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**Analyzing Implementation
of the Natural Forest Protection Plan
in China's Southwestern Forest Management Region**

by

H. G. Carey, Jr.

BA The University of Alabama, Tuscaloosa, AL

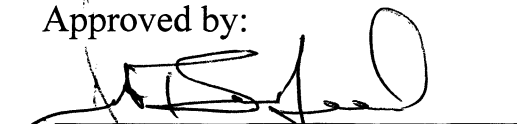
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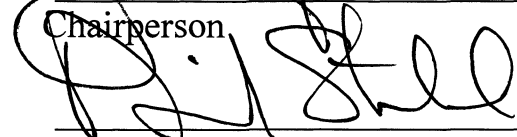
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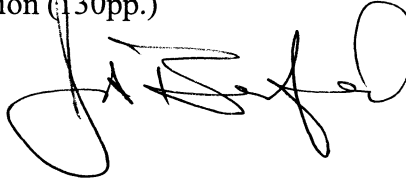
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Analyzing Implementation of the Natural Forest Protection Plan in China's Southwestern Forest Management Region (130pp.)

Advisor: Jim Burchfield



Abstract:

China's Natural Forest Protection Plan of 1998 is a ten-year policy attempting to reduce the severity and frequency of devastating floods in the nation's major watersheds. The purpose of this paper is to analyze NFPP implementation and to determine its effectiveness in producing the desired outputs. A modified version of Sabatier and Mazmanian's (1980) framework for analyzing policy implementation is used to conduct the analysis. Several factors contribute to the determination of NFPP implementation as ineffective particularly the inclusion of extraneous socio-economic development goals, a low level of institutional capacity, and restrictions over forest related activities for non-state forest enterprises. Although the State Forest Administration is the intended target-group of the policy and the policy appears initially successful in curtailing industrial logging on State lands, the extension of restrictions to non-state forest enterprises contradicts previously guaranteed usufruct rights and negatively effects NFPP implementation. Several recommendations are made for improving the effectiveness of NFPP implementation including removing the socio-economic development goals, improving SFA capacity at all levels, and stabilizing usufruct rights. Stabilizing the policy atmosphere includes reducing or eliminating State control over non-state forest enterprises, providing compensation to those who are restricted from operating due to the NFPP and supporting the legally established rights of usufruct through judicial regress. This analysis reveals some of the shortcomings of NFPP implementation and the applicability of a modified Sabatier and Mazmanian (1980) framework for analyzing forest policy implementation in China and organizes a broad range of sources considering NFPP implementation, its effectiveness and its extensive impacts.

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This paper may never have been completed without the continued support from my family, colleagues and friends on both sides of the Pacific. The continual guidance and mentoring of the wonderful faculty and staff at The University of Montana has made the graduate experience a fulfilling and rewarding one. The detailed comments from Robin Saha, and his patience in helping me to delve into the world of environmental policy analysis were invaluable. Thanks also goes out to Steve Siebert who always knew how to ask the right questions and pull the most useful insights out of me. And of course, I must acknowledge and thank my Graduate Chair and friend Jim Burchfield who always believed in me and gave me the chance to pursue my goals. I've never met a finer facilitator. And to my friends and colleagues in China, thank you all for being patient with me as I adjusted to an amazing culture. Specifically I must thank my host family in Deyang for welcoming me into their home, my counterpart Yang Zhishan for guiding me through the administrative side of Sichuan University and, of course, my dear friend and tutor, Li Yi. Furthermore, the information within would be incomplete without the help of Li Shengzhi, Zhao Zhilong, Mike Geottig, Kya Fernwood, Yan Jiong, The Environmental Volunteer Association of Sichuan, Green Rivers, and all the others along the way that helped me to understand forestry in China and the many challenges facing the nation's environment. Finally, these acknowledgements would not be complete without expressing my appreciation to my family for pushing me to complete what I had begun, to Shine who illuminates my life and, of course, to da wolves—you guys are da best.

TABLE OF CONTENTS

Title Page.....	i
Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Maps.....	vii
Photos.....	vii
List of Figures.....	viii
List of Tables.....	ix
Chapter 1: Introduction.....	1
Chapter 2: Background.....	9
<i>The Commune Era.....</i>	9
<i>Management of State Forests in the Reform Era.....</i>	11
<i>The Evolution of Collective, Non-state Forest Management Systems in the Reform Era.....</i>	12
<i>Forest Management at the Household Level in China.....</i>	16
<i>China's Southwestern Forest Management Region.....</i>	18
<i>Land Tenure and the Management of China's Forests.....</i>	20
Chapter 3: Literature Review.....	23

<i>Origin of the NFPP</i>	25
<i>Goals and Purpose</i>	26
<i>Scale and Context</i>	28
<i>Management Organization and Staffing</i>	29
<i>Budgeting and Finance</i>	31
<i>Target-groups and Interested Stakeholders</i>	31
<i>Policy Design Summary</i>	33
Chapter 4: Methods.....	35
Chapter 5: Findings.....	44
Analysis of the Tractability Variables.....	45
<i>Availability of a Valid Technical Theory</i>	45
<i>Target-group Size, Diversity and Extent of Change</i>	47
<i>Socio-political and Historical Context</i>	48
<i>Summary of Tractability Impacts on Dependent Variables</i> ...52	
Analysis of Statutory Variables.....	56
<i>Clarity and Consistency of Objectives</i>	57
<i>Hierarchical Integration and Decision-rules</i>	59
<i>Financial Resources</i>	62
<i>Formal Access by Outsiders</i>	64
<i>Summary of Statutory Impacts on Dependent Variables</i> ... 67	

Analysis of Non-statutory Variables.....	72
<i>Socio-economic Conditions, Land Tenure and Attitudes of</i>	
<i>Constituency Groups</i>	72
<i>Commitment, Expertise, Leadership Skill and Resources of</i>	
<i>Implementing Officials and Support from Sovereigns</i>	77
<i>Media Attention to the Problem and Public Support</i>	81
<i>Summary of Non-statutory Variable Impacts on Dependent</i>	
<i>Variables</i>	83
Summarizing the Impacts of Independent Variables on Policy	
Outcomes.....	90
Chapter 6: Discussion and Recommendation.....	96
Asserting the Recommendations.....	102
Chapter 7: Summary and Conclusions.....	108
Appendices.....	115
Appendix 1: Major Forest Policies of the Reform Era.....	116
Appendix 2: National and Regional Forestry Statistics for China...118	
Bibliography.....	125

LIST OF MAPS

Map 1: Map of China's Forestry Regions.....	xi
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Source: Richardson, S.D. (1990). *Forests and forestry in China*. Island Press, Washington, DC. 352 pp.

PHOTOS

All photos taken by author

Photo 1: Golden Palace, Kunming, Yunnan Province, January, 2003.....	8
Photo 2: Snow Dragon Mountain, Lijiang, Yunnan Province, January, 2003.....	22
Photo 3: Village Center Ruili, Yunnan Province, January, 2003.....	34
Photo 4: Golden Palace, Kunming, Yunnan Province, January, 2003.....	88
Photo 5: Three Pagodas Temple, Dali, Yunnan Province, January, 2003..	95
Photo 6: Lijiang Girls, Lijiang, Yunnan Province, January, 2003.....	107

LIST OF FIGURES

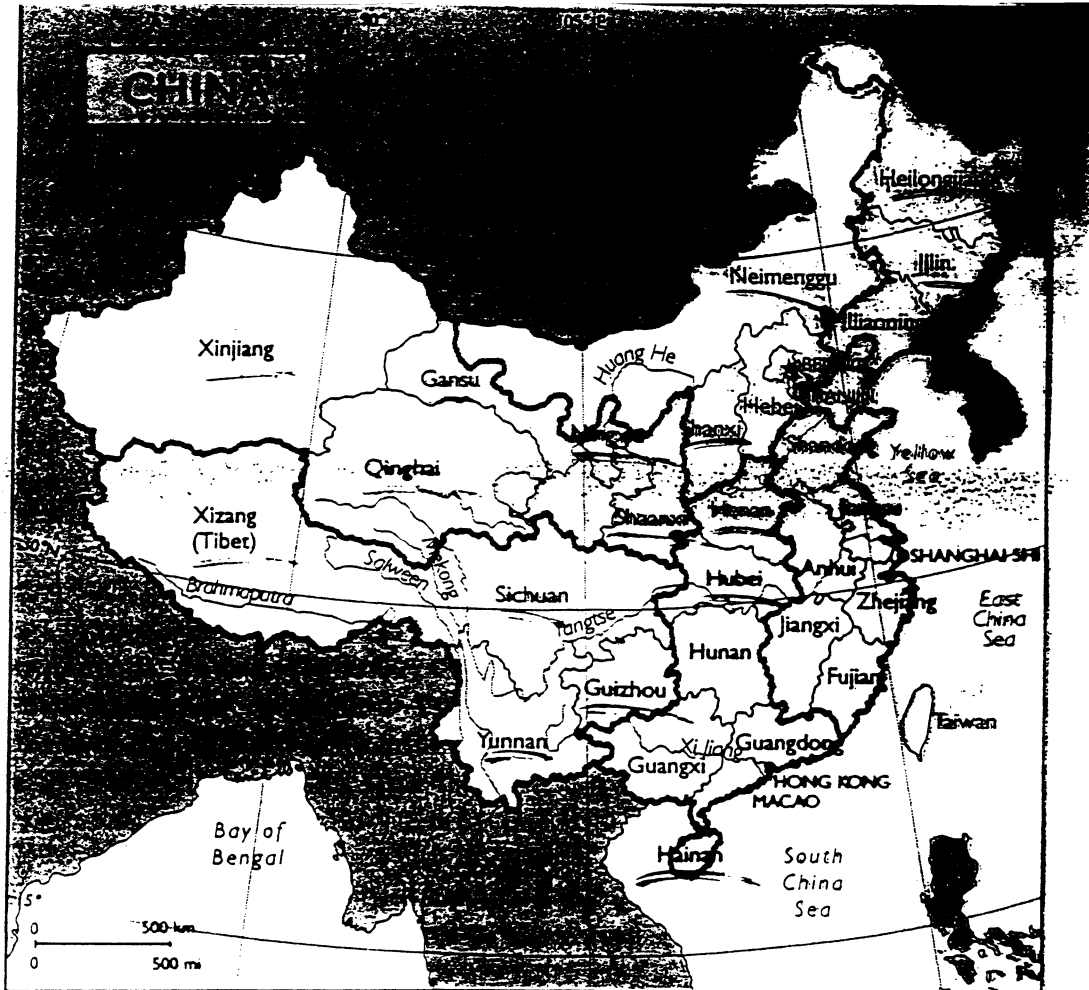
Figure 1: Percentage of Forestland Area by Management Type in China (1998).....	13
Figure 2: Division of Non-state Managed Forestlands (1998)	13
Figure 3: Total Forest Volume by Management Type in China’s Southwest Forest Region (1988-1998).....	20
Figure 4: Total Forest Area by Management Type in China’s Southwest Forest Region (1988-1998).....	20
Figure 5: SFA and NFPP Organizational Structure.....	29
Figure 6: Conceptual Framework of the Implementation Process.....	37
Figure 7: Modified Framework for Analyzing Policy Implementation in China.....	40
Appendix 2-Figure 2: Forest distribution in China in 1997.....	123
Appendix 2-Figure 3: Total log production from 1985 to 1998 in China and provinces or autonomies for the Natural Forest Protection Project	123

LIST OF TABLES

Table 1: Trends in Tenure Management of Non-state Forests in China since 1950.....	10
Table 2: Synonyms of Forest Management Systems in China Over Time.....	14
Table 3: Post-devolution Tenure and Management Arrangements for State and Non-state Forests.....	15
Table 4.1: Assessing the Impacts of Tractability Variables on Dependent Variables.....	55-56
Table 4.2: Assessing the Impacts of Statutory Variables on Dependent Variables.....	70-71
Table 4.3: Assessing the Impacts of Non-statutory Variables on Dependent Variables.....	89-90
Appendix 1-Table A: Major Forest Policies of the Reform Era.....	116
Appendix 2-Table 6-1: Forest Cover and Standing Forest Volume, Late 1970's to Early 1990's.....	119
Appendix 2-Table 6-3: Shelterbelts: Area and Volume for Selected Regions, Late 1970's to Early 1990's.....	120

Appendix 2-Table 6-4: Area in “Economic” Forests,	
Late 1970’s to Early 1990’s.....	121
Appendix 2-Table 6-6: Timber Resources and Production,	
Late 1970’s to Early 1990’s.....	122
Appendix 2-Table 3: Forest Resources Expansion 1973-1998.....	123
Appendix 2-Table 4: China’s Forest Products	
Imports.....	124

CHINA'S FOREST MANAGEMENT REGIONS



Note: China, showing six forest regions and the provinces and autonomous regions within each. The North region includes Hebei, Neimenggu, Shanxi, and Tianjin. The Northeast region includes Heilongjiang, Jilin, and Liaoning. The Northwest region includes Gansu, Ningxia, Qinghai, Shaanxi, and Xinjiang. The South Central region includes Guangdong, Guangxi, Hainan, Henan, Hubei, and Hunan. The Southeast region includes Anhui, Fujian, Jiangsu, Jiangxi, Shandong, and Zhejiang. The Southwest region includes Guizhou, Sichuan, Xizang, and Yunnan.

Chapter 1

INTRODUCTION

China's forest industry was forever changed by the establishment of the Natural Forest Protection Plan (NFPP) of 1998. The sweeping policy seeks to reduce the frequency, severity and impact of floods in the nation's major watersheds through the achievement of several ambitious goals. The "logging ban," as the NFPP is often referred to as, not only attempts to eliminate industrial timber harvesting on all State lands in 18 out of 26 provinces and autonomous regions, but it further endeavors to permanently reestablish and increase vegetative cover throughout the target areas in an effort to mitigate disastrous flooding. Several other goals are integrated into the policy including diversifying the rural economy, restructuring the State agency responsible for managing the nation's forestlands, and meeting domestic wood demands, among other goals. Such dramatic transformations are becoming increasingly more commonplace in contemporary China, and often with mixed results.

China is changing rapidly. The very core of its political system has been irrevocably altered from the former autocratic State model under Mao Zedong to what is known as the reformist paradigm initiated by Deng Xiaoping in the late 1970's (Richardson, 1990). Reform era policies have generally assumed two forms over the last 25 years. Reducing the level and pervasiveness of government control over financial

market systems is the first aspect of China's reform era policies. The decentralization of decision-making authority from the central government level to progressively lower levels of existing political hierarchies is the second fundamental reform occurring in China's political system (Richardson, 1990). This devolution of decision-making power is not only characterized by the privatization of formally State-owned enterprises (SOEs), but is also extended to rights of usufruct and tenure over land for non-state commercial enterprises (Richardson, 1990).¹

China's forestry sector, together with the many other industrial sectors in China, has been deeply impacted by reform era policies—especially those pertaining to control over land. Numerous policy changes directed at both State and non-state enterprises engaged in the management of forest resources in China have occurred over the last two decades (Hyde et al., 2003).² However, due to the inherent nature of communism, the transfer of control over land away from the State has always been a contentious issue in China. Consequently, internal struggles among conservative and reformist factions of the State bureaucracy and inconsistencies in policy reforms have plagued China's efforts to decentralize control over forest resources (Richardson, 1990; Yamane, 2001). This ideological battle has resulted in what may be termed as a “two steps forward, one step back” policy progression. Such an atmosphere has resulted in uncertainty among those

¹ Throughout this text the term ‘central’ may be considered synonymous with the American usage of ‘federal’ while the term ‘State’ simply refers to government jurisdiction or agencies as opposed to non-governmental establishments. Additionally, State agencies in China are organized in a descending hierarchy with the central (federal) government at the top followed by provincial (synonymous with American states), prefectural (similar to American congressional districts), county and township/local level agency administrations. See Figure 5, page 28.

²See Appendix 1, Table A “Major Forest Policies of the Reform Era.”

who are engaged in forestry businesses and activities. Liu (2001) notes that a definite relationship exists between tenure security, or certainty, and the sustainable management of forest resources and forest cover. He further notes that the underlying cause of forest degradation in the nation may be directly attributed to the lack of confidence in property rights caused by frequent policy changes in China's forestry sector over the last half century.

In 1998 the Ministry of Forestry was downgraded from an economic ministry functioning below the planning and economic commissions to the State Forest Administration.

The Ministry of Forestry was broken into three components: the part that manages nature reserves and national parks was moved to the State environmental protection agency; the part that manages most major afforestation, reforestation and new shelterbelt activities was moved directly under the State Council [and renamed the State Forest Administration]; and the remainder of the ministry and its logging and manufacturing enterprises are being commercialized (Rozelle et al., 2003, p132n1).

The restructuring attempts to reform the utilitarian minded, extraction-based Ministry of Forestry (MOF) into a State Forest Administration (SFA) charged with stewardship responsibilities of forest protection and reforestation. The Natural Forest Protection Plan of 1998 is one of the most significant reforms to have occurred in China's forestry sector. The policy further extends the fundamental restructuring of the SFA, which was initiated earlier in the same year (1998), and the restructuring of China's forest industry, both State and non-state, primarily through a ban on industrial timber harvesting and logging in all but a few provinces.

The central government blamed dramatic reductions in forest cover within the nation's major watersheds for a series of devastating floods occurring in the summer of 1998. Over 2,500 people perished and an estimated \$20 billion USD in damages were inflicted in the southwestern provinces of Sichuan and Yunnan (Zhang et al., 2000).³ These floods opened a policy "window of opportunity" securing the needed political support to take necessary action. "The [NFPP] policy was launched in 1998 in order to accelerate the improvement of the ecological environment in degraded natural forests and, at the same time, to realize biodiversity conservation and sustainable development for social and economic welfare" (Lu, 2000 in Yamane, 2001, p5).

The purpose of this paper is to analyze implementation of the Natural Forest Protection Plan in China's southwestern forest management region and to assess the effectiveness of the policy at achieving the desired outcomes thus far. This is accomplished by utilizing a modified version of Sabatier and Mazmanian's (1980) conceptual framework for analyzing the implementation process, which was chosen due to its concise, comprehensive organization and flexibility making it applicable in a variety of (non-western) contexts. The framework is modified in order to accommodate China's unique cultural setting and the complicated forest management context existing in the nation's southwestern forest management region. Although the Sabatier and Mazmanian (1980) framework is intended to be utilized as an analytic tool that reviews a given policy's implementation from start to finish, the modified Sabatier and Mazmanian (1980) framework is applied in order to determine effectiveness of implementation halfway through the NFPP's lifespan.

³ See page viii for a general map of China.

Land tenure (security) plays a pivotal role in the management of forest resources given the context (Richardson, 1990; Yamane, 2001; Liu, 2001). A strong understanding of this factor must therefore be developed together with a historical description of how existing forest management systems in southeast China evolved. This understanding is developed through an analysis of the Natural Forest Protection Plan and the nature of its implementation that considers the following questions:

- What is the Natural Forest Protection Plan?
- What are its purpose and goals?
- How and why did it evolve?
- How is it being implemented?
- What are the policy outcomes?
- How successful has implementation of the NFPP been in attaining the desired outcomes and what factors have limited the effectiveness of the policy?

Some key elements of the policy implementation process examined in order to address the above questions include statutory and non-statutory variables as well as the tractability of the problem. Consideration of these elements includes examining the rationale for the policy, the feasibility to affect change within the given context, the specificity or clarity of policy statutes, practical (human, material and financial) support for the policy, as well as existing socio-economic and environmental conditions within the study area. In addition, the dependent variables of compliance, actual and perceived impacts, and achievement in meeting the established goals, which are inextricably linked to the existent policy outcomes, are examined in order to better understand those outcomes and the effectiveness of policy implementation.

It is important to understand the inter-relationship between independent variables and policy outcomes of the NFPP for several reasons. Hundreds of millions of people are potentially impacted by the NFPP and the nature of its implementation with millions more directly affected (Chinatoday, 2005). Many of these stakeholders include at least 18 of China's ethnic minorities who are struggling to maintain their traditional ways of life. Socio-economic conditions in southwest China, especially in the mountain-forest communities where the NFPP has the most noticeable impact, are often basic, to say the least. Quality of education in the region is behind the rest of the nation, employment opportunities are extremely limited and the per capita income is among the lowest in the world (Jintao et al., 2002). For these reasons, and due to the fact that the goal of the NFPP is to alter a primary rural industry thereby necessarily affecting existing socio-economic conditions, it is essential to understand the policy's outcomes and the nature of implementation.

Also threatened by the way in which the NFPP is implemented are the last remains of the world's most biologically diverse temperate forests. With more than 50 conifer species, 80 types of forest formations and as many as 250 endangered floral and faunal species—most of which are endemic, the mountain forests of southwestern China are a priceless storehouse of biological diversity (IUCN, 2005). Inasmuch as the NFPP is a forest policy being applied in this unique and sensitive ecosystem, it is important to understand what outcomes the policy is having on the natural environment.

Policy outcomes depend, in large part, on the process by which a policy is implemented within a given context. For this reason, and due to the conditions cited above, the paper is a retrospective analysis using Sabatier and Mazmanian's (1980)

framework for analyzing the implementation of China's 1998 Natural Forest Protection Plan. It is hoped that the analysis will provide a better understanding of the policy's shortcomings so that a more effective policy may be developed once the NFPP is phased out or abandoned. Furthermore, this activity may prove useful for a number of different audiences, not the least of whom may include the fledgling State Forest Administration of China as well as several elements of the State government at central, provincial and other lower level decision-makers. The information contained in this paper and the findings of the analysis, inasmuch as it represents a synthesis of a diversity of sources concerned with NFPP implementation and its impacts, may also prove insightful and useful to non-state managers of forests in China as well as several NGO's operating in the region and who are concerned with the socio-economic and environmental situation there.

A brief background section and literature review provides the necessary information for framing the context of the inquiry. Following the literature review in chapter three, the methods to be utilized for conducting the analysis are explicated in chapter four. Once this is accomplished, an assessment of how and why the policy evolved and an identification of its goals and purposes are provided. Subsequently, in chapter five the conceptual framework for analyzing the implementation process, as defined by Sabatier and Mazmanian (1980), is applied in an effort to critically examine the NFPP's implementation. One would like to think that there is some significant reason for implementing a policy as pervasive as the NFPP—and indeed there is. However, since no long-term forest management plan currently exists, reflection on alternative approaches to forest management in the region after the NFPP's implementation merits consideration. The contribution of this work lies in the providing an analysis of

implementation that can inform future forest policy changes that can more effectively achieve realistic policy goals.

BACKGROUND



Chapter 2

BACKGROUND

China—the name alone conjures as many different thoughts and images as there are people in the vast and ancient nation. Throughout its long history, China has often struggled to strike a balance between development and the use of its natural resources (Harkness, 1998; Li, 2000). The emphasis of this chapter rests on how social, political and economic conditions have shaped the forests existing in southwestern China today. The focus is on the interaction between government policies and land tenure—the two most dominant forces altering the remaining forests and molding the State and non-state entities managing them. Once an understanding of these key factors is established, a meaningful analysis of NFPP implementation may be conducted.

The Commune Era:

The Chinese communist revolution was fought not only because of the general state of unrest pervasive during the 1930's and 1940's, but it was also in reaction to the overbearing landlord system that capitalized large tracts of land benefiting the elite few (Elvin, 1998). Without any means to subsist or survive, and due to an evolving serfdom system, the common masses felt that there was no other choice but to revolt. Mao Zedong's Peoples Liberation Army defeated the Nationalist Army establishing the People's Republic of China in 1949. All land (private, commercial and non-

secular/religious) was nationalized soon thereafter (Liu, 2003). Communities, households and individuals were reorganized into communes in an effort to maintain agricultural and economic productivity. The communal tenure system remained dominate through the 1970's.

Table 1: Trends in Tenure Management of Non-state Forests in China since 1950.

Time Period	Major Features and Events
1950-1955	<ul style="list-style-type: none"> • Integration of use-rights to land and land ownership. • Private ownership of forests was the single, dominate form of ownership except in border and ethnic areas. • Integration of tree ownership and land ownership. • 1950-1952: Land Reform Campaign distributed equally land, forest, and other means of production to farmer households. • 1953-1955: Agricultural production organized at three levels: household, mutual aid team and elementary cooperative.
1956-1980	<ul style="list-style-type: none"> • Collective ownership was single, dominant form of ownership. • Integration of use rights to land and land ownership. • Informal split in tree ownership and land ownership. • 1956: 96% of rural households incorporated into advanced cooperatives; land, forests and other means of production transferred to advanced cooperatives from individual households. • 1958: forests further transferred from advanced cooperatives to peoples communes. • 1961-1964: adjustment of Chinese economy in response to agriculture failure and famine in 1959-1961; forest ownership and management devolved from commune to production team or production brigade; scattered trees returned to households. • 1966-1979: collectivization and scattered trees owned by households.
1980s-1990s	<ul style="list-style-type: none"> • Collective ownership dominant, but private trees and forests emerge. • Separation of use-rights to land and ownership. • Split of tree ownership and land ownership. • Many forms of forest management: household-based, collective, cooperation among households and between communities and external institutions. • 1981-1986: devolution of forest management; collective non-forest land and scrub forests distributed free of charge to households; collective forests contracted as responsibility hills; considerable deforestation. • 1993-present: lease of use-rights to non-forested land to rural households for terms of 50-100 years.

Source: Liu Dachang (2003, p242)

Management of State Forests in the Reform Era:

Management of State and non-state forests alike has changed dramatically since the introduction of reforms in 1978 (Hyde et al., 2003; Rozelle et al., 2003; Albers et al., 1998; Li, 2000; Liu, 2001). With the onset of reforms, China's first Basic Forest Law (1953) was essentially scrapped and a provisional forest law was established in 1984. The provision emphasized the *indivisibility* of State and collective property maintaining prohibitions against *individuals* managing or controlling collective forests (Ross, 1988). Additional policy reforms were enacted demanding a higher level of regeneration to felling ratio, promoting reforestation, and requiring the diversification of management and resource use while enhancing safety, forest protection and fire prevention standards (Richardson, 1990; Hyde, 2003).⁴ The Ministry of Forestry was unable to successfully carry out the duties with which it was charged, so that by the late 1990's China's State managed forests were in serious trouble (Hyde, 2003; FAO, 2004). Overexploitation of high-graded mature forests resulted in a shift to harvesting immature young forests contributing to extreme imbalances in the age and structural quality of forest stands. It is estimated that 80% of China's forests are immature (Hyde et al., 2003; Richardson, 1990). Ministry of Forestry statistics reported that the amount of land in timber production declined by 1%, while the volume decreased by 10.3% during the same time period (Albers et al., 1998). Also, according to Zhao (1992), annual harvest rates were estimated to reach nearly five times the natural growth rates and, until the 1990s, reforestation after clearcutting was a rare exception. Consequently, forest resources have been exhausted and timber harvesting has been reduced to poor quality specimens.

⁴ See Appendix 1, Table A "Major Forest Policies of the Reform Era."

Presently, China organizes its forest areas into six geographic regions and according to designations of State and non-state, or collective forests—depending on administrative control.⁵ “The State-owned forests include approximately 3,000 independent forest farms and about 135 State forest bureaus. The bureaus control their own forest farms, and most of them control their own wood-processing facilities as well” (Hyde et al. 2003, p8). According to Hyde et al. (2003), the State forest bureaus were initially established as logging operations in primary and well-developed secondary timber producing forests while the independent forest farms most commonly managed commercial plantations. Although bureaucratic lines of authority have changed frequently over the last 60 years, the independent forest farms currently obtain personnel and directives from local and provincial governments with each required to follow State Forest Administration (SFA) guidelines for forest management (Hyde et al., 2003). These SFA bureaus and forest farms represent the intended main target-groups of the NFPP. However, as will be shown later, the actual implementation of the NFPP is impacting a range of stakeholders beyond the intended target-group.⁶

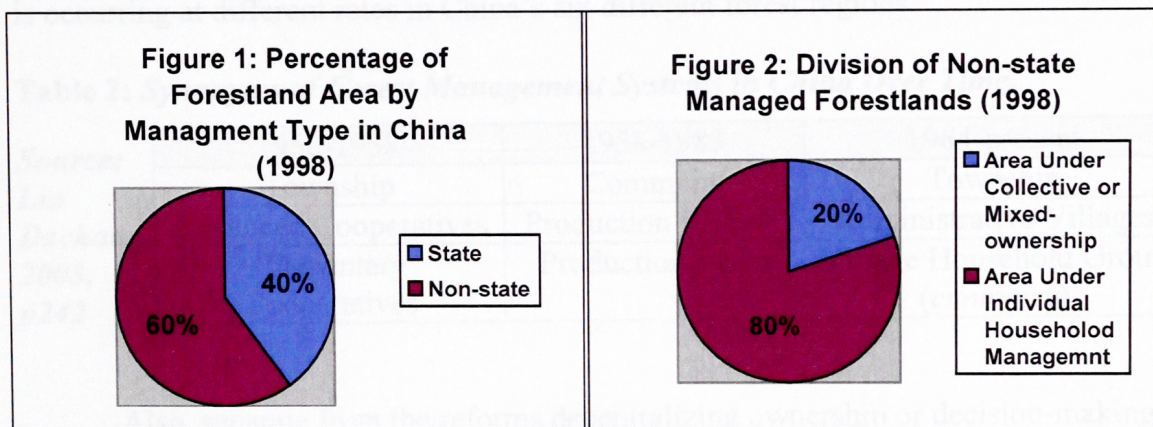
The Evolution of Collective, Non-state Forest Management Systems in the Reform Era:

Collective, or non-state forests, were initially managed by collective production brigades in the commune era (pre 1978) with individual households gradually entering into a long-term (50-100 year) contract responsibility system for rights of usufruct to

⁵ See page ix for a map of China’s forest management regions.

⁶ Throughout this text “target-group” refers to the various individuals and divisions directly affiliated with the SFA (i.e. employees and administrators at the central provincial and local levels). “Non-targeted interested stakeholders” or “stakeholders” refer to those not employed in the SFA, but directly impacted by implementation of the NFPP (i.e. non-state forest enterprises, local governments, the service industry, subsistence farmers, indigenous minorities, etc.).

manage forestlands. “About 60% of China’s total forestland now belongs to the collectives, and individual households manage about 80% of that” (Hyde et al., 2003, p10)⁷ It is the non-state, non-SFA forest enterprises that are largely the stakeholders most impacted by NFPP is being implementation.



Since the 1980s, reforms have devolved decision-making authority from the collective to the household level (Richardson, 1990; Hyde, 2003). This type of decentralization is contrary to the decentralization from the State to the local community, as is the common trend in many other countries seeking optimal levels of decentralization. These policy changes were made based on the belief that a household responsibility system was a more efficient production model (Liu, 2003; Yamane, 2001).

Today, land tenure is vastly different compared to the era of Chairman Mao (1949-1978). According to Liu (2001, p240), *land* ownership (separate from *forest resource*, or *tree* ownership) in contemporary China is either State- or collective-owned. Collective ownership includes the lands of townships, administrative villages, and village household groups (the equivalent to communes, production brigades, and production

⁷ See Figures 1 and 2

teams respectively in the commune era).⁸ State ownership of forests is decreasing proportionately with increases in non-state forest management systems as the primary or well-developed stands administered by the SFA are harvested (SFA, 2000). However, according to State statistics, the conversion of State forests to non-state managed forests is occurring at different rates in China’s six different forest regions.

Table 2: *Synonyms of Forest Management Systems in China Over Time.*

Source: <i>Liu Dachang, 2003, p242</i>	1950-1958	1958-1983	1984-present
	Township	Commune	Township
	Advanced Cooperatives	Production Brigade	Administrative Villages
	Elementary Cooperatives	Production Team	Village Household Group (<i>cunminzu</i>)

Also, separate from the reforms decentralizing ownership or decision-making control over land, the tenure of trees and forest resources is more complicated. Liu (2001, p240) notes four categories of tree and forest tenure in China: State-owned, collective-owned, private-owned and mixed-ownership in the form of shareholding systems. The last three categories are grouped together and collectively referred to as non-state forest management systems with the private-owned and mixed-ownership (part private, part collective) forest management systems as the most recent developments. These two types of management systems are based on policies separating rights of usufruct from land ownership with the understanding that “whoever plants the tree owns it” (Liu, 2001, p240). Table 3 serves to clarify these distinctions according to management type, tenurial arrangement, the type of land affected, the primary decision-markers and current trends in expansion or recession of the management type.

⁸ See Table 2, “Synonyms of Forest Management Systems in China Over Time.”

Table 3. Post-devolution Tenurial and Management Arrangements for State and Non-state Forests. (Source: Hyde et al., 2003, p29)

	Management Type	Tenurial Arrangement	Type of Land Affected	Primary Decision-makers (for production and management)	Trend in Area Covered
State	State Forests	The central government holds exclusive rights of use and access	Primary or well developed secondary timber stands	The State Forest Administration, and provincial, prefectural, or county forest bureaus	Decreasing proportionately with increases in non-state management systems
Non-state	Family Plots (ziliushan)	The collective owns the land, but use rights are distributed to households. Trees planted on the land are the property of the households.	Denuded forest-land and brush	Households (what and where to plant, when and where to harvest and sell non-timber forest products)	Expanding from 1980-1987, steady since
Non-state	Responsibility Hills (zerenshan)	The collective owns the land and trees	Existing forests and lands suitable for forest	Shared between collectives and households	Decreasing from 1984-1990, steady since
Non-state	Modified Collective (including collective forest farms)	Collective ownership	Existing forests and lands suitable for forest	Village leadership, but with greater input and participation from villagers than before reforms	Expanding slightly from 1987-1990, steady since
Non-state	Shareholding System (government dominate)	The collective owns the land. Tree tenure has been unclear, although the name implies household ownership	Existing forests and lands suitable for forest	Board of trustees made up of village leaders and representatives of other shareholders	Steady

Some clarification of the terms used in Table 3 may be needed. Family plots (ziliushan) refers to collective non-forested mountainous land that was allocated to rural households in the early 1980s in an attempt to encourage farmers to plant trees to meet their needs for tree products, especially fuelwood. Responsibility hills (zerenshan), on the other hand, refers to collective forests (and non-forested lands in some cases) that were contracted to households for management in the first half of the 1980s in an effort to improve management of existing forests and to establish new plantations (Liu, 2001, p259n10).

Forest management at the Household Level in China:

But what does all of this really mean? What is life actually like at the household level for those engaged in the management of trees or forest enterprises? As mentioned, trees and forests in China may be managed by individuals, collectives and/or combinations of both with varying proportions of administrative responsibilities. Most revolution era communes had dissolved by 1980 and the collective forests were increasingly characterized by guidelines for production; they established systems of accountability and increased rights of usufruct.

By 1983 there were 175,000 forest farms run by villages managing 16.7 million hectares of hill and forest, of which 10.9 million was in forest. The ownership remained collective, but the individual trees (were) converted into shares and accorded a money value that (was) then allocated among the owners of the usufruct (Richardson, 1990).

Although Beijing maintained restrictions on labor mobility, administration of nonagricultural activities steadily decentralized (Richardson, 1990). Decentralization encouraged diversification and specialization according to local resource availability and comparative advantage. The popularity of the reforms rested in more efficient

productivity fueled by market opportunities (Hyde et al., 2003). Government quotas for agriculture and timber were met and surpluses (a higher quality material) were sold on open markets. "The overall effect of the initial agricultural reforms was positive and impressive. Land productivity increased 225% between 1978 and 1984, and the productivity of agricultural labor increased by 172%" (Hyde et al., 2003).

Greater familial wealth financed many new enterprises, including village forest farms (VFF's), a specialized type of township and village enterprise that entered into contracts with local administrations (Richardson, 1990). The VFF's arrangements fixed administrative responsibilities tying profits to performance, accounted for half of China's increase in per capita income during the 1980s, and were becoming more efficient than the larger State-owned enterprises (Hyde et al., 2003).

Village forest farms evolved significantly during this period. Multiple households and individuals specialized in a great diversity of activities and worked together for the overall management of the collective forest area (Xu, 1986). Many joint ventures existed, such as regional/household, county/household, enterprise/forestry department, and timber production/timber processing ventures. According to Richardson (1990), since being required by new reform policies to contribute financially to reforestation, the major users of State wood often found it preferable to establish joint ventures with households and collectives to raise trees rather than pay levies to Beijing. Joint forest technical ventures were becoming more common undertaking specialized activities with VFFs. The activities that these enterprises engaged in included, for example, forest disease and pest control services, nursery management services, non-timber forest product production and horticultural product wholesalers (Richardson, 1990). In all parts

of the economy, the specialized households represent a significant departure from past policies.

According to the State Forest Administration (2000), these groups (village forest farms and township and village enterprises) are still held accountable to national forest management guidelines, and are expected to report to local and provincial governments for personnel and planning. However, discrepancies and confusion regarding the exact extent of SFA authority over the collectives remains. Winkler (2004) notes that “contradicting sets of data reflect the fact that, although local communities are *de jure* owners of some forest areas, their ownership did neither entitle them to forest management (rights or profits).” Unfortunately, the nature of the NFPP’s implementation may be ushering in a new cycle of uncertainty regarding rights of usufruct and contributing to an economic situation in China’s southwest forest region that could drain the household savings accumulated in the 1990s period of growth and expansion.

China’s Southwestern Forest Management Region:

The management of trees and forest resources in China’s southwestern forest management region, comprised of Sichuan and Yunnan provinces, is the main consideration of this paper. This region is more complicated and difficult to define in comparison to China’s other forest regions since it does not strictly adhere to either the State management model or the non-state system just described. For example, China’s northeast forest region, which includes the provinces of Heilongjiang, Jilin and Liaoning, is a heavily forested area with many primary stands of large, economically valuable conifers (SFA, 2000).⁹ For this reason, and since the SFA is primarily interested in and

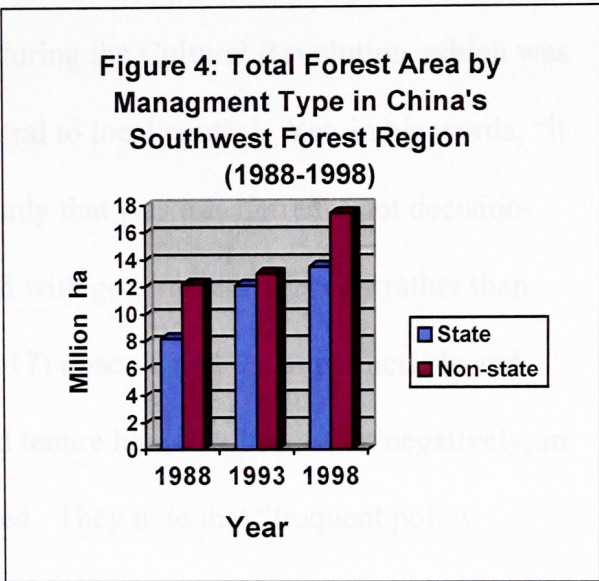
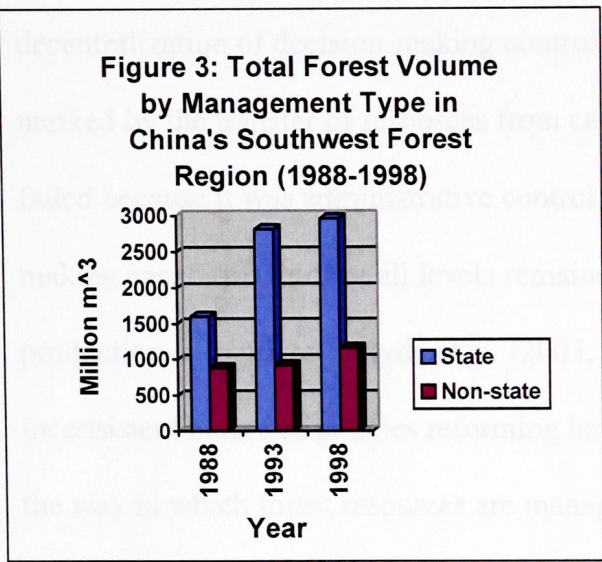
⁹ See Appendix 2: China’s Forest Resource Statistics

involved with large timber operations, 91% of the region's forestland is (in 1998) managed by the State Forest Administration leaving virtually no room for non-state forest management enterprises to operate in the northeast (SFA, 2000). By contrast, the southern collective region is named as such due to the prevalence of non-state forest management systems in that particular area. Over 89% of the region is (in 1998) managed by collective-owned, private-owned or mixed ownership shareholding systems specializing in a diversity of forest enterprise activities, such as those previously mentioned. The remaining 11% is comprised of SFA managed forests (SFA, 2000).

The difficulty in defining forest management in China's southwest forest region comes from a general disagreement about which type of forest management system, State or non-state, is dominant. Ross (1988) considers forests in the southwestern part of China to be primarily State run due to larger timber *volumes* managed by the SFA. Sun (1992), on the other hand, views them as predominately collectively managed since non-state forest enterprises manage a larger *area* of forestlands. In reality, forest management systems in the two provinces lay somewhere between these two designations, possessing both characteristics of State managed forests (typical in northeastern China) and collective forests (common in the southern provinces). Hence, the common designation of the forest region (by the World Bank, 2003 and Hyde et al., 2003) as the southwest mixed-management forest region. Figures 3 and 4 help to illustrate this division more clearly.

The southwestern forest management region plays a vital role in China's forest industry. It supplied over 10% of China's industrial timber in 1988, 22.1% and 10.9 million m³ of the nation's forest cover and volume respectively in 1993 and accounted for

a significant proportion (17.3%) of the nation's plantation forests in 1993, according to the World Bank (2003), the FAO (2004) and the SFA (2000).¹⁰



Source: Zhang (2003, Tables 5-2 and 5-4)

Land Tenure and the Management of China's Forests:

As should be evident by the previous few paragraphs, even though the rapid policy changes have granted more control over resources at the local level, the changes have not been implemented consistently or uniformly across or within regions. Some regions (i.e. the southern collective region) were allowed to decentralize their forestry operations away from State management towards non-state management while other regions (the southwest mixed-management region) continue to struggle in establishing acceptable (according to the State) proportions of State to non-state forest management and tenure.

Several researchers (i.e. Richardson, 1990; Hyde et al., 2003; World Bank, 2003; Liu, 2001) have examined land tenure in China, reform era policies and their effects on

¹⁰ See Appendix 2: China's Forest Resource Statistics

forest management systems. These sources are useful for providing insights into the importance and inter-relationships between land tenure, tenure security and people's trust in government policy and reforms. Richardson (1990, p29) mentions problems with the decentralization of decision-making control during the Cultural Revolution, which was marked by the transfer of resources from central to local control. Yet, in his words, "it failed because it was administrative control only that was transferred—not decision-making capacity, which at all levels remained with government agencies rather than production enterprises." Hyde et al. (2003, p17) observe that the unpredictable and inconsistent nature of policies reforming land tenure have resulted, often negatively, in the way in which forest resources are managed. They note that "frequent policy experimentation creates uncertainty and imposes significant environmental and social costs" (Hyde et al., 2003, p17).

The World Bank (2003) echoes the above Hyde et al. (2003) comment by asserting that data from a recent multivariate analysis clearly shows that forest use patterns, particularly within the non-state sector, vary significantly by forest tenure type. Their findings confirm that increases in forest area occur more frequently in locations where individuals have more control and income rights (especially in China's southern and southwestern regions). Liu (2001) also describes how trust on the part of households managing forests towards the State has been eroded due primarily to the frequency of policy change since the early 1980s and subsequent removal of rights of usufruct supposedly granted by the policy reforms. He notes that the result of frequent policy changes is an atmosphere of uncertainty leading to attempts at preempting government withdrawal of rights granted by policy reforms. "This high frequency of policy change

has undermined farmers' confidence in policy, even policies that they favor. This has encouraged the rapid conversion of forest resources by farmers even when they enjoy management rights" (Liu, 2001, p239). This uncertain policy atmosphere, which reduces trust and encourages the extraction of resources, also discourages shifts from collective to household-based management of forest resources on a sustainable level and the investment in forest resources for the future. Essentially, this situation removes an otherwise very promising avenue for rural people to generate income by sustainably managing their natural resources and replaces it with a situation that accelerates extraction of natural resources while providing only short-term, non-sustainable economic opportunities. The significance of tenure security for the management of non-state forests in China cannot be underestimated; however, neither can the continued influence and authority of the State—especially in the form of the Natural Forest Protection Plan and the manner of its implementation.



Chapter 3

LITERATURE REVIEW

Development, implementation and modification of China's Natural Forest Protection Plan has been taking place in a hyper-dynamic cultural context with complex social, political and economic factors at play since 1998 (Jintao et al., 2002). The purpose of this literature review is to identify what is currently known about the development and implementation of the NFPP, particularly in its relation to China's southwest forest region. The goal is to determine what unanswered questions remain. The contribution of this paper is that it addresses those unanswered questions and explains why those answers are needed.

Sinkule and Ortolano (1995) supply a basic framework for examining the design of environmental policy in China. Their framework helps to establish and organize what is currently known about the design of the NFPP. They cite the following as necessary aspects to consider when examining the design of a policy (in the Chinese context):

- examine how and why the policy was initiated
- identify policy goals and purpose
- establish the scale and context
- reveal the organization of management and staffing
- identify the resources committed to the program (i.e.—budgeting and finance)

- recognize the target-groups involved and identify non-targeted interested stakeholders

A substantial quantity of information regarding each of the aforementioned points is necessary in order to collate what is known about the NFPP. Fortunately, the China Council for International Cooperation on Environment and Development (CCICED) established the Western China Forests and Grasslands Task Force (hereafter “Task Force”) in July 2000 "to support the government in the ecologically, socially, and economically sustainable development of forests and grasslands in western China" (Jintao et al., 2002, p1). The CCICED is a multi-disciplinary, multi-national team chaired by members of the Chinese Academy of Engineering and the World Bank. "The council makes annual recommendations to the Chinese government, at the highest level, on the formulation and implementation of long-term strategies and policies for sustainable development” (Jintao et al., 2002, p1n1).

The Task Force was given a two-year assignment with the mandate to identify relevant knowledge on western China's forests and grasslands and to address planning and implementation gaps in the Natural Forest Protection Plan (NFPP) and the Sloping Land Conversion Program (SLCP).¹¹ They were also contracted to address the linkages between the implementation of the NFPP/SLCP and poverty alleviation development in western China (Jintao et al., 2002). The Task Force was required to provide independent advice on policy reforms in the forestry sector and related sectors to the national State

¹¹ The Sloping Land Conversion Program is a policy sub-component introduced into the NFPP framework in 1999. The expanded policy requires the conversion of all agricultural plots exceeding 25 degrees in regions covered by the NFPP to forests or grasslands.

Council and policymakers at central and provincial levels. Over 1,400 household level surveys were administered at 10 case study sites in nine western provinces and focused on the underlying socio-economic issues revealed by the case studies (Jintao et al., 2002). Additional policy issues impacting the forestry sector were identified and the technical feasibility of the policy was evaluated. The Task Force studies are among the few sources of literature published regarding the topic and represent the vast majority of what is known about the NFPP and its current status. Therefore, a large portion of the following information presented is based on their case studies.

Origin of the NFPP:

Implementing forest policies in China has historically been constrained by many factors. Some obstacles to the successful implementation of forest and environmental policies in China have traditionally included limited forest resources, ambiguous proclamation and inconsistent application of policy statutes, insufficient funds, extensive ecological destruction, massive population pressures, constrained managerial and scientific research capacity and rudimentary environmental awareness among the general public (see Harkness, 1998; Richardson, 1990; Hyde et al., 2003). Into a context of dynamic reforms and historically weak implementation, the Natural Forest Protection Plan was launched. The initial stages of implementation took place on a pilot level in 1998 and 1999, with full implementation beginning in 2000 and scheduled to continue through 2010 (Jintao et al., 2002). Implementation was not uniformly applied in the 18 provinces for which the plan encompasses yet the main goals of reversing the alarming rates of decline in natural forests and watershed cover remain consistent (Jintao et al., 2002).

The tremendous floods of 1998 provided the policy window of opportunity for the establishment of the NFPP and the implementation of an almost nationwide logging ban. Typically, policy formation in China involves a top down approach. Atypically, the earliest logging bans in Yunnan and Sichuan were suggested by the provincial governments and then accepted at the central level (Jintao et al., 2002). The central government identified general areas of concern (i.e.—flood control and watershed stability), then set the annual goals for the program and mandated local governments to prepare their own annual implementation plans (Jintao et al., 2002). The local governments were then charged with the task of implementing their plans according to the final budget set in Beijing. After an ongoing monitoring process, auditing is carried out and the implementation is evaluated with recommendations and financial disbursements made for next year's plan according to the results (Jintao et al., 2002).

The provincial, or non-central origin of the NFPP, suggests that it is perceived as important by a significant portion of society (350 million people in the Yangtze watershed) and several key decision-makers. Many locals, generally urban residents, business owners and farmers in the Sichuan basin floodplain, continue to voice concerns about increasingly frequent and severe floods while Beijing recognizes the potential financial costs associated with floods and deforestation in the nation's largest watersheds.

Goals and Purpose:

The Natural Forest Protection Plan is a forest policy primarily directed at reforming the heavily timber-dependent State forestry sector. It mandates the State Forestry Administration to counter the impacts of deforestation. During a fact-finding

mission to Sichuan in the fall of 1999, according to Winkler (2004), Chinese Premier Zhu Rongji elucidated the six following goals of the new government policy:

- All logging activities in the designated areas were to cease and remaining (primary/timber) forest stands protected.
- Financial and managerial adjustments at all levels of the SFA would be made and massive restructuring of the forestry sector, especially State timber enterprises, would take place.
- State forest workers are to be re-deploy as stewards and planters, as opposed to their previous occupations as loggers and sawyers with compensation for those who must be laid-off.
- The conversion of sloped agricultural lands (generally over 25 degrees) to secondary forests or commercial plantations utilizing a food for work program (the SLCP) shall take place.
- An effective reforestation and forest protection management system is to be developed.
- Wood product needs and demands are to be satisfied while reducing rural firewood dependency and diversifying the rural economy.

According to Lu Wenming (1999), a professor at the Chinese Academy of Forestry in Beijing, these goals are consistent with each other and their impacts will be positive. He asserts that the program will increase the quantity and improve the quality of natural forest resources while establishing a new source of economic growth. He further claims that new employment opportunities will be created thereby increasing per capita income through a successful transition of forest industries and the establishment of

large-scale commercial forests. Finally, “the reforms in forest areas shall be further deepened so as to achieve radical transitions both from planned economy to market-oriented economy and from extensive management to intensive management, and to finally realize sustainable forest management and establish a scientific forestry management system” (Lu, 1999, p1). However, a deeper inspection into the NFPP shows the difficulty of implementing such a broad and ambitious program and achieving goals that may not be as complimentary to each other as the professor suggests.

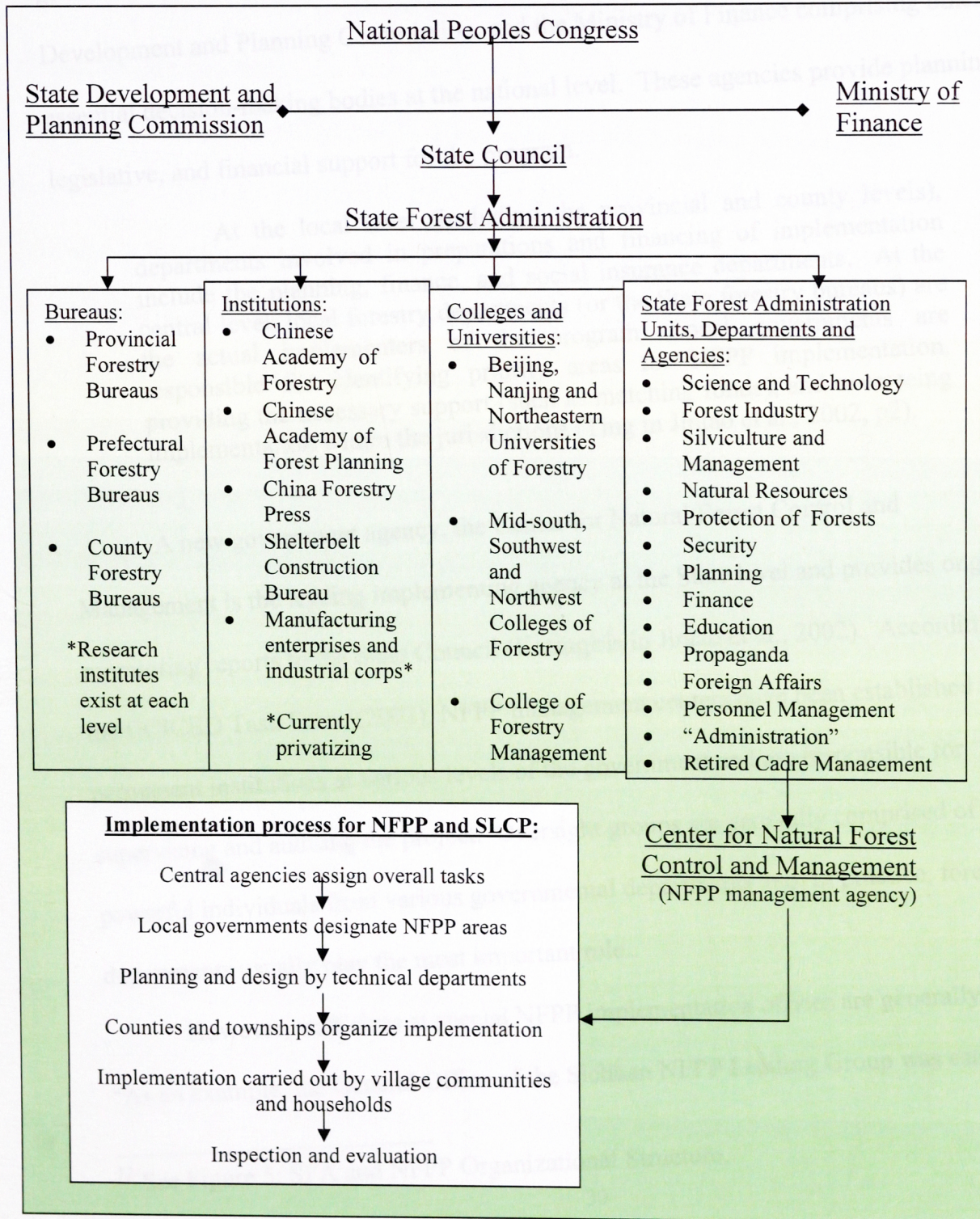
Scale and Context:

The Natural Forest Protection Plan is a profound change in policy that applies to over half of China’s provinces and autonomous regions, land area and population. Seemingly, the primary focus of the policy is toward China’s southwestern forest region. This region is where the first logging bans occurred and where severe flooding continues to be an ominous threat. Over 350 million people live in the Sichuan basin and Yangtze River floodplain with hundreds of thousands more living in the Hengduan Mountains that comprise the area’s upper watershed (Chinatoday, 2005). The vast majority of mountain inhabitants are comprised of ethnic minorities—groups of people often lagging behind the Han majority in educational opportunity and economic prosperity (CEPF, 2002). Most minority groups still depend heavily on traditional, subsistence-based activities that are closely linked to the mountain-forests where they dwell (Coggins, 2003). Fuelwood and non-timber forest product collection, pasturing and swidden agriculture are primary livelihood activities for those living in this region of China (Winkler, 2004). The logging ban will be in effect until at least 2010, necessarily resulting in broad socio-economic impacts (Jintao et al., 2002). These impacts not only affect timber-based enterprises and

those who formerly depended on them, but they also affect the area's ethnic minorities whose access to their traditional forests has been significantly altered due to the policy.

Management Organization and Staffing:

Figure 5: SFA and NFPP Organizational Structure



The government agencies involved with the development and implementation of the NFPP are situated at many levels, including the national, provincial, county and township levels with the SFA playing a central role (Jintao et al., 2002).¹² The central government has ultimate decision-making power with the State Council, the State Development and Planning Commission, and the Ministry of Finance comprising other essential decision-making bodies at the national level. These agencies provide planning, legislative, and financial support for the program.

At the local level (including the provincial and county levels), departments involved in preparations and financing of implementation include the planning, finance, and social insurance departments. At the central level, local forestry departments (or the State forestry bureaus) are the actual implementers of the program. Local governments are responsible for identifying priority areas for NFPP implementation, providing the necessary support (such as matching funds), and overseeing implementation within the jurisdictions (Ting in Jintao et al., 2002, p2).

A new government agency, the Center for Natural Forest Control and Management is the leading implementing agency at the State level and provides ongoing monitoring reports to the State Council (Katsagiris in Jintao et al., 2002). According to the CCICED Task Force (2002), NFPP management centers have been established as permanent institutions at various levels of the government and are responsible for supervising and auditing the project. Oversight groups are generally comprised of powerful individuals from various governmental departments and, in practice, forestry departments usually play the most important role.

However, staff sizes at special NFPP implementation offices are generally small. “As an example, the General Office of the Sichuan NFPP Leading Group was established

¹² See Figure 5: SFA and NFPP Organizational Structure.

in 1998 with two full-time employees” (Katsigris in Jintao et al., 2002, p 4). NFPP designated ranger teams are small and cover large areas due to budgetary constraints (Jintao et al., 2002). Despite insufficient monitoring and enforcement staff, the teams are expected to plant trees, augment existing plantings, prevent illegal logging, prevent fires and raise public awareness (Katsagiris in Jintao et al., 2002).

Budgeting and Finance:

According to the CCICED Task Force report (2002), eighty percent of the implementing costs are provided by the central government with the remaining 20% provided at the provincial level and lower. Appropriations are made to provincial finance departments through State budgetary channels before being released to the forestry departments at the provincial level. The provincial SFA departments are then required to use the funds to cover capital expenses (i.e. tree planting, nursing seedlings and fire prevention) and operational expenses (i.e. forest maintenance, pensions and compensations) according to budget requirements and approved implementation plans. A total of 3.12 billion yuan (over \$350 million US), representing almost 87% of the national budget for the top ten “key” environmental programs was earmarked for the NFPP in the second half of 1998 (Jintao et al, 2002). The 2002 Task Force case studies claim that roughly half of this was allocated to national coffers while the other half found its way to progressively lower institutional levels of the local and provincial NFPP management centers.

Target-groups and Interested Stakeholders:

A vast cross-section of China’s population is deeply impacted by the NFPP and the nature of its implementation (Jintao, 2002). These affected groups and individuals

may be divided into two main camps: 1) target-groups and 2) non-targeted interested stakeholders. As previously mentioned, the intended target group of the NFPP is the State Forest Administration's executives, managers and employees. Prior to the establishment of the NFPP, the SFA as an organization and its staff were the ones primarily involved with large-scale timber operations and were viewed as the ones mainly responsible for the denuded condition of the nation's major watersheds (Hyde et al., 2003; Richardson, 1990). A key component of the NFPP, the logging ban, is therefore intended to apply to SFA timber operations only.

Non-state forest enterprises, however, also operate in the regions targeted by the NFPP. Even though the majority of these enterprises are engaged in the development and management of secondary stands, orchards or woodlots established in areas previously harvested and abandoned by the SFA, restrictions on their management have been extended by local implementers of the NFPP for various reasons (World Bank, 2003). The individuals, households and collective or mixed-management, non-state organizations involved with the management of forest resources comprise one third of the non-targeted interested stakeholders. A second third includes those not directly involved with forest enterprises, but who benefited from the industry's presence in the region. Some examples of these stakeholders include hospitality enterprises, transportation services, local governments (via stumpage taxes), etc. These stakeholders are impacted due to the removal of a key source of income in the region, up to 80% of local incomes in some prefectures according to the 2002 Task Force studies. The final third is basically the urbanites and residents in major floodplains who are threatened by seasonal flooding and stand to benefit or suffer from the success or failure of the NFPP.

Policy Design Summary:

In summary, the Natural Forest Protection Plan was initiated in 1998 primarily for the purpose of stabilizing some of China's major watersheds. The objectives of the program include both social and ecological goals. The primary provisions of the NFPP are the cessation of logging in demarcated areas and the reforestation of degraded sloped lands while simultaneously, and seemingly contradictorily, meeting the nation's growing wood product needs. Included in the program are the more developmental goals of reducing rural firewood dependency and improving rural livelihoods through diversification of the economy away from the timber-dependent model existing previously. Special oversight and management groups have been established to administer the program and unprecedented amounts of financial resources have been allocated for the program. Although the State Forest Administration is considered the primary target-group of the NFPP, the immense breadth and depth of the policy directly impacts a large number of non-targeted interested stakeholders.

Perceptions of these stakeholders towards the new policy vary widely and are influenced, in large part, by the method of its implementation. There are possible sources of resistance with any policy and the NFPP is no different. Individuals and organizations directly involved with State or non-state forest management in NFPP areas may resist changes that fundamentally and permanently alter their livelihoods while those not directly involved with the forest sector are concerned about anticipated secondary socio-economic impacts and may also resist implementation of the program (Jintao et al., 2002).

A significant amount of information regarding what is currently known about the NFPP, its goals and target-groups, its management and funding, has just been presented. However, some important questions remain and require explanation. How is the policy being implemented—specifically what effects is it having and how are target-groups and stakeholders responding? And what are the policy outputs thus far? The more thorough analysis of its implementation that follows helps to answer these questions more decisively. However, a clear plan and framework for conducting the necessary analysis and determine the effectiveness of the NFPP in producing the desired outcomes is required, and thus, is presented in the following chapter.



Chapter 4

METHODS

While serving as an environmental educator at Sichuan University in the 2002-2003 academic year, I was privy to an excellent atmosphere in which to develop an understanding of both China's complicated socio-political situation and its sometimes overwhelming environmental challenges. Teaching environmental science at one of the nation's top universities and in one of its most biodiverse and threatened environments resulted in numerous collaborations. Learning from and interacting with several of China's most dynamic environmentalists, NGOs, political leaders and students, as well as learning from their international counterparts and colleagues was an invaluable experience. As such, I was afforded the first-hand opportunity to delve deeper into the conundrum that is forest ecosystem and environmental management in western China.

Personal experience and observations serve as the inspiration for this text while informing it's content. Involvement with park rangers, SFA managers, government officials and Chinese NGOs has provided essential interactions for consideration. Additionally, interactions with international NGOs, researchers and scholars have further contributed to an understanding of China's environmental issues in general, and the impact of the NFPP specifically. Personal experiences, together with additional texts, case studies and a modified version of the Sabatier and Mazmanian (1980) conceptual

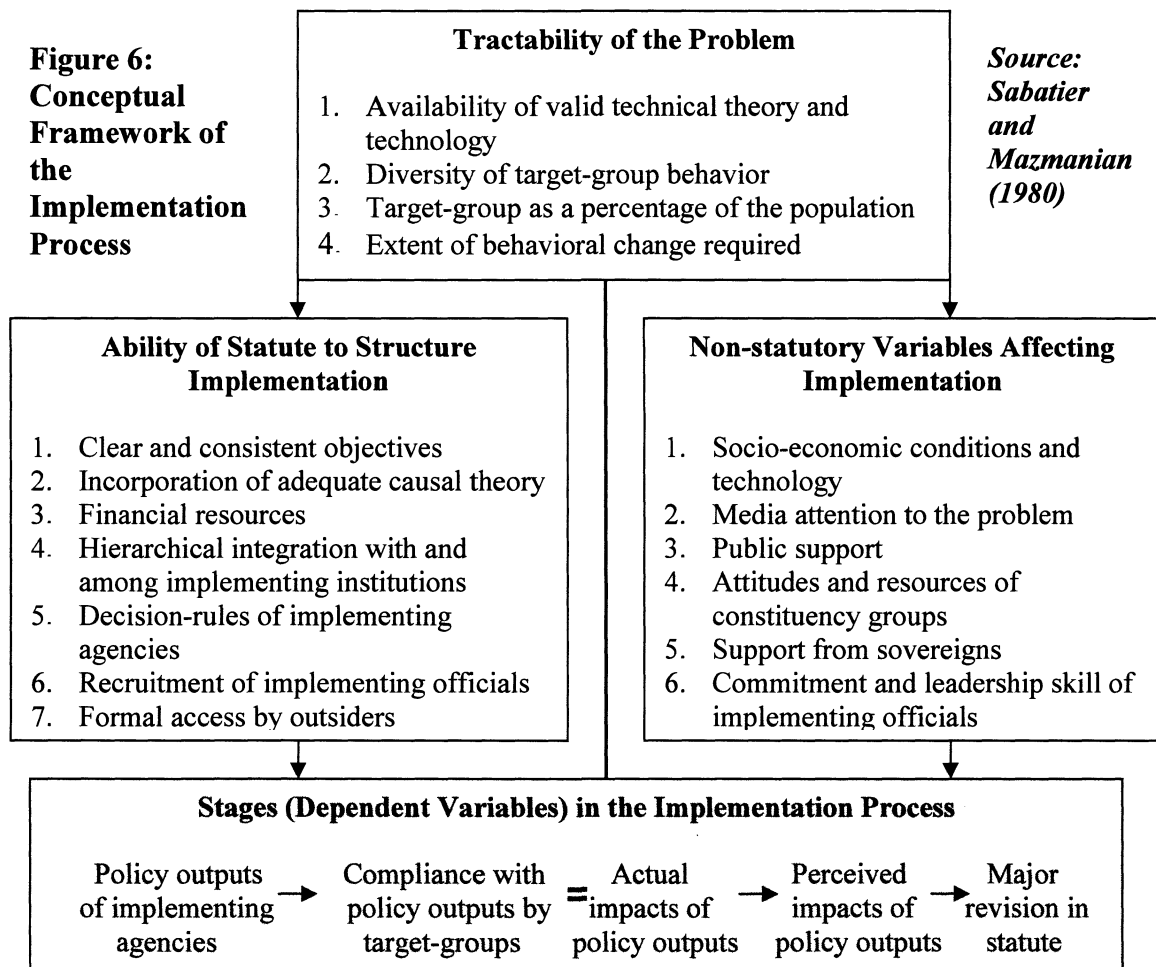
framework are applied and considered in an effort to analyze the NFPP and its implementation in China's southwest forest management region. The purpose of this analysis is to assess the effectiveness of the policy at achieving the desired outcomes.

Regarding implementation of a given policy, Sabatier and Mazmanian (1980) view the identification of factors affecting the achievement of statutory objectives through implementation of a specific policy as the crucial role of the implementation analysis. The researchers divide those factors into three broad categories: 1) the tractability of the problems being addressed by the statute, 2) the ability of the statute to favorably structure the implementation process, and 3) the net effect of a variety of "political" variables on the balance of support for statutory objectives (see Figure 6). The Sabatier and Mazmanian (1980) framework was chosen for this analysis precisely because of this clear delineation between independent variables and their relation to policy outcomes. In comparison to other models available for policy analysis, the Sabatier and Mazmanian (1980) framework is the most complete and the most adaptable for application in non-western contexts. The framework is now presented as it appears in Sabatier and Mazmanian's (1980) paper "A Conceptual Framework of the Implementation Process." It should be noted at this time, however, that the framework is subsequently modified to suit the particular needs of this inquiry and the Chinese specific context. The nature and extent of these modifications are more clearly delineated later in this chapter.

Tractability of the problem refers to the extent, range and complexity of the issues being addressed by a given policy. The implied assumption is that modifying the

behavior of target-groups will ameliorate problems and that some problems are more tractable, and therefore more easily controlled, than others.

This brief review of the variables involved suggests that problems are most tractable if (1) there is a valid theory connecting behavioral change to problem amelioration; the requisite technology exists; and, measurement of change in the seriousness of the problem is inexpensive; (2) there is minimal variation in the behavioral practices that cause the problem; (3) the target-group constitutes an easily identifiable minority of the population within a political jurisdiction; and (4) the amount of behavioral changed is modest (Sabatier and Mazmanian, 1980, p156).



According to Sabatier and Mazmanian (1980), statutory and political variables affect the mobilization of resources necessary for instituting behavioral change. The

statute establishes the purpose of a given policy and stipulates the objectives to be pursued. The clarity and specificity of a statute also have the ability to structure the entire implementation process.

In sum, a carefully drafted statute can substantially affect the extent to which its objectives are attained. More precisely, legislation that seeks to significantly change target-group behavior in order to achieve its objectives is most likely to succeed if (1) its objectives are precise and clearly ranked; (2) it incorporates a valid causal theory; (3) it provides adequate funds to the implementing agencies; (4) the number of veto points in the implementation process is minimized and sanctions/inducements are provided to overcome resistance; (5) the decision-rules of the implementing agencies are biased toward the achievement of statutory objectives; (6) implementation is assigned to agencies that support the legislation's objectives and will give the program high priority; and (7) the provisions for outsider participation are similarly biased through liberalized rules of standing and by centralizing oversight in the hands of statutory supporters (Sabatier and Mazmanian, 1980, p161).

Non-statutory variables also affect the implementation process in two significant ways: 1) by providing sufficient political support to reach a maximum threshold of cooperation among stakeholders—a requirement for successful institution of statutory objectives, and by 2) managing changing socio-economic conditions to maintain public support for policy changes (Sabatier and Mazmanian, 1980). The major non-statutory variables affecting implementation according to Sabatier and Mazmanian (1980) are socio-economic conditions and technology, public support, attitudes and resources of constituency groups, support from sovereigns, commitment and leadership skill of implementing officials and the level of media attention to the problem.

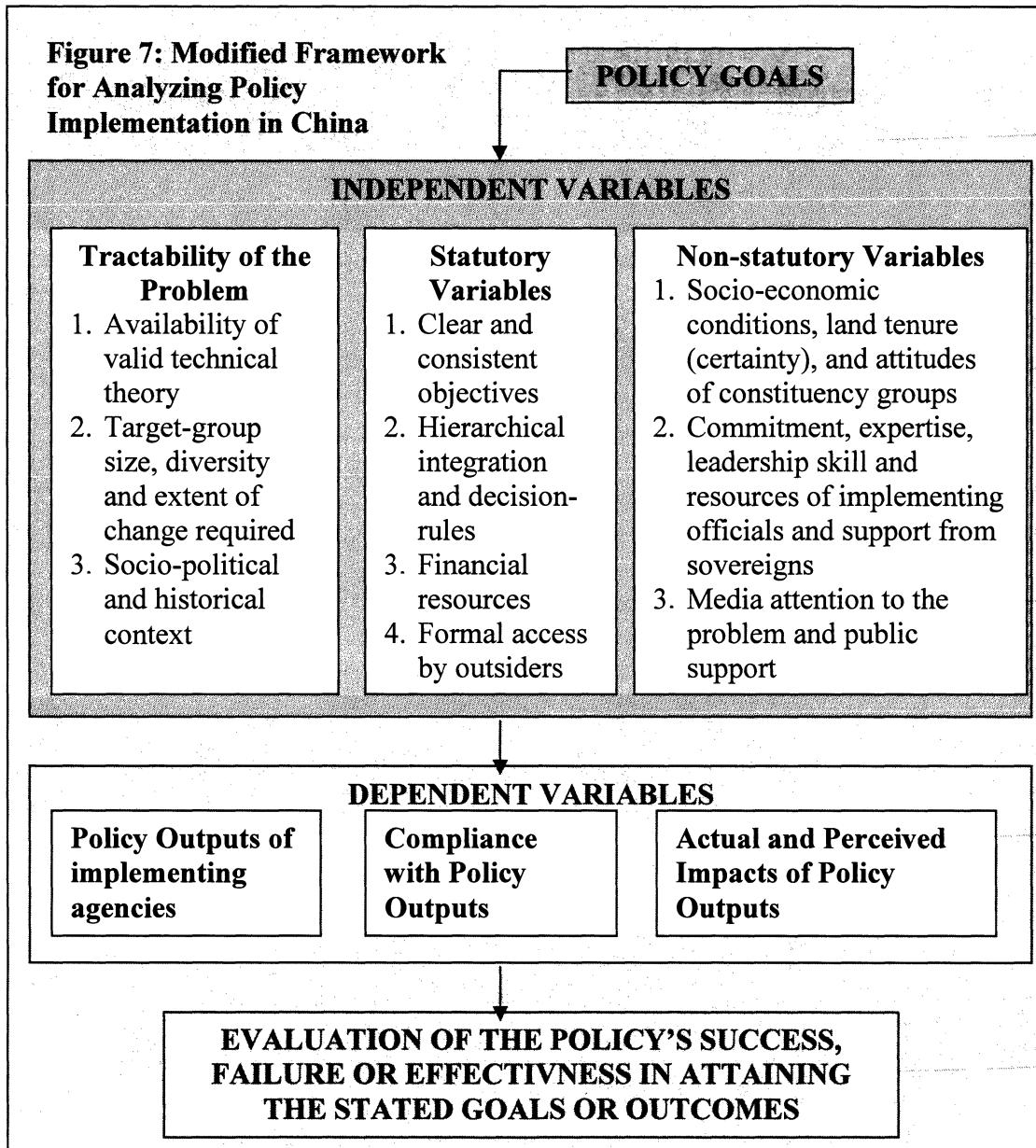
The final component of Sabatier and Mazmanian's (1980) conceptual framework for analyzing the implementation process concerns the evaluation of dependent variables. These variables have been separated into five distinct stages by the analysts: 1) the policy

outputs (decisions) of the implementing agencies, 2) the compliance of target-groups with those decisions, 3) the actual impacts of agency decisions, 4) the perceived impacts of those decisions, and 5) the political system's evaluation of a statute in terms of major revisions (or attempted revisions) in its content.

For the purpose of this investigation and given the unique context of inquiry, the Sabatier and Mazmanian (1980) conceptual framework was modified before being applied to analyze the NFPP and its implementation to date.¹³ Although the Sabatier and Mazmanian (1980) framework was chosen, in part, due to its applicability in a variety of contexts, alteration of the model is necessary in order to accentuate the significance of land tenure in China and the impact that it has on the management of trees and forest resources, particularly in the southwestern region of the country. Changes were made in an effort to condense and streamline the analysis by combining the more similar aspects of the model and eliminating those for which there is insufficient information or that contribute little to the goal of determining the effectiveness of NFPP implementation in producing the desired policy outcomes. A more explicit separation between the dependent variables and what Sabatier and Mazmanian (1980) call the tractability and (non-) statutory variables is established. Subsequently, Sabatier and Mazmanian's (1980) designated categories of "tractability of the problem," "ability of statute to structure implementation," and "non-statutory variables affecting implementation" are considered sub-components under the penumbral designation of independent variables. Each of these independent variable sub-components retain their Sabatier and Mazmanian (1980)

¹³ See Figure 7: Modified Framework for Analyzing Forest Policy Implementation in China.

titles and defined meanings, however, their own component parts have been reorganized and supplemented in a few essential ways.



The "tractability" sub-component retains the "availability of valid technical theory" element while combining elements 2, 3 and 4 from the Sabatier and Mazmanian (1980) model now referred to as "target group size, diversity and extent of change

required." Given China's unique social, political and historical context, especially in terms of implementing environmental policy and in contrast to western, more European-American contexts, a third element of the tractability sub-component is established. Essentially, the "socio-political historical context" variable recognizes the significant difference between China's history of environmental policy design and implementation in comparison to the west, and considers precedent within the established context as a necessary variable to consider when assessing the tractability of problems addressed by the NFPP.

"Incorporation of adequate causal theory" has been removed as a statutory variable and is now integrated into the first element of the tractability sub-component for convenience and avoidance of repetition. Likewise, "decision-rules of implementing agencies" has been combined with the "hierarchical integration" statute variable for similar reasons. Also, "recruitment of implementing officials" has been dropped as a statutory variable due to its limited contribution to the analysis while a central independent variable for consideration has been added. Land tenure and tenure security in China, as previously mentioned in the background chapter, is an issue of primary concern and debate in association with the NFPP and its implementation. Indeed, this one variable, or most certainly when taken together with the "socio-economic conditions" and the "attitudes and resources of constituency groups" independent variable elements, may very well determine the success or failure of the NFPP and cannot be overlooked or understated. Due to the interrelated nature of these three subjects, they have been combined into one element for analysis under the independent variable sub-component of "non-statutory variables affecting implementation" in the modified framework.

Finally, the dependent variable component of the Sabatier and Mazmanian (1980) model is also modified. Instead of Sabatier and Mazmanian's five sub-component parts, the dependent variables are considered as a whole and analyzed concurrently with the analysis of the independent variables. This approach is taken in order to draw a more distinct connection between each aspect of the independent variables and the policy outcomes themselves. The outputs of NFPP implementation and the implementing agency are further specified throughout the findings chapter and are directly related to the actual policy outcomes resulting from the manner in which the NFPP is implemented.

This new modified framework is applied by analyzing existing reports, case studies and personal experience. Although the Sabatier and Mazmanian (1980) framework is intended to be utilized as an analytic tool that reviews a given policy's implementation from start to finish, the modified Sabatier and Mazmanian (1980) framework is applied in order to determine effectiveness of implementation halfway through the NFPP's lifespan. In an effort to critically examine implementation of the NFPP to date, a standard of evaluation is established to assess each dependent variable according to its influence on implementation. Clarke and McCool (1996) provide some useful suggestions for making such assessments in their book *Staking Out the Terrain: Power and Performance among Natural Resource Agencies*. Clarke and McCool (1996) utilize a three-part ordinal scale in order to assess and compare the power and performance of various U.S. government agencies. For each variable analyzed, the authors use a '+' to indicate a positive influence or characteristic inherent in the variable, a '-' to represent negative influences or characteristics and a '0' to signify aspects of the variable that has no discernable effect on policy outcomes.

A similar approach is utilized in this text in order to assist in analysis of the NFPP. In this case, the ‘+’ sign indicates that a variable or aspect of a variable has positively contributed to, or enhanced, policy implementation and the achievement of NFPP goals. The ‘-’ sign represents that a variable or aspect of a variable has negatively affected or impeded successful implementation. A ‘0’ sign deems that a variable or aspect of a variable was neutral or contributed equivalently, both positively and negatively, to implementation of the NFPP and achievement of the stated goals. The ‘+,’ ‘-,’ ‘0’ scale is organized into tables on pages 55, 71-72 and 89-90 for the impact of tractability, statutory and non-statutory variables on policy outcomes respectively.

Following presentation of the findings, the discussion section considers all of the previous information and clarifies the most significant factors affecting implementation of the NFPP. Subsequently, several recommendations are made for improving the NFPP, its implementation and, consequently, the achievement of its goals. However, will the recommended changes improve the likelihood of meeting the stated policy goals, or is alteration of the policy goals themselves required if the NFPP is to be considered successful? Also worth considering is whether or not the existing socio-political context is too constraining for any meaningful success to be attained? The following chapter now leads us toward answering these questions through application of the modified framework for analyzing China’s implementation of the Natural Forest Protection Plan.

Chapter 5

FINDINGS

The following section applies the modified version of Sabatier and Mazmanian's (1980) conceptual framework for analyzing the implementation of environmental policies. The independent and dependent variables are examined in detail and evaluated through an analysis of their sub-component parts. First the complexity of the policy and the level of behavioral change required by the NFPP are ascertained and the likelihood of the required changes to address the problems of watershed stability and management is determined. Second, the statutory and non-statutory variables affecting implementation are likewise assessed. An examination of the dependent variables, as indicators of policy effectiveness, requiring consideration occurs concurrently with the analysis of the independent variables and rounds out the implementation analysis section of this text. The purpose of this analysis is to determine the success of the Natural Forest Protection Plan and the effectiveness of its implementation. Effectiveness, in this case, is determined in terms of the NFPP's ability to achieve the stated goals of eliminating destructive timber practices and protecting remaining stands in target areas, revegetation of lands already denuded, restructuring the management and operations of the State Forest Administration, and diversification of the rural economy while reducing rural dependence on fuelwood and meeting the nation's wood product needs. Ultimately, the

effectiveness of the NFPP is not only determined by its ability to produce these outputs, but also in its ability to produce the desired outcome of long-term watershed stability.

Analysis of the Tractability Variables

The presence of a valid causal theory connecting stakeholder behavior to problem amelioration and the existence of the technology required to implement the policy are examined below to determine the tractability of the problems addressed by the NFPP.

The amount of variation in behavioral practices, the distinctness of the target-groups and the amount of behavior change required are also investigated in order to assess tractability.

Availability of a Valid Technical Theory:

NFPP policy planners at the central level assume that recent or historical forest management approaches are responsible for reductions in vegetative cover resulting in the floods of 1998 (Liu, J., 1998). They also assume that a ban on logging in the main watersheds, the development of a different forest management system, and the reforestation of sloped "wastelands" will ameliorate the target problems (Liu, J., 1998). The validity of this causal theory is questionable given uncertain correlations between decreases in forest cover and increases in the frequency and severity of floods within the targeted watersheds (Bruijnzeel, L, 2004). Additionally, regulating hydrologic flow may not reduce socio-economic impacts of downstream flooding due to ever increasing populations and valuable infrastructure being established on perennial floodplains. Although no new technology is required to implement the NFPP, suggesting that the target problems are easily tractable, policy designers believe that they will be able to restructure a massive government bureaucracy, protect and reforest millions of hectares

while increasing domestic wood production, and that they will be able to do so with a greatly depleted workforce which needs to be thoroughly retrained. Furthermore, they seek to accomplish all of this while simultaneously diversifying the rural economy (Winkler, 2004). These assumptions are questionable.

There is ample evidence in China's recent history for its ability to completely restructure entire industrial sectors—the agricultural sector is a prime example (Richardson, 1990). The Green Wall of China also provides justification for believing that the nation is capable of conducting large-scale reforestation projects (Xinhua, April 29, 2004). The ability of NFPP implementers to meet the remaining goals, though, is a bit more dubious. Liu et al. (1999, 2001) and Lu et al. (2002) provide strong evidence for their claims that China is not very successful in its efforts to curtail illegal timber practices even within its most prestigious protected areas. However, even if the central government strongly and effectively enforces the logging ban according to NFPP mandates, that would only reduce the nation's ability to meet its domestic wood demand. Domestic consumption of wood products has been increasingly outpacing production in recent years even with virtually unrestrained timber harvesting prior to the logging ban (SAF, 2004). Additionally, the ability and capacity for China to retrain former timber operators into a new generation of ecosystem and watershed managers is questionable (Richardson, 1990). Support for this claim and the issue in general is dealt with in more detail under the non-statutory variable “commitment, expertise, leadership skill and resources.”

Possibly most curious among the main goals of the NFPP is the socio-economic objective of diversifying the rural economy. It is unclear how this goal relates directly to

reducing the flooding hazard through a revegetated watershed. Naturally, one could argue that more affluent rural households operating in a more stable free-market economy, rather than a natural resource-based subsistence economy, is ultimately better for the environment and could possibly lead to increases in forest cover (see Liu et al. 1999, 2001 and Lu et al., 2002). However, this is not the argument made by the policy developers and those who implement the NFPP (Winkler, 2004). Instead, this goal seems tacked on as a rider to the more central environmental goals of the NFPP. The presence of a valid causal theory connecting stakeholder behavior to problem amelioration, in this case, is questionable.

Target-group Size, Diversity and the Extent of Change Required:

The NFPP helped to orient and establish needed direction for the fledgling SFA by providing several goals and objectives for the agency. The intention of the policy was to change the ways in which China's forests are managed primarily by the State, but also by non-state managers, for the purpose of increasing watershed stability. Traditionally, State agencies (specifically, the MOF) were the only actors allowed to conduct logging and timber activities on any significant scale (Richardson, 1990). Hence, the logging ban aspect of the NFPP essentially targets SFA timber operators and the ways in which they conduct their business. On the other hand, denuded, primarily sloped agricultural land has increasingly been leased to collective and non-state users over the last 25 years (Liu, 2001; Richardson, 1990; Hyde et al., 2003). It is precisely these lands and those who lease them that are targeted by the other main goal of the NFPP—increasing watershed stability through the conversion of lands exceeding 25% in slope to secondary forests and

sustainably managed commercial plantations (i.e.—the Sloping Land Conversion Program).

In conforming to the logging ban mandate, the SFA is expected to downsize by roughly 33%, from a workforce of about 3 million to one measuring around 2 million (Jintao et al., 2002). According to the 2002 CCICED Task Force report, these former timber operators are expected to take on the new roles of forest rangers and stewards responsible for eliminating illegal forest activities such as timber harvesting, poaching and non-timber forest product collection. They are also expected to manage against forest fire, conduct research, initiate reforestation activities and pursue public awareness campaigns. Furthermore, each level of the SFA (national, provincial and local) develops its own management protocol suited to their particular needs and not always in a manner consistent with national forest management policies or priorities. The State target-group represents a substantial portion of the population (up to 80%) in prefectures affected by the NFPP, while the potentially affected population within the 18 provinces covered by the policy exceeds several hundred million (Jintao et al., 2002). Furthermore, the regions where this initiative is being carried out is home to many of China's ethnic minorities, each with their own, deeply ingrained customs, beliefs and traditional practices in relation to the natural environment (Coggins, 2003). Given these considerations, the extent of behavioral change required from State forest resource users and other potentially affected individuals is enormous clearly reducing the likelihood of altering the behavior and use of forest resources is in this context.

Socio-political and Historical Context:

Hyde et al. (2003) have identified three cycles of forestry and land reforms since 1978. According to them, increased decision-making authority at the local level, greater control over land and forest resources and less State control over the market economy characterizes each cycle. However, as inflation and other indicators determined as negative by the central government increase or become more prevalent, the policy advances and reforms are removed and replaced with centralized authority creating greater uncertainty at each stage (Liu, 2001; Hyde et al., 2003; Yamane, 2001). The impact of this atmosphere of uncertainty on forest management, especially in the southwestern management region, was mentioned in the background chapter.

On the other hand, the authoritative nature of Chinese society has historically enhanced implementation of massive national projects. The Great Wall, the Three Gorges Dam and the Green Wall of China are some of the most obvious examples for the ability of a strong central government to implement ambitious projects. In terms of implementing the NFPP and in pursuance of its lofty goals, an intervening and authoritative central government may or may not be good in terms of effective implementation or the achievement of desired outcomes. For example, a draconian approach to enforcing the logging ban may, in fact, eliminate commercial logging while simultaneously reducing subsistence forest and timber activities (Jintao et al., 2002). In my discussions with Jim Harkness, Director of the WWF in China in May 2004, he suggested that this is indeed the case. A stern central approach may also succeed in mobilizing a workforce capable of replanting the vast areas of denuded sloped agricultural lands in the nation's upper watersheds, though such an approach may not provide the necessary incentives required to ensure proper monitoring and survival rates

(Jintao et al., 2002). Precedent exists to support this possibility in the case of the Green Wall of China initiative (Steffen, A., 2003).

Achieving the socio-economic goals of meeting wood product demands while reducing rural firewood dependency and diversifying the rural economy, however, may prove more difficult to achieve through purely authoritative pressure. As the rural southwest transforms from a timber-based economy to a more free market and tourism-based economy, as NFPP proponents promote, the presence of an intervening strong central government may have unintended negative effects (Hyde et al., 2003; World Bank, 2003). Part of the central government's plan for diversifying the rural economy revolves around cultural and environmental tourism (Jintao et al., 2002). However, tourism-based economies may be expected to slowly evolve due to the inexperience of mountain-forest entrepreneurs with such ventures even if the central government institutes sweeping business management workshops (US Embassy—China, 2000). The other objective of this goal, reducing firewood dependency, though, seems to depend on a strong central government to provide cheap and dependable electricity through expensive and extensive rural electrification programs (Liu, J. et al., 2001).

Given the historic context of wood production, forest cover and the uncertainty of land tenure in the southwest forest management region, using an iron fist approach may be counter-productive to achieving NFPP goals (Liu, 2001). Liu (2001) draws several connections among tenure certainty, or security, non-state forest managers' trust in the State and the consequences for timber production. He claims that it is “the insecurity of land and tree tenure that affects incentives to plant new trees and manage existing resources sustainably” (Liu, 2001, p257). It is his assertion that “lack of tenure security,

rather than household management per se, has discouraged [non-state] farmers from managing timber forests as expected by the government” and that “a positive relationship between household management and forest cover where tenure is secure appears to exist” (Liu, 2001, p257). In other words, the more authority the central government exerts over timber and wood production by non-state managers, especially through the inconsistent application or implementation of policies governing land tenure and forest or tree management, the more likely or extensive a decrease in forest cover and wood product production among non-state forest enterprises.

Furthermore, timber and wood product production from non-state forest enterprises has been steadily gaining on State enterprises in recent years (World Bank, 2003). This is a trend that may reasonably be expected to accelerate in light of decreased production on State lands due to the logging ban. However, if the central government strongly intervenes in the operations of non-state forest enterprises, a promising avenue for meeting the nation’s wood product needs through sustainable management of economically productive forest enterprises will most likely dissolve. The Hyde et al. studies of 2003 already provide some evidence to support this claim. Therefore, it is unlikely that the goal of meeting China’s enormous and growing wood demand will be achieved through exertion of strong central authority over non-state forest enterprises and the inconsistent implementation of yet another forest policy (i.e.—the NFPP) without heavy reliance on foreign imports (SAF, 2004). Additionally, it is unlikely that long-term watershed stability will be achieved through draconian measures. Even if large areas of the upper watersheds are reforested, survival rates may be reduced unless continued

monitoring and maintenance of the outplanted trees occurs either through the provision of sufficient incentives or the mobilization of forced labor groups (Steffen, 2003).

Summary of Tractability Impacts on Dependent Variables:

The historic socio-economic and political context in which the NFPP is being implemented has both advantages and disadvantages. On the one hand, a strong central government can mobilize its people to achieve large and ambitious projects more readily than less authoritarian governments. On the other hand, in relation to land tenure reform in China, an autocratic approach to increasing wood production, forest cover and establishing long-term watershed stability may not be the most effective way to attain some of the NFPP's main goals. The research and evidence provided by Liu (2001), the World Bank (2003), Hyde et al. (2003) and others regarding correlations between tenure uncertainty and decreases in forest cover or timber production on non-state forestlands, due to an inconsistent policy environment and interjection of central government control, supports this assertion. Yet the goals of eliminating all timber harvesting in the nation's main watersheds, reforesting those watersheds—at least in the short-term, and reducing rural firewood dependency are actually suited to the advantages inherent in a strong central government. Restructuring the SFA, the timber industry and the forestry sector, including the re-deployment of its employees, is also a task more easily accomplished through authoritarian means.

Millions of SFA employees must be retrained to perform tasks entirely different from their previous jobs. Tens of millions of non-state forest managers are required to alter the ways in which they conduct their business. The lives and livelihoods of hundreds of millions of other citizens are impacted by both or either the implementation

of the NFPP or its success in achieving the desired outcomes—primarily reducing the frequency and severity of seasonal floods. Furthermore, each of the above stakeholders and target-groups not only vary greatly among themselves, but also across the many provinces where the NFPP is being implemented. This diversity is punctuated by differences between economic and educational strata, ethnicity, and means of livelihood (CEPF, 2002). Additionally, the extent of change required by the policy—essentially an entire restructuring of China’s forestry sector, the reforestation of millions of hectares and the diversification and vitalization of the rural economy—is immense. Each of these indicates that the size and diversity of the target-groups affected by the NFPP, as well as the extent of change proposed, is substantial thereby reducing the likelihood of successful policy implementation according to the modified Sabatier and Mazmanian framework. However, the Three Gorges Dam project is recent evidence of China’s ability to relocate large numbers of people and to provide those transplants with accommodations and livelihood opportunities sufficient enough to quell social insurrections (Xinhua, March 22, 2004). The Green Wall of China project in the northern portion of the country is a strong demonstration of the central government’s ability to achieve truly impressive results in reforestation and shelterbelt activities. The FAO estimates that over 1 million hectares per year are established in China primarily due to the Green Wall program and other State initiatives (FAO, February, 2005).

The validity of the NFPP’s guiding philosophy, that re-vegetating the denuded upper watersheds of the nation’s major rivers will reduce the frequency and severity of floods and their collateral socio-economic costs, is not necessarily robust due to the increasing presence of urban infrastructure on potentially impacted floodplains. Also,

glaring contradictions exist among some of the main policy goals. Meeting the nation's growing wood demand is not consistent with drastic reductions in timber output—especially when the involvement of a strong central government in the management of non-state forests reduces forest cover and wood product output (Liu, 2001). The November, 2004 issue of *The Forestry Source* by the Society of American Foresters cite SFA statistics identifying a 41% decrease in timber harvest volumes from NFPP provinces between 1997 and 2003 while wood product imports increased 268% during the same timeframe (SAF, 2004). Furthermore, if non-state managed forest enterprises are unable to operate in a free-market economy and benefit from the fruits of their labor due to inconsistent and uncertain tenure and rights of usufruct, one of China's most dynamic rural economic sectors may falter thereby negatively altering rural socio-economic conditions.

In summary, aspects of each of the aforementioned independent variables both facilitate and detract from tractability of the problem (see Table 4.1). The availability of a validity technical theory regarding vegetation and hydrological flow is one supporting factor. The socio-political and historical context of China's strong central government and its ability to accomplish projects on a massive scale, despite large numbers of diverse peoples, is another. These conditions may lead one to predict successes in the NFPP's ability to produce the desired outcomes, namely the short-term objectives of stopping all timber harvesting in the target areas (i.e.—the logging ban), restructuring the financial and managerial organization of the SFA, retraining SFA employees to perform new types of tasks, outplanting large areas of denuded lands in the sensitive watersheds, and reducing rural dependency on firewood for fuel.

Some aspects of these first few independent variables, however, actually reduce tractability. A strong central government may be capable of implementing large-scale projects, however an authoritarian approach to regulating non-state forest enterprises in the Chinese context may actually reduce tractability of the problem. This is especially true in regard to some long-term goals of the NFPP such as the establishment of an effective forest protection and management system, the diversification of the rural economy and the ability to meet domestic wood demand. Therefore, given the above analysis, tractability of the problems addressed by the NFPP and its ability to produce the desired short-term outputs seems high, but tractability in the long-term sense of impacting the dependent variables in a way that produces desired outcomes appears low.

Table 4.1: Assessing the Impact of Tractability Variables on Dependent Variables

Desired Outcomes	Availability of a Valid Technical Theory	Target-group Size, Diversity and Extent of Change Required	Socio-political and Historical Context
<i>Eliminate industrial logging</i>	+ Reduced logging slowing reductions in vegetative cover is a valid technical theory	+ Industrial logging is easier to monitor than subsistence harvesting	+ Strong central government - Long history of resource extraction
<i>Reduce rural use and dependency on firewood</i>	+ Increasing rural electrification leads to reduced firewood dependency is a valid technical theory	+ The target-group is easily identifiable - Target-group is spread over vast areas	+ Strong central government - Long tradition of firewood use for fuel
<i>Re-establish vegetation on sloped denuded lands in the short-term</i>	0 More vegetative cover leading to increases in watershed stability and reduced socio-economic costs may or may not be a valid technical theory	- Enormous areas are targeted - Extent of revegetation efforts required is massive	+ Strong central government + Proven experience in mobilizing resources for massive projects
<i>Permanently increase vegetative cover in the nation's main watersheds</i>	- Flood damage to urban areas may not be reduced simply by regulating hydrologic flow due to increases in population on potentially impacted floodplains	- Enormous areas are targeted - Sustaining revegetation efforts indefinitely requires tremendous efforts and commitment	- Strong central government - Intervention in non-State forest operations - Historically one of the most impacted and denuded areas on earth
<i>Restructure the financial and managerial organization of the SFA</i>	0 Changes in SFA management will increase agency effectiveness may or may not a valid technical theory	+ The SFA is a finite institution/agency 0 The extent of change required is moderate	+ Strong central government - Reduced capacity due to cultural revolution

Table 4.1 (continued): Assessing the Impact of Tractability Variables on Dependent Variables

Desired Outcomes	Availability of a Valid Technical Theory	Target-group Size, Diversity and Extent of Change Required	Socio-political and Historical Context
<i>Retrain SFA employees to perform new tasks</i>	+ The idea that training is necessary for SFA employees to transition from loggers to stewards is a valid theory	- Large number of employees - Large diversity of individuals	+ Strong central government - Reduced capacity due to cultural revolution
<i>Meet domestic wood demand</i>	- Meeting domestic wood demand while reducing timber harvests due to logging ban is not a valid technical theory	- Domestic wood demand is enormous and skyrocketing	- Government intervention in non-state enterprises reduces wood production
<i>Establish an effective forest protection and management system</i>	+ Recognition that a new approach to forest management is needed in order to stabilize sensitive watersheds is a valid technical theory	0 Represents a complete reversal of previous forest management approaches - A large area and diversity of forests	- Strong central government - History of ineffectiveness in managing protected areas
<i>Diversify and revitalize the rural economy</i>	+ Diversifying economies by developing non-natural resource-based industries is a valid technical theory 0 Belief that revitalized rural economies will result from the logging ban despite traditional dependence on natural resources may or may not be a valid technical theory	- Very large and diverse target-group - Large extent of change needed	- Impacted areas historically operate on natural resource-based economies - Rural communities in affected areas are generally not included in China's recent industrialization

Analysis of Statutory Variables

Application of the modified framework for analyzing implementation of the NFPP also requires inspection of the role that statutory variables play in structuring the implementation process. According to Sabatier and Mazmanian (1980), an understanding of program objectives on the part of the implementing agencies and their perceived locus of control or jurisdictional authority must be examined. This issue of jurisdictional authority is of particular importance in relation to the topic—especially given the history of forest management systems, tenure security and authoritative central control in China. The following analysis of statutory variables focuses on the aspects of the policy affecting the mobilization of resources necessary for instituting the desired behavior

change including clarity and specificity of the statutes, as well as the purpose and objectives to be pursued.

Clarity and Consistency of Objectives:

The NFPP policy goals are neither specific nor internally consistent—a common characteristic of Chinese policies (Harkness, 1998). Although Lu Wenming (1999) does cite explicit targets for reductions in logging quotas required by the NFPP, the zoning and definition of forest types is problematic in China and decreases the specificity of the policy's logging ban statute (see Rozelle et al., 2003). The development of an effective restoration and protective forest management system is underway, but it is seemingly incompatible with the goal to meet the nation's massive wood product demands. It may be possible to establish creative forest enterprises or to support existing ones that contribute to meeting China's growing demand for wood. However, it will take decades for such forest enterprises to approach the productivity lost to the logging of more productive primary timber stands due to the NFPP. Also complicating efforts to establish effective forest restoration and protection management systems is the fact that they are being developed in a context lacking a robust and valid data set for forestry systems in the target areas.

Discrepancies between the different data published about China's forest cover illustrate the difficulty of reaching any firm conclusions about the forest conditions....therefore, it is difficult to infer anything about changes in forest values from the official forest data (Hyde et al., 2003, p180).

The above comment is made primarily due to the fact that definitions of forest cover have changed repeatedly over the years reducing consistency of cross-comparisons in data.

The clarity of policy objectives has traditionally plagued environmental management in China (Harkness, 1998; Sinkule and Ortolano, 1995). The NFPP is no different. There is no real ranked importance of the goals beyond the primary objective of halting all timber activities in demarcated areas. This is an apparent source of dissonance for policy implementation according to Sabatier and Mazmanian (1980) leading to a lower probability in achieving the desired outcomes. Due to the vagueness of the program, many State employees in national, provincial and local SFA departments do not fully understand the necessity or protocol for implementation (Jintao et al., 2002). The extension of the restricted use mandate to non-state forest farms, contrary to the expressed intentions of the central government, is evidence of serious misunderstandings already occurring due to the ambiguity of the policy (Jintao et al., 2002). The vagueness of policy statutes, according to the 2002 Task Force case studies, allows implementers at the local level to apply their own agendas and extend their jurisdictional authority over non-state forest enterprises.

According to Sabatier and Mazmanian (1980) and Sinkule and Ortolano (1995), a policy—its stated purpose, goals and desired outcomes, must be both clear and consistent. Clarity restricts independent interpretation among local level implementers ensuring a higher probability in attaining the vision sought by policy designers. Consistency is required in order to avoid incompatible and contradictory objectives. It has already been suggested that the goals of meeting the nation's wood demands and restructuring the rural economy are inconsistent and incompatible with the goal of eliminating timber production—a main source of both income for rural economies and wood products for the nation.

Progress towards meeting the wood demand is a quantitative matter that should be easily measurable, while reducing rural firewood dependency directly correlates with the government's ability to provide cheap, reliable electricity in remote regions (Liu, 2001). It is the other goals, and the specific activities to be employed in achieving their outcomes, that are unclear. Specifically what forest types are off limits to logging and will the definition of those forest types continue to change in order to suit the particular needs of the State as they have in the past? How exactly is the financial and administrative structure of the SFA going to be restructured to avoid the mismanagement that plagued the former MOF, especially once the focus of the agency is no longer consumed by the NFPP? What exactly will the one million plus SFA employees be retrained to do and what resources are available to accomplish that massive capacity building effort within a relevant timeframe? How will the reforested watersheds be monitored and maintained throughout the duration of the project and long after the food-for-work incentives run out? Will revegetating the watersheds be enough to reduce flooding and socio-economic impacts? What constitutes an effective forest protection and management system? To what ends will the rural economy be diversified and how will such a substantial transformation be supported in the interim? Each of these questions illustrates the many shortcomings in the clarity of the NFPP suggesting a low probability in attaining the desired outcomes.

Hierarchical Integration and Decision-rules:

The level of coordinated interagency action is another way the statute may structure implementation. "To the extent that the system is only loosely integrated, there will be considerable variation in the degree of behavioral compliance among

implementing officials and target-groups—as each responds to the incentive for modification within his local setting" (Sabatier and Mazmanian, 1980, p159). As noted, in the case of the NFPP, most of the actual implementation work takes place at the county level despite their very limited role in the decision-making process.

Indeed, an important issue with regard to the program design is that decision-making power is increasingly diminished at lower levels of government, although lower level government forestry bureaus actually implement the program. In addition, because program funds are appropriated from upper levels to lower levels of government, lower level governments generally lacked the leverage to complain about decisions made by higher levels (Ting in Jintao et al., 2002, p3).

The NFPP requires that lower levels of government sign agreements with higher levels of government thereby accepting responsibility for implementation outputs (Jintao et al., 2002). Furthermore, according to the 2002 Task Force studies, State-owned agencies are only responsible for staff and requirements at their own level and are generally not responsible for people participating in the program at other levels. Township or county level agencies, therefore, often lack needed human, material and financial resources more available to agencies at the central or provincial levels.

Although there is a high level of State control in China, as demonstrated by the drastic reduction in timber harvest levels post-NFPP (SFA, 2000), this is not to say that there is integration within and among the various State agencies and entities. Rather, the high level of State control in China is in contrast to the lack of sovereignty allowed in private organizations, not in the dominance of a central government organ over provincial and local government institutions. When conflicting directives from inter-governmental superiors are received by subordinates, Sabatier and Mazmanian (1980) claim that the subordinates will ultimately lean toward the directives of the superiors who will most

affect its legal and financial resources over the longest period of time. This is an important aspect to consider since it sheds light on the posturing currently taking place among implementers of the NFPP (Jintao et al., 2002). Due to the vagueness and conflicting goals of the NFPP, local and provincial implementers are provided great latitude in interpreting and applying the mandated statutes. Combined with low hierarchical integration within and among State agencies, statute ambiguity results in increased opportunities for local implementers to bend the original intent of a policy for their own benefit. Specifically, this refers to the extension of the logging ban over non-State forest enterprises by local level implementers for economic or political gain, as detailed in the 2002 CCICED Task Force case studies.

Along those lines, Jintao et al. (2002, p66) recognize the distortion of incentives centered on the concept that the role of the State is to redistribute resources and exert direct control over land use regardless of ownership or rights of usufruct. “This concept not only contradicts existing law—as it pertains to private and collective landowners—but is out of step with modernization reforms in other sectors of the economy and the stated aspirations of the government” (Jintao et al., 2002, p66). It is this ingrained political philosophy that the central government should control all forms of land use, which is resulting in the extension of the logging ban to non-state forest enterprises. Although it is a belief held predominantly among the older, more conservative and traditional SFA cadres, it is still a powerful force even in reform-minded and progressive modern China.

In light of the fact that there is little intra- and inter-agency hierarchical integration within the SFA and among other agencies participating in implementing the

NFPP, there is substantial and unnecessary replication of work and the wasting of limited scientific, material and economic resources (Richardson, 1990; Zhao Zhilong, March, 2003). There is also considerable variation in implementation, compliance and accountability due to existing decision-rules that lay the burden of responsibility for achieving policy outputs at the local level despite their lack of involvement in designing the NFPP (Jintao et al., 2002). All of these factors combine to reduce the overall efficiency and effectiveness of policy implementation necessarily diminishing the likelihood of achieving the desired outcomes.

Financial Resources:

To their credit, the central government is financially supporting the NFPP at a level unseen for forestry programs in China previously. The level of financial support suggests the relative importance of the policy among central decision-makers, however, it may still be insufficient given the massive scale and ambitious objectives of the NFPP. Furthermore, as noted in the policy design section, a small portion of the more than \$300 million US annual budget for the program has ended up at the local level where most of the implementation costs are incurred (Jintao et al, 2002).

According to the 2002 Task Force report, the SFA also has the burden of supplying non-wage payments into pension, unemployment, health insurance, and housing funds for retired and released State workers. Each of these are not fully covered by State subsidies provided to ease the transition of the agency from a timber-based to a non-timber-based industry. In addition, many State forestry bureaus maintain schools and hospitals for staff and their families. In Sichuan, payments into various benefit funds make up over 60% of the total staff compensation package (Jintao et al, 2002). After the

reductions in timber revenue from the NFPP, State-owned forest enterprises have no means of making the required payments. Program funding and subsidies only cover salaries of staff actively involved in forest tending and afforestation activities. Moreover, local level bureaus of the SFA may not be able to pay full staff salaries and other benefits in the future once State subsidies end (Jintao et al., 2002). Impacts on rural communities and local economies are substantial.

The annual provision of \$300 million USD combined with the savings in overhead that comes from a two-thirds reduction in the SFA workforce would seemingly increase the amount of financial resources available to implement the NFPP. Additionally, enforcing the logging ban does not require any expensive technology or materials, just a sizable labor force—something readily available in China. However, retraining the remaining State employees will take significant time and money while simultaneously requiring substantial up-front financial outlays to cover the benefit packages promised to those who must be laid-off. Restructuring the financial and administrative functions of the SFA will also be a challenge, especially now that no new revenue is coming in from timber harvesting as it did in the past. From now on, substantial amounts of money will be required to establish an effective forest protection and management system and to reforest and maintain the vegetative cover within the nation's major watersheds. Most glaring, however, is the fact that restructuring the rural economy in the 18 provinces where the policy is being implemented will require massive financial investments which, according to the Task Force case studies, have yet to be allocated as promised by the NFPP. Without a strong commitment on behalf of the

central government, achieving the outcome of a revitalized and robust rural economy, not to mention re-vegetated watersheds, seems remote at best.

Formal Access by Outsiders:

According to Sabatier and Mazmanian (1980), statutes may also affect the participation of actors external to the implementing agencies, namely two groups: potential stakeholders and the legislative, executive and judicial sovereigns. They also assert that, in cases where target-groups or individuals lack the ability to bear the cost of judicial review, statutes that allow for citizen participation “in the form of mandamus actions requiring agency officials to comply with statutory provisions” are more likely to attain the desired outcomes (Sabatier and Mazmanian, 1980, p161).

Community participation, collaborative management and capacity building are approaches typically not considered in China. The formal access of stakeholders and outsiders to contribute and modify the NFPP is highly restricted. Neither local level SFA employees, nor non-state forest enterprises were consulted during the policy planning process. Furthermore, the rural people who stand to be most significantly impacted by implementation of the NFPP, in most cases, lack the ability to bear the costs of judicial review for challenging adverse actions of the implementing agency. Furthermore, judicial appeal in China is still a questionable venture. China is, traditionally, a non-litigious nation. Most of the very limited number of lawyers that do counsel are trained primarily in business law (US Embassy-China, 2000). Additionally, many of the judges who may hear such a case challenging the authority of the State to exert control over land use may be conservative in nature. Similar to those local level implementers who are responsible for extending their authority over non-state forest enterprises, the

conservative judges may subscribe to the cultural belief that it is the duty of the central government to control the manner in which land is to be used. Although such a decision would contradict existing law and the expressed intention of the State, it is not a difficult scenario to imagine.

There are, however, many progressive members in the various levels and branches of government. There is also a growing number of domestic and international NGOs with increasing influence. Although most domestic NGOs, such as Green Rivers and Environmental Protection Volunteer Association of Sichuan, are environmental, not social, in nature, the two issues seem to converge when discussing the NFPP and may draw at least a modicum of support. It seems more likely that more substantial support would come from international NGOs, such as World Watch Institute, Amnesty International, the World Wildlife Fund, Greenpeace or others. The activities of all NGOs are typically under close scrutiny, though, and supporting contentious issues may negatively impact their organization (US Embassy-China, 2000).

Multi-national institutions, such as the World Bank, the WTO or the IMF, have the most substantial leverage in influencing policy formation and adjustment in the current Chinese context. Inasmuch as China is currently in the initial stages of joining the WTO, they must comply with a wide range of standards and requirements. Several of these include the opening up and liberalization of the market economy and a legal system that recognizes private property and ownership (at least as it applies to corporations) and guarantees that those rights, if infringed upon, will be upheld in Chinese courts (US-China Business Council, 2005). Such standards may increase the possibility of judicial regress for stakeholders adversely affected by the NFPP.

One “outsider” group does currently have a direct and significant impact on the evolution of the NFPP and its implementation. The CCICED Western China Forest and Grasslands Task Force has extensively monitored the implementation of the NFPP to date. Their recommendations, based on numerous case studies, have reached the ear of Beijing. Reports in the People’s Daily newspaper suggest that at least some of those recommendations are being considered by policy implementers thereby influencing implementation of the NFPP (Xinhua, November 25, 2002). The inclusion of the international and interdisciplinary CCICED Task Force in providing assistance in the monitoring and evaluation of the NFPP is a promising sign that the formal access of outsiders may be increasing in the more liberal atmosphere of the reform era.

Domestic and international environmental NGO’s are relatively new in China and their influence is minor, though growing. Rural individuals or non-state enterprises generally lack the wherewithal to challenge legal transgressions—especially when the legitimacy of the courts is still in question. There is, therefore, little formal access for domestic outsiders to exercise citizen participation in the formation or modification of policies that directly impact their lives. According to Sabatier and Mazmanian (1980), this necessarily reduces the likelihood of attaining the desired outcomes of a policy. The socio-political landscape in China is rapidly changing, however, both from within and without. Conservative cadres are being replaced with more progressive leaders, initiatives and legislation increasing individual rights are being passed, and the legitimacy of the courts is slowly growing. These trends are supported and spurred on by China’s emergence into multi-national trade groups requiring such standards suggesting that formal access by outsiders is increasing in China.

Summary of Statutory Variable Impacts on Dependent Variables:

Virtually every aspect of each of the four statutory variables suggests that there is a low probability that the NFPP will attain the desired outcomes (see Table 4.2). The objectives are neither clear nor consistent. The hierarchical integration is loose and the decision-rules are not conducive to progressive and effective implementation. Financial resources are inadequate and there is very little formal access by those outside the implementing agency to alter the design and implementation of the policy. All of these conditions taken together, according to Sabatier and Mazmanian (1980), diminish the likelihood of policy success. This situation impacts policy outputs and the dependent variables in several significant ways.

Implementation of the NFPP is changing local governments' revenue patterns and, therefore, their ability to provide both public and non-public goods, services or financial support. Although a subsidy is allocated to local level administrative units implementing the NFPP, it is insufficient to compensate for reductions in taxes and stumpage fees due to the program (Katsigris in Jintao et al., 2002). The World Bank (2003) reports that, in Sichuan as a whole in 1999, the total bank debt of provincial forestry units implementing the NFPP was 1.66 billion yuan (\$202.4 million US), of which 1.4 billion yuan (\$179.7 million US) was considered non re-payable. There are 9 counties in Sichuan where the timber industry accounted for over 80% of the local government revenues (Katsigris in Jintao et al., 2002). According to Task Force case studies of 2002, now that revenues are dramatically reduced, roads are becoming neglected, schools and clinics are closing and financial institutions are suffering from high rates of loan defaults.

The cessation of logging removed an important source of cash revenue and economic opportunities for rural people despite their depth of association with the timber industry. Drastic changes in this one sector have had strong ramifications throughout all levels of China's rural and mountain-forest communities, society and economy (see Jintao et al., 2002; Li et al., 2000; Liu et al., 2003; and Rozelle et al., 2003). Timber-processing facilities that formerly relied on both State and non-state forest timber activities are, predictably, drastically impacted. Not only do they now lack raw materials for processing, but aside from partial pension subsidies, the NFPP neither offers the option to shift into a conservation role, nor does it provide unemployment benefits to non-state timber-processing enterprises (Jintao et al., 2002). Moreover, according to the Task Force case studies (2002), many new timber-processing facilities were recently established in less developed areas, making the situation even worse, given the debt incurred. They are now facing bankruptcy and foreclosure.

With the implementation of the NFPP, community-level economies based on timber utilization from collective [non-state] forests have experienced severe economic setbacks in many of the natural forest regions of China and in some cases have even collapsed completely. The inclusion of collectively owned [non-state managed] natural forests into the NFPP has caused a significant decline in economic output from community and household level forestry and related sectors (Katsigris in Jintao et al, 2002, p31).

Also, subsistence livelihood activities in many communities, such as swidden agriculture, pasturing practices and the collection of non-timber forest products, are changing through limited access to land, timber and other forest products for self-use. "Extreme measures have cut off local communities' access to non-timber forest products as well as timber" (Ting in Jintao et al., 2002, p7). A significant proportion of the locals'

cash income is derived from manual labor in the forestry sector or through the industries which either directly or indirectly provide services catering to those associated with the timber industry (i.e. restaurants, hotels, gas stations, etc.). Although alternative livelihoods are emerging, they may not be strong enough or develop rapidly enough to mitigate the negative impacts.

As the NFPP matures and the implementing agency adopts some of the CCICED Task Force recommendations, hierarchical integration may improve, more financial resources should begin filtering down to the local level and outsiders may gain some power to manipulate the policy's implementation, possibly even through legal channels. Many changes must occur, however, and it will take time to reverse traditional patterns of agency and ministerial isolation or non-cooperation and the culturally ingrained beliefs regarding the State and its authority over land use and tenure issues. It seems unlikely that legal challenges to that authority will take place within the life span of the NFPP unless pressed to do so by multi-national organizations as a requirement for China's participation in the WTO. It is also unclear whether the courts will interpret the established laws in favor of non-state users of land, or whether they will support the continuation of central authority over that resource. Some things are clear, however. In order to meet several of the proclaimed goals, especially the revitalization and diversification of the rural economy, substantially more financial support is required. Additionally, one of the most fundamental problems with the NFPP remains to be the ambiguity and inconsistency of policy goals. Due to its impact on tenure security and, hence, incentives for non-state forest enterprises to continue their important and valuable

work, this one element exerts a strong negative effect on the ability and possibility of the NFPP achieving what it has set out to do.

Table 4.2: Assessing the Impact of Statutory Variables on Dependent Variables

Desired Outcomes	Clear and Consistent Objectives	Hierarchical Integration and Decision-rules	Financial Resources	Formal Access by Outsiders
<i>Eliminate industrial logging</i>	+ The objective of halting industrial logging is consistent with the objective of slowing or reversing reductions in vegetative cover 0 The objective of eliminating industrial logging may or may not be consistent with the objective of revitalizing the rural economy	- Conflicting and ambiguous directives from superiors results in extension of the logging ban to non-state enterprises	+ Significant financial inputs have been earmarked + Restricting logging operations costs less than conducting them - Restricting logging operations reduces revenue for many stakeholders	- Rural stakeholders have no representation in the formation and application of the logging ban + Multi-national institutions are assisting in monitoring application of the logging ban
<i>Reduce rural use and dependency on firewood</i>	+ The objective of reducing rural firewood dependency is consistent with the objective of reducing rates of loss in vegetative cover	- Little or no integration between forest management agencies and those responsible for rural electrification programs	- Rural electrification programs are expensive and take decades to realize	- NGOs wishing to help reduce rural dependence on firewood are young and not yet very effective or influential
<i>Re-establish vegetation on sloped denuded lands in the short-term</i>	+ The objective of increasing vegetative cover in the short-term is consistent with the objective of increasing watershed stability	- Little intra- and inter-agency hierarchical integration in undertaking short-term activities	- Revegetating millions of acres of steep, remote lands requires massive financial inputs - Food for work subsidies are lacking	- Non-SFA groups that may be required to revegetate vast areas have been alienated from the planning process
<i>Permanently increase vegetative cover in the nation's main watersheds</i>	+ The objective of increasing vegetative cover in the long-term is consistent with the objective of increasing watershed stability	- Little intra- and inter-agency hierarchical integration in pursuing long-term goals	- Monitoring and sustaining revegetation efforts on millions of acres of steep, remote lands requires massive financial inputs	- Non-SFA groups that may be required to monitor and sustain revegetation efforts have been marginalized
<i>Restructure the financial and managerial organization of the SFA</i>	0 Changes in SFA management may or may not increase agency effectiveness in stabilizing watersheds - Objectives of the restructuring are not clear	- Decision-making authority is diminished at lower levels where most implementation occurs	0 Restructuring the SFA requires moderate amounts of time and money	+ Multinational organizations, such as the World Bank and WTO, are assisting with the restructuring of State agencies

Table 4.2 (continued): Assessing the Impact of Statutory Variables on Dependent Variables

Desired Outcomes	Clear and Consistent Objectives	Hierarchical Integration and Decision-rules	Financial Resources	Formal Access by Outsiders
<i>Retrain SFA employees to perform new tasks</i>	+ Training is necessary for SFA employees to transition from loggers to stewards and consistent with the goal of establishing an effective forest protection and management system - The source of technical expertise to conduct the training is unclear	- Lower level government agencies lack needed human, material and technical resources more available to higher level agencies	0 Retraining SFA staff and administrators requires moderate amounts of time and money	0 Deficiencies in technical capacity due to the cultural revolution may require outside technical specialists to help retrain SFA employees
<i>Meet domestic wood demand</i>	- Objective of meeting domestic wood demand is seemingly incompatible with the logging ban - Lack of clarity regarding what forests, State vs. non-state, are subject to the logging ban results in reduced production from non-state forest enterprises	- Agencies and provincial SFA departments are loosely integrated and/or their dedication in the pursuit of meeting China's massive domestic demand for wood and wood products varies significantly	- Reduced timber output, combined with increased wood demand, raises both price and spending on wood and wood product imports	0 Non-state forest enterprises not affected by the NFPP continue contributing to meeting domestic wood demand 0 Trade agreements are increasing wood imports
<i>Establish an effective forest protection and management system</i>	- It is not clear what constitutes an "effective forest management system"	0 Forest protection and forest management are conducted by two separate agencies: the State EPA and the SFA respectively	- Forest protection is more expensive and less profitable than timber extraction 0 Management and protection of China's remaining forests requires significant financial resources	- NGOs wanting to help protect and manage forests are young and not yet very effective + Multi-national institutions are assisting in efforts to protect and manage forests
<i>Diversify and revitalize the rural economy</i>	- A struggling transitional economy must result due to the logging ban before a diversified, sustainable economy emerges - Lack of clarity regarding what forests, State vs. non-state, are subject to the logging ban reduces incentives for non-state forest enterprises	- Diversifying and revitalizing the rural economy requires a high level of intra- and inter agency coordination—a situation that does not currently exist	- Revitalizing the rural economy requires massive subsidies in the short and long-term	- NGOs that may wish to help diversify and revitalize the rural economy are young and not yet very influential + Multi-national institutions are assisting in efforts to revitalize the rural economy

Analysis of Non-statutory Variables

Each of the modified framework's non-statutory variables impacting NFPP implementation are considered in this section. The uniformity and severity of existing socio-economic conditions in the southwest forest region are explored. Existing land tenure and security in the region is also considered. The state and nature of media coverage regarding the NFPP is noted along with stakeholder resources, attitudes and organizational ability. Finally, the commitment and leadership skill of supporting implementing officials and sovereigns and the institutional capacity of the implementing agency is also analyzed.

Socio-economic Conditions, Land Tenure and Attitudes of Constituency Groups:

Socio-economic conditions for households and communities of State-owned forestry bureaus are generally better than those of communities that are predominately non-State supported (Jintao et al., 2002). However, negative changes in employment patterns attributed to the NFPP have been immense. As mentioned, an estimated 750,000 to 1 million employees of State-owned forestry enterprises, out of about three million employees prior to implementation, have been dismissed (Jintao et al., 2002). "In a survey of 112 staff households at the bureau [local level SFA forestry unit], an average of 94% of household incomes came from staff salaries, and about 85% of households depend exclusively on staff salaries for income" (Katsigris in Jintao et al., 2002, p16). Those sources of income are now truncated for over one-third of households in NFPP areas. At the same time, alternative work options are limited in many cases. Remote location, few transferable job skills, limited education and China's policies restricting

labor mobility may be expected to hinder a transition to alternative livelihoods or successful out-migration for work (Jintao et al., 2002).

Poverty in rural mountain communities is substantial and often debilitating (Han, T., 2005). Some rural regions in China have among the lowest per capita incomes in the world. These communities depend heavily on subsistence activities and, formerly, indirect benefits from the timber industry (Winkler, 2004). In some places, local authorities take advantage of their authority by destroying bridges and erecting fences to restrict access to the collection of fuelwood or the operation of non-state forest enterprises then illegally levy fees for subsistence access (Jintao et al, 2002). Additionally, according to the 2002 Task Force studies, the few regional jobs available are usually allocated to former State employees leaving scarce employment opportunities for locals who are also ineligible to receive unemployment subsidies. Furthermore, former State employees not able to locate employment place increasing pressures on the non-state forest enterprises to provide work (Jintao et al., 2002).

Each and every segment of the rural population in NFPP areas suffer from severe economic constraints (Han, T., 2005). According to Sabatier and Mazmanian (1980), the severity and breadth of these negative and persisting socio-economic conditions, greatly reduces the possibility that the NFPP will be able to meet the goals established by the central government.

Thus the more diverse an economy and the more prosperous the target-groups, the more probable the effective implementation of statutes imposing non-productive costs on them. The lower the diversity and prosperity, the more likely the substitution of subsidies for police power regulation (Sabatier and Mazmanian, 1980, p163).

Regarding the above quote, the NFPP affected areas are more in the latter condition rather than the former. Despite a long and peaceful tradition of non-confrontation and respect for public order and government authority in China, individuals are increasingly faced with the choice to comply or survive even in the face of “the substitution of subsidies for police power regulation.” The possibility of civil unrest increases as conditions deteriorate. Although such behavior is uncommon in Chinese society, there is precedent for the evolution of mass movements in dire circumstances. Unfortunately, the last such movement, a 1989 pro-democracy demonstration in Tiananmen Square, was dealt with in such a manner as to send a clear message to all who may try to place their individual agendas above that of the collective. In the context of the NFPP, subtle non-compliance through illegal forest utilization activities is the most likely scenario. After all, paying off or bribing local administrators if you are caught is a much more favorable situation than being involved with an uprising that may be ruthlessly crushed by the central government, especially an uprising located far away from the public eye.

Many policies in the past have failed in China due to the level of control over resources, particularly land (Richardson, 1990). It was noted in the background and literature review section that Hyde et al. (2003), the World Bank (2003) and Liu (2001) have reported on the inconsistent and unpredictable nature of government policies in China that create an air of uncertainty regarding the management of forest resources. Furthermore, the authors assert that uncertainty, and the correlating decreases in trust toward the State, not only reduces incentives to sustainably manage forest resources, but that it has also been shown to lead to decreases in forest cover since new investments in

forestry practices are not undertaken. This is particularly true in China's southwestern forest management region where policies have historically been inconsistently applied (Liu, 2001; Yamane, 2001).

Decentralization in decision-making power and rights of usufruct from the State to local communities has been a defining aspect of reform era policies in China since 1980 (Hyde et al., 2003). The assumption, which has thus far been shown to be true, is that increased local control leads to greater and more sustainable forest management systems (Yamane, M., 2001; Yin, R., 2003; Wenming, L., 1999; Rozelle, S., Huang, J. and Benziger, V., 2003). Indeed, the non-state forest enterprises are exceedingly promising in their productivity and socio-economic potential for rural communities (World Bank, 2003). However, the nature of the NFPP's implementation may have lasting and far reaching detrimental effects on this encouraging component of China's forestry sector and may also negatively impact several policy outcomes.

This extension of the NFPP to collective [non-state] forests has national level repercussions: production from these forests has been overtaking production from State-owned enterprises, and now constitutes at least 1/2 of all forest products supplied in the country. Impacts on rural households that previously had access to collectively owned forests raise a host of very critical issues with regard to sustainable management regimes and tenure (Jintao et al., 2002, p34).

Currently, as revealed in the 2002 Task Force case studies, the attitudes of rural residents affected by the NFPP toward the policy are quite low. Without any substantial understanding of, or vested interest in the design, management and implementation of the NFPP, rural forest dwellers have little, if any, empathy for its mission. After all, it is not they that suffer from the flooding, yet it is they that must endure the brunt of the costs associated with its implementation. They must reforest the denuded, sloped agriculture

land in exchange for food subsidies, they must decrease their intake of wood for building material and fuel, and they must do so while their local economy is in a period of massive upheaval. Ultimately, and perhaps most ironically, several of the NFPP's goals have a significantly reduced chance of being realized by the existing understaffed and insufficiently supported SFA without collaboration with rural civilians. In other words, as long as rural mountain-forest dwellers are marginalized, as long as their security in the ownership of land and the fruits of their labor are diminished, and as long as socio-economic conditions continue to lag, successful implementation of the NFPP is necessarily impeded.

The most obvious impact of the socio-economic conditions in NFPP areas has to do with the goal of diversifying the rural economy. Much more needs to be done in order for the NFPP to revitalize the rural economy from where it was before implementation of the NFPP to where the leaders in Beijing and rural residents would like to see it. Not only that, but what is being done needs to be changed significantly if this goal is to be realized. The current methods of implementation are, in fact, having impacts opposite of that which is intended (Jintao et al., 2002). This is true, in large part, due to the infringements being experienced by leasers of land.

Furthermore, the willingness of individuals, collectives and communities to participate in a policy that is adversely affecting their livelihoods is low. The attitudes of constituency groups are simply not conducive to achieving the desired outcomes. Naturally, external pressures may attempt to coerce support for the policy and force participation in achieving its objectives. Such pressures may result in civil unrest or outward disobedience. Dissent is not completely absent in Chinese society. The

reform era has seen the development of greater resistance to the draconian measures of the central government more characteristic of the pre-reform era. As socio-economic conditions continue to deteriorate, the likelihood of resistance and the ability to organize opposition to the policy increases. The ability for such discontents to effectively attain their agendas, however, remains low.

Commitment, Expertise, Leadership Skill and Resources of Implementing Officials and Support from Sovereigns:

The modified analytic model emphasizes socio-economic conditions and land tenure given the Chinese context. Sabatier and Mazmanian (1980), on the contrary, call the commitment and leadership skill of implementing officials the non-statutory variable most capable of directly affecting policy outputs by virtue of agency officials' commitment to the policy's purpose.

This comprises at least two components: first, the direction and ranking of the statutory objectives in officials' preference orderings; and, second, their skill in realizing those preferences, that is, their ability to go beyond what could reasonably be expected in using the available resources. The importance of both attitudes and skill, of course, vanes with the amount of discretion afforded administrators (Sabatier and Mazmanian, 1980, p166).

The institutional capacity of those implementing the NFPP is quite significant in the Chinese context. Traditionally, many senior level SFA/MOF managers only considered the most efficient methods for harvesting trees (Richardson, 1990). Reforestation of denuded lands is a recent endeavor. To them, incentives for strong leadership performance have been related more to high production rates and financial returns rather than through a genuine interest and concern for the forest ecosystem under their management (Rozelle et al., 2003). Furthermore, due to China's historical and

existing system of job appointments and lack of labor mobility, many individuals are assigned positions in the environmental field without necessarily having any real interest or commitment to the ideals of environmentalism or natural resource conservation (Richardson, 1990). Yet, as revealed through discussions with Zhao Zhilong (2003), a Chief Vice Director in one of Sichuan's forestry bureaus and Li Shengzhi (2003), a Program Officer in Conservation International's China program, younger professionals are expressing more developed environmental values through a greater concern for, and interest in, environmental issues. They also see the potential of quick upward mobility as their superiors retire in the face of the restructuring—if they themselves are able to survive the cutbacks. Unfortunately, due to the lingering effects of the Cultural Revolution, many of these energetic young forestry professionals are ill equipped to face the challenges of reforming the entire industry along stewardship, non-extractive lines. Richardson (1990) notes that no full-length university course was completed in any field during the decade-long Cultural Revolution and since then all students receive diplomas regardless of their performance. Also according to Richardson (1990), there is little evidence of integrating resources among institutions and regions. The result is a general lack of managerial capacity, a shortage of qualified replacements and the wasting of scarce resources through non-cooperation and the duplication of efforts.

Monitoring compliance is proving to be both difficult and costly (Rozelle et al., 2003). The entire forest industry, primarily the production, trade and processing of forest products and the overall management of these activities in general, is undergoing drastic reforms (Hyde et al, 2003). Completely changing from the formally utilitarian, extractive, profit-driven industry into a more sustainable, eco-centric management

institution, practically overnight, requires a great deal of human, material and technical resources. Resources available to local level implementing officials, apart from their leadership skills and expertise, however, are limited. Not only must the greatly reduced and ill-trained workforce of the new SFA act as extension agents and advisors, they must also encourage non-state groups targeted by the sloping land conversion aspect of the NFPP to alter their behavior in favor of the government's goal of stabilizing the nation's upper watersheds (Jintao et al., 2002). According to the 2002 Task Force report, they have the leverage of food in exchange for the desired outcome. However, discussions with Zhao Zhilong, Chief Vice Director of Sichuan's Forestry Bureau in Dujinagyan in March 2003, suggest that the food surpluses predicted by the central government and earmarked for use in this program were not available.

Additionally, local level implementers are manipulating the intentions and authority of the policy for their own benefit, as evidenced by restricting access and levying fees to utilize non-state lands, showing that there is a low level of commitment to achieving at least some of the desired outcomes (Katsigris, 2002). Implementers at the provincial level are more vested in the outcomes of the NFPP. Not only are they the ones that initially proposed the policy, at least the logging ban and revegetation efforts, but they are the ones that stand to lose the most if it fails and the flooding continues to worsen. Commitment at the national level is still in question. On the one hand, a substantial amount of money, by Chinese standards, was appropriated for the project. On the other hand, the national body that drafted the NFPP introduced several other goals, namely the socio-economic development schemes. Such initiatives require substantial inputs on their own. Their inclusion in the NFPP simply results in the draining of much

needed and limited funds from the activities more central to the original purpose and ultimate goals of the policy.

Fundamentally restructuring an agency's purpose requires a great deal of commitment. This commitment must come not only from the individual implementers at the local, provincial and national level, but from the State as a whole as represented by the sovereigns in Beijing and the legislature. Will Beijing apply the recommendations of the CCICED Task Force and substantially modify the policy, especially as it pertains to the unintended effects on rights of usufruct and land tenure security? Are they willing to relinquish their traditional power and culturally supported authority over land use? Will they abandon the policy before its ten-year life span in favor of a different approach? What will the legislature do; support the continued exercising of decision-making control over land use and, hence, non-state forest enterprises, or will they uphold the current law and its mandate to decentralize decision-making control in this realm? These are important questions with very real ramifications. Inasmuch as the mid-term review was just completed, 2005 should be a very interesting year with respect to these questions and the future of the NFPP.

Optimism prevails in the evaluation of this variable, however. Personal experience as a teacher of environmental science in China has shown a rapid and pervasive increase in environmental values and general knowledge of and concern for the nation's diminishing natural landscapes. The simple fact that Chinese environmental NGOs exist today when they were virtual non-existent twenty years ago is a very promising sign. True, new professionals entering the fledgling SFA may not have the advantage of multi-disciplinary ecosystem management classes that the west is able to

benefit from—most Chinese students that travel abroad for training are not foresters. But the conservative thinking, extraction oriented approaches of forest management senior professionals may spur new environmental managers to consider creative approaches and solutions to the complex problems facing the SFA and its implementation of the NFPP.

It is undoubtedly a very exciting time to begin a forestry career in China. Although it may be too late for youthful exuberance, creativity and idealistic values to positively impact implementation of the NFPP, the lessons learned from such an ambitious project may prove invaluable to the development of skills and expertise in the new, reform-minded generation. The real test, as far as the imminent success or failure of NFPP implementation is concerned, lies with the support from sovereigns which is discussed later in this chapter.

Media Attention to the Problem and Public Support:

The state-controlled nature of media coverage in China is another non-statutory variable capable of altering the implementation process according to Sabatier and Mazmanian (1980) and the modified model. Although Sabatier and Mazmanian's western centered perspective does not translate well into the Chinese context in this respect, consideration of this variable is nonetheless revealing. Nearly all reports in the State media praise the successes of the NFPP in eliminating destructive logging practices while downplaying the negative socio-economic changes impacting rural peoples (People'sDaily, 10/25/01). This contributes to general public support for the program, especially among the urban dwellers affected by the 1998 floods, yet does little to convince many rural residents in mountain-forest regions of the program's benefits.

In fact, media attention to the NFPP is substantial. Comparable to the Three Gorges Dam project, most citizens in China are at least aware of “the logging ban.” This is true due to pervasive application of the NFPP (in 18 out of 26 provinces) and the impact that reductions in timber output is having on the price of wood products and manufactured goods throughout the country (World Bank, 2003). However, the State-controlled media is, by definition, substantially biased. Few of the negative impacts mentioned thus far are given much, if any, coverage in the nation’s major sources of information. So although media attention to the problem is high, the objectivity of the information presented is questionable.

Apart from the fact that the State media and a substantial number of urban residents strongly support the NFPP, most of the rural residents that feel a more direct and daily impact on their lives due to the policy understandably resent it (Jintao et al., 2002). According to Sabatier and Mazmanian (1980), the tenacity and voice of opposition groups is determined by membership and financial resources, their ability to comment on proposed decisions and the capacity of such groups to publish critical studies (of the NFPP). However, not only do impacted rural residents have little voice or tenacity, public opposition to centrally mandated policies is sensitive in China. Faced with this lack of a channel for dissent and the requirement to meet seemingly contradictory goals in the absence of adequate human, material or financial resources, support at the rural and local level is reduced.

Although support for the NFPP in rural areas is low, the fact remains that a larger, more influential mass supports the program (People’sDaily, 10/25/01). Such media and public support, however, does not necessarily increase the likelihood of producing the

desires outcomes. Ostensibly, urban and media support is based primarily upon the outcome of reducing the frequency and severity of floods. There is little interest or knowledge in the socio-economic goals, the impact of the policy on rural livelihoods or in how the objective of flood control will actually be attained. They are, understandably, most concerned with their own livelihoods. It is the support from the rural residents, however, that is required if the ultimate goal of reducing flooding is to be achieved. Without their help, it will be exceedingly difficult to establish and maintain vegetative cover in the sensitive watersheds. Furthermore, such compliance cannot be maintained indefinitely through autocratic means. Due to this reason, the lack of support from rural residents necessarily reduces the chances for implementation success.

Summary of Non-statutory Variable Impacts on Dependent Variables:

The purpose of this analysis is to assess the effectiveness of the NFPP in producing the outcomes of eliminating destructive timber harvesting practices in targeted areas, of restructuring the SFA and of diversifying the rural economy while meeting domestic wood product needs. The impact of the NFPP on socio-economic conditions is more immediately noticeable in comparison to the other policy goals since the effectiveness in eliminating destructive timber practices requires time-consuming audits and surveys and successes in restructuring the SFA may be less obvious or require a longer period of time to realize. Also, the socio-economic objectives of the policy is, perhaps, more easily ascertained due to the availability of substantial data regarding this subject as a result of the Task Force case studies. According to those studies, crisis level poverty conditions in rural mountain-forest communities unquestionably exist while traditional subsistence livelihoods are threatened. Furthermore, socio-economic

conditions in rural Sichuan and Yunnan are fragile and have historically been complicated by the extension of State authority over non-state forest management systems in the region (Jintao et al., 2002). The unemployment of almost a million people combined with China's policies restricting job mobility exasperates the existing problems.

The biased perspective of the State-owned media and the non-existence of freedom of demonstration and expression by the general public or outsiders further frustrates the situation of rural constituency groups. Confounded by the lack of sufficiently trained senior management, possessing limited commitment to the long-term goals of the NFPP, and restricted in their management capacity due to the hiatus of the Cultural Revolution, implementing officials possess few incentives to excel in their assigned duties (Richardson, 1990). The result is a structure that more or less encourages local level implementers to extend their authority over non-state forest management systems in the name of the NFPP due to the possible benefits that may be accrued to them. Ultimately, although the logging ban itself enhances the short-term achievement of statutory objectives, under the current circumstances and given the evaluations of the non-statutory variables as a whole, the analysis suggests a reduced probability in achieving the desired long-term outputs. The impacts on dependent variables support these claims.

According to the 2002 Task Force studies, negative trends in educational opportunities and social stability within rural communities is occurring. Education is traditionally highly valued in Chinese culture and a large proportion of household income is commonly devoted to education. Thus, declining incomes are negatively impacting

school enrollment (Jintao et al., 2002). As mentioned, many schools have already been forced to close as a result of economic impacts due to the logging ban. Additional evidence from the Task Force studies suggest that impacts on minorities, which make up the majority of populations in many of the mountain-forest areas covered by the logging ban, may be disproportionate in comparison to Han Chinese in the area primarily due to lower employment competitiveness. Given the potential for widespread employment difficulties, decreasing incomes and an increased school dropout rate, social stability in affected communities, both minority and non-minority, are at risk. Already, crime rates in many forest districts have increased (Katsigris in Jintao et al., 2002).

These extreme negative changes in socio-economic conditions continue to impact perceptions about the importance of problems addressed by the policy. Faced with the development of crisis level poverty conditions and no option to transfer domiciles and employment, rural people have little empathy for the conservation of what scant vegetation remains in the watersheds. The maxim “conservation after breakfast” is universally relevant and, in the face of the rural divestiture occurring in exchange for urban development, mountain-forest communities in southwestern China are becoming increasingly anxious. Arbitrarily expanding the scope of the NFPP by imposing the logging ban on collectively owned forests has had serious implications for the livelihoods and perceptions of the involved communities. This has raised a host of legal questions and is incurring many social depravities as well.

Indeed, this situation, and the corresponding erosion of trust due to the illegitimate extension of the NFPP’s restricted-use mandate to non-state forests, may be the most significant negative impact resulting from the existing method of NFPP

implementation. The previously thriving non-state forest enterprises have been severely hampered in their ability to operate efficiently and in their ability to invest in diversifying their services given the unpredictable and uncertain tenure situation.

Production capital and investments in production facilities could not be recovered or redirected to other areas [after the implementation of the NFPP]. This has particularly affected the township and village [non-state] enterprises. At the same time, the total number of [non-state forest enterprises] decreased by nearly 65%...and employment declined about 53% (Katsigris in Jintao et al., 2002, p33).

In the past, forests were used as collateral, especially by non-state forest enterprises, to secure loans for needed agroforestry supplies (Richardson, 1990). Now, due to the insecure tenure issues related to extension of the NFPP and State authority over non-state forestlands, banks are hesitant to recognize the value of the forests and are withholding loans due to the uncertainty of ownership (Jintao et al., 2002).

Apart from the alterations of trust dynamics occurring between State and non-state constituencies, issues of compliance are also important to consider when analyzing implementation and ability to achieve desired outcomes. According to Sinkule and Ortolano (1995), compliance is a function of stakeholder and target-group values, attitudes, beliefs and behavior. Given the great and generally negative socio-economic impacts associated with implementation of the NFPP, how probable is compliance with the established statutes? We have only to look to Sabatier and Mazmanian (1980) for the answer. The analysts suggest that the decision to comply is a function of four factors:

- 1) The probability that noncompliance will be detected and successfully prosecuted.
- 2) The presence of sanctions available to penalize noncompliance.
- 3) The state of stakeholder and target-group attitudes concerning the fundamental legitimacy of the rules.
- 4) The costs to stakeholders and target-groups of compliance with statutes.

The primary provision of the NFPP is the logging ban. This provision is fairly straightforward despite its ubiquitous application. According to Jim Harkness (2004), Director of the WWF in China, the logging ban is strongly and effectively enforced, albeit, beyond its intended range. His testimony (2004) and personal experience in Sichuan (November, 2003) verify that industrial logging trucks are no longer plying the roads of western Sichuan. Large-scale timber harvesting in the region by the SFA appears to have ceased. However, Greenpeace China has recently uncovered evidence that Asia Pulp and Paper is conducting illegal timber operations in Yunnan Province (Xinhua, December 16). The SFA, upon becoming aware of the Greenpeace China accusations, immediately launched an investigation of the private timber corporation confirming the allegations. Chinese authorities are now suing APP for damages and are forcing compliance with the logging ban statute (Xinhua, January 17).

At a more local level, compliance with the restricted-use mandate of the NFPP is currently begrudgingly accepted, albeit, circumvented whenever probability of detecting non-compliance is low (Harkness, 2004; Liu, J. et al., 2001). However, as socio-economic conditions continue to decrease, non-compliance at the local and subsistence levels may reasonably be expected to increase proportionately. This is especially true

given the difficulty of the small SFA management teams to adequately supervise the extensive area of NFPP implementation (Zhao Zhilong, March, 2003). The corollary impact on vegetative cover due to non-compliance at the local level is currently unclear. The affect that implementation of the NFPP is having on formerly sustainable household level subsistence practices is also currently indeterminate. However, it has been suggested by some (Albers et al., 1998; Jintao et al., 2002; Hyde et al., 2003) that stakeholders are increasing pressure on and conversion of forest lands in the wake of massive and negative socio-economic impacts associated with implementation of the NFPP. Meanwhile, compliance at the State and industrial level seems complete. Due to the scale of their operations, the easier to monitor industrial timber harvesters bare the majority of attention by the regulating police powers. Given these variable scales of compliance, the likelihood of achieving the main outcomes of increasing vegetative cover and stabilizing hydrological flow is uncertain.



Table 4.3: Assessing the Impact of Non-statutory Variables on Dependent Variables

Desired Outcomes	Socio-economic Conditions, Land Tenure (certainty), and Attitudes of Constituency Groups	Commitment, Expertise, Leadership Skill and Resources of Implementing Officials and Support from Sovereigns	Media Attention to the Problem and Public Support
Eliminate industrial logging	+ Existence of a strong central government and a social tradition of obedience increases likelihood of compliance	0 Commitment of senior SFA cadres to the logging ban is questionable + Substantial resources have been dedicated to enforce the logging ban + Strong support for the logging ban from the central government	+ Media attention and support among urbanites is high - Support among rural residents is questionable at best
Reduce rural use and dependency on firewood	- Rural residents depend on wood for fuel and will continue to utilize fuelwood until cheap, dependable electricity is supplied	+ Rural electrification programs are supported by the central government - Resources for rural electrification programs are lacking or take significant time to mobilize	0 Media attention and public support for this goal is neither significant or negative
Re-establish vegetation on sloped denuded lands in the short-term	+ Poor socio-economic conditions combined with financial and/or material subsidies help revegetation efforts - Food for work subsidies are not being provided as promised	+ Sovereigns are committed to the goal of short-term revegetation 0 Implementing officials may or may not be committed to the goal of short-term revegetation 0 Expertise in watershed revegetation exists, but is limited 0 Necessary resources exist, but may not be totally sufficient	+ Media attention and urban support for this goal is high 0 Rural support depends on availability of work or impact on/reductions in subsistence agricultural land area
Permanently increase vegetative cover in the nation's main watersheds	- As socio-economic conditions deteriorate and the ability to detect non-compliance lowers, actual compliance with restricted use policies become more difficult to enforce	0 The support of sovereigns and commitment implementing officials to the goal of long-term watershed revegetation is still in question 0 Availability of necessary resources and leadership skill required to sustain long-term watershed revegetation is questionable	+ Media attention and urban support for this goal is high 0 Rural support depends on availability of work or impact on/reductions in subsistence agricultural land area
Restructure the financial and managerial organization of the SFA	0 Sweeping changes may or may not be resisted by affected constituency groups - Cultural tradition of "guanxi," or favoritism in business and employment	- Lack of sufficiently trained senior managers due to the hiatus of the cultural revolution - Few incentives for managers to excel in their duties 0 Support and resources for making the transition are moderate	0 Media attention to this goal is not substantial, nor is it absent 0 Public support for this goal is neutral
Retrain SFA employees to perform new tasks	0 Huge numbers of employees require training 0 Employees may or may not resist a new employment role	- Lack of experienced trainers 0 Commitment to the new role of the SFA, on behalf of implementing officials and sovereigns alike, is questionable	0 Media attention is not substantial, nor is it absent 0 Public support is neutral

Table 4.3 (continued): Assessing the Impact of Non-statutory Variables on Dependent Variables

Desired Outcomes	Socio-economic Conditions, Land Tenure (certainty), and Attitudes of Constituency Groups	Commitment, Expertise, Leadership Skill and Resources of Implementing Officials and Support from Sovereigns	Media Attention to the Problem and Public Support
Meet domestic wood demand	- Incentives to engage in forest enterprise activities are reduced due to State control over land regardless of ownership or rights of usufruct	0 Commitment, expertise, leadership skill, resources and ability to attain this goal are all questionable 0 Support from sovereigns, primarily in judicial decisions regarding rights of usufruct for non-state forest enterprises in a position to contribute to meeting domestic wood demand, is not yet known	0 Media attention and urban support is not substantial, nor is it absent 0 Rural support depends on ability to benefit from forest enterprise activities
Establish an effective forest protection and management system	- Incentives to reorganize or establish a new forest management system are distorted in favor of the concept that the role of the State is to redistribute resources and exert direct control over land regardless of ownership or rights of usufruct - Existence of a poor, subsistence and natural resource-based economy reduces likelihood of compliance with restricted use (of forest resources) mandates	0 Commitment, expertise, leadership skill, resources and ability to attain this goal are all questionable - Recent studies (Liu et al. 2001 and Lu et al., 2002) suggest China is not very successful in effectively establishing and managing protected areas and/or forest ecosystems	+ Media attention and support among urbanites is high 0 Support among rural residents depends on the impact resource management has on their lifestyle
Diversify and revitalize the rural economy	- Existence of a poor, subsistence and natural resource-based economy - Job mobility is restricted - Over 1 million former SFA employees are unemployed - Negative trends in education and investment reduce business potential	0 Commitment, expertise and leadership skill toward meeting this goal are all questionable - The massive amount of resources required to meet this goal are not available - The basic ability to reasonably attain the goal, given the existing scale and context, is doubtful	+ Media attention toward this goal is significant and public support is high

Summarizing the Impacts of Independent Variables on Policy Outcomes

The design and implementation of the NFPP has unquestionably altered socio-economic conditions in the targeted areas (Jintao et al., 2002; Winkler, 1998). However, due to the current lack of a robust data set or capacity to monitor policy outputs, the nature and extent of those changes and their impact on forests and forest management systems in southwestern China cannot be definitively known at this time (Rozelle et al.,

2003). What is currently known includes quantifiable information regarding changes in social and economic conditions throughout the reform era and implementation of the NFPP to date, as well as changes in forest ecosystems according to State forestry statistics up to the last forest inventory in 1998.¹⁴

Several researchers have identified interrelationships between changing socio-economic conditions and changes in forest cover and forest management systems within reform era Chinese (Rozelle et al., 2003) and southwestern forest management region contexts (Li, 2000; Lu et al., 2002; Liu et al., 2003). Their research, the Task Force findings and case study evidence regarding socio-economic and environmental changes resulting from the method of NFPP implementation reveals several forces influencing a number of dependent variables impacting forest management systems in southwestern China. The strength of trust and tenure arrangements among stakeholders and the level of decision-making authority, particularly the level of non-state enterprise self-determination, are two main driving forces given the context. Operational capacity—of the SFA to implement the NFPP, of local governments to provide matching funds for the project while losing revenue because of it, of essential community services (schools, clinics, roads, utilities) and enterprises to operate and of local household ability to subsist—is another key factor. Related to capacity, employment, and hence, livelihoods are additional socio-economic variables impacting policy outcomes especially given the large gap left by the extinction of the timber-based economy. Changes in environmental values among the various stakeholder and target-groups, and the logging ban itself, round

¹⁴ See Appendix 2: Forest Resource Statistics in China.

out the most fundamental variables affecting policy outcomes, China's southwestern forests, and the organizations responsible for their management.

“The impacts of the Natural Forest Protection Program at the local level are immense” (Katsigris in Jintao et al, 2002, p10). Virtually every aspect of life in the region is impacted: schools are closing, local governments are unable to provide necessary public services, traditional livelihoods are struggling to persist, and the availability of capital for the development of new businesses or industries is evaporating (Jintao et al., 2002). A significant reduction of income for many rural residents is one of the most serious socio-economic impacts occurring as a result of the program, according to the 2002 Task Force studies. Communities in prefectures where the timber industry was previously dominant suffer disproportionately since they do not receive any compensation under the current plan and community access to forest resources has been substantially and illegally reduced (Jintao et al., 2002). Non-state forest management enterprises in the region, in addition to subsistence livelihoods, have also been permanently altered due to actions restricting access to non-state forest farms (Rozelle et al., 2003; Liu, 2001). This situation is effectively strangling what had been, up to the late 1990s, one of the most promising free-market industries in southwestern China.

The extension of the NFPP beyond SFA employees and administrators, due in large part to the vagueness of policy statutes is a truly unfortunate situation, especially given the existing and tenuous historical context. The misappropriation of legally established tenure arrangements and decision-making authority resulting from the way in which the NFPP has been implemented may have irreversibly altered value and trust dynamics between private citizens and the State. These negatively shifting attitudes may

likewise force changes in cultural resource use-patterns (i.e. subsistence agroforestry livelihoods) thereby endangering fragile cultures and ecosystems alike (CEPF, 2002). Without tenure security, there is little incentive to manage forests sustainably for future returns. If the SFA is already understaffed and relying on disgruntled private citizens to assist with the restoration of the nation's watersheds, it is unlikely that the agency will be able to successfully attain the key goal of the NFPP—watershed stability.

The NFPP has unquestionably reformed the financial and organizational operations of the SFA and the timber industry through reorganization of the labor pool and the redirection of industry focus (Jintao et al., 2002). The SFA is no longer able to continue along the lines of its predecessor, the Ministry of Forestry, in the ceaseless extraction and highgrading of some of the world's last, great biodiverse temperate forests. Although goals for reforestation activities have been set and oversight committees are in place, a redefinition and rezoning of the remaining forests is still a contentious issue (Rozelle et al., 2003). Concurrently, internal conflicts of interest, such as the posturing taking place among head administrators of NFPP management centers attempting to direct State funds along nepotistic lines, threaten the legitimacy of monitoring agencies (Katsigris in Jintao et al., 2002).

Fundamentally, though, the NFPP signals a significant change in values and attitudes towards forests among all involved with or affected by the policy. Whereas local government institutions see the protection of forests as a means of pandering to State and central powers, personal experience shows that the more educated and privileged members of Chinese society, as represented by academia and its highest levels of leadership (i.e. central government cadres), are beginning to value the nation's forests

for other functions besides timber production (i.e. watershed stability). Additionally, the cultural values of minorities and rural households with respect to forests are rapidly changing. In the past, religious and social norms regulated natural resource use patterns in remote rural communities (Coggins, 2003). Now, resource consumption in general and the number of households are increasing while out-migration of the most educated and skilled youth is expected to occur (Liu, J. et al., 2001). Possibly even more significant, trust among locals toward the government has been substantially reduced due to the nature of the NFPP's implementation (Jintao et al., 2002). Conflict and reduced collaboration among the major stakeholders is already increasing (Katsgiris, 2002).

The actual and perceived outputs of the NFPP, like the policy outputs of the implementing agency, have been demonstrated to be, for the most part, negative. Essentially, due to the fact that the non-statutory independent variables are categorically and unfavorably impacted by the nature of the NFPP's implementation, many rural residents are attaching negative connotations to the policy (Jintao et al., 2002). The logging ban has clearly fundamentally and permanently altered the forest industry and a number of associated industries thereby altering employment and revenue opportunities in rural communities to varying degrees. Budgetary changes as a result of the program, are constraining the ability of local level governments and economic institutions to provide essential social and financial services (Jintao et al., 2002). Also, access to and control over forest resources has been substantially reduced causing a host of other problems. Most significantly, value and trust perceptions have been, perhaps irrevocably, impacted due to the policy outputs and associations with land tenure and socio-economic conditions. Due to these conditions and perceptions, there is a low chance that the NFPP

will successfully produce the desired outputs of long-term revegetation of the nation's major watersheds, restructuring the SFA, meeting domestic wood demand, reducing rural dependence on fuelwood and restructuring the rural economy—all with the ultimate outcome of watershed stability.



Chapter 6

DISCUSSION AND RECOMMENDATIONS

How should, or will, China address the aforementioned conditions and shortcomings of the NFPP? What alterations in the implementation of the NFPP are needed to increase the likelihood of attaining the desired outcomes? Ideally, the future of forestry in China would be able to meet each and all of the ambitious NFPP goals. Protection of the remaining forests would be established, reforestation and rehabilitation of denuded lands would occur, the SFA would transform into an ecosystem management institution with intrinsic environmental values, and the nation's growing wood product needs would be met while improving the livelihoods of rural people. Yet, as has been shown, several of the NFPP's goals are neither realistic nor internally consistent. So what options are available to modify the NFPP and increase its likelihood of success? Any reasonable options for altering the NFPP and the future of forest policy in China must bear in mind the nation's historical context, the way that past policies have impacted forests and their management, and the existing socio-economic conditions of the region. Furthermore, those options must pass the litmus test of the modified framework if they are to be successful.

One option is to simply dissolve the NFPP or not enforce policy mandates. Livelihoods would gradually return to a timber and non-timber forest product-based

economy with decreases in forest cover occurring at pre-ban rates.¹⁵ Virtually all forestlands in the region could reasonably be expected to transform into commercial plantations, agriculture and grazing plots, poor quality secondary forest and/or denuded wasteland. The timber-based economy riding that wave to the end would then be forced to undergo essentially the same transformation brought on by the NFPP (and perhaps without central government and State assistance). This option only prolongs the inevitable.

The above scenario makes it clear that the SFA must change from an industry based on timber extraction to an institution of forest stewardship. After all, the NFPP was established for very real and practical reasons. More frequent flooding combined with development in major floodplains is placing hundreds of millions of people and large tracts of property at risk—not to mention what’s left of the world’s most biodiverse temperate forests and China’s ethnic minorities, which are inextricably linked to them. Is a complete ban on logging, though, necessary given the large socio-economic ramifications? Are sustainable approaches or innovations in harvesting methods a viable alternative as the 2002 Task Force report seems to indicate?

A sustainable harvesting scheme would clearly not only lessen negative impacts on forestry enterprises, but also lessen many of the negative economic impacts on other stakeholders. Some managers in western Sichuan, for example, have suggested various types of selective logging schemes for their enterprises, mentioning issues of overmature forest and windfallen trees. Because of interference from grazing, the latter do not play the role they potentially could in regeneration. Thus, the ban on collecting them should be reconsidered (Jintao et al., 2002).

¹⁵ See Appendix 2: Forest Resource Statistics in China.

Given the current context of limited institutional capacity to invest in innovative harvesting methods and the pension to vaguely define the parameters of sustainable yield, anything short of the existing absolute total ban on logging leaves the remaining primary forests in a vulnerable state. The question is, in what cases and to what extent should that restriction be applied?

One solution may be to simply continue implementing the NFPP as it has been thus far. However, as was shown through application of the modified model, the policy as it is currently being implemented may reasonably be expected to fail—or worse. Extending restrictions on management of forests to non-state enterprises previously guaranteed rights of usufruct and not compensated for losses incurred due to the NFPP will most certainly continue to have negative consequences. Non-state forest enterprises could be forced out of business and corrupt authorities pandering to conservative State cadres may continue to demand illegitimate levies from locals in exchange for access to forest lands for subsistence needs. Enterprise and household economic viability declines reducing employment opportunities, household incomes, and operational capacity while simultaneously and significantly decreasing trust and tenure security.

In this scenario, one may expect direct and indirect socio-economic pressures related to subsistence livelihoods to increase forest conversion to some degree while the enforced ban may reduce conversion of natural forests and possibly increase development of other (secondary) forest types. The balance between those pressures, the types of forests they impact and the extent of changes incurred in the various types of forest management systems are currently indeterminate at best. This option—the no action or *status quo* alternative is, therefore, also undesirable.

Another option may be to scrap the NFPP altogether in favor of an entirely new approach. This option leaves open the flexibility of planners to address the shortcomings identified in the preceding analysis including elimination of the more socio-economic developmental goals of poverty alleviation and rural electrification. Although this option has merit, it could compound the problems of the current situation. In the best possible scenario for this option, all current shortcomings of NFPP implementation would be tackled and resolved including clarification of goals and intentions, sufficient funding whether or not the socio-economic goals are retained and the inclusion of various stakeholders and target-group constituencies in a collaborative planning process. At worst, the central government could assume an autocratic position employing draconian measures such as extreme authoritarian or police presence, forced labor or a complete redistribution of land and forest resources to suit its needs. After all, precedent exists to support the plausibility of such a scenario—and not so long ago. More likely, a new approach to solving the same problem of watershed stability would not be nearly so drastic, nor would it be so inclusive. Whatever the outcome of scrapping the current policy in favor of a new one would be, the result is the same in either case—uncertainty. And, as mentioned, uncertainty in the Chinese context, especially as it relates to the management of forest resources, only results in less incentive to invest in the sustainable management of trees and forests. Consequently, forest cover and vegetation in the nation's major watersheds decrease thereby reducing the likelihood of ever producing the primary outcome that the current policy seeks to produce—watershed stability.

Whereas the Task Force recommends removing restrictions on non-state forest enterprises throughout the 18 provinces in which the NFPP is currently applied, it may

not be the best option for Sichuan and Yunnan provinces if reductions in forest cover are to be avoided. As noted in the background and findings sections, due to the complicated tenure-trust arrangement present in the southwestern forest management region, return of management authority over forestlands to the non-state forest management systems may actually result in accelerated rates of conversion (of forestlands to harvested and denuded “wastelands”). This response may be expected given the strong possibility that managers may seek to preempt possible future withdrawal of access rights to those lands by the State once they have regained what will most likely be perceived as temporary access to forest resources (see Rozelle et al, 2003).

Preliminary information suggests decreasing trends in percent and volume of natural forests in the southwestern region are occurring within both State and non-state managed forests (World Bank, 2003; Harkness, 2004; Critical Ecosystem Partnership Fund, 2002). Arguably, this may suggest that management type, whether administrated by State or non-state entities, has essentially been a non-factor with respect to changes in primary forests in the region. “A relatively constant land area under forest cover, however, does not mean that reform policies, management practices, and other economic forces have not affected the resource” (Rozelle et al., 2003, p115). Sayer and Sun (2003), on the other hand, suggest that “political reasons instead of economic development (commercial logging) have been the primary source of the loss of natural forests.” Implementation of the NFPP is none-the-less undoubtedly changing relationships between forests, their management, the people that depend on them and the polices that govern each. The extent to which this is occurring and the nature of that relationship warrants continued consideration, explanation and critical evaluation. The relationship

between vegetative cover, hydrologic flow, the frequency of floods and the severity of their socio-economic impacts likewise merits further consideration.

Under the present southwestern forest management system, and according to existing information regarding the significant negative relationship between forest cover and the erosion of trust within this context, decreases in the area's forest cover, even in some more remote natural forests, may be expected (Hyde et al., 2003). Additionally, as previously mentioned, reductions in trust have been shown to reduce incentives for non-state forest management systems (World Bank, 2003; Hyde et al., 2003; Jintao et al., 2002). Operational capacity and employment opportunities, especially among the non-state entities, may be expected to worsen before eventually transforming the anticipated subsistence based livelihoods of locals into a more sustainable market economy based on the most adaptable non-state forest enterprises (Jintao et al., 2002).

Is the above option, then, when applied to the modified analytical framework, capable of increasing the chances of success for the NFPP? The answer is yes, but not dramatically. Both tenure certainty and socio-economic conditions may or may not increase as a result of this option, but there is no doubt that it will increase, even if ever so slightly, the possibility of realizing the desired outcomes in comparison to the other options previously mentioned. However, consider the possibility of adding the provision of issuing compensation for the illegitimate extension of the NFPP's restricted use mandate to non-state forest enterprises. Better yet, what if this illegal transgression is challenged in China's rapidly developing legal system? This would most likely increase tenure security if rural people have faith in the reforming judicial system to protect their rights. Such conditions not only improve tenure certainty and trust dynamics, but also

help to address the critical socio-economic impacts currently resulting from implementation of the NFPP through financial infusions to rural households and communities who were operating thriving forest enterprises prior to establishment of the policy. Despite relinquishing control over the non-state forest enterprises and the large outlay of cash required by this option, it may be the only avenue left to the State if many goals of the NFPP are to have a reasonable chance of being attained. The only other ways to increase policy success is to simply redefine it through elimination of one or more of the goals—namely, the developmental goal of improving rural people's socio-economic conditions, or to reverse the current trend of development in the floodplains which is placing many people and much property at great risk.

Asserting the Recommendations

It seems China has reached the point of no return, so to speak, with regard to implementation of the NFPP in the southwest forest management region. The question remains "where to go from here?" The solution appears to revolve around three tenuous points: 1) decision-making authority, 2) rights of usufruct, and 3) compensation for lands reapportioned by the State due to the policy. These three issues taken together form the trust relationship between non-state forest enterprises and the State thereby determining tenure certainty and security. Therefore, if the logging ban over primary forests on State lands continues to be well enforced, as we have seen indeed it should, then a return of decision-making authority and rights of usufruct to non-state forest management systems should increase the likelihood of success for the NFPP. However, the damage has been done, more or less, to relationships of trust among the various stakeholders in general and between the non-state forest management systems and the State specifically.

The primary recommendation for modifying the NFPP pertains to rights of usufruct and tenure security under the non-state system. “Denying these communities the right to benefit from their investments in their forests not only contradicts existing legislation but compounds tenure insecurity and diminishes incentives to invest in forest restoration and management” (Jintao et al., 2002, p63). Removing all restrictions from the non-state forest management systems, save logging in primary and threatened or biologically diverse natural forests, is a key aspect of the NFPP requiring alteration. It is virtually universally recognized in the literature (Liu, 2001; Liu et al., 2003; World Bank, 2003; Hyde et al., 2003; Richardson, 1990; Rozelle et al., 2003) that increased tenure security and recognition of property rights (of usufruct), backed by a stronger judiciary legal system, will greatly increase incentives to sustainably manage forest resources among non-state forest enterprises throughout China. Hyde et al.(2003), and the World Bank (2003) note that continuing the decentralization of State-owned enterprises, allowing them to self adjust in preparation for the downsizing and reduced industry subsidies that comes with membership in the WTO, will increase sector efficiency.

The vagueness of NFPP statutes has allowed for great latitude in their interpretation on behalf of implementers at various levels. Subsequently, actual and perceived outputs have significantly and negatively altered stakeholder-implementer value-trust dynamics and socio-economic conditions. Most significantly, according to the World Bank (2003) and many others, is the need to reduce policy uncertainty and strengthen incentives. A coherent strategy that makes necessary transitions while balancing and considering socio-economic needs should be pursued. The devolution of decision-making authority to a more local level, inasmuch as decisions are in line with

State objectives to protect forest ecosystems, are two more considerations put forth by Hyde et al. (2003) and Lu Wenming (1999).

In addition to increasing tenure certainty and security, improving overall capacity within China's forestry sector is fundamental to the issue of efficiently and effectively managing the nation's forests. The issue of poorly trained replacements must be met with stronger support for training programs focusing more on ecosystem and watershed management approaches rather than in the production-extraction model indicative of the old Ministry of Forestry. Increasing the capacity to conduct high quality research activities and addressing the growing wood crisis through additional communal reforestation activities is also recommended by the World Bank (2003).

Improvements in policy design, implementation and analysis depends on improvements in capacity. Capacity building at all levels of government agencies and research institutions should be given high attention. Building up strong and independent research institutions seems to be particularly important currently in China (Jintao et al., 2002, p73).

The demonstrated lack of capacity on behalf of the SFA to meet each or all of the NFPP goals must also be more clearly recognized and acknowledged. To begin with, removing socio-economic development responsibilities from the SFA agenda would free up a great deal of human, material and financial resources allowing for greater focus on ecosystem management issues. The continued decentralization of timber related enterprises from State-owned to non-state managed enterprises and the devolution of decision-making authority over larger tracts of secondary forests will further assist the SFA by reducing the scope and scale of its responsibilities. This not only helps direct more resources to the NFPP's policy sub-component and sister project, the Sloping Land Conversion Program, but it will help guide and clarify the restructuring process.

Additionally, a more rigorous monitoring and assessment of ecological tradeoffs must be developed together with an appropriate transition to a more effective forest management strategy once the NFPP is phased out. Jintao et al. (2002) note that one of the NFPP's main problems is its lack of an effective monitoring and evaluation system. Current monitoring and evaluation focuses on compliance with the logging ban only and does not consider policy outcomes such as its administrative and socio-economic goals. This is only one of many areas where the NFPP may need improvement. The logging ban assumes that strongly enforced and homogeneously applied restrictions on any type of forest harvesting in sensitive areas will increase forest ecosystem and watershed functions thereby reducing damages related to flooding. More research is needed to verify this causal theory within the evolving context of NFPP implementation and by recognizing that life and property is at greater risk now due to urban expansion and development in flood-prone areas, not necessarily due to an increase in the frequency and severity of floods themselves. Accordingly, the World Bank (2003) recommends that more information on relations between key indicators and variables be collected in an effort to identify specific relationships between socio-economic forces and changes in both State and non-state forest management systems and in forest cover within the Yangtze River watershed. Furthermore, greater financial support for affected forest communities is also required to ease the transition into alternative non-timber based market economies. This includes extending State subsidies to local governments and municipalities in order to maintain essential public services and reducing SFA budgetary pressures at the same time.

Complimentary to the above recommendation is the need to develop a more robust and detailed interdisciplinary data set. Ideally, the collection of this data set would not only assist government and non-governmental decision-makers by virtue of providing qualitative and quantitative information of a higher validity than that which currently exists, but it would also directly improve the capacity of the SFA in conducting field surveys. Inter-organizational, interdisciplinary and inter-stakeholder communication could be developed while improving SFA employee moral, participation and levels of trust helping to positively shift environmental values and awareness among the interested parties and the general public.

In summary, there is a great deal of latitude available for improving the NFPP specifically and China's forestry sector in general. Issues pertaining to rights of usufruct, tenure security and decision-making authority among non-state systems are clearly the most salient with respect to forest management systems in the region. However, issues of institutional capacity are also of great concern given the recent socio-economic and political history of China. Related to this, the absence of a robust and valid data set regarding a number of key variables in the system is a significant deficiency that needs to be addressed. Maintaining or increasing current financial support for the transition from a timber-based economy to a more diversified market-based economy is iterated by many—especially the World Bank. They also emphasize removing existing legal and economic barriers to the efficient operation of the nation's forestry sector in light of China's imminent induction into the WTO. Further improvements in the process and participation in developing future environmental policies is another notable recommendation despite the unlikelihood of its imminent acceptance. Even if each of the

aforementioned recommendations are applied, some difficult questions remain. To what ends should forestry in China be directed? What are the most pressing issues of concern? Furthermore, who are the beneficiaries, what stakeholders should be involved in future decisions about forest policies in the region and who decides the answers to these questions? These dilemmas are not unique to China and the world may learn a great deal from the way in which the Chinese address these issues within their own rapidly developing, hyper-dynamic, high-population context.



Chapter 7

SUMMARY AND CONCLUSIONS

The purpose of this paper is to analyze implementation of the Natural Forest Protection Plan in China's southwestern forest management region and to assess the effectiveness of the policy in producing the desired outputs and outcome. Implementation of the NFPP began in 1998 primarily in response to a series of devastating floods that occurred early in the year. The central government blamed these floods on a lack of vegetative cover in the nation's major watersheds. The primary outcome of the ten-year program is to be less severe and frequent flooding by virtue of more stabilized watersheds and hydrological flow patterns. The desired policy outputs anticipated to produce this outcome include the short and long-term revegetation of China's major watersheds and a total ban on industrial logging in 18 provinces. The NFPP seeks to produce other outputs as well. These include the administrative restructuring of the State Forest Administration, the retraining of its workforce, an increase in its effectiveness as a forest protection agency and its ability to meet the nation's growing wood product needs while reducing rural fuelwood dependence and revitalizing the rural economy.

The policy, as it is implemented in China's southwest forest management region, is embroiled in a complex socio-economic and political-historical context that greatly

impacts the ability to produce the desired outcome and outputs. China's history of communal ownership of land and unpredictable changes in policies regulating forest resources and rights of usufruct has produced an air of uncertainty, especially among forest resource managers in the southwestern provinces. Such uncertainty has led to less investment in sustainable forest management, higher rates of land conversion and lower levels of vegetative cover than the central government desires. Until recently the non-state forest management system has been held up as a model of successful reforms on behalf of the State. Their achievements served as an example for the smooth transformation of an industrial sector formerly heavily controlled by the State to a sector successfully operating in the emerging free market economy. Although the State is seeking to stabilize the policy environment, the nature of NFPP implementation to date has only increased the level of uncertainty among non-state forest enterprises primarily due to increases in State control over these non-state entities.

The central government maintains that the restricted use mandate regarding timber harvesting as established by NFPP statutes is directed at the SFA and State lands only. Although the SFA is the intended target-group of the NFPP, numerous interested stakeholders are emerging as implementation progresses. These stakeholders and the target-group represent a substantial portion of the nation's populace and are comprised of diverse socio-economic sub-groups with a wide range of perceptions and levels of influence over NFPP implementation.

Sabatier and Mazmanian's (1980) conceptual framework of the implementation process was modified to accommodate China's unique context and applied in order to analyze the impact of a variety of factors on NFPP implementation and its ability to

produce the desired outputs. Although the Sabatier and Mazmanian (1980) framework is intended to be utilized as an analytic tool that reviews a given policy's implementation from start to finish, the modified Sabatier and Mazmanian (1980) framework was applied in order to determine effectiveness of implementation halfway through the NFPP's lifespan. Each aspect of the independent variables—tractability, statute and non-statute variables affecting implementation and their impact on the dependent variables of compliance and outputs—were compiled, examined and evaluated utilizing information extracted from personal interactions and experiences, numerous case studies and additional reports from experts on the matter. Clarke and McCool's (1996) 3-part ordinal scale was also applied indicating whether a variable enhanced, detracted or contributed equivalently to implementation and its effectiveness in producing the desired outputs.

The findings show that socio-economic conditions in rural areas are currently negatively impacted by implementation of the NFPP while impacts on forests and forest management systems in southwest China are indeterminate at this time. The presence of a strong central government is favorable for producing the output of short-term revegetation of the nation's watersheds while it is less capable of producing the output of long-term increases in vegetative cover. Also, as a result of the nature of NFPP implementation, uncertainty among non-state forest enterprises regarding the tenure of trees over which rights of usufruct had previously been granted is increasing while the capacity of local institutions to provide necessary community services is decreasing.

Compliance with the logging ban statute is near complete among State target-groups while compliance among subsistence stakeholders and some private enterprises is lower due to a reduced risk of detection as a result of an understaffed agency. Although

the technical theory under which policy implementers are operating is valid and would result in the desired outcome of watershed stability if all outputs are produced, the size, diversity and extent of change required is enormous, agency integration is low, there is little access by outsiders and the commitment of sovereigns is still questionable. There are variations both in the central level design for different provinces and in the way in which the provinces have developed their own implementation schemes. Also, the reasons for the provincially imposed absolute logging ban are not fully understood even within the implementing agencies. Primarily, the disregard of community rights is a fundamental flaw with the current implementation of the NFPP due to the fact that the decision-makers, implementers and overseers do not include many potentially impacted stakeholders. Also, even though the media and urbanites support the policy, rural residents are less supportive as food for work subsidies diminish and as socio-economic conditions deteriorate. All of these factors necessarily reduce the likelihood of the NFPP to achieve the desired outcome according to Sabatier and Mazmanian.

The findings further reveal that the restructuring of the SFA into an effective forest management agency while meeting domestic wood demands despite the logging ban is neither consistent nor a valid technical theory. The size and extent of change required to transform the SFA is substantial while the specifics of the restructuring remain unclear. Appropriations slowed by the complex, multi-level planning and approval process, management problems, confusion and disagreement over the program's objectives, insufficient funds and staff, and a general lack of collaboration and institutional capacity to successfully pursue the program's goals further impede effective implementation of the NFPP. Although recent precedent exists in China supporting the

government's ability to successfully overhaul ineffective agencies, there is a lack of experienced professionals in the fields of ecosystem management and watershed restoration to assist in the shift.

Shortcomings are also evident in the NFPP's ability to produce the desired outputs of a revitalized rural economy and a reduction in rural fuelwood consumption. Around 1 million former SFA employees are now unemployed as a result of the NFPP causing substantial and negative impacts on local economies. Investment in new enterprises and education are decreasing thereby increasing subsistence-based livelihood activities. Conversion of land to agricultural use and the collection of fuelwood are two such activities increasing in prevalence and in their impact on vegetative cover. Commitment of leaders and sovereigns to revitalizing the rural economy is questionable due to the insufficient funding for training and new enterprises during the necessary transition period. Virtually all of the conditions revealed in the findings necessarily reduce the ability of the NFPP to produce the desired outcome and outputs according to the modified framework for analyzing policy implementation in China.

Several options exist for modifying NFPP implementation; two of those options may increase its effectiveness in producing the desired outputs while the others do not. Dissolving the policy altogether, with or without attempting to establish a new policy approach aimed at achieving the same outcome, only increases uncertainty thereby reducing investment in forest enterprises capable of increasing vegetative cover. Altering the complete ban on logging in favor of a sustainable yield approach also perpetuates perceptions of an insecure policy environment among natural resource managers further reducing the likelihood of achieving long-term increases in vegetative cover. The options

that may increase policy effectiveness include eliminating the socio-economic objectives and reducing or removing government control over non-state forest enterprises.

Removing all restrictions from non-state forest enterprises, save destructive activities in primary and threatened or diverse areas, is an essential modification for improving the effectiveness of NFPP implementation. Challenging the illegal extension of State control over non-state entities guaranteed rights of usufruct and suing for compensation within the nation's maturing legal system is another key recommendation. Each of these actions, when backed by a stronger judicial system, may increase confidence in State policies thereby encouraging investment in the development of non-state forest enterprises capable of assisting NFPP implementers in achieving many of the desired outputs. Clarifying the objectives of the administrative restructuring of the SFA is also important, while increasing training, capacity and interagency coordination is another main recommendation for improving the SFA, and hence, NFPP implementation. Finally, the development of a rigorous monitoring program backed by a robust data set of key variables is fundamental to continual modification and improvement of the NFPP as a policy and in its ability to produce the desired outputs. All of these recommendations taken together necessarily enhance the ability of the NFPP to achieve a primary outcome of more vegetative cover in the major watersheds, however, a reduction in the frequency and severity of floods and their socio-economic impacts may not necessarily follow as policy planners assume.

China's Natural Forest Protection Plan was established for very real and significant reasons. Rapid conversion of one of the world's last, great biodiverse temperate forests combined with massive development on the nation's perennial

floodplains is increasingly threatening millions of lives. Application of the modified framework for analyzing policy implementation in China revealed that the NFPP, inasmuch as it is currently being implemented, will unlikely reverse this trend or rates of conversion. Producing the desired outcome of stabilized watersheds and less socio-economic impacts is, therefore, also unlikely. Achieving the outputs is complicated by a great many factors, yet there are many options available to policy implementers for altering the NFPP and increasing the probability of realizing its more central goals.

Although the challenges for achieving the desired outcome are large and seemingly insurmountable, in the end, optimism must persist. China has a long history of attaining ambitious, seemingly impossible goals. With the right leadership, resources and commitment, they can do so again—including large-scale watershed restoration. The biggest hurdles now are socio-economic and political. If these can be overcome, the technical aspects of sustaining long-term revegetation efforts will follow in suite. If so, like the phoenix of Chinese mythology rising out of the mire and ashes of history, a model may spontaneously develop out of the initial failures of the NFPP spurring innovations tailored to China's unique context and the complex environmental challenges contained within. Following in the Chinese tradition, the venerable sage Lao Tzu provides guidance and inspiration in our journey to transcend the complexities of modern ecosystem management which now parts from this dialogue and continues on its Way to a more harmonious interaction with the environment:

Nature is like a bellows,
Empty, yet never ceasing its supply.
The more it moves, the more it yields;
So the sage draws upon experience
And cannot be exhausted.

APPENDICIES

APPENDIX 1

Major Forest Policies of the Reform Era

Table A: Major Forest Policies of the Reform Era

Year	Policy	Issued by	Principal objectives
1981	Decisions on Several Issues Related to Forest protection and Development	Central Committee and State the Council	Sets rules for forest protection and development. For forestry reform: determines the ownership of forests, designates areas for household use, defines forestry responsibility system.
1985	The First Basic Forest Law	People's Congress	Formally recognizes the division of land between the State and collectives, sets forest management objectives, establishes timber harvest quotas and requires shipping permits.
1986	Implementation Rules for the Forest Law of China	State Council	Implements the forest law, protects forest resources and develops the forest industry.
1987	Enhancement of Forest Resource Management	Central Committee	Halts ruinous cutting, implements the responsibility system of government leadership at all levels in the protection and development of forest resources.
1988	The Provisional Regulation of State-owned Enterprise Management Responsible Contracting System	State Council	Improves control over the consumption of forest resources and improves the financial operation of State-owned forests. SOEs required to adhere to timber quotas, promote reforestation, diversify management of resources, enhance productivity, forest protection and fire prevention.
1995	Notice on Implementing the System of Using Forest Lands with Certificates	MOF	Requires certificates for the management of all forestlands differentiating them from other land uses. Restricts the conversion to other land uses ensuring that the land is regulated according to the Forest Law.
1995	General Outline for Restructuring the Forestry Economic System	MOF	Pushes forest enterprises toward the market, mobilizes financial support to forestry through tax policy, strengthens infrastructure development, reduces the role of government & reinforces administrative support for forestry

1995	Instructions on the Decision about Accelerating Progress	MOF	Reforms science, technology and education in forestry and establishes them as the guiding ideology for promoting forest development as the major mission for the near future
1996	Reform of the Classified Management of Forestry	MOF	Classifies forests according to commercial, environmental (public interest) and mixed-objectives
1996	Decision on Several Issues Related to Deepening the Reform in the State-owned Forest Farms	MOF	Emphasizes 2 points: 1) classified management reform must differentiate between commercial and environmental forests and should be appropriate for local economic and social development conditions and 2) industry structure of forestry farms must be optimized
1998	National Ecological Environmental Establishment Program	State Council	Continues the shift toward environmental justifications for State forest management
1998	Amended Forestry Law of the PRC	People's Congress	Legalizes transfer of family plots and extends the period of user rights, essentially stabilizing forest tenure in collective forests; emphasizes that the primary role of forestry is to provide environmental services.
1998	Protecting Forest Resources, Interdicting Ruinous Deforestation and Occupation of Forest Land	State Council	Protects forest resources by preventing the conversion of forestland for agriculture and other development purposes
1998	Natural Forest Protection Plan	State Council	Bans logging in primary forests in the upper reaches of the Yellow and Yangtze River watersheds, reduces timber production of State-owned forest farms in the northeast and inner Mongolia by 19.91 million m ³ , establishes 12.7 million ha of plantations and redirects/resettles over 740, 000 excess workers.
1999	Sloping Land Conversion Program	State Council	Converts steep-sloped marginal cropland to forests and grassland and seeks to reduce rural poverty through these efforts.

Adapted directly from Zhang and Chen in Hyde et al. (2003) and SFA (1999, 2001).

APPENDIX 2

National and Regional Forestry Statistics for China

The Tables on pages 119-122 are taken directly from Rozelle et al., 2003 (pages 110, 117, 119, 120 and 120) in Hyde et al., 2003. They in turn draw their information from China's *National Forest Resource Statistics* published in 1983, 1989 and 1994. The Tables on page 123 are taken directly from Yamane (2001) and also uses data published by the *National Forest Resource Statistics*. The bar graph on page 124 illustrates the sharp increase in China's forest product imports since the establishment of the NFPP. It is taken directly from a Society of American Foresters article entitled "China's Appetite for Timber Grows" in the November 2004 issue of *The Forestry Source*.

Table 6-1. Forest Cover and Standing Forest Volume, Late 1970s to Early 1990s

Region	Forest cover					Standing forest volume				
	%			% Change		Million m ³			% Change	
	1980	1988	1993	1980-1988	1988-1993	1980	1988	1993	1980-1988	1988-1993
Northeast State Forest Region										
Heilongjiang	33.6	34.4	35.6	2.2	3.5	14.4	13.2	13.5	-8.3	2.3
Nei Monggol	11.9	11.9	12.1	0.3	1.7	8.5	8.6	9.0	2.0	3.7
Jilin	32.2	33.0	33.6	2.5	1.9	6.6	7.1	7.6	8.1	6.8
Subtotal	19.5	19.8	20.3	1.6	2.5	29.4	28.9	30.0	-1.7	3.8
Southern Collective Forest Region										
Fujian	37.0	41.2	50.6	11.3	22.9	3.0	2.6	3.2	-11.0	21.9
Jiangxi	32.8	35.9	40.4	9.6	12.3	2.4	1.7	1.8	-28.7	7.3
Hunan	32.5	31.9	32.8	-1.9	2.9	1.6	1.4	1.5	-12.2	7.7
Guangdong ^a	27.7	27.0	35.9	-2.4	32.8	2.0	1.9	2.2	-8.7	18.1
Guangxi	22.0	22.0	25.3	0.0	15.2	2.2	2.0	2.1	-7.5	4.7
Subtotal	29.4	30.2	35.2	2.8	16.5	11.2	9.6	10.9	-13.8	12.9
Southwest Mixed-Management Region										
Yunnan	24.0	24.4	24.6	1.6	0.8	11.0	11.0	11.0	-0.0	0.8
Sichuan	12.0	19.2	20.4	60.1	6.0	10.5	12.7	13.0	21.4	2.5
Subtotal	16.9	21.3	22.1	26.2	3.6	21.5	23.7	24.1	10.4	1.7
North Central Fast-Growth Region										
Jiangsu	3.2	3.8	4.0	17.5	6.9	0.03	0.07	0.08	113.1	18.2
Anhui	13.0	16.4	16.3	25.8	-0.2	0.55	0.71	0.63	30.9	-12.5
Shandong	5.9	10.5	10.7	77.8	2.0	0.05	0.11	0.15	118.3	42.1
Henan	8.5	9.4	10.5	10.7	11.6	0.32	0.40	0.48	26.8	19.2
Subtotal	7.9	10.4	10.8	30.9	4.1	0.95	1.29	1.34	36.8	3.5
All China	12.0	13.0	13.9	8.2	7.2	79.8	80.9	90.9	1.4	12.3
Total covered area (million ha)	115.3	124.7	133.7							

Notes: Forest cover is total forest area divided by total land area. The years 1980, 1988, and 1993 are approximate dates of China's second, third, and fourth forest surveys. (The first survey occurred before reforms began in 1978 and is irrelevant to our analysis. The second was conducted in different provinces between 1978 and 1981, the third was conducted between 1986 and 1989, and the fourth was conducted between 1992 and 1994.)

^aHainan is included with Guangdong.

Sources: National Forest Resource Statistics 1983, 1989, 1994.

Table 6-3. Shelterbelts: Area and Volume for Selected Regions, Late 1970s to Early 1990s

Region	Area					Volume				
	Million ha			% Change		Million m ³			% Change	
	1980	1988	1993	1980-1988	1988-1993	1980	1988	1993	1980-1988	1988-1993
Northeast State Forest Region										
Heilongjiang	0.47	0.45	0.40	-6	-10	0.42	0.29	0.28	-32	-3
Nei Monggol	0.28	0.40	0.50	43	26	0.12	0.21	0.23	76	8
Jilin	0.89	0.82	0.75	-8	-8	0.70	0.63	0.79	-10	26
Subtotal	1.64	1.66	1.65	1	0	1.24	1.13	1.30	-9	15
Southern Collective Forest Region										
Fujian	0.14	0.22	0.31	60	39	0.09	0.12	0.22	41	78
Jiangxi	0.05	0.19	0.26	276	33	0.04	0.05	0.07	27	35
Hunan	0.04	0.16	0.20	258	22	0.02	0.09	0.10	307	17
Guangdong ^a	0.17	0.25	0.36	46	43	0.08	0.16	0.20	92	24
Guangxi	0.59	0.67	0.86	14	29	0.46	0.47	0.57	1	22
Subtotal	0.99	1.50	1.98	50	32	0.70	0.89	1.17	28	30
Southwest Mixed-Management Region										
Yunnan	0.54	1.60	1.80	198	12	0.97	2.33	2.57	140	10
Sichuan	2.03	3.38	2.72	67	-20	2.68	5.30	5.37	97	1
Subtotal	2.57	4.98	4.52	94	-9	3.65	7.63	7.94	109	4
North Central Fast-Growth Region										
Jiangsu	0.03	0.06	0.07	115	13	0.01	0.02	0.03	222	23
Anhui	0.03	0.39	0.12	1,450	-70	0.00	0.19	0.04	4,581	-80
Shandong	0.47	0.47	0.44	1	-7	0.03	0.05	0.07	52	50
Henan	0.28	0.34	0.31	23	-8	0.13	0.15	0.16	15	11
Subtotal	0.80	1.27	0.94	59	-26	0.17	0.41	0.30	138	-26
All China	10.00	14.56	16.07	46	10	8.84	14.00	17.78	58	27

Notes: The years 1980, 1988, and 1993 are approximate for the three forest survey periods.

^aHainan is included with Guangdong.

Sources: National Forest Resource Statistics 1983, 1989, 1994.

Table 6-4. Area in "Economic" Forest, Late 1970s to Early 1990s

Region	Commercial tree crops					Orchards				
	Million ha			% Change		Million ha			% Change	
	1980	1988	1993	1980-1988	1988-1993	1980	1988	1993	1980-1988	1988-1993
Northeast State Forest Region										
Heilongjiang	0.03	0.06	0.05	98	-15	0.01	0.01	0.02	0	197
Nei Monggol	0.85	0.89	0.87	5	-3	0.02	0.03	0.04	17	59
Jilin	0.05	0.04	0.04	-13	-2	0.02	0.02	0.02	18	-33
Subtotal	0.94	1.00	0.96	7	-4	0.05	0.06	0.08	15	35
Southern Collective Forest Region										
Fujian	0.34	0.57	0.79	65	40	0.04	0.20	0.44	460	115
Jiangxi	0.98	1.10	1.13	12	3	0	0.04	0.05	—	40
Hunan	2.42	2.42	2.27	0	-6	0.90	0.83	1.79	-7	116
Guangdong ^a	0.75	0.84	1.32	11	57	0.20	0.19	0.50	-5	163
Guangxi	0.71	0.80	0.99	13	23	0.05	0.06	0.20	30	223
Subtotal	5.20	5.73	6.50	10	13	0.37	0.57	1.36	54	138
Southwest Mixed-Management Region										
Yunnan	0.32	0.59	0.68	84	15	0.05	0.09	0.14	62	61
Sichuan	0.24	0.69	0.84	191	21	0.02	0.25	0.31	1,188	25
Subtotal	0.56	1.28	1.52	130	18	0.07	0.34	0.45	361	34
North Central Fast-Growth Region										
Jiangsu	0.11	0.15	0.16	27	11	0.05	0.08	0.08	70	6
Anhui	0.14	0.32	0.41	125	28	0.03	0.07	0.12	133	89
Shandong	0.33	0.87	0.99	160	14	0.17	0.73	0.86	341	18
Henan	0.31	0.33	0.43	6	31	0.10	0.10	0.17	-3	77
Subtotal	0.90	1.67	1.99	84	20	0.35	0.98	1.23	185	28
All China	11.28	13.74	16.10	22	17	1.50	3.41	5.30	127	55

Notes: The years 1980, 1988, and 1993 are approximate for the three forest surveys.

^aHainan is included with Guangdong.

Sources: National Forest Resource Statistics 1983, 1989, 1994.

Table 6-6. *Timber Resources and Production, Late 1970s to Early 1990s*

Region	Timber forest volume					Roundwood production				
	Million m ³			% Change		Million m ³			% Change	
	1980	1988	1993	1980-1988	1988-1993	1980	1988	1993 ^b	1980-1988	1988-1993
Northeast State Forest Region										
Heilongjiang	1,341	1,216	1,267	-9.3	4.1	16	19	12	15.6	-34.9
Nei Monggol	797	775	798	-2.8	2.9	0.4	6	5	43.4	-14.8
Jilin	571	590	619	3.2	5.0	6	6	5	0.9	-15.8
Subtotal	2,709	2,581	2,684	-4.7	4.0	0.27	31	0.2	16.5	-27.2
Southern Collective Forest Region										
Fujian	284	245	286	-13.7	16.9	4	6	6	45.4	0.5
Jiangxi	229	157	167	-31.5	6.4	3	2	3	-21.5	11.0
Hunan	158	123	135	-21.7	9.6	2	3	3	22.3	12.7
Guangdong ^a	194	162	187	-16.4	14.9	3	2	3	-30.8	38.1
Guangxi	174	156	154	-10.6	-1.4	2	2	3	30.7	37.6
Subtotal	1,039	843	929	-18.8	10.1	14	15	0.18	7.8	15.7
Southwest Mixed-Management Region										
Yunnan	976	698	662	-28.5	-5.2	2	3	4	35.0	9.9
Sichuan	767	713	737	-7.0	3.3	4	5	5	8.4	1.6
Subtotal	1,743	1,411	1,399	-19.0	-0.9	6	8	9	18.3	5.1
North Central Fast-Growth Region										
Jiangsu	2	4	5	84.8	15.3	0	0.1	0.5	—	939
Anhui	54	52	58	-3.6	10.0	0.5	0.4	2	-10	491
Shandong	2	6	7	238.6	35.4	0	0.1	1	119	1,772
Henan	19	24	30	27.5	24.4	0.2	0.2	2	3	1,031
Subtotal	77	86	100	11.7	15.9	0.7	0.8	6	8	790
All China	6,881.86	6,173.17	6,743.39	-10.3	9.2	54	62	64	16	3

Notes: The years 1980, 1988, and 1993 are approximate for the three forest survey periods.

^aHainan is included with Guangdong.

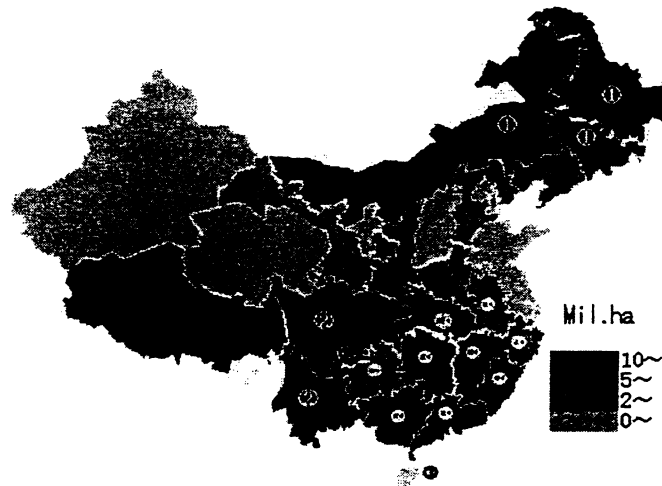
^bFor the North Central provinces, this estimate is based on mean timber production after they attained the new higher level of output in the period 1990-1992. For the others, it is based on the mean output over the entire period 1988-1993.

Sources: *National Forest Resource Statistics* 1983, 1989, 1994; *China Agricultural Yearbook* 1981, 1989, 1994.

Table 3 Forest resources expansion 1973-1998.

Year	Area of forestland (million ha)	Volume of standing stock (million m ³)	Area of land with forests (million ha)	Volume of forests (million m ³)	Forest cover (%)
1973-1976	257.60	9,530	121.86	8,660	12.7
1977-1981	267.13	10,260	115.28	9,030	12.0
1984-1988	267.43	10,570	124.65	9,140	13.0
1989-1993	262.89	11,790	133.70	10,140	13.9
1994-1998	263.29	12,488	158.94	11,267	16.6

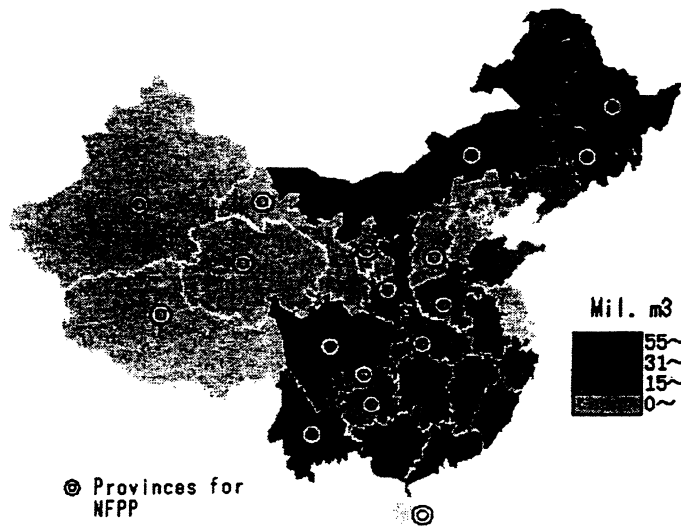
Source: China National Forest Resource Statistics (1973-1998).



Notes: 1. Three northeastern provinces; 2. Yunnan and Sichuan; 3. Ten southern provinces.

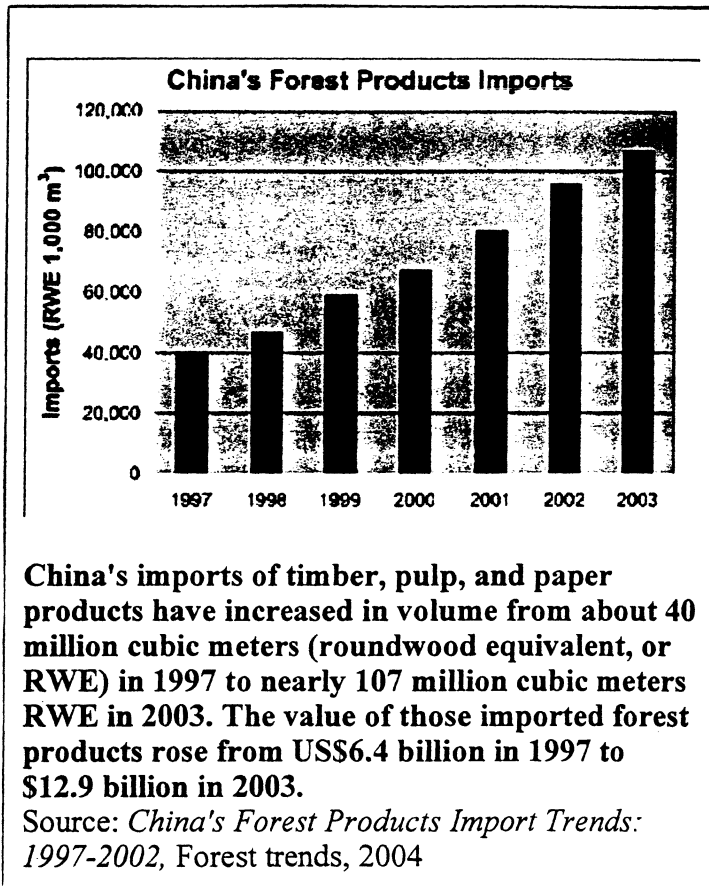
Source: Developed by Yamane from China National Forest Resource Statistics.

Fig. 2 Forest distribution in China in 1997.



Source: Developed by Yamane from China National Forest Resource Statistics.

Fig. 3 Total log production from 1985 to 1998 in China and provinces or autonomies for the Natural Forest Protection Project (NFPP).



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