and resources, and defined their boundaries. The reform target of resource management systems was to promote separation of enterprise from resources; the deepening of reforms requires the inevitable separation of enterprises from government and society. Therefore, comprehensive reform should be followed up on to ensure real forest resource management system reform.

Pilot reform of state-owned forest property right system — a good start, but should coincide with a system and mechanism reform

Yichun forest reform took household contract management of commodity forest resources as the breakthrough, and set flexible management as the goal. The state-owned forest was managed by workers independently under the framework of law; this was the core content of the state-owned forest property right system reform. Transferring the management rights of forestland and forest ownership to workers fundamentally solved the problems of lack of a main body of state-owned forest property rights, and lack of interest and responsibility for forest cultivation and protection. The Yichun forest region has made a bold attempt to resolve the problem of inactive state-owned forests, by extending the property right system reform to the state-owned forest region. Overall, reform has achieved some results; diversification of the main investment and management body of the state-owned commodity forest should improve the economic structure of forest region.

The reform of state-owned forest was a systematic program with a wide degree of difficulty and complexity, and needed special promotion and attention. For the Yichun forest region, it is difficult to solve the chronic problems that beset the development of the state-owned forest regions by exploring the single reform of the forest tenure system that focuses on the management mechanism. Without separating government, enterprise, and society, rejuvenating the management mechanism alone can bring more pressure on forest resources; it is disadvantageous for forest protection, and will depart from the reform goal of the state-owned forest regions. Therefore, the Yichun forest region should carry out the overall reforms, coordinate the two types of reforms, design a comprehensive, integrated and system reform scheme with separation among government, enterprise, society and public institutions, and promote the comprehensive economic and social reform of the whole forest region.

Problems facing state-owned forests reform at present

At present, the reform has gotten to the root of the issue of state-owned forests' long-term system and mechanisms. Reform is being slowed by many key problems that have not been solved yet. Support from national and the local governments at all levels is needed to address these problems.

Lack of participation and support for the reform from central authorities

Most of the current state-owned forest reforms are the forest enterprise and the subordinate forestry bureau spontaneous reform exploration, which the Central government tacitly consented to, but lacks the instruction from the macroscopic stratification. Since the reform and open policy, the desire to promote reform inside and outside state-owned forests is very intense, but without a clear line between the functions of the government and enterprises and so on crucial the questions cannot obtain the basic solution throughout. Even if reform has made progress, relations between the state-owned forests government, enterprise, social and the resources have not straightened out, various forest regions' reform's direction exist difference, and the goal of reform is not explicit.

In the process of state-owned forest reform, the role of the central government did not fully play, which reflected in, on the one hand, before the State-owned forests imposing spontaneity reform starts, the central government should give the explicit instruction to the reform general goals according to the forest region's regional function, and set concrete goals for reform. On the other hand, the central government should undertake the reforms' cost together with the local governments, to solve such problems as the State-owned forests government's lack of function, it is needed that the local governments at all levels provide full support. The central government doesn't have the concrete action in these two aspects, which is the substantial reason for present state-owned forests reform progress slowly, even is tempted by the mistake.

Local governments' insufficient support for state-owned forest reform

State-owned forests' highly centralized management system was developed in the past when party, government, business, and society were designed to unite, and suited the planned economy national condition and the forest's condition. The management system had its rationality, and it played the important role for the development, construction and promotion for state-owned forests. But the general goals for state-owned forests have changed, so the forest enterprises should return back to the key role of market competition, and the management of social functions should be undertaken by the local governments.

The national state-owned forests management system is complex, as the partial forest regions do not have any independent local authority, and the majority of forest region governments do not have complete executive functions. Enterprises have undertaken some government functions. However, due to lack of business capital, they were unable to support fully state-owned forest reform. Without full local government support, at present state-owned forest reform is progressing slowly. The crucial forest resource management system reform advanced with difficulty.

Governance division between central and local governments cannot be clearly distinguished; cost of reform becomes the key restriction to reform

The responsibility to cover the cost of the state-owned forests reform must be assigned; only then can extra personnel be arranged and social functions transferred from enterprises, in the process of separating government administration from enterprise management. It is difficult to pay for the cost of reform, which to a certain extent has affected the progress of reform. Forest enterprises that undertake the entire social function and have heavy employee costs first need to obtain the compensation, for their staff's changes status. However, inefficient forest enterprises may not be able to pay. Also, forest enterprise infrastructure is outdated, which has impaired secondary transformation industries. Finally, the enterprise retirees' medical expenses are still borne by the enterprises. After the NFPP started, central funding was mainly used to solve the personnel problem, thereby shouldering part of the state-owned forests reform cost. As state-owned forests reform deepens, especially removing social functions and auxiliary industries from enterprises, the reform's cost becomes difficult for local governments to undertake independently.

Authority for state-owned forests still unclear; separation between enterprises and forest resources has not made substantive progress

Forest resource management system reform was the most difficult part of the reform. The primary cause is that reform touched upon the core interest of various economic subjects in state-owned forests. The forest enterprises not only do not have the initiative to carry out this reform, but also resist separating from forest resources. Forest resources are the foundation of enterprise survival, from physical possession and the free use of forest resources. If they separate with the forest resources, the forest enterprises will experience the most difficult process. Currently, the opportunity for comprehensive forest resource management system reform is not yet mature, will encounter resistance from state-owned forests at all levels, and will not progress substantively. The establishment of a vertical management system in the state-owned forests is the key target of reform, while the thorough separation between enterprises and the forest resources is also trend-driven.

Another problem in the forest resources management system reform is the dispute about what kind of forest resource management system to establish in the state-owned forests. There are two main thoughts. One would establish the State Council Forestry Department responsible to represent the vertical management structure of the State Council The finance of the state-owned forest resource management structure calls for separation between revenues and expenditures. The expenditures needed (including forest public security funds) and the forest resources management funds are involved in the central public finance budget, after the taxes are paid legally and locally, all income would turn in the central level funds completely.

Another way is direct management by the people's governments at the provincial level. State-owned forests resources management structure is divided into two categories: revenues and expenditures. Expenditures are included in the provincial public finance budget, while all revenues after imposition fully return to the provincial level funds. Today, the central forestry department is responsible for state-owned forests resources administration, but the management is materially absent, and state-owned forest enterprises are managed from off site.

Suggestions on deepening state-owned forest reform

State-owned forest reform should be led by central government and be carried out comprehensively from top to bottom

China's three decades of reform highlights that the government's leadership is critical, while suggesting that basic units may well be the primary agents of change. State-owned forest reform involves the government department and government's executive functions, and the state-owned resources' management and operation. The reform should maintain and appreciate the value of the state asset, and maintains the forestry staff's survival and the forest region's social stability. A slight move in one part may affect the situation as a whole. Therefore, only comprehensive design and planning can advance the reform as a whole for the nation. This would hopefully enable each concrete reform to progress from the actions of superiors to subordinates. Meanwhile the strategic plan for reform and the macro-level design must unify with the basic unit's creativity and enthusiasm, respect the creativity of people fully, summarize experience of reforms on the micro-level promptly, adjust the reform's step, meanwhile guarantee society's stability during the reform process.

Local governments should participate in all levels of forest region management system reform

To advance the state-owned forest reform steadily, local governments at all levels must play their role fully, gradually strengthening their role in the regional economy and social development, strengthening the livelihood of people in the forest region, perfecting the social service system, and integrating completely the forest region's population into local social security system. Local governments should also establish and perfect the government finance system, take over the governmental and the social management function from forest enterprises, and create opportunity for the secondary transformation industry.

The situation that state-owned forests government and enterprise created is quite complex. There is a risk that the government does not have the ability to contract certain functions after they are transferred by the enterprises. Forest enterprises that work in areas without active local governments, should be assisted by the higher-level governments to establish and gradually perfect local authority. When conditions are ripe, the forest enterprises will turn over their government and social management functions. Forest enterprises that work across several administrative areas, can turn over the possession of the personnel and auxiliary industries to different local governments to solve such problems as personnel employment, social security, and enterprise management. In brief, in order to advance the reforms, the provincial and more local governments must be linked from top to bottom.

Central and local governments should share cost of reform according to governance divisions

State-owned forest reform must advance on the basis that establishing and strengthening local authority will solve the problem of forest enterprises' extra personnel and the debt burden. It should also speed up the improvement of forest region infrastructure. The costs of state-owned forest reform should mainly be shared by the central and the local governments at all levels, and the costs of enterprises' conformity, reorganization, and remanufacturing should be borne by the enterprises after reorganization.

The central government should bear the costs of the transition period of reform. State-owned forests and state-owned forest enterprise staff have contributed for a long time to the national economy and should be able to obtain central government help when facing temporary difficulties. For many years, many national preferential policies in support of industries and agriculture have failed to benefit forest regions, so

central-level funds should give the compensation to the forest regions. Local governments have the responsibility of safeguarding social stability. The local governments take on the partial costs of reform to maintain social stability in forest regions.

Currently, the NFPP avoids the subject of enterprise debt. The debt in nonfinancial institutions (including owed wages) should be paid by the forest enterprises, or paid by staff stock in the process of restructuring. The cost that state-owned forests would bear to establish the local government can first be taken on by the higher-level governments, then get be compensated completely or partly through central-level funds. For a long time, the nation invested insufficiently in infrastructure in the state-owned forests, which should be made up for in the reform; namely, the plan of national infrastructural facilities should favor to the State-owned forests for a period of time to decrease the disparity between the infrastructure in the State-owned forests and the peripheral developed areas. The forest regions' investment on infrastructure facilities outside of the national plans should be done through local financing, to improve socioeconomic development in forest regions.

The arrangement of personnel is the most difficult problem for state-owned forest reform. Besides the personnel needed for new state-owned forest management structures, there is the personnel laid off from the local administrative offices and auxiliary industries, the forest enterprise staff who became enterprise shareholders when they changed status, and those who continued the forest enterprises. Other personnel who have not entered the administrative offices and enterprises need the government to provide employment and social security. These so-called "extra personnel" should be supported proportionally by central and local governments at all levels to safeguard their livelihoods.

Establish central direct management of state-owned forest resources management system; sort out the relationship between administration and enterprises

The forest resource management structure should be established under the central government's direct management, to form a top-to-bottom vertical management system. The Northeast state-owned forests should maintain the current management scope for forest enterprises bureau, and establish a national forest administrative bureau (or sub-bureau), to be managed directly by the state forestry bureau. The Northwest state-owned forests' entire forestry bureaus, referred to Xinjiang and Qinghai's pattern of transformation, turned to administrative offices completely, directly integrate to the state forestry bureau's management. The forest enterprises with management scope in Southwest state-owned forests, refer to the system and the mechanism of reform pattern in the Northeast state-owned forests, need solve the problem of society and the personnel, and establish national forest administrative bureau responsible for state-owned forest resources' operation and management. The national forest administrative bureau (sub-bureau) is primarily responsible for forest operation, management, and protection in the area under its jurisdiction. In view of its specialty in management function, the funds of national forest administrative bureau (sub-bureau) and management investment should be paid by the central-level funds, the income should turn over to the central-level funds, implying the separation between revenues and expenditures.

After the reform, the forest enterprises and the forest resources should be separated thoroughly. Forest enterprises would no longer hold, manage, and freely use forest resources. The national forest administrative bureau and forest enterprises should have a marketable contractual relationship; namely, the national forest administrative bureau would contract the forest management enterprises for concrete work, such as afforestation, forest management, forest fire prevention, disease prevention, logging, and so on. Forest product processing industries would purchase raw material from the market, or contract forestland for their business.

ANNEX 3: Reform strategy in key state forest area of Northeast and Inner Mongolia of China

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Introduction

The state forest area of Inner Mongolia and Northeast China includes the three northeastern provinces of Heilongjiang, Jilin, and Inner Mongolia, covering a total area of 60.8 million hectares and accounting for about 6.3 percent of China's total territory. The forest area is 35.9 million hectares, with forest volume of 3.2 billion m^3, 18.8 percent and 23.4 percent of the national total, respectively. Forest cover in this area is 67.1 percent. In 2010, timber production of the area was 11.2 million m^3, accounting for 13.8 percent of the national total that year.[7]

This area, which stands across the boreal and temperate zones, is endowed with a humid climate, elevated plains and rich forest resources. The Northeast and Inner Mongolia state forest area, covering the Greater Khingan, Lesser Khingan, and Changbai Mountain forest regions, has been regarded as the largest and most important state forest area, with the most intensive resources and a unique property rights system in China. This key area is an important ecological defense for the grain production areas of the Songliao Plain, the Three Rivers Plain, and the Grasslands of Hulun Buir.

As an important player in the old industrial base of Northeast China, the key state forest enterprises (SFE) and state forest farms (SFF) in this area have been developed in parallel with modern China's growth. Over the past five decades, timber production in this area exceeded 1 billion m^3, accounting for more than half of the national total and generating taxes of more than Y 24 billion, which greatly contributed to economic development in the country.

Due to many years of over-logging, negligence of cultivation, and institutional shortcomings, the state forest area of Northeast China and Inner Mongolia has been facing severe resource and financial crises since the mid-1980s. At the beginning of the 21st century, 60 forest bureaus out of 84 had almost depleted their mature or old-growth forests resources. Forest bureaus in this area were confronted with unprecedented challenges: the "two crises" (resource crisis and economic crisis) and social stability problems. It is in this context, and in order to address the crises, that the Natural Forest Protection Program (NFPP) was launched over the Tenth and Eleventh Five-Year periods.

The NFPP, however, did not touch on the root causes of the institutional shortcomings and as such, the future of the SFE in the area was still worrisome. The quality of state forest resources declined steadily, and forest area increasingly shrank in some regions; forest enterprises had heavy social burdens, and the modern enterprise system was difficult to build up; economic revival and industrial restructuring in the forest area was hard to carry out; workers' livelihoods were unsatisfactory; and social instability increased.

Simply put, the state forest area of Inner Mongolia and Northeast China did not take advantage of the NFPP to build up a sustainable development system. As NFPP ended, forest resources in this area inevitably continued to be depleted, mainly because the underlying causes of the two crises had not been thoroughly addressed. Institutional reform in this area is now an imperative.

Institutional shortcomings in the state forest area of Inner Mongolia and Northeast China

[7] Source: the Seventh National Forest Resource Inventory. 2010. Beijing: Ministry of Forestry.

Addressing the two crises in the state forest area of Inner Mongolia and Northeast China under the current institutional arrangement is a challenge. While some relief may be provided, the reform path, however, is still debated. Therefore, it is of the utmost importance to undertake more in-depth analysis of institutional arrangements and their limitations in state forest areas, in order to find an optimal transition path. Overall, problems facing the state forests in this area can be categorized into two groups: institutional problems in resource management and forest enterprise problems.

Institutional problems in resource management

The key problem in resource management is the lack of monitoring of natural resources, their inadequate supervision, which has led over time to over-harvesting of resources in the absence of resource recovery.

First of all, ownership of state forest resources is ambiguous, and responsibilities are not clearly allocated between the central and local governments. According to the *Forest Law*, the State Forest Administration (SFA) owns state forest resources on behalf of the central government. However, the SFA does not have personnel at the local level. It is the provincial and local governments, on the contrary, that have de facto control over the management of state forests and forest bureaus in terms of personnel, and financial and taxation affairs. In this sense, state government is merely a nominal owner, but local governments are the de facto owners, users, and beneficiaries of state forests. Because of this imbalance, local governments have been able to maximize their own benefits at the expense of the central government. Therefore, as long as the current system persists and if the ambiguity of ownership is not solved, no one will truly care about forest resource recovery.

Second, the roles of users and regulators of state forests overlap. Forest certificates were issued to SFE for free, thus allowing them to cut trees according to their own needs and development goals at any time. Finally, departments in charge of forest management and supervision are usually set up as subordinates of forest bureaus (that is, inside forest enterprises), making the oversight functions very ineffective, and as a consequence making over-logging unsurprisingly persistent and difficult to address.

Forest enterprise problems

The essence of the problems with state forest enterprises in Inner Mongolia and Northeast China is the lack of a modern enterprise system.

First, state forest enterprises were inherently formed to play the multiple functions of forest resource management, administration, government, and business. Divided between their public and private functions, they also had to take on a social role, through the management of schools, hospitals and the responsibility of handling an ever growing number of retired workers. As a result, their business functions such as production and profit generation suffered.

Second, poverty - already severe in state forest areas, has continued to increase due to the number of industrial restructurings and growing unemployment since the beginning of the NFPP. Such poverty problems might be temporarily solved under well-functioning enterprises. However, under the currently set-up of forest enterprises, poverty issues may get even worse. Hence, the establishment of a comprehensive social security system will be key to ensuring reform success and the sustainability of the state forest area of Inner Mongolia and Northeast China, and as such, should be set as a new target of the government's policies.

State forest reform in Inner Mongolia and Northeast China

The Natural Forest Protection Program

The NFPP has presented both a challenge and an opportunity for the reform of state forest areas. Pressure for economic restructuring came from the prohibition (logging ban) and a reduction of harvesting in natural forests, which then led to a reduced timber production and the need to restructure and downsize.

There were two ways to cope with the pressure coming downsizing: (1) transfer workers to positions in forest protection and ecological conservation through relevant policy support and (2) offer workers a one-time settlement option.

After redirection and replacement, workers were no longer highly dependent on forest harvesting and processing. The salaries of workers transferred to positions in forest maintenance and ecological forest conservation became linked to performance assessment. In the meantime, market and competition mechanisms were introduced gradually. Workers who took the settlement option had to look for other jobs on the labor market.

Therefore, the implementation of the NFPP prompted state forest enterprises and their employees to seek a way out, and assemble internal dynamics and reform forces. It also shouldered some reform costs through its policy on social expenditure, providing a social buffer for the separation of government and enterprise functions. To compensate for the decline in timber production and worker income, the central government offered subsidies for education, health care and other services.

During NFPP Phase 2, reforms were expanded to other parts of the state forest area. Specifically:

- *Subsidies in social insurance*, including continued support of five basic insurance items (i.e., old-age pension, medical, unemployment, work injury, and maternity insurances) and moderate increase of subsidy standards.
- *Flexible employment* (including for those who were offered one-time settlement and who faced particular risks of poverty or difficulty in finding a job, old-age pension and medical care). Phase 2 of NFPP required local (municipal or provincial) governments to coordinate and subsidize social insurance.
- *Subsidies in social expenditure.* Phase 2 thoroughly reviewed the various roles of state forest enterprises, their financial difficulties, and workers' low income, and focused on raising both the subsidy standard and its scope. Such an arrangement has not only been more in line with the real condition of the enterprises but also provided opportunities for the separation of social functions from the enterprises.
- *Construction of infrastructure in state forest areas*. According to the requirements of NFPP Phase 2, public undertakings in state forest areas such as roads, water, and power supply should be included in all levels of government economic and social development plans, and related industrial plans. Hence, the issue of underdeveloped infrastructures in state forest areas could be gradually resolved.

Central Decision as the reference for reform

During the Tenth Five-Year period, China's overall forestry development strategy was to transit from timber production to ecological conservation, focusing on the Natural Forest Protection Program. Annual timber production in state forest areas of Inner Mongolia and Northeast China was reduced to 11.02 million m^3 (compared with 18.53 million m^3 in 1997), and is expected to be even lower during the Eleventh Five-Year period.

In June 2003, the "CPC Central Committee and State Council Decision on the Development of Forestry" (Central Policy Document No. 9) stated the central government's determination to deepen institutional reform in key state forest areas, and to establish a consolidated forest resource management system to administer assets, personnel, and operation affairs. In October 2003, state forests of the Northeast and Inner Mongolia were included in the Revitalization Plan of the Old Industrial Base of the Northeast. In 2004, the State Council clearly listed reform tasks in forest resource management in its work plan. On January 1, 2010, Document No. 1, "Several Comments on the Intensification of Rural and Urban Development and Further Consolidating the Foundation for Rural and Agricultural Development," called for pilot reform in state forest management system and centralization of management of state forest resources.

Central government's focus on the reform provided the enabling environment necessary for the rehabilitation of the natural forest ecosystems in the Northeast and Inner Mongolia, but also a unique opportunity to reform the forest resource management system and enterprises, and revitalize key state forest areas.

Experiences from local practices

In recent years, China's key state forest areas have put much effort into the advancement of their own reforms, based on their different locations and functions. Six forest bureaus for pilot reforms emerged—Inner Mongolia Forest Group, Jilin Forest Group, Northwest (Xinjiang, Qinghai) State Forest Area, Qinghe Forest Bureau, Shibazhan Forest Bureau, and Yichun State Forest Area, following various reform models. These reform models have each brought about operational practices and experiences to learn from.

Current practices and experiences can be summarized as follows:

- Family-run and market-oriented measures have been widely implemented in state forest areas and are becoming a primary institutional factor of natural forest resource protection and development. The family-based mode of operation has been developed, along with the emergence of social groups, enterprises, and individuals participating in forest management. Market forces have been increasingly improving forest cultivation as well as the performance of special forests. These could guide future institutional reforms.
- Parallel to state-owned enterprise reform, a large number of state-owned processing enterprises in state forest areas have also embarked on restructuring (e.g., ownership, procurement, leasing or mortgaging). Through restructuring, not only did many enterprises make up their deficits but some also generated surpluses, limited resource depletion, improved their efficiency and increased workers' income.
- Industrial adjustments in forestry have had significant impact: the stripped wood processing industry has lost its dominance, and the long-term development of the primary and tertiary industries in China have been boosted, thus driving employment and economic growth in forest areas.

To sum up, three trends have emerged from the local practices and experiences: a new innovation model in forest resource management, the development of new products and markets, and a new model for the processing industry—all of which building the case for deepening the reform in state forest management system.

Ripe for change

First of all, the external environment for reform is continuously improving, in part due to the increasing coverage of the Collective Forest Tenure Reform in China, which can be seen as an example of comprehensive and systematic reform in state forests maintaining both continuity and depth.

Second, on May 12, 2010, the State Council, which deliberated on the "Suggestions on Speeding up the State Forest Farm Reform" decided to reform state forest farms and key state forest areas as a whole. To do so, it assigned leadership to the National Development and Reform Commission (NDRC) and the State Forestry Administration (SFA), and together with relevant departments, requested both institutions to form a reform task force, in order to further investigate reform issues and to recommend further pilot reform, drawing on lessons learned from past experiences.

In addition, the SFA also identified a way to reform key state forest areas, through the reduction of forest resource exploitation; reduction and replacement of the workforce; separation of social functions from enterprises; separation of secondary industries such as wood processing; and, the establishment of a new system of state forest management with clearly defined responsibilities. Under such a system, governmental and administrative functions would be separated from enterprise functions, unlike when forest management bureaus were the main authorities of forest management.

Overall reform strategy in Northeast China and Inner Mongolia state forest region

Equal emphasis is given to the reform in the forest resource management system and the enterprise system. The reform should lead to greater institutional separation of forests resources management and usage.

Direction of forest resource management system reform

Reforming the forest resource management system is fundamental to improve the situation in key state forest regions.

Phase 2 of the NFPP brings forward the following ideas: the Northeast China and Inner Mongolia key state forest region should establish a forest resource management with the "integration of responsibility, powers and rights, and integration of asset and personnel and activity management. Following the principle of separating government and enterprises, there should be separation of forest resource management from state forest enterprises, giving the monitoring power to state forest management institution on behalf of the state, which carries out asset owner responsibility and enjoys corresponding benefits." Creating a long-lasting mechanism requires that the system of forest resource management be independent from the operations of the state forest enterprises.

The existing experiments, however, fail to achieve this. The newly established forest resource bureaus are financially dependent on the enterprises they are supposed to monitor. The separation of management and utilization is therefore unachievable.

There are three proposals for the development of new forest resource management system. One is to establish a set of centralized state forest management agencies; the second is to delegate state forest management responsibility completely to provincial government to establish a localized forest management system; the third is a combination, namely, the coexistence of a centrally directed forest management system and localized system.

Centralization of state forest management

This requires a system of vertical management led by the State Forestry Administration on behalf of the State Council, representing the state ownership over state forest resources in Northeast China and Inner Mongolia. Under the State Forestry Administration, the state forest management bureaus and sub-bureaus would be established in the three provinces as administrative sub-branches of the SFA. Central government would allocate funding for these SFA sub-branches. All revenue from the sub-branches would be submitted to the central treasury after paying taxes. The state forest management agencies would be responsible for forest protection and development of planning. Commercial forests in the regions would be optimized through market mechanisms. Harvests and afforestation in the commercial forests would be auctioned in the market to improve efficiency and reduce cost. The previous SFE would have to compete with all other economic organizations, such as private firms and individuals, to obtain concessions or management rights.

Staff of the local forest resource management agencies will come from SFE or other pertinent agencies, following the pilot projects. To ensure effectiveness and complete independence, funding has to come from central forest authority.

SFE should be allowed to convert to pure economic organizations, along with transformation of the enterprises into shareholding companies, or complete privatization.

Advantages of setting up a centralized forest management system include allowing uninterrupted central policy implementation, and ensuring central government funding to the regions. Some disadvantages would include the financial burden for the central government. In the meantime, there are many administrative barriers in the national system to be overcome in order to get the new system up and running. The overall trend in the past three decades is devolution of economic power from central to local authorities. Local governments have been responsible for helping state enterprises transform in the market. Accordingly, the related systems of personnel, financial, and material management have been adjusted for the trend. The existing arrangement in the key state forest regions is largely in line with this trend: Local governments have taken control of major aspects of the SFE, such as staffing, financial control, and so on. Re-centralizing forest administration over state forests would go against the existing trend, so it would require special institutional and policy arrangements and a great deal of resources.

Delegating forest administration power to provincial government

The governments of provinces, autonomous regions, and municipalities could be entrusted by the central government, just as SFA, to function as state forest asset management agents. In reality, this has been the practice in the state sector. These local governments will be de facto owners if given the power of real decision making over staffing and financial arrangements.

One issue is how to maximize the ecological function of the state-owned forests if local governments were the de facto owners and focused only on local interests. One possibility is through an expanded forest ecological benefit compensation program, providing incentives for local government to manage the public forest in a way that seeks a balance between local interests and national provision of ecological benefits. This requires that the state council delegates the administration of state owned forests to provincial governments, allowing provincial governments to establish state forest administrative agencies within their jurisdictions. Funding will be provided by provincial treasuries. All revenue would be paid into the provincial treasuries, after tax obligations. Central government inspection agencies may remain to oversee the local administrations.

Advantages of this set-up include cooperation of local governments, and minimum administrative cost involved with administrative structure changes.

Reform at the SFE level will be the responsibility of local governments, given their incentive to make the system of SFE suit their local needs. The main risk involved is lack of central government control over the direction of the forest sector evolution. In the future, the central government will have to use incentive polices to motivate local government to follow central policy goals. Central government will have to make adjustments for these structural changes.

Compromising strategy

The problem with above-mentioned approach is the potential opposition from the parties which lose power. One compromise would be to divide forest area into two parts. One small share of the existing state forest with extremely high national and international ecological value, re-centralized as a national forest, would be under the direct administration of the SFA. The other part, the large share of the existing state forest, would then be devolved down to provincial governments and become true local public forest. The establishment of the concentrated national forest would not encounter strong resistance from local government and would not imply a huge increase in the cost of reform. Central government can use the national forest as an experimental forest, providing models for conservation and management, and a scientific research base. Again, establishment of local public forest system would give local government freedom to make innovative decision to reform the SFE.

Strategy for enterprise reform

Separation of administrative function from enterprise

Phase 2 of the NFPP proposes that the social management and public service provisions of the SFE will be transferred to local government, in order to establish a new social management system led primarily by government, and to lay a solid social foundation for a long-lasting mechanism for natural forest protection. In areas where government and enterprises are integrated, a management commission should be formed and transformed into local-level government by end of the reform process. Where SFE have integral governmental functions, these should be transferred to local government, together with other social services such as school and hospitals.

Phase 2 of the NFPP in fact pointed out two potential arrangements. One is to maintain the existing form of the SFE, transferring social services to the local governments, and transforming enterprises into modern corporations. The other option is to remove the business operations from the SFE. Through reform and market-led transfers, the productive assets of SFE are to be bought out by multiple economic entities in order to form new and independent businesses for better management efficiency. In the meantime, the remaining part of the SFE will become quasi-government or true government entities. These newly formed entities will continue to take on the responsibilities of social assurance, and protection and monitoring of forest resources.

The first proposal in many ways has been practiced in the Jilin and Inner Mongolia regions, while the second proposal has its foundation in Heilongjiang Province. The Heilongjiang provincial government has determined to take on the full cost of reform and will pursue the reform along the line of the second proposal. This will solve a critical puzzle regarding who should pay for the settlement of management agencies above

the business operations in the state forest system. The second proposal pursued in Heilongjiang seems to have strong prospect of sustainability system-wise.

Again in the case of SFEs in Heilongjiang, government functions have been embedded in enterprise operation throughout its history. Upon the separation of business operations, the SFE will no longer operate for profit. Rather, they should expect revenue from government budget allocation, tax revenue, and revenue from the land to support service provision and forest protection. The transformation of SFE toward quasi- or true government seems to be a low-cost way toward enterprise reform.

Development of modern corporation system

There is still the important task of developing viable business models in the state forest regions. Phase 2 of the NFPP requires that based on central government decision, enterprises should become independent management entities, and participate in market competition. SFE should follow the principles of cooperation and specialization, embarking on business restructuring and worker re-employment. SFE should speed up separation of the main functions from the secondary, and strive for a new and dynamic system. Reforming the shareholding system and mechanism transformation is called for. This can be accomplished through several methods, including restitution, asset selling, merging, and shareholding cooperation. Firms with low technological standards and low-quality products will go bankrupt in due time.

Main Conclusions

At present, the reform has touched only some of the long-standing problems in forest management institutions and mechanisms. Progress has been slow in part because many key issues need support from both the central and local governments.

Lack of support and involvement from the central government

Current state forest reforms have been mostly spontaneous attempts undertaken by state forest enterprises or their subordinates, agreed to by the central government, but lacking macro-level guidance. Since China's economic reform in the 1980s, although there has existed strong desire for reform in state forest areas, many critical issues such as overlapping functions of government and enterprises have not been fundamentally resolved. Even today, when the current reform is considered as a breakthrough, the relationship between government and enterprises, society and resources, has not been straightened, and the goals of reform have not been clearly defined across regions.

The central government's insufficient role during state forest reforms is shown in the following: first, prior to spontaneous reforms emerging in state forest areas, the central government should have set the overall objective based on categorization of forest uses and specific reform milestones; second, the central government should have shared some of the reform cost in tackling many problems left from the absence of governmental functions in state forest areas, and should have provided as much support as possible for the establishment and improvement of local governments. So far there has been no specific action in either area by the central government. This is a substantial cause of the slow progress with the state forest reform.

Support from the local government not enough

In the past, the highly centralized management system combining party, government, and enterprises was designed for the planned economy, had its rationality for that era, and made notable contributions in developing state forest areas. However, the overall objective of forestry has shifted. Forest enterprises need to return as competitors in the market. Hence, enterprises with legacy social responsibilities should transfer them to local governments. The local government's support is indispensable in establishing a viable forest management system in state forest areas, so the local governments should fully play their leading roles.

With the complexity of China's state forest management system, some areas did not have their own local government, and most of the forest enterprises did not have full administrative function. In the case of financial difficulties, the enterprise "governments" could not fully support reform. Therefore, the absence of local government support has led to very slow reform progress and the difficulty in promoting forest resource management system.

Ambiguity of central and local duties and responsibilities

The reform cost should be shared reasonably in order to place surplus workers and to strip social responsibilities from enterprises. The low efficiency and poor performance of some enterprises with heavy social responsibilities and personnel burdens meant they could not pay adequate compensation for their redundant workers. Old infrastructure also made it difficult to separate out secondary industries. In addition, significant medical expenses for retired workers have increased the load on these enterprises even more.

Since the implementation of the NFPP, central investment has been mainly used to solve staffing problems, bearing some cost of the reform. However, the ongoing reform intended to fully separate social secondary industrial responsibilities from enterprises, leading to the situation that local governments can hardly bear the reform cost. Only central financial support can help bear the cost of state forest reform. Without this support, the reform process will be delayed and threaten social stability in state forest areas.

Lack of progress in separating forest resource management from enterprises

Reforming the forest resource management system has been less effective than many sorts of reforms so far. One main reason is that, because institutional reform is likely to touch the core interests of various economic groups, forest enterprises (bureaus) have no motivation to undertake such reform and lose their forest management functions. Because forest resources were regarded as the basis for survival, forest enterprises (bureaus) will experience a most difficult process in moving from freely expropriating forest resources to resource management functions. Hence, all levels of resistance may occur. In state forest areas, a major reform goal is to create a vertical management system, and the general trend is complete separation of forest management functions from enterprises.

Policy recommendations on reforming state forest areas in Inner Mongolia and Northeast China

In order to continue and deepen current state forest reforms, a number of policy steps are needed as described below:

Top-to-bottom reform should be comprehensively undertaken by the central government

The past three decades of China's economic reform has demonstrated the importance of government-led and -undertaken reforms, coupled with experimentation and new reform models at the grass-roots level.

Reforming the state forest areas will not only involve related government departments and their administrative functions, but also affect the management and operation of forest resource enterprises. One small change will affect the whole area. Therefore, it is critical that the central government provide an overall reform guideline and implementation plan in order to undertake reform comprehensively. In this way a smooth transition could be made, accompanied with all necessary interrelated reform measures and ensuring the sustainability of forest resources and economic and social development in state forest areas.

Reform should fully respect grassroots initiatives

In recent years, a variety of reform types, such as the Inner Mongolia Forestry Group, Jilin Forestry Group, Northwest (Xinjiang, Qinghai) State Forest Area, Qinghe Forestry Bureau, and Shibazhan Forestry Bureau, and Yichun State Forest Area, have primarily emerged through experimentation and the maximization of their own interests. As local difficulties were solved, other forest areas gained fresh experiences. Therefore, the macro-level design of the strategic plan for state forest reform should take into account grassroots efforts, and ensure social stability as it deepens the reform in all directions.

State forest reform should be incremental

Both China's overall economic reform and its agricultural reform have shown the effectiveness of progressive reforms. On the contrary, when reform is too radical as has been the case, arguably with the forestry distribution system reform since 1985, the risk is that reform will result in stagnation and even retrogression.

Past reforms have resolved the most urgent problems at a particular stage, but it is unrealistic to expect them to solve all problems. Reform policies of forest resource management and enterprise systems need to be flexible and efficacious; institutional changes and personnel reassignments need to be done gradually, to reduce their impact.

Local governments at all levels should actively participate in state forest management reform

To implement state forest reform smoothly: (1) local governments should play their full role, taking on government functions and leading regional economic and social development; (2) construction of infrastructure should be strengthened and social services should be improved, with all populations in state forest areas integrated into the social security system; and (3) a sound government finance system should be established to undertake the government and social administrative functions, in order to facilitate the separation of secondary industries.

Given the complexity of overlapping government and enterprise functions, state forest enterprises may find that local governments are unable to take on new social responsibilities. For enterprises with no existing local government, a local government should be built with the help of the regional government, to take over the enterprises' government and social functions gradually. For enterprises that are located across more than one administrative area, if each has its own autonomous government, personnel and secondary industries should be transferred to territorial governments to take care of the employment, social security, business, and other issues.

In short, provincial and lower levels of government should be vigorously involved in facilitating the reform, aiming at the separation of government functions from enterprises, the establishment of a new system of state forest resource management, and the final goal of building a harmonious social system in forest areas.

Reform costs should be reasonably shared between the central and local governments

The reform tasks confronting state forest areas include the establishment of local governments when missing and the improving their functions, the burdens of redundant workers and debts on enterprises, infrastructure construction and development, and long-term management costs. The reform costs should be mainly shared by the central and local governments, while some of the integration and restructuring costs of enterprises should be borne by the enterprises themselves after reorganization.

The central government's commitment in bearing the transition costs during reform is primarily due to the long-term contributions to national economic growth made by the employees in state forest areas. In addition, central funding is responsible for the support and compensation for state forest areas because few industrial or agricultural policies benefited this sector for a long period. Meanwhile, local governments' share of the reform costs is to ensure a stable society, as local governments are taking the responsibility of social stability and the reform is the key to maintaining such stability.

Currently, in NFPP areas, basically all the debts of logging and processing enterprises are lifted from financial institutions, but the nonfinancial-sector debts (including arrears of wages) should be paid by forest enterprises, or in terms of employee stock shares during restructuring. Costs of establishing local governments can be borne by the upper levels of governments at first, and then paid by central funding partly or totally. More attention is to be given to infrastructure building in state forest areas in order to narrow the regional gaps with the surrounding, more developed areas. Infrastructures not included in the national plan need to be taken care of by local finance and investment, in order to improve the conditions for social and economic development.