

PROMOTING SUSTAINABLE FORESTRY

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Summary

Forest ecosystem provides a wide range of environment service function and plays a integral part in the life supporting-system. China is a country with mega-biodiversity in forest ecosystem but both the forest area and forest cover are less than average level in the world. China has attached great importance for the development of forest resources and has realized the dual increase of forest area and stock volume in the past decades. However, with the increasing demands of forest products, excessive exploitation without appropriate regeneration measures places heavy pressure on sustainable forestry development. Rational management and effective use of existing forest resources are the double key aspects of promoting sustainable forestry. Setting up nature reserves is one of the most effective approaches to maintain and strengthen multi-function of forests. Afforestation in combination with watershed management provides a solution for restoring ecological function of forest and shaking off poverty in mountainous regions. Undergoing Natural forest conservation program is a policy for maintaining ecological role of forest ecosystem. Rapid growing and productive artificial forests are the important resources to meet the need of increasing demand of forest products. The strategies for sustainable forestry development are to improve the policy system and legal system, improve capacity and set up technological safeguard systems, and establish forestry economic system in conformity with requirements of market economy. In addition, scientific research and international forestry cooperation should be strengthened.

1. Introduction

1.1. Function of forest

Forests play an increasingly important role in China's social and economic development. Besides supplying commercial timber and fuelwood, forests yield large quantities of non-wood products such as forage, animal and plant food, furs and skins, essential oils, gums, waxes, latex and resins, etc. In addition to the production of goods, the forest ecosystem provides a wide range of environmental service functions through purification of air and water, mitigation of drought and floods, generation and preservation of soils and renewal of their fertility, cycling and movement of nutrients, control of the vast majority of pests, protection from the sun's harmful ultraviolet rays, partial stabilization of climate, moderation of weather extremes and their impact and provision of aesthetic beauty and intellectual stimulation that lift the human spirit. As an integral part of the Earth's life-supporting systems, forests provide suitable habitats for conserving biodiversity. More than 90% of plants and animals are found in forested areas.

1.2. Current status of forest resources in China

China has more than 8000 species of woody plants, of which more than 2000 species are trees. There are 26 genera and 200 species of *Pinaceae* and *Taxodiaceae*. In addition, China has more than 260 genera and 2000 species of broad-leaf trees. Most of these trees make high quality timber of special economic value. However, China has very limited forest resources, mainly distributed in the north-eastern and south-western region. At present forests cover an area of 130 million hectares and amounting to 9000 million cubic meters of timber. China's forest area is only 3 to 4% of the total forest area of the world. The national forest cover is less than 14%. The available per capita forest area is only 0.11 hectares and the total stock volume is 860 million cubic meters, which is 11.7% and 12.6% of the world average, respectively.

The main problems in forestry are shortage of forest area, failure to exploit over-mature forest in more remote areas, and excessive harvesting in accessible areas without promoting regeneration practices. Residues from cutting and processing have not been fully utilized.

China attaches great importance to the development of forest resources. The central government has put forward a number of general strategic objectives and counter-measures for strengthening breeding, protecting and managing forest resources, enlarging forest area, and improving forest quality. Since 1995 there has been very extensive planting of large-scale shelter forests, implementation of ecological system projects, voluntary afforestation activities and national green programs. The Chinese Government has promulgated a series of afforestation technology regulations and set up scientific and technological systems, information networks for scientific research, and extended technological supervision. Advanced scientific and technological achievements and practical technology have been promoted to improve the quality of forest planting and breeding.

1.3. Forestry in China and its diagnosis

Only a small area of forests and a poor heritage of forestry survived until the foundation of the People's Republic of China. Owing to rapid population growth, coupled with the development of agriculture, industry and construction, the exploitation of forest resources in China has been accelerating, and this in turn has led to a series of hazards and disasters.

The Chinese Government has always attached great importance to development of forestry, regarding tree planting, afforestation, land greening and improvement of the environment as a major priority. The Government adopted a series of major political, economic and legislative measures to forcefully promote forestry development. While the total volume of forest resources globally is currently showing a decreasing trend, China has managed to increase both the forest area and the stock volume. According to the result of a comparison between the fourth national forest resources inventory (1989-1993) and the third national forest resources inventory (1984-1988), the forest area increased by 8.03 million hectares, with an annual increase of about 2.04 million hectares. The net increase rate of forest cover was 0.94%, with an annual increase rate of about 0.2%, and the annual average increment of forest stock volume was 70.16 million cubic meters. The forest area of China currently stands at 133.7 million hectares, the forest cover reaches 13.92%, and the forest stock volume is 10.137 billion cubic meters.

China has extensively motivated the public to participate in forestry development, keeping on with the campaign of obligatory tree planting over the whole country, greatly promoting the overall development of forestry. While going on improving large-scale shelterbelt forestry ecological programs have basically covered all of China's provinces and districts (excluding Taiwan). Not counting the Plain Greening Program, the total ecological program, including the planned area for afforestation, covers 121.96 million hectares, taking up 12.7% of the territory. Furthermore, great efforts have been made to actively rescue endangered species, and vigorously strengthen the development of nature reserves.

The Chinese Government lays great emphasis on the issue of sustainable forestry development. China has adopted many forceful measures and taken the Forestry Action Plan for China's Agenda 21 as a guide to incorporate sustainable forestry development strategies into the Long Term Plan by the Year 2010. The priority projects were enacted for implementing sustainable forestry development. Training courses and symposia on the incorporation of the Forestry Action Plan for China's Agenda 21 into forestry economic development planning at different levels, were held successively in 1995 and 1996, to guide local levels in the drawing up of their medium and long term forestry economic development plans. The Chinese Government has set up organizations to carry out comprehensive mountain development focusing on forestry, and trying eliminate poverty. Overall planning and integrated management of mountain, water, farmland, forests and roads have been carried out to promote the multi-faceted development of mountain economies. The Ministry of Forestry has selected four typical regions of different types in China to carry out the development of "Experimental and Demonstration Sites for Sustainable Forestry Development" and provide experiences

and methodologies for the sustainable development of China's forestry.

2. Rational management of existing forest resources

2.1. Development of forest survey and monitoring system

The formulation of a national forest survey and monitoring system is fundamental to forest management and sustainable utilization. At present, a state forest survey and monitoring system has been completed, but systems at the prefecture or bureau level are still in the experimental phase. On the whole, China's forest survey and monitoring system, especially at the local level, needs improvement, despite some rudimentary achievements.

China will create a program to develop a forest survey management system that incorporates relevant technical standards. Four state level forest survey centers will be established in the North-east, the middle South, the North and the North-west. Provincial and prefecture forest survey bodies will also be set up. And then a national forest information database and geographical information system will be created. Policies and regulations will be implemented to promote experimentation on the spread of management models for monitoring forest ownership and usage. China will set up a national forest monitoring system by the end of this century, which includes local networks, a data monitoring system and geographical information system. An assets management system for forests will be established as soon as possible to implement the commercial usage of forest resources, and complete a forest monitoring and management system that fits the market economy.

2.2. Management of existing forests

In China, existing forests cover an area of 130 million hectares and amounting to 9,000 million cubic meter in timber. The current national forest cover is less than 14%. Illegal felling and destructive behaviors are frequently observed. Quite a lot of these forest resources are being destroyed to different degrees. There are many problems in the supervision and management of forest resources, such as clear felling of forest, low timber prices, and the relationship between forest ownership and user rights. The market economy requires a business management system of forest resources. In the near future, China will adopt effective measures to maintain the ecological value of forests and appraise resource benefits. Advanced technologies and professional skills will be employed to design and carry out campaigns to maintain, manage and utilize forest resources.

The measurements of forest resources management will place emphasis on the following aspects:

a) Promoting management activities to prevent forest destruction and further deterioration

China will plan for forest growth and utilization, enhance the forest management bodies at all levels, and work to increase the public awareness of the significance of forest

resource management. China will motivate citizens to participate in voluntary tree planting and encourage contracting wasteland for afforestation. Illegal felling behavior that destroys forest resources will be strictly forbidden.

b) Strengthening program of natural forests conservation

Now natural forests cover an area of 873 million hm², accounting for 80% of total area of stands, and 92% of total stock volume. The natural forest resources play a multiple role in maintaining ecological equilibrium. The main objectives of natural forest resources conservation are to conserve biodiversity and promote socio-economic sustainable development. Through adjusting development strategies and forest resource management, it is expected to reconstruct and make full use of ecological service function of natural forest resources and to improve ecological environment, which sustains our survival. By the end of 2010, the natural forest resources are expected to be recovered. The management direction will realize the transformation from relying on logging natural forest to depending mainly on artificial forests for timber production. The conflict among population, economy, resources and environment will be moderated and resolved. A self-contained forestry ecological system and rational forestry industry system will be constructed and it will play a great role in socio-economic sustainable development.

The focus of natural resource conservation is protecting forest resources in forbidden felling regions of great ecological value, including the upper reaches of Yangtze River and Yellow River, Inner Mongolia and North-east China. These regions are categorized as non-felling areas, ecological recovery areas and commercial forest areas according to their roles. The forests of non-felling areas need to be protected by prohibiting felling; ecological recovery areas should be protected through reduced felling, and commercial areas need to strengthen commercial forest cultivation. The natural forest resources conservation engineering should coordinate the relationship between conservation and development. It is of great importance to ensure sustainable use of existing forest resources while carrying out natural forest conservation programs.

c) Fostering the protection of forest resources

To accomplish this goal China will attach importance to the construction of bases for fast growing high-yield commercial forests, and reinforce the shelter forest network in the North-east, North-west and North of China, the shelter belts along the upper and middle Yangtze River Basin, the coastal shelter forest network and the afforestation project in Taihang Mountain. Furthermore, China will work to develop trees that are fast growing, of high yield, high calorific value, and multi-purpose timber to solve the energy problem in rural and mountain areas with severe shortages of firewood. Emphasis will be placed on fostering the development of fuel forests, and encouraging the exploration of alternative energy sources such as biogas, solar energy, and more efficient wood burning kitchen ranges. Efforts will also be made to reinforce the protection of the forest zones, and prevent forest destruction and deterioration caused by pollution, forest fire, plant disease, pests and artificial factors.

d) Constructing conservation and management of forest resources

Progress has been made in the management of forest resources. A nationwide system for conservation and management of forest resources has taken shape; thus the prevention and control of deforestation have been strengthened. A quota harvest system is being implemented throughout the country. The management of forestland tends to be standardized and in accordance with laws concerned. The major goal is to reverse the trends of excessive consumption of timber. Annual consumption of forest resources nationwide is limited to 300 million cubic meters and the consumption of timber forest is less than its yield.

e) Setting up sound market economy system

In order to incorporate supervisory work with forest resources and asset management, it is of great importance to set up a unified system, well suited to the market economy. The government will supervise the implementation of a forest development program to monitor and control felling and regeneration. China will carry out price reform for forest products, gradually abolishing the loss subsidy given to forestry enterprises, and collecting a compensation fee for exploiting forest resources.

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Biographical Sketches

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