Public Disclosure Authorized

Public Disclosure Authorized

A WORLD BANK COUNTRY STUDY

22137
March 2001

China

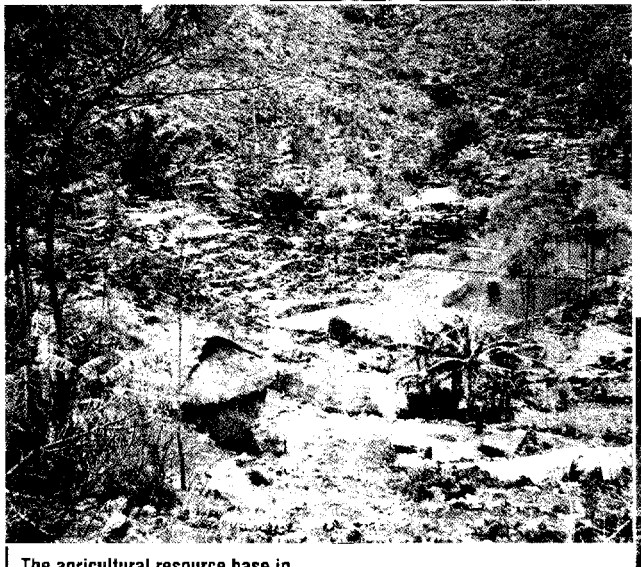
Overcoming Rural Poverty

Many Problems

A thatch roof school building in Pinglan Village (Lingyun County, Guangxi).

Ethnic minority people are heavily overrepresented among the poor. Arable land resources are often very limited (notice the corn planted between the rocks behind this young ethnic minority woman), and access to transport is very constrained (Lingyun County, Guangxi).

Iodine deficiency and other diseases are more common in the poor and mountainous areas, and are an important cause and effect of poverty (Zhenan County, Shaanxi).



The agricultural resource base in some parts of the Karst Mountains is not adequate for even subsistence production. Overgrazing and fuelwood collection contributes to devegetation of the hillsides and, in some cases, severe environmental collapse.

The parents of this family are ill and cannot maintain their farm production. With very little cash income, the family does not have enough to eat and the children cannot attend school (Baojing County, Hunan).

A WORLD BANK COUNTRY STUDY

China

Overcoming Rural Poverty

The World Bank
Washington, D.C.

Copyright © 2001
The International Bank for Reconstruction
and Development/THE WORLD BANK
1818 H Street, N.W.
Washington, D.C. 20433, U.S.A.

All rights reserved
Manufactured in the United States of America
First printing March 2001
1 2 3 4 04 03 02 01

World Bank Country Studies are among the many reports originally prepared for internal use as part of the continuing analysis by the Bank of the economic and related conditions of its developing member countries and of its dialogues with the governments. Some of the reports are published in this series with the least possible delay for the use of governments and the academic, business and financial, and development communities. The typescript of this paper therefore has not been prepared in accordance with the procedures appropriate to formal printed texts, and the World Bank accepts no responsibility for errors. Some sources cited in this paper may be informal documents that are not readily available.

The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent. The World Bank does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use. The boundaries, colors, denominations, and other information shown on any map in this volume do not imply on the part of the World Bank Group any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.

The material in this publication is copyrighted. The World Bank encourages dissemination of its work and will normally grant permission promptly.

Permission to photocopy items for internal or personal use, for the internal or personal use of specific clients, or for educational classroom use, is granted by the World Bank provided that the appropriate fee is paid directly to Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, U.S.A., telephone 978-750-8400, fax 978-750-4470. Please contact Copyright Clearance Center prior to photocopying items.

For permission to reprint individual articles or chapters, please fax your request with complete information to the Republication Department, Copyright Clearance Center, fax 978-750-4470.

All other queries on rights and licenses should be addressed to the World Bank at the address above, or fax no. 202-522-2422.

ISBN: 0-8213-4925-2
ISSN: 0253-2123

Cover photo: These Hui ethnic minority children endure the hardships of a severe drought in Xihaigu (Tongxin County, Ningxia). Cover photo by Alan Piazza. All other photos from Alan Piazza's personal collection.

Library of Congress Cataloging-in-Publication Data has been applied for.

CONTENTS

Abstract vi
Preface viii
Acknowledgments ix
Abbreviations and Acronyms x
Executive Summary xiii
A. The Remaining Challenge xiii
B. The Macroeconomic Context xvi
C. Poverty Reduction Programs xviii

1. TRENDS IN RURAL POVERTY IN THE 1990s 1
A. Continued Reduction of Rural Poverty 1
B. Location of the Poor 3
C. Other Characteristics of the Poor 8

2. THE MACROECONOMIC CONTEXT 15
A. Introduction 15
B. Macroeconomic Growth in China in the 1990s 16
C. Trends in Employment 23
D. Inflation and Prices 31
E. Fiscal Challenges in Poverty Reduction 33
F. Conclusions and Recommendations 37

3. POVERTY REDUCTION PROGRAMS IN CHINA 39
A. Overview 39
B. Institutional Arrangements, Strategy, and Funding 40
C. Targeting 44
D. Poverty Programs and Instruments 45
E. A New Approach: Implementing Programs to Meet the Needs of the Poor 53

4. MEASURES TO INCREASE MOUNTAIN AREA PRODUCTIVITY 58
A. Poverty in Mountain Areas 58
B. Strategy for Mountain Area Economic Development 59
C. Recommendations for Improving Agriculture Program Effectiveness 60
D. Market Analysis and Development 68
E. Environmental Protection 69
F. Education, Health, and Nutrition 70
G. Poverty Reduction Through Labor Mobility 72
H. Poverty Reduction Through Voluntary Resettlement 72

Annexes
Annex 1 Quantitative Trends 77
Annex 2 Macroeconomic Statistics 87
Annex 3 Improved Technology, Research, and Extension Needs for Mountain Agriculture 92
Annex 4 Participatory Poverty Assessments 110
Annex 5 Policies for Poverty Reduction in China 116
Bibliography 147

Maps

Map 1 Incidence of Rural Poverty in China by Province, 1991
Map 2 Incidence of Rural Poverty in China by Province, 1996
Map 3 China: 592 Nationally Designated Poor Counties
Map 4 China: Poor Mountainous Region

TABLES IN TEXT

1: Number of Rural Poor, 1990-98 xv
1.1: Number of Rural Poor, 1990-98 2
1.2: Incidence of Rural Poverty by Region and Province, 1988, 1989, 1991, and 1996 4
1.3: Puding County (Guizhou) Township Disparity, 1992 8
2.1: Regional Patterns: Growth versus Change in Rural Poverty, Initial Level of Income and Initial Poverty Rate 18
2.2: The Importance of Agriculture for Poverty Reduction, 1991-96 20
2.3: Percent of Rural Household Net Income Per Capita from Agriculture 20
2.4: Percent of Rural Household Net Income Per Capita from Wage Earnings and Transfers 21
2.5: Growth in China's Labor Force 24
2.6: Growth in Rural Enterprise Employment 25
2.7: Estimates of Migrant Employment 26
2.8: Official Data on Employment in Agriculture (millions) 27
2.9: Estimated Change in Labor Use in Agriculture, 1989-96 29
2.10: Regional Growth Rates in the Labor Force and Off-farm Employment 30
3.1: Central Government Poverty Reduction Funding (Y Million) 43
3.2: Yunnan Poverty Program Funding – Sectoral Spending (Yuan Million) 48

FIGURES IN TEXT

1: Number of Rural Poor, 1990-97 xiii
1.1: Number of Rural Poor, 1990-97 2
2.1: Growth in GDP 16
2.2: The Relationship Between Per Capita GDP and Rural Poverty, 1990-97 17
2.3: Provincial Growth Rates versus Rates of Poverty Reduction 18
2.4: Wages as a Share of Income by Income Group, 1996 22
2.5: Indices of Agricultural Employment, 1989=100 28
2.6: Annual Change in GDP and Prices 31
2.7: Annual Change in Farm Output, Input, and Rural Consumer Prices 32
2.8: Government Revenues and Expenditures as a Percent of GNP 33

BOXES IN TEXT

1.1: Poverty Estimates Based on Consumption Data....14
2.1: Fiscal Challenges in Three Poor Counties....35
3.1: Multisectoral Rural Development Poverty Reduction Projects....54
4.1: Key Features of Agricultural Development in the Karst Areas....61
4.2: *Cunji Guihua*—Working with Village Development Plans....62
4.3: Impact of Project Approach—Analysis of Cashflows for Three Poor Households....65
4.4: Typical Technology Improvements for Karst Areas....67

ABSTRACT

China is widely recognized for its achievements in reducing absolute poverty since the adoption of a broad program of rural economic reforms beginning in 1978. Based on the government's austere rural poverty line, official estimates indicate that poverty declined from more than 30 percent of the rural population in 1978 to less than 5 percent by end-1998. The Chinese government has a strong commitment to poverty reduction, and the scale and funding of its poverty reduction program, and the sustained dramatic reduction of absolute poverty over the last twenty years of reform, are exemplary by any standards.

Estimates based on an international poverty line document an equally steep decline in the incidence of poverty in China. However, since the international standard is somewhat less severe than China's official poverty line, it indicates greater numbers of poor in all years, and that by end-1998 a much larger share of the rural population—about 11.5 percent or some 106 million people—remained in poverty. While China's austere poverty line was a useful standard when the incidence of extreme poverty was greater, the international standard has now become a more appropriate measure to gauge the extent of poverty and guide the government's poverty reduction program in the next century. Available evidence also shows that an increasing share of the remaining rural poor are now concentrated in China's western provinces, and mostly within remote and mountainous townships. The educational, health, and nutritional status of these remaining rural poor is deplorable, and minority peoples and the disabled are known to represent highly disproportionate shares of the rural poor.

Assisting these remaining poor requires the continuance of the existing poverty reduction system. The key issue is not allocating more funding for poverty reduction, but is instead making more efficient and effective use of available funding. This can be achieved through a number of measures. First, available poverty reduction funding should be targeted to all poor townships. The current system of targeting the nationally-designated 592 poor counties results in the provision of very little assistance for the half of the poor residing outside the designated poor counties, and to a very substantial leakage of assistance to the non-poor within the poor counties. Second, financial monitoring and supervision of the use of poverty reduction funds must be greatly strengthened. At present, the weak fiscal situation in China's poor areas motivates local governments to divert a large share of poverty reduction funding to alternative uses, and the very limited supervision of the use of available funding often leads to poor quality of poverty reduction works and activities. A number of government agencies provide funding and other support for poverty reduction, and the overall coordination and accountability of this array of assistance is inadequate. Third, the effectiveness of funding to increase the productivity of upland agriculture (where the majority of China's poor attempt to eke out subsistence levels of production) could be greatly enhanced through (a) adopting a multi-year "project-based" approach with greater community participation in design and implementation, (b) developing appropriate applied agricultural technologies, and (c) completing realistic assessments of the market prospects for a wide array of niche crops which are now being planted extensively in China's upland areas. Fourth, greater efforts must be made to provide the poor with improved access to basic education, health, credit, water supply, and roads and other basic infrastructure.

Fifth, past attempts to foster enterprise development in the poor areas through direct funding have had mixed results. Local government should instead focus on providing an enabling environment for rural enterprise development. Finally, China's poverty reduction work could be enhanced by forging stronger links with other government, academic and civic organizations. The next generation of poverty work could include contracting the implementation of some small projects to grass roots and civic organizations, which might enable the poverty program to try new and innovative approaches, and improve its outreach.

PREFACE

China's "8-7" National Poverty Reduction Plan, which has been associated with sustained and significant reductions in the numbers of the extremely poor during the 1990s, will conclude at the end of 2000. The primary purposes of this report are to assess the state of poverty in China at the end of the 1990s, and to contribute to the determination of the most effective and efficient means of overcoming remaining absolute poverty in the new decade. The report is intended for all those interested in poverty reduction in China and, in particular, government decision-makers with responsibility for designing the next stages of the national poverty reduction program.

Available evidence indicates that the majority of China's absolute poor are increasingly concentrated in remote and mountainous townships and villages in the western provinces. The report focuses heavily on these remaining rural poor, and to a lesser extent on the ethnic minority groups and the disabled people who are heavily overrepresented among the poor. At present, less than one percent of China's registered urban population have income levels below the absolute poverty line. Although reform of state-owned enterprise and other developments may result in the emergence of urban absolute poverty as a major issue in China, the report does not cover that very important issue.

The report gives considerable attention to the macroeconomic context, and finds that the trends in poverty reduction in the 1990s have been at least partly determined by larger macroeconomic trends. The Asian financial crisis of the late-1990s dramatically confirmed that past achievements in poverty reduction could be quickly reversed. Although its effects on the poor in China were muted, it should be remembered that a future macroeconomic downturn could threaten China's success in poverty reduction.

ACKNOWLEDGMENTS

This joint report was undertaken as a collaborative effort of the Leading Group for Poverty Reduction, United Nations Development Programme, and The World Bank. The LGPR team was led by Su Guoxia, the UNDP team was led by Terry McKinley, and The World Bank team was led by Alan Piazza. The UNDP team, in collaboration with the International Labor Organization, has written an additional Supplement to this joint report. (The Supplement, which is included in this report as Annex 5, provides a complete listing of the UNDP and ILO staff and consultants involved in the work of the joint report and the Supplement.)

The report was written by Alan Piazza and Julia Li (East Asia and Pacific Region, Rural Development and Natural Resources Sector Unit), Enjiang Cheng, Claude Saint-Pierre, Terry Sicular, Bruce Trangmar, and Robert Weller (consultants). Major inputs were provided by Terry Mckinley (UNDP), Hu Tao, Kang Xiaoguang, Yang Qiulin, Zhao Yaqiao, and Richard Hardiman (UNDP consultants), Shaohua Chen and Martin Ravallion (Development Economics, Development Research Group), Li Guo (East Asia and Pacific Region, Rural Development and Natural Resources Sector Unit), Louise Beynon, Lisa Croll, and Zheng Baohua (DFID Consultants), and Lina Song and Wang Yihuan (The World Bank consultants). Additional inputs, comments, and review were provided by Halsey Beemer, Chen Xiaoping, Cheong Chup Lim, W. Hunter Colby, Yuri Dikhanov, Zafer Ecevit, He Jin, Paul Heytens, Janet Hohnen, Bert Keidel, Valerie Kozell, Kathie Krumm, Lena Lindberg, Lu Lei, Tamar Manuelyan Atinc, Albert Park, Thomas Rawski, Arlene Reyes, Scott Rozelle, Mikiko Sasaki, Sari Söderström, Juergen Voegele, and Wu Guobao.

The report is in large part based on findings of missions which visited Beijing, Anhui, Chongqing, Guangxi, Guizhou, Hunan, Qinghai, Sichuan and Yunnan during July 1998 and October/November 1998. These missions comprised a number of LGPR, UNDP and The World Bank staff and consultants, and benefited greatly from meetings and support from a number of staff, researchers, and officers of a variety of government agencies, donors, and domestic and international NGOs. In particular, the missions would like to gratefully acknowledge the time and generous assistance provided by the national, provincial, and lower level offices and various departments of the All China Women's Federation, China Disabled Persons' Federation, Chinese Academy of Agricultural Sciences, Chinese Academy of Sciences, LGPR's Foreign Capital Project Management Center, Ministry of Agriculture, Ministry of Science and Technology, Ministry of Water Resources, State Ethnic Affairs Commission, State Forestry Administration, State Statistical Bureau, CIMMYT, Ford Foundation, GTZ, IFAD, UNICEF, Winrock International, and WFP. The missions also benefited greatly from small group meetings with many poor farm households at the local level. Their assistance and participation is very much appreciated, and it is hoped that this report contributes to the further improvement of their well-being.

ABBREVIATIONS AND ACRONYMS

8-7 Plan	8-7 National Poverty Reduction Plan
ABC	Agricultural Bank of China
ADB	Asian Development Bank
CAS	Chinese Academy of Sciences
CDPF	China Disabled Persons' Federation
CEIS	China Economic Information Service
DFID	Department for International Development
FTA	Farmer Technical Association
FFW	Food for Work
FURC	Foundation for Underdeveloped Regions in China
GDP	Gross Domestic Product
GONGO	Government Organized NGO
ICIMOD	International Centre for Integrated Mountain Development
IFAD	International Fund for Agriculture Development
ILO	International Labor Organization
ILUS	Integrated Land Use Systems Project
LGPR	Leading Group for Poverty Reduction
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOST	Ministry of Science and Technology
MWR	Ministry of Water Resources
NGO	Non-Governmental Organization
PADO	Poor Area Development Office
PMO	Project Management Office
PPA	Participatory Poverty Assessment
PPP	purchasing power parity
PRA	Participatory Rural Appraisal
QBPRP	Qinba Mountains Poverty Reduction Project
RCC	Rural Credit Cooperative
SDPC	State Development and Planning Commission
SEAC	State Ethnic Affairs Commission
SEU	Sheep Equivalent Units
SFA	State Forestry Administration
SGWS	Sichuan Grassland Working Station
SOE	State-Owned Enterprise
SPC	State Planning Commission (now SDPC)
SSB	State Statistical Bureau

SWPRP	Southwest Poverty Reduction Project
TVE	Township and Village Enterprise
UBE	Universal Basic Education
UNDP	United Nations Development Programme
VDP	Village Development Plan
WFP	World Food Programme
WF	Women's Federation
WS	Work Station

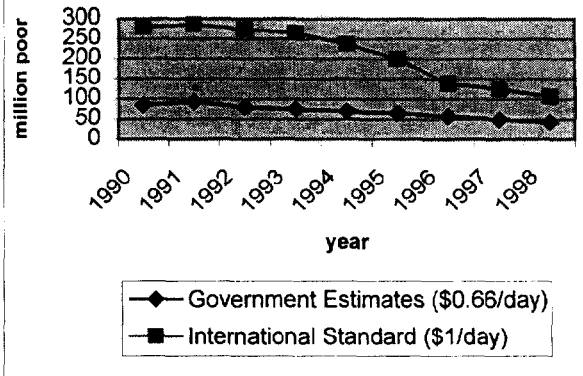
EXECUTIVE SUMMARY

A. THE REMAINING CHALLENGE

Twenty Years of Poverty Reduction. China is widely recognized for its achievements in reducing absolute poverty since the adoption of a broad program of rural economic reforms beginning in 1978. Broad participation in the subsequent reform-driven economic growth, together with a well-funded national poverty reduction program, have brought about a tremendous reduction in rural absolute poverty during the past twenty years. Official estimates indicate that rural poverty declined from roughly 260 million poor in 1978 to 42 million in 1998, or from one-third to about one-twentieth of total rural population. These official estimates are based on the government's austere poverty line equivalent to $0.66 per day (in constant 1985 purchasing power parity dollars).

The World Bank has developed an international poverty standard of $1.00 per day (in 1985 purchasing power parity dollars) for cross-country comparisons of poverty. Estimates based on this somewhat less severe poverty line indicate substantially greater numbers of absolute poor in China in all years, but do confirm the continuing remarkable decline in poverty during the 1990s.[1] As shown in Figure 1, the international standard indicates that by end-1998 a much larger share of the rural population—about 11.5 percent or some 106 million people—remained in poverty.[2]

Figure 1: Number of Rural Poor, 1990-97



Source: Table 1

The government's austere poverty line was a useful standard when the incidence of extreme poverty was greater, and helped to target available poverty reduction funding to those most in need. However, the government's poverty line may no longer be such an effective tool in identifying the potential beneficiaries of national poverty reduction efforts since such a small share of the population now have income levels below it, and large numbers of transient poor have income levels just slightly greater than it. In addition, those with incomes consistently below

[1] The significance of the difference between the official government estimates of poverty and those based on the international standard is discussed in The World Bank (1996). As shown in Annex 1, the sharp decline in rural poverty during the 1990s is observed across a variety of poverty lines ranging between $0.5 to $2.5 per day.

[2] Available evidence indicates an increase in urban poverty during the 1990s. However, at present, less than one percent of the registered urban population have income levels less than the dollar per day international poverty line. Consequently, in 1998, the 106 million rural poor greatly exceeded the less than 3 million registered urban poor.

the poverty line suffer extreme hardship and deprivation. *Consequently, China should consider whether the international standard may now be a more appropriate measure to gauge the extent of poverty and guide its poverty reduction program.*

The Chinese government has a strong commitment to poverty reduction, and most government ministries and agencies have special poverty reduction responsibilities and projects. The State Council's Leading Group for Poverty Reduction (LGPR) was established in 1986 in part to provide greater coherence to these many poverty reduction initiatives and, in particular, to expedite economic development in the poor areas. LGPR has emerged as the principal advocate of China's rural poor, and is now the key agency responsible for coordinating the nation's more than US$2 billion in annual funding for poverty reduction programs. This funding is organized under China's "8-7 Poverty Reduction Plan" (8-7 Plan), which was established by LGPR in 1994 to overcome remaining absolute poverty in the nationally-designated 592 poor counties. The scale and funding of China's 8-7 Plan poverty reduction program, and the sustained dramatic reduction of absolute poverty over the last twenty years of reform, are exemplary by the standards of any developing country.

Current Challenge. Even with the successes to date, there are still more than 100 million rural absolute poor, and in most cases this remaining poverty is both severe and relatively intractable. In the past, the broad incidence of poverty made it possible to achieve substantial reductions in poverty through general economic growth and through programs that were more broadly targeted. At present, the majority of the rural poor are concentrated in resource deficient areas, and comprise entire communities located mostly in upland sections of the interior provinces of northern, northwestern and southwestern China. Although these poor have land use rights, in most cases the land itself is of such low quality that it is not possible to achieve subsistence levels of crop production. Consequently, in most years the poorest of the poor consume grain and other subsistence foods beyond their own production levels. The poorest households are typically those further disadvantaged by high dependency ratios, ill health and other difficulties. Minority peoples and peoples with disabilities are known to represent a highly disproportionate share of the rural poor. Poverty also exacerbates society-wide problems of lower rates of female participation in education, higher relative female infant mortality rates, and higher rates of maternal mortality. Available evidence suggests that the severity of the remaining poverty worsened somewhat during much of the 1990s. As shown in Table 1 below, the squared poverty gap index increased during the 1990s, and in 1998 remained considerably greater than in 1990.[3]

The educational, health and nutritional status of these remaining absolute poor is deplorable. As many as half of the boys in many of China's poorest villages and, particularly in some minority areas, nearly all of the girls do not attend school and will not achieve literacy. Infant mortality rates and maternal mortality ratios in very poor counties exceed 10 percent and 0.3 percent respectively (or at least 50 percent to 100 percent greater than the national average), and are greater yet in the poorest townships and villages. Incidence of several infectious and endemic diseases, including tuberculosis and iodine deficiency disorders, is concentrated in poor and remote areas. Roughly half of children in households at or below the absolute poverty line are at least mildly malnourished (stunted), and iron, vitamin A, and other micronutrient deficiencies remain a severe problem among the poor. As many as 90 percent of poor children suffer chronic worm infections.

[3] The squared poverty gap index is a measure of the income that would be necessary to bring a poor person up to the poverty line. A greater index value indicates greater severity of poverty.

Table 1: Number of Rural Poor, 1990-98

	Official Government Estimates				International Standard ($1/day)	
Year	Poverty Line \a (Current Y)	Number of Rural Poor (million)	Share of Rural Population (percent)	Squared Poverty Gap Index	Number of Rural Poor (million)	Share of Rural Population (percent)
1990	300	85	9.5	0.43	280	31.3
1991	304	94	10.4	1.15	287	31.7
1992	317	80	8.8	0.85	274	30.1
1993	350	75	8.2	1.36	266	29.1
1994	440	70	7.6	1.38	237	25.9
1995	530	65	7.1	1.00	200	21.8
1996	580	58	6.3	0.58	138	15.0
1997	640	50	5.4	0.85	124	13.5
1998	635	42	4.6	0.67	106	11.5

\a The official government poverty line is the equivalent of $0.66 per day.
Note: Both sets of estimates are derived from per capita income data from the State Statistical Bureau's annual sample survey of rural households.
Source: Author's calculations.

Regional Concentration of the Poor. The reduction in rural poverty has been greatest in China's coastal and central regions where rural economic growth has been greatest. Many of the rural poor in 1978 resided in less remote and less hilly areas in the coastal and central regions, where increased application of fertilizer, irrigation, better seed and other modern inputs could bring about rapid productivity gains, and so were better able to participate in the rapid agricultural growth of the reform period. Most of the residual poor have remained trapped in more remote upland areas where agricultural productivity gains have proven far more problematic. Available evidence shows that this trend has continued in the 1990s, with an increasing share of the rural poor now concentrated in China's western provinces. The number of poor in the western provinces (including both the northwestern and southwestern provinces) increased from less than half of all of China's rural poor at the beginning of the 1990s to more than two thirds (about 70 percent) by 1996. This increasing concentration of poverty in the western provinces is observed using both the official government poverty line and the international dollar per day poverty line. The change in the distribution of remaining rural poverty was driven by sharp declines in the incidence of poverty in the eastern and central provinces relative to the more modest achievements in the western provinces. Poverty reduction in the northwestern provinces appears to have been particularly limited, and the severity of poverty is also deepest in these provinces.

Mountain Area Poverty. In addition to this concentration of poverty in the western provinces, it is believed that the majority of China's poor reside in mountainous counties and townships. A number of observers have concluded that China's poverty problem mainly occurs in poor mountain regions, and China's poverty reduction programs have long focused on mountain areas. Available information and field visits in a number of poor areas have documented considerable disparity at the county level, and confirm that a very high proportion of the rural poor live in mountain townships. These poor mountain townships are located in the nationally-designated and provincially-designated poor counties, and in a number of other counties not specifically designated as poor. Administrative boundaries in mountain counties typically delineate better-off townships around the county seat and in wide valley floors ("*baqu*"), and poorer mountain townships in higher elevation outlying areas ("*shanqu*"). In Yunnan, for example, the provincial government selected 506 key townships for poverty reduction programs

beginning in 1995. Almost all of these poor townships are distributed in high mountain ranges, in steeply-sloped mountains, and in minority and border areas. Some 86 percent of Yunnan's remaining poor in 1996 reportedly resided in these 506 poor townships.

B. The Macroeconomic Context

Economic Growth. Overall economic growth explains much of China's record of success in poverty reduction since 1990. Both over time and across provinces, growth in per capita GDP has been closely associated with the pace of poverty reduction. Available evidence also confirms that the impact of aggregate growth on poverty in China has been substantially influenced by the regional and sectoral composition of that growth. Slower-than-average growth in poor regions explains in part the increasing regional concentration of poverty. In addition, uneven growth in agriculture, the main source of income for the rural poor, has contributed to differences in the rate of poverty reduction. Poverty reduction has been slower where agricultural growth has lagged, and faster where agricultural growth has more or less kept pace with that in other sectors. *For these reasons, macroeconomic policies that promote growth, especially those that promote efficient agricultural growth and that target regions with high concentrations of poor such as the recent infrastructure investment program, should be seen as highly complementary to microeconomic poverty interventions.*

Employment. Trends in employment further highlight the importance of agriculture. Agriculture is often viewed as a passive reservoir for China's surplus labor, and expansion of nonagricultural activities is seen as the main route for absorbing this surplus labor. A closer examination suggests, however, a different understanding of agriculture's role. Estimates of agricultural employment show that in the 1990s labor use in agriculture has risen and suggests that agricultural employment responds actively to opportunities for diversification and to increased relative prices. Agriculture's potential to provide employment has been greatest in high-value, labor-intensive crops, horticulture, and livestock production. This potential can be promoted by ensuring that farmers have better access to water, credit, capital, and technology, and by allowing farmers to produce what is most profitable. During the 1990s, off-farm employment has also been an important source of new employment, with migration and private and individual enterprises playing a growing part in generating jobs. *Poverty programs should recognize these trends and assist the poor to gain access to migrant jobs and to participate in private businesses either as entrepreneurs or employees.*

Fiscal and Financial Challenges. During the 1990s the Chinese government has demonstrated a strong fiscal commitment to poverty reduction. This commitment has faced challenges on two levels. First, it has faced challenges at the central level because of ongoing fiscal deficits and the declining share of fiscal revenues in GDP. Second, it has faced challenges at the local level because of the extremely weak fiscal situation of poor counties. Despite its precarious fiscal situation, the central government has to date maintained and increased funding for poverty reduction. Maintaining funding, however, is only the first step in coping with fiscal pressures, because such pressures exist not only at the center but also at lower levels of government. Fiscal pressures are especially strong for poor counties, which face severe and persistent fiscal shortfalls.

The difficult fiscal situation of poor counties holds implications for the effectiveness with which central poverty reduction funds are used. The LGPR system is responsible for seeing that funding for poverty reduction is used in ways that benefit the poor. Poor county governments, however, face different incentives and have different objectives. First, they face pressing

expenditure demands, including simply paying back wages to employees on the government payroll. Second, revenue-starved county governments face strong incentives to use poverty funds in ways that quickly generate local fiscal revenues. The result has been an incentive to spend poverty funds to cope with pressing budgetary problems or to promote rural industry and township and village enterprises (TVEs). The central government has recently responded to this problem by limiting the amount of poverty funds spent on rural industry. Yet even when poverty funds go to agriculture and basic infrastructure, the spending may not reach the poor. The returns to agricultural and infrastructure investments in nonpoor or even marginally poor townships tend to be higher, emerge more quickly, and be more easily taxable than the returns on such spending in the poorest townships and villages. *Actions should be taken to address the underlying fiscal difficulties in poor areas and to provide incentives for local governments to assist the poor. Continued fiscal reforms are needed to broaden the local tax bases and generate more budgetary revenue, including from agriculture and the private sector. The distribution of the new tax system on inter-governmental distribution should be assessed, and changes made to improve net fiscal flows to poor areas.*

Similar problems exist in the financial system. Most of poverty reduction funding is in the form of loans. Reforms in the banking system have caused the Agricultural Bank of China (ABC), which manages poverty loans, to behave increasingly as a commercial, profit-oriented bank. Commercial banks worldwide view poor farm households as poor credit risks. Risk of nonrepayment is high, and in China where land is not privately owned, poor households have little to offer in the way of collateral. Moreover, farm households are numerous and dispersed, the loan amounts are small, and administrative costs are high. ABC therefore has disincentives to direct poverty loans to poor farm households. These problems are compounded by the fact that the interest rate on poverty loans is low, so that such loans would be unprofitable even in the absence of the greater risk and transactions costs. In the past the government subsidized the ABC's losses due to the low interest rates on poverty reduction loans, but now government subsidies do not fully cover the losses. *As the financial system moves towards the market, new methods are needed to provide credit to the poor. The policy requiring low interest rates on poverty loans creates perverse incentives and should be reevaluated. Microfinance programs are now a significant component of China's poverty programs, and could be an effective way to provide credit to the poor and reduce poverty if they were better designed.*

Outlook. Recent weak aggregate demand and slowing growth raises concerns about whether China's successful record of poverty reduction can be maintained in the future. A review of China's past macroeconomic performance suggests that China has followed a pattern of cyclical growth since the start of the reforms, and that the recent slowdown is a continuation of this cyclical pattern. International experience has shown that most countries undergo cycles in aggregate demand, and that poverty is sensitive to such cycles because of their impact on unemployment, inflation, the terms of trade, and fiscal capacity. Indeed, macroeconomic fluctuations can have devastating and long-term effects on the poor, as many of the poor live close to subsistence and typically have limited opportunities to insure against income shocks. For these reasons, the continued success of China's poverty reduction policies will require increased attention to the effects of macroeconomic cycles and fluctuations on the poor. Counter-cyclical macroeconomic policies can be beneficial to the poor, and microeconomic poverty interventions should continue to help poor households reduce production risk, diversify sources of income, and gain reliable access to sources of credit. Consolidation of China's past successes in poverty reduction will depend on efforts in this direction, because many of those who have recently escaped poverty are close to the poverty line and remain vulnerable.

C. POVERTY REDUCTION PROGRAMS

While recognizing China's exemplary success in reducing poverty, this report notes that international standards indicate that there are still more than 100 million rural poor concentrated in the western provinces and mountainous regions. To meet this challenge, it is important that China's existing poverty reduction program be extended, and funding continue at current levels, into the next decade (following the conclusion of the current "8-7 Plan" implementation period in 2000). Furthermore, it is essential that the effectiveness and efficiency of the existing program be enhanced through better coordination of the existing funding, institution building, more rigorous supervision of all poverty reduction works and activities, better targeting, and increased beneficiary participation. Adoption of a multisectoral project-based approach could also enhance program effectiveness.

Coordination and Institutional Arrangements

Institutions. China's poverty reduction program comprises a wide variety of actors, programs and funding channels. The bulk of the central government's $2 billion of annual funding for the poverty reduction program is channeled through subsidized loans provided through ABC and the banking system, the Food for Work Program (*"Yigongdaizhen"*) administered by the State Development Planning Commission, and grants administered by the Ministry of Finance (MOF).[4] LGPR and its executive agency, the Poor Area Development Office (PADO) system which extends down to the county and township levels, has responsibility for the overall success of China's poverty reduction program and for the coordination of the large number of poverty reduction activities of these other government ministries and agencies. With the exception of some lesser programs under their immediate control, the LGPR system does not directly implement poverty reduction projects and activities. Instead, most poverty reduction projects and activities are managed or implemented by the sectoral agencies generally responsible for such activities. Rural roads constructed under the Food for Work Program, for example, are implemented by local staff of the Transport Bureau.

Implementation of the programs has been a challenge for the government, and it is believed that there is room for substantial improvements to program effectiveness. The subsidized loan program, which comprises half of all poverty reduction funding, has (a) found that its lending to enterprises has done little to reduce poverty, and (b) encountered significant difficulties in directing loans to poor households. These issues, compounded by low repayment rates on the program, convinced the Government to experiment with microcredit schemes in the second half of the 1990s, but these have also encountered serious difficulties. The Food for Work Program could be improved by more explicit targeting of the poorest areas, and by refocusing its work on the types of programs that bring the greatest benefits to the poor. Little is known about the MOF grant program, but it too is believed to have encountered a number of implementation difficulties.

The effectiveness of the entire poverty reduction program could be greatly improved through much stronger institutional arrangements. Despite its mandate to coordinate the nation's poverty reduction program, the LGPR system does not have (a) sufficient advance access to the detailed program information necessary to insure that all poverty reduction funding benefits the poor, or (b) the staffing to properly oversee the quality of poverty reduction project works and

[4] The $2 billion of annual funding does not include additional funds and support for the poor including, most importantly, funding for poor area health and education administered by the Ministry of Health and the Ministry of Education.

activities. This limited control and inadequate staffing directly contribute to the significant leakage of available funding to works, activities and other uses which have little or no benefit to the poor, and to an unacceptably large share of the works and activities which do benefit the poor but which are of inferior or substandard quality.

At the provincial and lower levels, officials often complain that the LGPR system has been given responsibility for ensuring that poverty reduction goals are achieved, but not sufficient control over the funding or the necessary staffing to fully complete this important mission ("Fupinban you zeren, mei you quanli"). The LGPR system has only limited access to data on the projects and activities undertaken through the Food for Work and the MOF grant programs, and at best has only limited influence during the planning stage over the works and activities undertaken with subsidized loans provided through the Agricultural Bank of China. *The current arrangement of relying on local bureaus and agencies to implement project works and activities must be maintained, but the LGPR system should play a greater role in the planning of how funds are to be used, and in the supervision and monitoring of their usage. It is therefore strongly recommended that, in order to raise the impact of the funds on the poor and reduce the leakage of funding to alternative uses, the LGPR system should take on a greater planning and supervisory role for the use of the funds.*

Roles of Other Institutions. *Forging stronger links with government line bureaus, academic and civic organizations involved in poverty work would increase LGPR's effectiveness in setting policy and implementing programs.* For example, LPGR's policy making function could be strengthened by contracting research work to organizations with specialized knowledge, and incorporating research findings into their policies and strategies. The Ministry of Agriculture (MOA), for instance, could make a far greater contribution to China's poverty reduction program by working with the LGPR system to create a development strategy for the karst region, and to initiate a program of applied agricultural research for mountain areas.

The next generation of poverty work could include contracting the implementation of some small projects to grass roots and civic organizations. For example, government organized NGOs (GONGO) have proven successful at implementing poverty projects in a number of areas. Yet most of their funding is self-raised, and official poverty alleviation funds are not channeled through them. *Experimenting with channeling a portion of the poverty funds through GONGOs and other grass roots organizations could enable the poverty program to try new and innovative approaches, and improve its outreach.* Such an approach has proven highly successful in other developing countries, and could be particularly valuable to work in China's minority areas.

Accountability. Strengthening LGPR's oversight and control over poverty reduction should be complemented by reciprocal measures to increase LGPR's accountability by improving monitoring of the impact of the poverty program and the use of poverty funds. The monitoring function should be contracted to an independent outside organization. Financial monitoring should trace the flow of funds, and determine whether the use of funds meets LGPR's guidelines. Impact monitoring could build on the State Statistical Bureau's rural household survey, and LGPR should rely more heavily on those survey data in targeting its programs and evaluating their effectiveness.

Multisectoral Project-Based Approach. Experience with a number of large- and small-scale projects during the 1990s in China suggests that one of the most effective means of assisting the absolute poor is through an integrated set of interventions in the form of a multiyear project. In most cases, the multisectoral rural development project model includes an integrated program

of investments in (a) upland agricultural development, using menus of field and tree crop and livestock activities to increase upland agricultural productivity, (b) labor-intensive construction of rural roads, drinking water systems, small scale irrigation, agricultural drainage works, and other rural infrastructure, (c) provision of off-farm employment opportunities through a voluntary system of enhanced rural labor mobility for the upland poor, (d) institution building and poverty monitoring, and (e) rural enterprise development. Improved access to basic education and health, and separate microcredit components, are included in some donor supported projects.

The Chinese authorities have expressed their intention to roll out the multisectoral approach over a larger area, and some provinces have begun experimenting with this approach. *Given the favorable experience with this new approach, it is recommended that China consider using a portion of the poverty reduction subsidized loan funds blended together with grant funds to fund integrated multisectoral projects in the poorest areas.* However, the multisectoral rural development projects are very demanding of design and implementation capacity and, at present, funding and institutional arrangements may not be adequate to enable an effective rollout of this approach. Better coordination between funding channels is necessary to enable the poverty program to direct sectoral components in an integrated manner to the poorest of the poor. Most critical to the successful implementation of this approach are strong institutional arrangements. This includes establishment of effective project management offices (PMOs) and work stations at the provincial, county, township and village levels, and implementation of a rigorous works supervision and acceptance process referred to as the "*yanshou*" system. At present, the number of staff involved in specific poverty work at the provincial and county levels are probably sufficient to staff functional PMOs. At the township level, however, staffing is inadequate. *It is recommended that all township poverty reduction work stations comprise at least three full time staff.* Assuming this model would be applied to all of China's poor townships, the estimated annual cost of strengthening township poverty reduction work stations to reasonable levels would be less than Y 100 million, or about 0.4 percent of total annual poverty reduction funding. Reducing direct poverty funding by this amount would not significantly reduce the scale of the program, and would likely have a significantly positive impact on the effectiveness of the program.

Targeting

Since they were first established in 1986, the national and provincial lists of poor counties have played an important role in organizing China's poverty reduction program and helped concentrate available poverty reduction funding in some of the areas of greatest need. However, it is now evident that the current system of county-based targeting results in (a) a severe dilution of available poverty reduction funding for the half of China's remaining poor who reside in the nationally-designated poor counties, and (b) the near complete omission of central government poverty reduction funding for the other half of the poor who reside outside these poor counties. This severe problem could be largely resolved by switching to a system of township-based targeting which would direct the bulk of available funding to poor townships within and outside of the nationally-designated poor counties.

Just over half of China's remaining rural poor reside in the nationally-designated 592 poor counties. Most of the central government's poverty reduction funding is allocated to the nationally-designated poor counties, but is not specifically earmarked for the poor households or the poor townships within these counties. Instead, these funds are distributed both to poor and nonpoor townships within the poor counties. Therefore, it appears that available poverty reduction funding is equally distributed to all 200 million rural inhabitants of the 592 poor

counties. Since only about 21 million absolute poor resided in the poor counties in 1998, it is evident that assistance to the most needy was diluted by roughly ten-fold by the leakage of benefits to the nonpoor. Just as importantly, very little central government poverty reduction funding is provided to the other half of the poor residing outside the poor counties. Most provinces use their own funding to assist the poor residing outside the poor counties. However, provincial funding levels are known to be very limited. Overall, therefore, the total poverty reduction assistance package available for the poor outside the nationally-designated poor counties is extremely limited.

Targeting All Poor Townships. Most of China's remaining poor reside in poor townships within and outside of the nationally-designated poor counties. *It is therefore strongly recommended that, as a most crucial first step, all available poverty reduction funding should be channeled directly to poor townships within and outside of the 592 nationally designated poor counties, and poor villages should be guaranteed access to these funds.* Pilot tests of this switch from county to township based targeting should be undertaken immediately, and need not wait until the completion of the 8-7 Plan. A switch from county to township targeting would increase the administrative costs of the program. The most obvious implication of township targeting would be the need for additional staff at the township level. Lack of staff at this level is currently one of the major weaknesses of the poverty loan program, and switching to township targeting would certainly necessitate additional staffing at the township level. However, the costs of doing so appear modest, particularly when set against the improvements in targeting and program effectiveness that are likely to occur with this switch.

Ethnic Minorities. Ethnic minorities are also heavily represented in the remote, mountainous townships and villages, and solving the problems of absolute poverty will help solve the most fundamental problems of minorities. Minorities constitute such a large proportion of the remaining absolute poor because past programs have often not reached out to the most remote areas where the obstacles to poverty relief are greatest. Therefore, concentrating project resources on the absolute poor will often automatically target minorities. Targeting all poor townships should also benefit the minorities who presently live outside the boundaries of both the poor counties and the minority regions, and thus currently receive neither poverty assistance nor special types of relief administered in minority regions.

Disabled Persons. Improving targeting of the rural poor will not necessarily help all of the needy disabled since, while the disabled are heavily overrepresented amongst the poor, even greater numbers of the disabled poor are found outside the poor areas. Poverty programs for the disabled will thus need to move beyond the traditional limits of officially designated poor counties. For those disabled who cannot work at all, the current welfare system does not effectively address the vicious circle that exists between poverty and disability. Very few of the disabled poor who are completely dependent on aid qualify as "Five Guarantee" households, and at most they receive only small amounts of aid, leaving them well below the poverty line.

The flagship program for the disabled who can work is financing for "rehabilitation poverty relief loans" (kangfu fupin daikuan). This program is currently budgeted at Y500 million annually. On the assumption that the funds already provided to the nationally designated poor counties will help all the poor there, the rehabilitation loan program only applies in non-poverty counties. However, disabled households do not always benefit from existing poverty relief programs in poor counties since such aid has tended to go first to those families most likely to show quick progress (and therefore often does not reach disabled households at all). *This situation could be ameliorated either by extending the reach of the rehabilitation loan program to*

include all counties, or by building explicit measures aimed at the disabled into future poverty relief programs.

Gender and Poverty. Participatory poverty assessments are now providing greater understanding of the ways in which poverty disadvantages women in poor regions and poor households. First, the assessments draw attention to the heavy demands on female labor, and the rigid gender divisions of labor. Second, village and household assessments have shown how improving local infrastructure (most importantly, water supply, rural roads and paths, and electrification) can reduce the excessive demands on labor and improve the quality of life. Third, there is inadequate support for specialized training for women in agricultural technologies and for a variety of other knowledge and information that poor women require. Fourth, poor women and girls are particularly disadvantaged in access to basic education and health services. Finally, these assessments found that women's kin relations and their own organizations are important mechanisms for poverty reduction.

Participation. Development work around the world has found that allowing stakeholders a voice in project design, management, and evaluation improves results. Such approaches were not tried much in China before the 1990s, and still tend to occur primarily in programs supported by international organizations. Where they have been used, however, the results have been encouraging. Most of China's experiments with participation have been in project identification and preparation. Some projects are systematically developing strategies by creating a dialogue between experts and local beneficiaries. In many cases these result in a menu of options, which allows projects to adapt flexibly to local needs. Most recently, the results of participatory poverty assessments in several villages in Guangxi, Yunnan and Ningxia powerfully document the poor's own understanding of their experience with poverty, and highlight a number of significant weaknesses of poverty reduction activities and projects in their villages.

Less work has been done on building participatory institutions for project management, and the few experiments which have been undertaken have had mixed results. Local officials and experts are sometimes unhappy with what they perceive as a diminution of their authority, and China has very little precedent on which to model such independent institutions. On the other hand, there has been some success with institutions that combine local government and existing social networks, ranging from water management associations to small loan societies. Finally, monitoring and evaluation systems have very rarely tried participatory methods in China, and tend in general to lack qualitative input. The following recommendations, if applied to future poverty reduction programs in China, might further increase benefits to the rural poor:

- Projects that bring management organization down to the village level typically respond more effectively to local needs.

- The most successful community participation builds on existing social networks. Small loan societies, for example, work better in groups that already have close social ties than in ad hoc combinations with no other interests in common (as often happens in China). Participatory institution building will also work best when it builds on natural community leadership.

- Local project officials need training programs both to learn participatory methods and to understand their goals. These methods are a significant departure from the usual cadre work style in China, and training programs need to show the benefits to local leaders.

- Attempts to build new participatory administrative units can be improved by building the interests of local government stakeholders into the project or by building more community input into existing institutions.

- Minority community participation is especially important to help projects adjust to local cultural differences. Representatives from the local Ethnic Affairs offices should also be built into project management teams in minority areas.

Program Design and Instruments

The greatest endowment of most of the rural poor is their own labor, and increasing the productivity of this labor is the main development objective of the poverty reduction program. Productivity can be increased through investment and support for (a) human capital, including education, health and nutrition, (b) farm and community level basic infrastructure including land improvements, roads, and power, (c) appropriate agricultural and other applied technologies, and their extension to the poor, and (d) improved access to microcredit and off-farm employment opportunities.[5]

Education and Health. A variety of programs have led to significant improvements to the poor's access to basic education and health services during the 1990s. The Ministry of Education and the Ministry of Health each administer special programs to improve the education and health status of the poor. In addition, Project Hope, Spring Bud, and other programs have funded the construction and repair of schools and the provision of desks and chairs and tuition assistance for the poorest children in many of China's poorest areas. Despite these achievements, extremely low levels of educational attainment, poor health, and malnutrition are still major contributors to, and at the same time partly the results of, absolute poverty in the rural areas. Achieving poverty reduction goals therefore requires that even greater levels of assistance be devoted to support for improved access to basic education, health and nutrition services for the absolute poor. International donor-supported poverty reduction programs have shown that activities to improve access to basic education and health services can be successfully integrated into larger multisectoral poverty reduction projects and are very warmly received by project beneficiaries. The successful integration of basic education and health services into these multisectoral projects had the additional important payoff of better mobilizing the local community in support of the overall project and significantly enhancing beneficiaries' participation in all aspects of the projects.

The Ministry of Education has established national implementation plans for achieving nine-year universal basic education (UBE) by 2010. However, in accordance with different regions' financial resources and abilities, the national plans allow for lesser degrees of UBE in China's poor areas. For the poorest 5 percent of the population, the national plan calls for only three- to four-year UBE. (For better-off areas, the national plan calls for achieving nine-year UBE by 2000.) *In order to reduce inequalities in the provision of education, the Government should define a minimum level of provision for all children and should then ensure that there is adequate funding for this provision so that the disparity of needs and resources between richer and poorer areas is overcome. This would require that the central and provincial governments substantially increase the earmarked intergovernmental funds for compulsory education in the poor counties as part of the policy to achieve nine-year UBE throughout the country.* The provincial governments should guarantee a minimum level of per-student funding for all counties in the

[5] Rural infrastructure is discussed in the Supplement to this report.

province, at least at the primary and secondary levels, and limit the differences in per-student public spending between counties through equalization support (The World Bank, 1999c).

Similarly, the "Health for All in 2000" program calls for the re-establishment of the rural cooperative medical insurance system in all areas of China and an increase in the training of students from rural areas in secondary medical schools. However, these targets alone will certainly not be sufficient to upgrade basic health services and status in the poorest areas to acceptable levels in the near future. Instead, the current situation of inadequate public funding of essential services, even for cost effective prevention and treatment programs which have large public returns, must be addressed directly and urgently in the poorest areas. *The central and provincial governments should increase their assistance to the poor areas in support of a limited set of health services directed at the principal causes of morbidity and mortality.* At a minimum, this should include increased public funding for the control of infectious disease, overall disease surveillance and reporting, health information and education, and the strengthening of the basic infrastructure of the health system in the poorest areas.

Mountain Agriculture. China's poverty reduction programs have focused on mountain areas, and given that a large share of the remaining absolute poor are concentrated in core poor mountain townships or are scattered at high elevations and in difficult environments across other mountain townships, this geographic focus remains valid. However, there is no national framework for mountain area development, and existing sectoral strategies and mountain county governments have tended to underestimate both the problems (including resource constraints, market risks for specialty products, and watershed management costs) and the development opportunities facing the mountain areas. *It is therefore strongly recommended that a long-term national strategy be established for the economic development of mountain areas.* This would serve as a basis to (a) assess the impact of national trends and policy changes on mountain areas, (b) better prioritize national, provincial and donor investment, and (c) provide poor mountain counties with an appropriate framework within which to develop local strategies and programs. The Loess Plateau has already benefited from the development of such a regional strategy. The development of that strategy was subsequently complemented by coordinated investments into economic development, watershed management and agricultural research. *A regional initiative should now be taken under the national strategy to fund agricultural research and development* ***in the karst areas*** *where perhaps as many as half of the rural poor now live.*

Greater attention should be paid in the national and regional strategies to market development and the roles of the private sector. There is at present an urgent need to objectively assess the viability of markets for a number of specialty products now being introduced and supported in poor mountain areas. Particularly for some tree crops, medicinal tubers, and other specialty products, remote mountain areas face greater-than-average market risks. Since the investment cycle for many of these products requires substantial initial investments and a long (often several years) maturation period before harvest, there is the serious risk that markets will deteriorate after the investment has been made but before full or even initial production begins. In addition, China's several hundred poor mountain counties compete with 300 nonpoor mountainous counties and over 600 hilly counties in largely unsegmented markets for these products. Unfortunately, the decision to invest in these products in poor mountain counties often lags that in better-off areas by several years, thereby increasing the likelihood that poor mountain counties' production will begin just as the market decline hits. On the other hand, there appear to be some market opportunities which may merit further analysis and exploitation. These include: small niche consumer markets for specialty mountain products; improved processing capability (to maintain adequate levels of product quality); basic low-risk products (such as specialty maize,

buckwheat, and pulse crops); development of local markets for fresh mountain products; and leather, silk, and products from fast-growing trees (including bamboo and poplar). Forestry products could be of increasing importance in mountain areas if production incentives for small holders result from the ongoing forestry sector reform. Market development and the provision of support services also requires the nurturing of farmer technical associations and the private sector. Private operators, including individual farmers and small and regional enterprises, should also be encouraged to invest in agriculture-related supply, service, processing, and marketing activities.

Most policy-makers, local governments and line agencies agree on the need for well-coordinated agricultural development programs, and agricultural development activities are increasingly being planned as multisectoral and multiyear programs. However, few of these programs are actually implemented in this way. Technical bureaus responsible for the implementation of single-sector programs tend to concentrate their limited budgets and human resources on small-scale pilot operations (often at the village-level) and provide support to demonstration farmers with good entrepreneurial capacity. More comprehensive and collaborative interventions are also constrained by government procedures, such as bureau responsibility and incentive systems which are related to their own technical area, the allocation of local project responsibility to one lead agency, and increasingly competitive commercial interests between bureaus. *To overcome these weaknesses, development projects in poor mountain townships should apply a formal project approach to poverty reduction promoting (a) multiyear financial support to a diversified set of activities (including field crops, tree crops, animal husbandry, and forestry) reflecting the needs of the absolute poor, (b) an equitable share of investment to individual poor villages, and (c) the participation of all households, from the absolute poor in remote areas to farmers with entrepreneurial capacity.* Administrative village development plans are a simple and efficient tool to achieve these objectives at the village level. *It is therefore recommended that village plans should form the basis of township development projects in future poverty reduction programs.*

The 8-7 Plan has responded to mountain agriculture's need for an integrated set of interventions including land development, small-scale water conservancy, and technical packages for food crops, animal husbandry, tree crops and cash crops. This sound overall framework could be further improved through the reprioritization of investments to better reflect the needs of the absolute poor. First, investments (such as drinking water systems and small tools) which allow households to reallocate labor to more productive tasks are crucial. However, such investments do not always receive adequate priority or are not routinely included in poverty reduction program budgets. Second, the share of investment devoted to animal husbandry does not reflect its key role in all mountain land use systems. Moreover, the need of many transient poor households to recover from a loss of animal assets is well known, but credit to purchase replacement animals is often not available and not specifically funded. Third, expanding the limited area of more fertile land (through terracing and other means adapted to each region, including supplementary irrigation) appears to be one of the best ways to improve food security. Land development, however, does not receive adequate priority relative to funding for technical packages for food crops. Fourth, these technical packages for food crops have typically been limited to the main staple grains (for example, maize in the southwestern provinces). A combination of new varieties and other improvements for a wide range of crops (e.g., for potatoes) is needed to ensure long-term food security. Fifth, tree or cash crop development is often encouraged at the expense of investment into other agricultural activities, and before market and financial analysis under local conditions have demonstrated their viability for poor farmers.

Access to training and to improved technology are key to increasing the efficiency of agricultural interventions. Current investment planning procedures, however, do not allow for significant interventions in these fields, and limited budgets severely restrict the scope and quality of such activities. Several domestic and donor-assisted programs have successfully demonstrated the value of higher-quality training provided to township technicians and to larger numbers of farmers, and of strengthened information exchanges through linkages with research, teaching institutions, and enterprises. The few existing research programs in China which are specifically targeted to mountain agriculture have clearly demonstrated that returns on investment into low-cost, low-risk, simple technical innovations are much higher than direct investment into production. *It is recommended that a portion of public research funds be reserved for applied agriculture research in mountain areas, and there is a strong need to establish a specific program of grants for training, access to technical information, and agricultural research in mountain areas.*

Microcredit. Microcredit programs have had notable success in directly providing poor households with affordable credit and encouraging their self-organization, and have thus become a favored method of poverty reduction by the government and donor organizations. In 1996, LGPR decided to try to channel most poverty reduction funds directly to households, and explicitly endorsed the microcredit approach and the Grameen model. China's poverty reduction microcredit program expanded rapidly since then, and by 1998 it was reported to have reached 200 counties and have comprised a total investment of about Y 800 million. Most government funded microfinance programs have used variations of the Grameen Bank approach, which has been employed successfully in other countries, and in some donor programs in China. Initially, the program was organized by the PADOs which lent the funds directly to households.

Relatively high arrears rates in a number of the government's programs led to a recent switch in the microcredit program, and regulations now require that microfinance experiments using subsidized loans be undertaken by ABC, rather than the PADOs. Loan contracts are to be signed between the ABC and households. The role of the PADOs will focus on organizing households into groups and centers and facilitating loan repayment. This move addresses weaknesses in financial management and supervision, which has been one of the central problems in the government schemes. However, ABC's current institutional capacity is likely to hinder its ability to undertake Grameen type microfinance experiments as many county ABCs do not have agencies and staff at the township level. Moreover, the loan commission to be paid by ABC to the PADOs for their work in organizing groups and repayment is most likely too small to sustain their interest in microcredit.

Well designed microcredit programs can avoid many of the pitfalls seen in subsidized credit programs around the world, and which have plagued China's poverty loan program. In designing any future role for microcredit in the Government's poverty program, a number of points should be emphasized. *First, microcredit on its own is unlikely to meet the needs of the absolute poor, and should be combined with other types of interventions in the poorest areas. Second, improved financial management, monitoring, supervision and internal auditing, backed up by intensive staff training, are key to the success of any microcredit program.* Lax or non-existent systems made government experiments with microcredit vulnerable to spiraling repayment problems, and financial mismanagement. *Third, programs should avoid the tendency to become top-down, and may wish to experiment with devolving responsibility for implementation to grassroots organizations. It probably would be advantageous for the PADOs to play a role in monitoring and supervising microcredit, but to have the actual programs managed by organizations outside the government structure.* At a minimum, staff should be hired

by open recruitment and not be appointed by county or other officials. One positive aspect of the Grameen model is that its participatory methods promote initiative among the poor by encouraging them to form groups, choose group leaders, and decide their own investments. If programs side step this "bottom-up" approach, this aspect is lost, and targeting and repayment can also suffer. *Fourth, government programs have tended to charge rates of interest well below the level that would allow them to cover operating costs. This interest rate policy should be reevaluated since it can lead to leakage of funds to the non-poor, and also threatens the sustainability of the programs. Finally, the current group based models can be quite costly, both to the poor and in terms of administrative costs (for example, through frequent group meetings and repayment). Impact assessment should be undertaken to better understand the costs and benefits to the poor of existing programs, and to assess whether variations on the current models might be better suited to some areas.*

In the longer term, mechanisms to provide credit for the poor could take many forms. Developing savings services could be even more important for poor farmers than credit services, but no savings should be organized until prudent regulation and supervision has been established. Reforming existing financial institutions in poor areas may be the most efficient way to reach large numbers of poor and near poor, but this should not preclude a future role for informal financial organizations that now lend to the poor. If they are able to meet appropriate performance and regulatory standards, some of the current temporary microcredit program offices could possibly be converted into more permanent institutions which provide credit and savings services to the poor. In addition, small, grassroots organizations have the potential to play a valuable role in piloting innovative techniques, and their strong outreach is invaluable.

TVE Development. Beginning in 1989, poor county governments have used a large of portion of their available poverty reduction program funding to support the growth of county and township run enterprises. In 1992 and 1993, for example, about half of all poverty reduction subsidized loans were lent to industrial enterprises. Unfortunately, beginning in the mid-1990s, many TVEs in poor areas have suffered consecutive annual financial losses, many now have a negative net worth, and a high proportion of their total assets are accounts receivable and inventories. It is evident that many of the rural enterprises supported in the past with poverty reduction funding have also been loss making firms, often with minimal or no poverty reduction impact. While the number of such firms is not known, it appears that poverty reduction program funding for poor county TVE development may have even led to a net decline in revenues in some poor counties.

Recognizing the shortcomings of providing direct financial support, the government recently decided to severely curtail poverty reduction program funding for poor county TVE development. Instead, the more appropriate role for local governments is to establish a more favorable environment for poor county TVE development. The experience of those TVEs in poor areas which have better survived the current economic turbulence helps clarify what local government can do to facilitate TVE development. Relatively small enterprises with a more clearly defined ownership structure, operations based principally on local comparative advantage (such as cheap labor and local raw materials), and relatively large enterprises combining local resources with technology and market access provided by enterprises from more developed areas, appear to have been most successful in weathering the current economic challenges. The government's decision to curtail poverty reduction program funding for poor county TVE development was appropriate, and *it is recommended that local governments instead support TVE development through (a) reforming TVE ownership and management, (b) allowing those enterprises which have negative equity and which have suffered from financial losses for a*

number of years to go bankrupt, and (c) encouraging local enterprises, which have operations consistent with local comparative advantage, to establish joint ventures with enterprises from more developed areas. Past experience indicates that local governments in poor areas are not well-equipped to successfully establish and manage enterprises by themselves. These local governments should therefore instead focus on simplifying the procedures for the establishment of private and collective enterprises, reducing the taxes and other extra burdens on enterprises, improving local infrastructure, and providing more training for local accountants, auditors and technicians.

1. TRENDS IN RURAL POVERTY IN THE 1990s

Summary. China has experienced a tremendous decline in poverty over the last twenty years. Based on the government's austere rural poverty line, official estimates indicate that poverty declined from more than 30 percent of the rural population in 1978 to less than 5 percent by end-1998. For the purposes of cross-country comparisons, The World Bank has developed an international poverty standard. Estimates based on that international poverty line document an equally steep decline in the incidence of poverty in China. However, since the international standard is somewhat less severe than China's official poverty line, it indicates greater numbers of poor in all years, and that by end-1998 a much larger share of the rural population—about 11.5 percent or some 106 million people—remained in poverty. While China's austere poverty line was a useful standard when the incidence of extreme poverty was greater, the international standard has now become a more appropriate measure to gauge the extent of poverty and guide the government's poverty reduction program in the next century.

Available evidence indicates that there has been an increasing concentration of remaining poverty in China's western provinces during the 1990s. The proportion of China's poor residing in the western provinces increased from less than half in the late-1980s to more than two thirds by the mid-1990s. Most of these poor are concentrated in remote townships and villages, often in mountainous, low rainfall, or other lands with limited potential for even subsistence levels of production. It also appears that there has been a deepening of poverty during the 1990s, with the very poorest slipping further below the poverty line. The concentration of large numbers of extremely poor people in these areas suggests that geographic targeting of poverty reduction assistance to these households and communities should be intensified.

A. CONTINUED REDUCTION OF RURAL POVERTY

China is widely recognized for its achievements in reducing absolute poverty since the adoption of a broad program of rural economic reforms beginning in 1978. These reforms, including the adoption of the production responsibility system, the dismantling of the commune system, agricultural product price increases and market liberalization, have been associated with dramatic rural economic growth. Broad participation in this growth, together with a well-funded national poverty reduction program, have brought about a tremendous reduction in rural absolute poverty during the past twenty years. Official government estimates indicate that the number of rural poor declined from roughly 260 million in 1978 to 42 million in 1998, or from one-third to about one-twentieth of total rural population. As summarized in Table 1.1 and Figure 1.1, this decline continued through the 1990s.

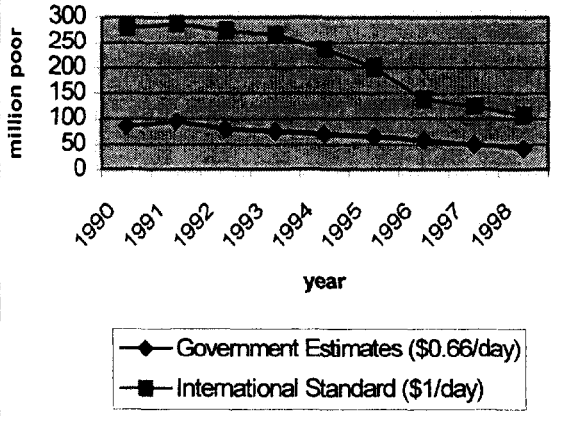
Table 1.1: Number of Rural Poor, 1990-98

	Official Government Estimates				International Standard ($1/day)	
Year	Poverty Line \a (Current Y)	Number of Rural Poor (million)	Share of Rural Population (percent)	Squared Poverty Gap Index	Number of Rural Poor (million)	Share of Rural Population (percent)
1990	Y300	85	9.5%	0.43	280	31.3%
1991	Y304	94	10.4%	1.15	287	31.7%
1992	Y317	80	8.8%	0.85	274	30.1%
1993	Y350	75	8.2%	1.36	266	29.1%
1994	Y440	70	7.6%	1.38	237	25.9%
1995	Y530	65	7.1%	1.00	200	21.8%
1996	Y580	58	6.3%	0.58	138	15.0%
1997	Y640	50	5.4%	0.85	124	13.5%
1998	Y635	42	4.6%	0.67	106	11.5%

\a The official government poverty line is the equivalent of $0.66 per day.
Source: State Statistical Bureau (SSB) for the official government estimates, and The World Bank for the international standard figures. Both sets of estimates are derived from per capita income data from the SSB's annual sample survey of rural households (see Annex 1 Tables 1 to 5). Poverty estimates based on consumption data are reviewed in Box 1.1 below.

These official estimates are based on the government's austere poverty line equivalent to $0.66 per day (in constant 1985 purchasing power parity dollars). The government's poverty line reflects national perceptions of the minimal standard of living, and those people with incomes less than this amount would likely be unable to secure subsistence levels of food and clothing (in Chinese, this is known as the "*bu wenbao*" poverty line). The World Bank has developed an international poverty standard of $1.00 per day (in 1985 purchasing power parity dollars) for cross-country comparisons of poverty. Estimates based on this somewhat less severe poverty line indicate substantially greater numbers of absolute poor in China in all years, but do confirm the continuing remarkable decline in poverty during the 1990s.[6] Even these

Figure 1.1: Number of Rural Poor, 1990-97



Source: Table 1.1

[6] The significance of the difference between the official government estimates of poverty and those based on the international standard is discussed in The World Bank (1996). As shown in Annex 1, the sharp decline in rural poverty during the 1990s is observed across a variety of poverty lines ranging between $0.5 to $2.5 per day.

estimates are considered to be conservative, since they rely on income, not expenditure, data.[7] The government's austere poverty line was a useful standard when the incidence of extreme poverty was greater, and helped to target available poverty reduction funding to those most in need. However, the government's poverty line may no longer be such an effective tool in identifying the potential beneficiaries of national poverty reduction efforts since such a small share of the population now have income levels below it, and large numbers of transient poor have income levels just slightly greater than it. In addition, those with incomes consistently below the poverty line suffer extreme hardship and deprivation.[8] Consequently, China should consider whether the international standard may now be a more appropriate measure to gauge the extent of poverty and guide its poverty reduction program.

Although the incidence of rural poverty declined significantly, available evidence suggests that the severity of the remaining poverty worsened somewhat during much of the 1990s. As shown in Table 1.1, the squared poverty gap index increased during the 1990s, and in 1998 remained considerably greater than in 1990.[9] In addition, it appears that rural poverty is increasingly concentrated in the western provinces, and that the depth of poverty is greatest in these western provinces. These trends in the location and severity of poverty in the 1990s are discussed below.

B. Location of the Poor

Regional Concentration of the Poor. The reduction in rural poverty has been greatest in China's coastal and central regions where rural economic growth has been greatest. Many of the rural poor in 1978 resided in less remote and less hilly areas in the coastal and central regions, where increased application of fertilizer, irrigation, better seed and other modern inputs could bring about rapid productivity gains, and so were better able to participate in the rapid agricultural growth of the reform period. Most of the residual poor have remained trapped in more remote upland areas (particularly in the western provinces) where agricultural productivity gains have proven far more problematic.

Available evidence shows that this trend has continued in the 1990s, with an increasing share of the rural poor now concentrated in China's western provinces. As shown in Table 1.2, the number of poor in the western provinces (including both the northwestern and southwestern provinces) increased from less than half of all of China's rural poor in each year 1988, 1989 and 1991 to more than two thirds (about 70 percent) in 1996. This change in the distribution of remaining rural poverty in the 1990s was driven by the relatively sharp declines in the incidence

---

[7] There are two reasons why this report's estimates of the incidence of poverty should be considered to be conservative lower bounds of the true number of poor. First, in order to be consistent with Government estimates and methods, all the estimates of the incidence of poverty presented in this report are based on the distribution of per capita income (from SSB's annual sample survey of rural households). However, per capita expenditure (consumption) data are considered to provide a superior basis for assessing the incidence of poverty, and should be used when available. As shown in Annex 1 and in Box 1.1, estimates based on available expenditure data indicate much greater numbers of absolute poor in China. Second, there remains some uncertainty about the purchasing power parity (PPP) estimates for China. The price data underlying these estimates are limited, and some evidence suggests that the PPP dollar per day estimates may therefore significantly understate the incidence of poverty in China (The World Bank, 1994).

[8] For example, about half of the children of poor households are at least mildly malnourished (The World Bank, 1992).

[9] The squared poverty gap index is a measure of the income that would be necessary to bring a poor person up to the poverty line. A greater index value indicates greater severity of poverty.

of poverty in the eastern and central provinces, from 7 and 14 percent respectively in 1988 to 1 and 3 percent in 1996. The incidence of poverty also declined (but by a much lesser margin) in the western provinces, from 22 to 13 percent of the rural population in the western provinces in 1989 and 1996 respectively. This increasing concentration of poverty in the western provinces during the 1990s is observed using both the official government and the dollar per day poverty lines, and is illustrated by Maps 1 and 2 for 1991 and 1996.[10]

Table 1.2: Incidence of Rural Poverty by Region and Province, 1988, 1989, 1991, and 1996

	1996 Rural Population (million)	Poverty Incidence (Number of Poor/Rural Population)				Number of Rural Poor (Headcount)				Share of National Total			
		1988 (%)	1989 (%)	1991 (%)	1996 (%)	1988 (million)	1989 (million)	1991 (million)	1996 (million)	1988 (%)	1989 (%)	1991 (%)	1996 (%)
National	**919.4**	**13.9**	**12.3**	**10.4**	**6.3**	**120**	**102**	**94**	**58**	**100**	**100**	**100**	**100**
North	**83.6**	**15.2**	**13.2**	**13.4**	**4.6**	**11.7**	**10.3**	**10.2**	**3.8**	**9.8**	**11.1**	**10.8**	**7.6**
Beijing	3.7	0.5	0.2	0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Tianjin	3.9	1.8	0.4	0.3	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Hebei	53.2	14.0	13.0	13.4	3.9	6.9	6.5	6.7	2.1	5.8	7.1	7.1	4.1
Shanxi	22.8	22.1	17.4	17.0	7.5	4.7	3.8	3.5	1.7	3.9	4.1	3.7	3.4
Northeast	**55.0**	**10.2**	**12.8**	**9.1**	**4.7**	**5.5**	**6.9**	**4.8**	**2.5**	**4.6**	**7.5**	**5.1**	**5.1**
Liaoning	22.2	8.0	8.0	4.4	2.9	1.8	1.8	0.9	0.6	1.5	1.9	0.9	1.3
Jilin	14.4	8.8	12.2	8.7	4.7	1.3	1.8	1.2	0.7	1.1	1.9	1.3	1.3
Heilongjiang	18.4	13.6	18.3	14.3	6.7	2.5	3.4	2.7	1.2	2.1	3.6	2.8	2.5
East	**272.0**	**7.0**	**4.9**	**7.7**	**1.2**	**17.9**	**12.7**	**19.1**	**3.2**	**14.9**	**13.7**	**20.3**	**6.4**
Shanghai	3.8	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jiangsu	53.1	4.5	3.4	4.1	0.1	2.4	1.8	2.2	0.1	2.0	1.9	2.3	0.1
Zhejiang	35.9	2.8	2.0	3.6	0.1	1.0	0.7	1.0	0.0	0.8	0.8	1.1	0.1
Anhui	49.8	10.3	7.7	27.8	2.7	4.7	3.6	12.9	1.4	3.9	3.9	13.7	2.7
Fujian	26.4	3.9	1.8	1.4	0.5	0.9	0.4	0.3	0.1	0.8	0.5	0.3	0.3
Jiangxi	32.0	8.5	5.0	0.3	0.7	2.5	1.5	0.1	0.2	2.1	1.6	0.1	0.5
Shandong	71.0	9.4	6.8	4.1	1.9	6.4	4.7	2.5	1.4	5.3	5.1	2.7	2.7
Central	**233.3**	**13.6**	**8.7**	**10.3**	**2.6**	**27.8**	**18.0**	**21.2**	**5.7**	**23.1**	**19.4**	**22.5**	**11.3**
Henan	77.5	25.0	16.5	21.7	4.3	17.6	11.8	15.8	3.3	14.6	12.7	16.8	6.6
Hubei	40.3	11.0	6.0	9.0	2.7	4.4	2.4	3.5	1.1	3.6	2.6	3.7	2.1
Hunan	53.2	7.9	6.2	3.1	1.5	4.0	3.2	1.6	0.8	3.4	3.5	1.7	1.6
Guangdong	57.5	2.7	0.9	0.3	0.2	1.3	0.5	0.1	0.1	1.1	0.5	0.1	0.2
Hainan	4.8	12.1	3.3	3.8	8.2	0.5	0.1	0.2	0.4	0.4	0.2	0.2	0.8
Southwest	**198.3**	**20.5**	**14.2**	**13.2**	**10.5**	**38.4**	**27.0**	**24.1**	**20.7**	**31.9**	**29.2**	**25.6**	**41.2**
Chongqing					6.6				1.6				3.2
Sichuan	93.9	16.7	11.2	11.2	7.0	15.3	10.4	9.6	4.9	12.8	11.2	10.2	9.7
Guizhou	29.8	23.0	17.8	23.5	12.8	6.3	5.0	6.2	3.8	5.3	5.4	6.6	7.6
Yunnan	33.5	23.8	19.0	17.3	22.9	7.4	6.0	5.5	7.7	6.2	6.5	5.9	15.3
Tibet	2.1	32.3	NA	11.6	10.1	0.6	NA	0.2	0.2	0.5		0.2	0.4
Guangxi	39.0	24.1	15.4	7.0	6.4	8.7	5.6	2.5	2.5	7.2	6.1	2.7	5.0
Northwest	**77.2**	**26.2**	**24.0**	**19.8**	**18.6**	**18.9**	**17.6**	**14.7**	**14.3**	**15.7**	**19.0**	**15.7**	**28.4**
Inner Mongolia	14.2	17.3	23.5	13.7	9.3	2.4	3.3	1.9	1.3	2.0	3.6	2.0	2.6
Shaanxi	27.5	24.9	20.3	18.0	17.5	6.4	5.3	4.7	4.8	5.3	5.8	5.0	9.6
Gansu	19.7	38.4	34.2	29.0	22.7	6.8	6.2	5.1	4.5	5.7	6.7	5.4	8.9
Qinghai	3.3	22.4	23.7	17.8	17.7	0.7	0.7	0.6	0.6	0.5	0.8	0.6	1.2
Ningxia	3.7	24.7	18.9	22.7	18.5	0.8	0.6	0.8	0.7	0.7	0.7	0.8	1.4
Xinjiang	8.8	22.3	18.7	16.3	27.4	1.7	1.5	1.7	2.4	1.4	1.6	1.8	4.8

Source: SSB's annual sample survey of rural households income (see Annex 1 Tables 6-11).

[10] Differences in the cost of living varies across provinces, and may bias these interprovincial poverty comparisons (Chen and Ravallion, 1996).

It also appears that the depth of poverty in the western provinces is now more severe than in the rest of China. As summarized below (and shown in detail in Annex 1 Table 12), the squared poverty gap was much greater in the northwestern provinces than it was in all other regions in 1991 and, particularly, in 1996:

Regional Depth of Poverty: Squared Poverty Gap, 1991 and 1996

	1991	1996
National	1.19	0.59
North	1.32	0.27
Northeast	1.36	0.52
East	0.76	0.03
Central	1.05	0.17
Southwest	0.77	0.49
Northwest	1.75	1.45

The squared poverty gap declined sharply in the north, northeast, east and central regions during 1991-96. On the other hand, the depth of poverty in the southwestern provinces was less than most of the other regions in 1991, but had declined by a much smaller margin by 1996.

Nationally-Designated Poor Counties. In 1986, using Ministry of Agriculture (MOA) county-level rural income data, the State Council's Leading Group for Poverty Reduction (LGPR) developed a national roster of 331 poor counties eligible for development assistance. A county was identified as poor if its 1985 average rural per capita income fell below poverty lines of Y 300, Y 200, or Y 150, depending on other locational or political factors. Average per capita grain production of less than 200 kg was also adopted as a second key indicator of poverty.[11] In addition to the national roster, 368 provincially-designated poor counties, eligible for provincial funding, were selected on the basis of poverty lines determined by the provinces. Province-specific poverty lines ranged from Y 150 in Yunnan to Y 400 in Jiangsu. In addition to drawing up a roster of poor counties, most provinces have identified townships in otherwise well-off counties as eligible for special assistance. As evidenced by the wide difference in qualifying income levels (Y 150 to Y 400), the provincial rosters included a number of counties that are relatively poor by provincial standards but that would not qualify as absolutely poor by the national minimum standard. That provinces created their own special programs testifies to a concern with relative poverty and, in many instances, to provincial budgetary strength. On the other hand, the provincial rosters did, in some cases, compensate for the incorrect exclusion of counties with average per capita income levels below the national minimum standard. The Yunnan provincial roster, for example, included all the counties that should have received central government support for absolute poverty reduction (that is, 15 counties with average per capita income of between Y120 and Y150 in 1985).

While the LGPR list of poor counties did capture a large share of China's most severe rural poverty, there has been considerable criticism of the "poor county" approach to poverty

[11] Eighteen indicators were used to determine counties' poverty status (LGPR, 1989). In addition to per capita income and grain production, these indicators include (a) access to safe drinking water, road transport, and other basic infrastructure, (b) total and per capita arable land, (c) several demographic factors, and (d) other measures of economic production and fiscal strength.

monitoring and targeting.[12] The determination of poor counties, and the subsequent allocation of poverty alleviation funding, was necessarily political. Counties with favorable political credentials and strong supporters—most notably the old revolutionary base areas—were included under the roster of poor counties despite having per capita income levels twice the level deemed to represent subsistence. The inclusion of politically favored counties forced the exclusion of many counties with per capita income levels well below the poverty line. Yunnan, for example, was forced to adopt a special cutoff of Y120, rather than the nationally mandated level of Y150, in order to reduce its number of poor counties.

Partly in response to these shortcomings, LGPR established a new list in 1993 of 592 nationally-designated poor counties. (The 592 nationally-designated poor counties are shown in Map 3.) The new list included a large number of previously provincially-designated poor counties and other poor counties which had been otherwise excluded from the original list. The new list of nationally-designated poor counties certainly does a good job of capturing most of China's poor counties. For example, of the 118 counties with average rural income levels of Y500 per capita or less in 1995, 90 percent (112) are included in the new list. Park *et al.* (1999) have noted that the new list includes a larger number of poor counties in the very poor southwestern provinces of Yunnan and Guizhou, while the much higher income coastal provinces of Fujian, Guangdong, Shandong and Zhejiang were net losers. However, while the new list better captures the poorest counties, it also nearly doubled the number of counties receiving central government funding for poverty reduction activities. This has contributed to spreading available poverty reduction program funding over a much greater population. The total rural population of the 593 nationally designated poor counties numbers at least 200 million. Since government estimates indicate that in 1997 roughly half (that is, about 27 million) of China's remaining 50 million absolute poor resided in the nationally designated poor counties, this means that only one in seven of these counties' rural inhabitants were absolutely poor. As discussed below, it is believed that available poverty reduction program funding is distributed more-or-less equally across the entire rural population of these counties, so there is a very substantial leakage of benefits to the nonpoor.

Mountain Area Poverty. In addition to this concentration of poverty in the western provinces, it is believed that the majority of China's poor reside in mountainous counties and townships.[13] A number of observers have concluded that China's poverty problem mainly occurs in poor mountain regions (ICIMOD 1994, MFO 1995, Han 1998, Wang 1998), and China's poverty reduction programs have long focused on mountain areas. In 1986, LGPR commissioned a Chinese Academy of Sciences (CAS) study (Jiang, 1989) which identified 21 core poor zones covering 741 counties (see Chapter 4 and Map 4). The CAS study found that at least 90 percent of the rural population of these poverty zones resided in mountain counties, and LGPR has focussed government support for poverty reduction activities on 18 of the CAS poverty zones. All of the 18 LGPR zones are mountainous, and two thirds of the 592 nationally-designated poor counties are mountain counties (Annex 3 Table 1).[14]

---

[12] Park *et al* (1999), for example, have noted that less than one third of the initial selection of 258 nationally-designated poor counties met the lowest standard of poverty (that is, only 83 of the designated counties had average rural income levels of less than Y150 per capita).

[13] Mountain counties are defined as those with elevations of at least 500 meters, sloped land comprising at least 60 percent of the total land area, the county seat located in a mountainous area, and a majority of the population living in mountainous areas (MOAb, 1997). Some 910, or about 40 percent, of China's counties are considered to be mountain counties.

[14] LGPR publications often mention that mountain counties comprise 497 out of 592 of national-poor counties. However, as shown in Annex 3 Table 1 of this report, this figure includes both mountain and hilly counties.

Available information and field visits in many poor areas indicate considerable disparity at the county level, and confirm that a very high proportion of the rural poor live in mountain townships. These poor mountain townships are located in the nationally- and provincially-designated poor counties, and in some other counties not specifically designated as poor. Administrative boundaries in mountain counties typically delineate better-off townships around the county seat and in wide valley floors ("*baqu*"), with poorer mountain townships in higher elevation outlying areas ("*shanqu*").[15] In Yunnan, for example, the provincial government selected 506 key townships for poverty reduction programs beginning in 1995. Almost all of these poor townships are located in mountainous, minority, and border areas. Four fifths of the poor townships are in Yunnan's 73 nationally-designated poor counties, and the others are located in the 17 provincially-designated poor counties and in some non-poor counties. (Simao County, for example, is not a designated poor county, but has two poor townships in the karst area with water availability problems.) In the Jiuwan Dashan mountains in Northeast Guangxi, Longsheng, Ziyuan and Xingan are three neighboring counties. Longsheng is a nationally-designated poor county, Ziyuan is a provincially-designated poor county, and Xingan is not designated as poor. The Longsheng County government reports that 4 of its 7 townships are poor, Ziyuan reports that 4 of its 8 townships are poor, and Xingan reports that 6 of its 11 townships are poor. All of the 14 poor townships are located at higher-elevations and have high proportions of Yao or Miao ethnic minority people. Similarly, Baojing County in Hunan has identified 5 poor townships out of its total of 24 townships. Four of the poor townships are in the southern part of the county on karst terrain, and the other is in the higher-elevation part of the northern hill range. The county has further listed 69 poor villages, of which 43 are within these 5 poor townships.

Another example is Puding County, in the karst mountains of Guizhou, which is divided in half by the Sanfen River. In Machang, Longchang, Chengguan, Baiyan, Huachu, and Maguan townships to the south of the river, there are more basins and agricultural production is based on irrigated crops. The poor townships of Jichangpo, Pingshang, Bulang, Houchang, and Maodong to the north of the river are typical core poor mountain townships. As summarized in Table 1.3, minority peoples comprise one third of the rural population of the northern townships, but only one eighth in the southern townships. Less than half of administrative villages in the northern townships were accessible by road in 1992, while more than three quarters were in the southern townships. Average per capita income was about 40 percent less in the northern townships, and per capita grain production was 10 percent less in the northern poor townships than in the southern townships. Moreover, corn comprised nearly half of the grain produced in the northern townships, but only about a quarter of that in the southern townships. The northern poor townships had on average only 0.24 mu per capita of irrigated land, or just slightly more than half that of the southern townships.

[15] Two types of poor townships occur: (a) "core" poor townships in which the absolute poor form the majority of the rural population, and (b) townships which have a lower proportion of absolute poor who are mostly found at higher elevations and in other difficult environments within the townships. The core poor townships are primarily found in the karst, loess uplands, and pastoral areas, while the other type of townships occur in all mountain types (see Chapter 4).

Table 1.3: Puding County (Guizhou) Township Disparity, 1992

	Agricultural Population		Share of Administrative Villages With Road Access	Arable Land Per Capita			Per Capita Income and Output		
	Total (number)	Minorities (%)	(%)	Total (mu)	Irrigated (mu)	Rainfed (mu)	Income (Y)	Grain (kg)	Agricultural Output Value (Y)
Southern									
Machang	33148	10.9	73.7	0.74	0.33	0.41	369	258	319
Longchang	27619	10.0	68.8	0.88	0.25	0.63	331	191	283
Chengguan	47967	23.6	87.8	0.71	0.39	0.32	419	267	360
Baiyan	27620	17.0	76.0	0.77	0.46	0.31	391	260	333
Huachu	44228	3.8	69.8	0.69	0.33	0.36	371	223	325
Maguan	44064	12.7	83.9	0.70	0.52	0.18	373	219	323
Northern									
Jichangpo	28300	36.7	70.8	0.8	0.25	0.55	248	216	259
Pingshang	22800	32.0	40.0	1.06	0.20	0.86	235	248	280
Bulang	19500	34.9	50.0	1.13	0.23	0.90	222	222	294
Houchang	19000	37.9	41.2	0.88	0.20	0.68	224	238	274
Maodong	25600	26.2	34.6	0.82	0.30	0.52	230	153	267
All Puding	339846	20.0	67.2	0.81	0.34	0.47	329	229	309
Southern Towns	224646	13.2	77.1	0.76	0.40	0.36	379	237	327
Northern Towns	115200	33.3	47.2	0.92	0.24	0.68	233	213	273

Source: Guizhou Poor Area Development Office.

C. Other Characteristics of the Poor

Since virtually all of China's rural population received land use rights as part of the implementation of the production responsibility system during the early-1980s, there are few if any landless laborers. Although these poor have land use rights, in most cases the land itself is of such low quality that it is not possible to achieve subsistence levels of crop production. Consequently, most poor consume grain and other subsistence foods beyond their own production levels, and are negatively affected by price increases for these products. The poorest households are typically those further disadvantaged by high dependency ratios, ill health and other difficulties. Minority peoples are known to represent a highly disproportionate share of the rural poor. Available evidence does not suggest that women are greatly overrepresented among the poor, though poverty certainly does exacerbate society-wide problems of lower rates of female participation in education, higher relative female infant mortality rates, and higher rates of maternal mortality.

The educational and health status of China's remaining absolute poor is deplorable. As many as half of the boys in many of China's poorest villages and, particularly in some minority areas, nearly all of the girls do not attend school and will not achieve literacy. The infant mortality rate and maternal mortality ratio in very poor counties—which exceed 10 percent and 0.3 percent respectively—are at least 50 to 100 percent greater than the national average, and are much greater yet in the poorest townships and villages. Incidence of several infectious and endemic diseases, including tuberculosis and iodine deficiency disorders, is concentrated in poor and remote areas. Roughly half of children in households at or below the absolute poverty line are at least mildly malnourished (stunted), and iron, vitamin A, and other micronutrient deficiencies

remain a severe problem among the poor. Up to 90 percent of poor children suffer chronic worm infections.

Distribution of Ethnic Minority Poverty. Minority peoples[16] are known to represent a highly disproportionate share of the rural poor. Ethnic minority groups make up less than 9 percent of the total population, but are believed to account for about 40 percent of the remaining absolute poor in China, and often live in the deepest poverty.[17] Minority autonomous counties also account for more than 40 percent of the nationally-designated poor counties.

The single most obvious contributor to minority poverty is geography. Minorities are concentrated in the northwest and southwest regions and within these regions they tend to occupy the most remote mountain areas. China historically shows a dynamic of poorer uplands and better-off lowlands, where minorities are usually concentrated in the highland economy. For example in Guangxi, the Han tend to be concentrated in the coastal region and more productive southern part of the province, sinicized Zhuang occupy the less fertile northeast, less sinicized Zhuang dominate in the karst regions of the northwest, and Yao occupy the most remote areas of the karst region. Guizhou shows a similar pattern, with the Miao, or Buyi and Miao, occupying the most remote, mountainous areas.[18]

Minorities who live in these remote areas tend to be the poorest of the poor. Work sponsored by the State Ethnic Affairs Commission (SEAC) concluded that in the mid-1990s minority autonomous counties and regions accounted for three quarters of all nationally-designated poor counties with per capita incomes under Y 400, and more than four fifths of the nationally-designated poor counties with incomes under Y 300. Provincial accounts support this finding. Sichuan, for example, reports that its poorest counties are all in minority areas. The average 1997 per capita income in Sichuan's poor counties was Y 1,032, but ranged between Y 720 and Y 860 in the three poorest prefectures, all of them minority autonomous regions. Simao Prefecture in Yunnan, whose population is 61 percent minority, estimates that 90 percent of its remaining poor are minorities.

Information from The World Bank-supported project in Gansu's Hexi Corridor region also documents a higher percentage of minorities in the poorer areas:

---

[16] Membership in China's 56 ethnic groups (including the majority Han) was unambiguously defined in the 1950s, and is in principle based on shared language, religion, cultural traditions, and history. The minority groups make up less than 9 percent of the total population, although they constitute almost the entire population in some localities.

[17] LGPR collects systematic data on the number of absolute poor in China, but does not classify them by ethnic group. The State Ethnic Affairs Commission has such data, but only for autonomous counties and regions. Many autonomous counties or regions, however, actually have Han majorities, and many minorities do not live in autonomous counties or regions. SEAC estimates that 40 percent of the poor are minorities.

[18] There are exceptions. In northern Guangdong and southern Fujian, for instance, Hakka (a Han dialect group) often concentrate in the uplands. Han who have arrived late in an area often occupy the very worst land and are also extremely poor.

Concentration of Minority Peoples and Poverty in Gansu's Hexi Corridor (Figures are for rural households in 1995)

	Per Capita Grain (kg)	Per Capita Income (Y)	Share Below Poverty Line	Minorities' Share
China	500	922	9%	8%
Gansu	390	563	22%	8%
41 Poor Counties	288	449	46%	NA
11 Project Counties	221	348	49%	22%
95 Project Townships	173	287	59%	25%

These figures highlight a situation of extreme poverty among minority peoples concentrated in poor counties and townships.

In these remote, mountainous areas, extremely difficult agroecological conditions have been exacerbated by periods of rapid deforestation and population growth. Until recently, poverty programs rarely reached into these areas, and this has slowed progress. Moreover, the lack of outside contacts for minorities, who often do not speak Han Chinese languages, means that isolated minorities lack information about off-farm jobs, markets, and investment opportunities, as well as connections that would enable them to make use of these opportunities. One consequence is that minorities have benefited less from labor mobility, an important source of income for poor families for most of the decade, than have Han Chinese. Participation in labor mobility among minority women appears to have been particularly low.

Disability and Poverty. Disabled people and households with disabled members represent a large, and rising, share of the poor.[19] The chronic shortage of labor power that often afflicts families with disabled members is a major cause of the absolute poverty remaining in China.

The China Disabled Persons' Federation (CDPF) estimates that of the 60 million total disabled population in 1997, 17 million were absolute poor,[20] and 12 million were rural absolute poor. Thus, these figures suggest that the disabled account for about one quarter of all rural poverty. There is a higher rate of disability among the absolute poor than among the entire population. The disabled account for 5 percent of the national population, but are estimated to represent close to 20 percent of the poor living in the nationally-designated poor counties.[21] In poor areas, disability correlates with absolute poverty through a vicious circle: family labor shortages due to disability increase the odds of falling into poverty, and the inadequacy of effective public health measures and medical care in poor areas increases the chances of becoming disabled.

---

19 China distinguishes five categories of disability: physical disability, mental illness, blindness, deafness, and mental disability. It includes disabled who are unable to work, and those who, as is often the case, lack the opportunity to work.

20 This estimate is based on CDPF's own survey of 1997-98. LGPR believes the number of disabled poor may be much lower. Counts of the disabled often understate their number through sampling errors and by emphasizing physical over mental disability.

21 This figure is based on the CDPF estimate that about 5 million of the disabled poor live in those counties, and SSB's estimate that about 27 million of the remaining 50 million absolute poor resided in those counties in 1997.

However, unlike the general pattern of poverty in China over the last decade, the disabled poor are not found primarily in geographically isolated areas. CDPF estimates that about two thirds of the rural disabled poor live outside the 592 nationally-designated poor counties, and are thus not reached by most existing poverty relief programs. In relatively wealthy provinces disability appears to be the single most important cause of poverty. In wealthy Jiangsu Province, for example, the disabled reportedly comprise more than 60 percent of the poor.

Gender and Poverty. A recent participatory poverty assessment (PPA) in a number of poor villages has helped document the ways in which poverty disadvantages women either in poor regions or poor households, and the repercussions poverty reduction projects have for women, their organization and gender relations (see Beynon, Zheng et al, 2000). First, the PPA team made a number of observations which draw attention to the heavy demands on female labor, the quite rigid gender divisions of labor, and the benefits of improving the quality of female labor. It was observed that the amount and quality of family labor is an important determinant of a household's income levels and avoidance and alleviation of poverty, and that women labored extensively and for long hours to undertake agricultural field work and other economic and domestic activities. In busy seasons women had little time to rest and relax, and often work from very early in the morning until midnight. The demands for and on female labor are greater in (a) female-headed or female-managed households due to the illness or absence of adult males due to death or labor mobility, (b) particular phases of the domestic life-cycle marked by larger numbers of dependent children or aged, and (c) where there are few labor-saving devices or infrastructure necessitating long hours fetching and carrying water and other resources or goods due to the absence of local water supply, roads and electricity.

The marked gender divisions of labor apparent in all the villages had important consequences for the role of women in the maintenance and development of domestic economies and activities. In single-headed households without women, domestic maintenance and economic activities such as livestock raising are likely to be left undone or underdeveloped. In the absence of adult males, households are likely to be poorer and women are likely to add to their labor burdens by undertaking ploughing and marketing in addition to their other activities. In the absence of either male or female adult members, girls rather than boys are likely to be taken out of school to undertake the activities of the absent adults. The PPA report confirmed the direct correlation between the quality of labor and poverty levels. Poor households were more likely to have male and female adult members who had (a) less than full labor power due to illness or disability, or (b) had little or no education, technical knowledge or productive expertise.

Second, the PPA report clarified the importance of improving local infrastructure in water storage, road communication and electricity for reducing demands on female and male labor, for poverty reduction, and for quality of life. The introduction of water supply systems resulted in (a) a reduction in the demands on women's labor for fetching and carrying water by as much as by four hours per day, (b) easier and increased land and agricultural productivity, and (c) improved public and personal hygiene. The construction of roads permitted animal, cart and tractor transport and better communications which resulted in (a) a reduction in time spent by women and men in carrying resources and goods by foot to and from the village, and (b) increased female and male access to services including schools, hospitals and markets. The introduction of electricity allowed for (a) an extension of the labor time available for women's domestic and income-generating activities, and (b) the introduction of labor-saving devices to reduce the labor demands on females and males.

Third, the PPA team observed the lack of specialized support for female income generation activities and women's demand for information and new technical knowledge. The importance of new technical knowledge and training for women was particularly evident in activities such as domestic livestock raising, which is typically a female responsibility and where the high incidence of animal death has a number of direct repercussions for family income and poverty alleviation. Gender disparities in access to agricultural and technical services were apparent in the villages where two-thirds or more of farmers taking part in extension services were men. These gender disparities, which led to women falling behind the male members of the household in skill development and in income generation, were the result of a number of factors: (a) the location of training services in townships is likely to hamper women's attendance given the distance and time taken up by their domestic and agricultural responsibilities, and (b) the exclusion of women emphasized gender divisions of labor and familial attitudes and the premise that "men earn the money and women take care of the fields and household" (despite evidence to the contrary). It was also observed that there was little female migration from any of the villages visited by the PPA team. Young women were either excluded or excluded themselves because (a) of their domestic responsibilities in the household for child and elderly care, or (b) they were fearful of leaving their villages for distant places and finding safe and supportive employment environments. The fact that several young women had returned to the village because they had not felt supported and safe or had been cheated of their earnings by their employers pointed to the importance of providing supportive services for young women in leaving their villages, obtaining employment, and monitoring work and living conditions.

Fourth, it was confirmed that education and health outcomes are typically given a low priority in poverty reduction projects, and that the unmet needs of women and girls are most apparent and greatest in education and health. In education, the PPA team noted the high levels of awareness in poor villages of the correlation between poverty and the lack of education and familial importance accorded to children's education in the hope of reducing poverty. However, the burden of school fees, one of the major expenses of families causing hardship, constituted a major constraint to raising educational levels and to reducing poverty. In investigating education levels and qualifications in poor villages, it was clear that in all cases women had fewer years of schooling than the males of their families and communities and in some cases they had received no schooling at all. Among children too, it was apparent that girls received less schooling and had fewer educational opportunities than their male siblings and peers. Girls were less likely to attend school and more likely to start school later and drop out earlier either because of familial circumstances (including inadequate financial resources, sibling competition, demand for children's labor, and son preference) or disadvantageous school environments (including excessive school fees and distance, and the lack of female teachers). It was reconfirmed that school enrolment figures do not reflect the late start, drop-out rates, and low school attendance of children and especially girls in poor regions, and that a number of steps need to be taken to improve the education levels of poor children and especially girls. Possible solutions include (a) subsidies for school fees and other education expenses which are equitable in allocation and inclusive of both girls and boys, (b) help with safe and reliable transport to and from schools, (c) encouragement of girls' schooling via female teachers, female role models, and reduction of gender bias in the classroom, and (d) recognition and reduction of gender bias within the family where son preference, scarce resources, and practical demands for girls' labor can all disadvantage girls.

Health is widely perceived by villagers as essential for well-being, and ill-health was identified as a major factor in causing poverty. It was observed that (a) the health of children, despite immunization, was placed at risk by poor nutrition and lack of medical attention in the

case of illness, and (b) the lower health status of women was exacerbated by the debilitating strain of heavy physical labor, reproductive health problems, and their lesser attention to health care. The greater severity of women's general ill-health and reproductive-related problems outlined by health officials was confirmed by the PPA team's own observations. Other studies in these same regions have also noted the high incidence of reproductive tract infection and other reproductive health problems made more serious by lack of water, poor hygiene by both men and women and poor or delayed health care. The needs of women for accessible and good quality health care are largely unmet due to a number of factors including high costs, excessive distance, the lack of female doctors, and the lack of adequate pre- and post-natal care. Women tend to place the health needs of other family members before their own, and this means that they often wait until they have reached serious or chronic levels before seeking the required attention.

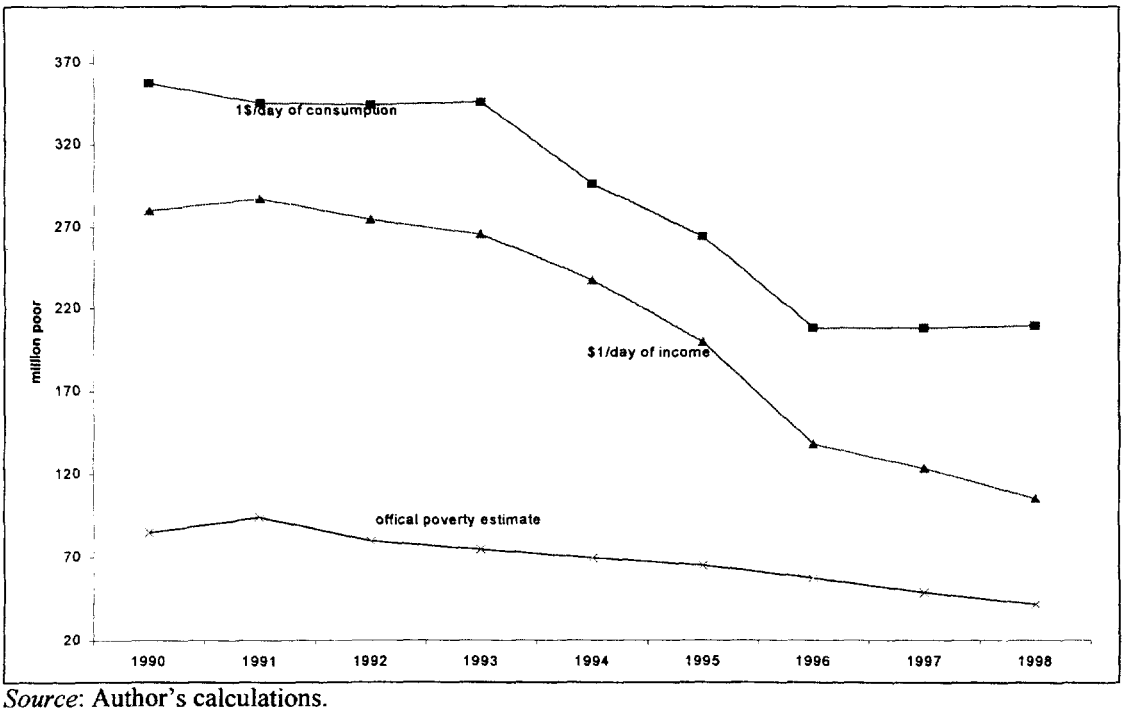
Lastly, the PPA team's investigation confirmed the significance of women's kin relations and their own organization as important mechanisms for poverty alleviation. Women's kinship networks are very important as sources of social support for poor families and the efficacy of this social capital in alleviating the effects of poverty. Given that men's kin relations were more village-centered and local, it was affinal relations of the wife's kin who were likely to live some distance and potentially have more resources at their disposal that were often the defining factor in determining a family's well-being. Most often, the better-off families in the villages could draw on such ties for credit, food and other support, while the poorer and more vulnerable families in the village were those without any extended family safety nets related either through the women or men of the family. In all the villages, the wife's parents or siblings provided the most significant sources of support in both production and in times of hardship. This support includes (a) access to credit, loans of tools and animals and labor help to overcome production constraints, (b) gifts or informal, short-term and no-interest loans to meet expenses associated with school fees, medical care and other cash costs, and (c) supplies of food and other safety-net support in times of shortage and crisis.

The PPA team also found that the Women's Federation (WF) has been marginalized or excluded from the design and implementation of some poverty alleviation projects. However, WF is one of the few government, quasi-government or nongovernmental organizations that have extensive nationwide networks, contacts, and communication channels which are capable of reaching and inclusive of all women. For this reason, WF is one of the most sought-after counterpart institutions in China. It is the experience of both donors and researchers that the levels of activity of WFs at the local level do vary, but usually in direct relation to the funding and other resources which they have at their disposal. Even where a local WF is hampered by lack of resources, it is one of the few networks and communication channels which has the potential to be activated at any time, and experience suggests that it is unlikely to miss an opportunity to benefit local women. WF leaders were adamant that some of the failures of poverty alleviation projects—to increase the quality of services and personnel skills, and the availability of services to girls and women in education and health and agriculture extension—were less likely to occur if their organization is involved in project design and implementation.

Box 1.1: Poverty Estimates Based on Consumption Data

Poverty estimates can be derived from income and consumption data sets. For China, both sets of estimates are derived from the SSB's annual sample survey of rural households, but there are three main differences in methods of estimation: choice of welfare measure, poverty threshold and population data. Official Government estimates use income as the welfare measure (although recent estimates appear to be using a hybrid measure of income and consumption) and reflect an austere poverty threshold. The international standard is calculated by the World Bank for purposes of cross country comparisons and tracking of global poverty trends. The international standard uses consumption as the relevant welfare measure and is based on a poverty threshold of $1 a day measured in PPP terms. (This report's international standard poverty estimates are based on income—not consumption—data.) The official poverty line is the equivalent of approximately $0.66 per day in 1985 PPP terms. There is an extra step in the World Bank's methodology for calculating the poverty rates for China using the international standard since the consumption data collected by SSB are not routinely made public. The Bank therefore uses the published data on the distribution of income together with average consumption rates which are also published to derive the consumption distribution for the purposes of calculating the poverty incidence. Consumption data available for three years suggest that this methodology predicts actual poverty levels that would be calculated using the consumption distribution reasonably well. Beyond differences in the welfare measure and the poverty threshold, the two sets of measures (official estimate vs. international standard) use different estimates of the rural population which affects estimates of the total number of poor.

As shown in the figure below, long term trends in poverty reduction are the same regardless of the measure used but trends since 1996 depend on whether income or consumption is used as the relevant welfare measure suggesting a sharp increase in average household savings during this period.



Source: Author's calculations.

2. THE MACROECONOMIC CONTEXT

A. INTRODUCTION

Since the start of the reforms twenty years ago, China's economy has experienced rapid growth and substantial structural change. These macroeconomic developments, and the reform policies that underlie them, have influenced trends in poverty. Economists have long debated the relationship between aggregate growth and poverty, and most now recognize that growth is an important, but not sufficient, condition for poverty reduction. International experience has shown that the impact of growth on poverty depends not only on the rate of growth, but also on the composition of growth and on structural aspects of the economy that determine whether and how growth reaches the poor (Bardhan, 1996; Islam, 1990; Lipton and Ravallion, 1995).

The evidence reviewed in this chapter confirms the importance of aggregate growth in explaining China's record of success in poverty reduction since 1990. Both over time and across provinces, growth in per capita GDP has been closely associated with the pace of poverty reduction. The evidence also confirms that the impact of aggregate growth on poverty in China has been substantially influenced by the regional and sectoral composition of that growth. Slower-than-average growth in poor regions explains in part the increasing regional concentration of poverty. In addition, uneven growth in agriculture, the main source of income for the rural poor, has contributed to differences in the rate of poverty reduction. Poverty reduction has been slower where agricultural growth has lagged, and faster where agricultural growth has more or less kept pace with that in other sectors.

Trends in employment further highlight the importance of agriculture. Agriculture is often viewed as a passive reservoir for China's surplus labor, and expansion of nonagricultural activities is seen as the main route for absorbing this surplus labor. The evidence presented in this chapter suggests a different interpretation of agriculture's role. Estimates of agricultural employment show that in the 1990s labor use in agriculture has risen, and the evidence suggests that agricultural employment responds actively to opportunities for diversification and to increased relative prices. During the 1990s off-farm employment has also been a source of new employment, with migration and private and individual enterprises playing a growing part in generating jobs.

Recent weak aggregate demand and slowing growth raise concerns about whether China's successful record of poverty reduction can be maintained in the future. A review of China's past macroeconomic performance suggests that China has followed a pattern of cyclical growth since the start of the reforms, and that the recent slowdown is a continuation of this cyclical pattern. International experience has shown that most countries undergo cycles in aggregate demand, and that poverty is sensitive to such cycles because of their impact on unemployment, inflation, the terms of trade, and fiscal capacity (Helleiner, 1987; Kanbur, 1987; Lipton and Ravallion, 1995). Indeed, macroeconomic fluctuations can have devastating and long-

term effects on the poor, as the poor typically have limited opportunities to insure against income shocks.[22]

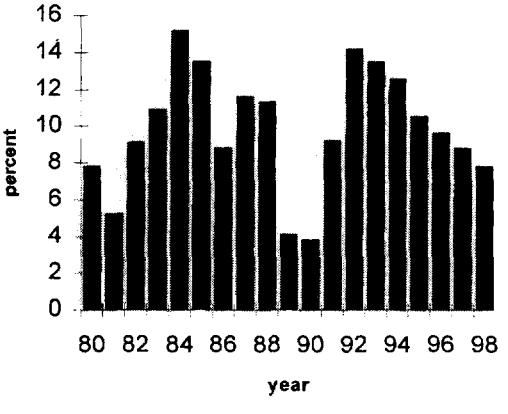
For these reasons, the continued success of China's poverty reduction policies will require increased attention to the effects of macroeconomic cycles and fluctuations on the poor. Consolidation of China's past successes in poverty reduction will depend on efforts in this direction, because many of those who have recently escaped poverty remain close to the poverty line and economically vulnerable.

B. Macroeconomic Growth in China in the 1990s

Since the start of the reforms China's economic growth has been high but cyclical (Figure 2.1). This pattern of growth has continued into the 1990s, during which time China has experienced a secular upward growth trend while concurrently passing through almost a full business cycle. The decade began at the bottom of an economic cycle. In 1990 growth in GDP per capita was only 3.8 percent, the lowest rate in the twenty years since the start of the reforms. Growth had slowed following contractionary policies adopted in the late 1980s in response to economic overheating and unprecedented inflation. This period was also characterized by a slowdown in economic reform.

In late 1989 and 1990 the government implemented a range of stimulatory policy measures, including an easing of credit constraints, increases in agricultural prices, and a major devaluation of the exchange rate. These steps were accompanied by the revival of the reform agenda, which was raised to center stage by Deng Xiaoping's Southern Tour in early 1992. The economy quickly rebounded, and growth in per capita GDP accelerated to rates exceeding 12 percent in 1992, 1993 and 1994.

Figure 2.1: Growth in GDP



Source: SSB(a), various issues.

As had been the case in earlier cycles, accelerating growth was accompanied by some unwelcome side effects. In 1993-94 China experienced inflation, including rapid price spikes for key agricultural commodities, overly rapid credit expansion, and an import surge leading to a trade deficit. China's leaders responded with a series of measures aimed at achieving a soft landing. Tightened bank credit was combined with selected administrative controls on new investment. An increased urban wage bill and improved conditions in agriculture counterbalanced these contractionary measures. Growth decelerated gradually, a departure from the sharp downturns of earlier cycles. This period also departed from the pattern of past cycles in a second regard: the government continued to actively move forward on major structural reforms even as aggregate growth slowed.

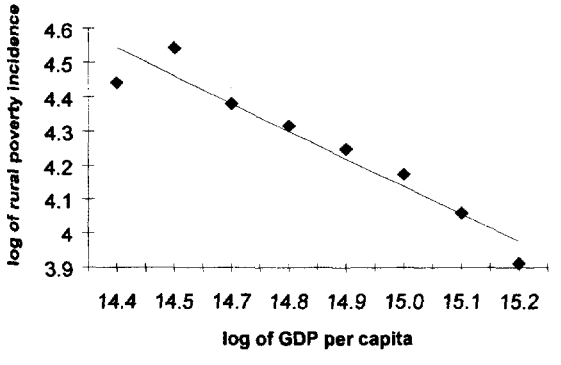
[22] A recent empirical study on China by Jalan and Ravallion (1999) finds that the extent to which rural households can insure against income risk is strongly related to their income level, and that poor households are least able to maintain stable consumption in the face of income variability.

By 1996 these measures had successfully brought inflation under control while maintaining slower, but still robust GDP growth. Growth, however, continued to decline, to 8.8 percent in 1997 and further to 7.8 percent in 1998. Weak aggregate demand since 1997 mainly reflects domestic developments, and to a lesser extent external factors following the East Asian financial crisis. The urban state sector has suffered from rising inventories, excess capacity, and record losses. Ongoing restructuring of state-owned enterprises and the extensive downsizing of both the government bureaucracy and state enterprises have contributed to increased urban unemployment, with repercussions on equilibrium in the broader labor market. In rural areas incomes have been affected by falling prices for farm products and stagnant growth in non-agricultural rural employment. The government has responded to these developments with a stimulus package of fiscal spending on infrastructure investment and loosened monetary policy.

In the 1990s, then, the Chinese government has displayed an ongoing commitment to dampening macroeconomic fluctuations through coordinated, countercyclical fiscal and monetary policies. Such policies have to some degree moderated, but have not eliminated, the cyclical pattern of China's growth.

Growth and the Poor. The 1990s have seen both growth in GDP per capita and a substantial decline in rural poverty (Figure 2.2).[23] These trends suggest that aggregate growth is a key factor explaining China's successful record in poverty reduction. Indeed, the elasticity of rural poverty with respect to aggregate growth has been about -0.8, implying that for each percentage point growth in GDP per capita, rural poverty has declined 0.8 percent.

Figure 2.2: The Relationship between Per Capita GDP and Rural Poverty, 1990-97



Note: GDP is in constant prices.
Sources: Chapter 1 and SSB(a), various issues.

This aggregate relationship, however, sheds little light on the mechanisms through which growth has benefited the rural poor. A better understanding of these mechanisms requires examining (a) the regional dimensions of aggregate growth, as the distribution of both growth and poverty have been regionally uneven, and (b) the sectoral composition of growth, and its relationship to the main sources of income for the poor.

Regional Differences in Growth. Analysis of changes in the regional patterns of poverty in Chapter 1 showed that in the 1990s poverty has become increasingly concentrated regionally. This changing concentration of poverty is partly explained by the fact that, while growth in almost all provinces has been high by international standards, poor provinces have grown more slowly than wealthy provinces. Between 1991 and 1996 rates of growth in per capita GDP (constant prices) were less than eight percent in Qinghai and Guizhou but more than seventeen percent in Fujian, Jiangsu and Zhejiang. Table 2.1 shows that, more generally, growth has been

[23] Here and elsewhere in this chapter, the number of poor and poverty rates are calculated using the official government poverty line.

fastest in the East and Center, relatively rich regions, and slowest in the Southwest and Northwest, China's poorest regions. A notable exception to this pattern is the Northeast, which, despite starting in 1991 with high per capita GDP and a low poverty rate, experienced relatively slow growth.

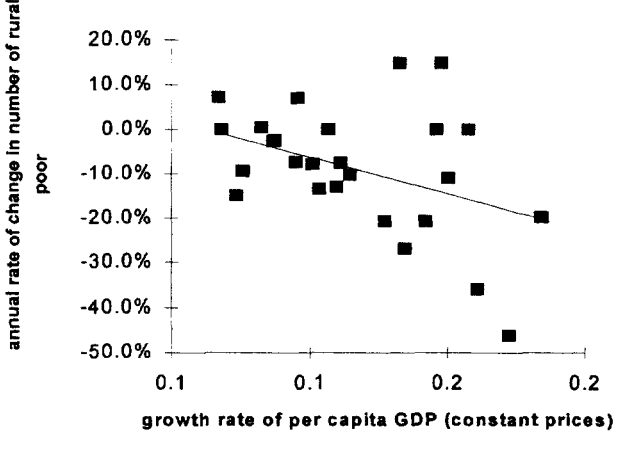
Table 2.1: Regional Patterns: Growth versus Change in Rural Poverty, Initial Level of Income and Initial Poverty Rate

	Growth in Per Capita GDP (%), 1991-96	Rate of Change in the Rural Poverty Rate (%), 1991-96	Per Capita GDP (yuan), 1991	Rural Poverty Rate (%), 1991
East	15.9	-31.1	1938	7.7
Center	14.1	-24.1	1639	10.3
North	12.1	-19.3	2089	13.4
Southwest	10.8	-4.5	1103	13.2
Northeast	10.6	-12.4	2216	9.1
Northwest	8.7	-1.2	1412	19.8

Note: GDP growth is in constant prices.
Sources: Chapter 1 and SSB(a), various issues.

A plot of provincial rates of rural poverty reduction against GDP growth reveals further that provinces with more rapid growth in per capita GDP have experienced more rapid declines in the number of rural poor (Figure 2.3). Simple regression analysis using these provincial data reinforces this conclusion: between 1991 and 1996 an increase in average annual per capita GDP

Figure 2.3: Provincial Growth Rates versus Rates of Poverty Reduction



Sources: Chapter 1and SSB(a), various issues.

growth of one percentage point accelerated the rate at which poverty declined by 1.8 percentage points.[24] In view of these conditions, the increasing concentration of poverty is not surprising.

Sectoral Differences in Growth. The sectoral composition of growth can, like the regional composition, influence trends in poverty. China's aggregate growth rates have largely been driven by rapid growth in industry (see Annex 2 Table 11). While agricultural growth in the 1990s has been relatively high, it has lagged behind that in nonagriculture, and consequently agriculture's share of GDP has declined over time. This raises the question of how poverty has been affected by the changing structure of the economy. Does the decline in poverty in the 1990s mean that the poor have been able to benefit from growth in nonagricultural sectors and increasingly earn income from off-farm or wage earnings? Or has growth in agriculture, although slower than in other sectors, been the main force underlying poverty reduction?

Closer analysis of the data on sectoral changes and poverty rates reveals that poverty in China is highly sensitive to trends in agriculture. The rate of poverty reduction has been slower in provinces where agriculture's share of GDP has fallen markedly. Simple regression analysis shows that, holding constant the rate of overall GDP growth, a one percent decline in agriculture's share of GDP reduces the rate of decline in poverty by 1.9 percentage points.[25]

This impact of agriculture on poverty reduction is illustrated in Table 2.2. Table 2.2 gives the regional shares of agriculture in GDP for 1991 and 1996. In some regions (the Center, East, and Southwest) agriculture's share fell substantially, that is, agriculture grew much more slowly than per capita GDP. In other regions (the North and Northeast) agriculture's share remained constant or declined only slightly. Here agricultural growth more or less kept pace with that in other sectors.

These differences influenced poverty. The last column of Table 2.2 contains estimates of the rate at which rural poverty would have declined if agriculture's share in GDP had remained constant, that is, if agriculture had grown at the same rate as all other sectors. These estimates indicate that, on average, if agriculture's share had remained unchanged, the rate of poverty reduction nationwide would have been nearly double the actual rate. For poor regions, rates of poverty reduction would have risen even more dramatically. This is especially true for the Southwest, where agriculture's share of GDP declined substantially between 1991 and 1996.

---

[24] This regression used data from 26 provinces. Beijing, Tianjin, Shanghai, and Zhejiang, an outlier, were excluded from the sample. Data for this same sample are shown in Figure 2.3. For the regression, the average annual rate of change in the number of rural poor, 1991 to 1996, was the dependent variable, and the independent variable was the rate of growth in per capita GDP, 1991-1996, in constant prices. The estimated coefficient on growth was –1.796, with significance at the 5% level. The adjusted R^2 was 0.15. The estimated coefficient on growth remains the same (or increases) in both magnitude and significance when the initial number of poor or initial poverty rate is included as a control.

[25] This regression used data from 26 provinces. Beijing, Tianjin, Shanghai, and Zhejiang, an outlier, were excluded from the sample. For the regression, the average annual rate of change in the number of rural poor, 1991 to 1996, was the dependent variable. The independent variables were the rate of growth in per capita GDP, 1991-1996, in constant prices, and the change in the primary sector share of GDP. The estimated coefficient on per capita GDP growth now increases to –2.75 (significant at the 1% level). The coefficient on the change in the primary sector's share is -1.87 (significant at the 1% level). The adjusted R^2 is 0.36. Thus adding the change in the primary sector's share of GDP as an independent variable increases both the explanatory power of the regression and the estimated coefficient on GDP growth. Including the initial number of poor or initial poverty rate as a control variable does not substantially alter these results.

Table 2.2: The Importance of Agriculture for Poverty Reduction, 1991-96

	GDP Share of Agriculture 1991 (percent)	GDP Share of Agriculture 1996 (percent)	Change in Agriculture's Share (percentage points)	Rate of Change in the Number of Poor (percent)	Rate of Change in the Number of Poor if Agriculture's Share Had Remained Constant (percent)
East	21.6	15.0	-6.6	-29.2	-41.5
Center	30.5	21.9	-8.6	-23.1	-39.2
North	13.1	12.0	-1.1	-20.7	-22.8
Southwest	38.0	28.8	-9.2	-3.0	-20.2
Northeast	20.2	19.1	-1.2	-12.2	-14.4
Northwest	30.8	26.3	-4.4	-0.6	-8.8
National	24.5	18.7	-5.8	-12.4	-23.3

Note: The regional numbers exclude Beijing, Tianjin, Shanghai, and Zhejiang, an outlier. The national numbers include all provinces, independent municipalities, and autonomous regions. The numbers in the last column are calculated using the estimated regression coefficient for the primary share of GDP (-1.87, see footnote 25), and with the assumption that between 1991 and 1996 agriculture's share of GDP remained unchanged at the 1991 level. That is, the numbers in the last column equal the actual rate of change in the number of poor plus 1.87 times the change in agriculture's share.
Sources: Table 2.1, footnote 25, and SSB(a), various issues.

The importance of agricultural growth to poverty reduction is explained by the fact that agriculture remains the primary source of income for the rural population and for the rural poor. Evidence suggests that, despite the rapid growth of township and village enterprises and other nonagricultural activities in rural areas, the income of rural households is still predominately derived from agriculture, and especially from crop production (Table 2.3). In 1997 agriculture generated 56 percent of rural household income. Although agriculture's share of rural household income fell somewhat in the 1990s, the share of crop production showed no sign of a secular decline. The contribution of crop production to rural household incomes fluctuated from year to year, but remained within a range of 43 to 49 percent of rural household income. Available data suggest that the importance of crop income is even higher for the poor.[26]

Table 2.3: Percent of Rural Household Net Income Per Capita from Agriculture

	1990	1991	1992	1993	1994	1995	1996	1997
Agriculture total	62.8	61.3	58.5	59.1	58.4	58.0	57.1	55.9
Crop cultivation	48.1	45.7	43.1	47.6	48.4	49.1	48.0	45.1
Other agriculture	14.7	15.6	15.4	11.5	10.0	8.9	9.1	10.8

Note: Other agriculture includes forestry, aquaculture and animal husbandry. Agriculture total is the sum of crop production and other agriculture.
Source: SSB rural household survey data, SSB(a), various issues.

[26] Available data for Guizhou, for example, show that on average in 1997 crop production contributed 53 percent of net household income, and that the share of crop production in income was higher for the poorest income groups. For households in Guizhou with per capita net income of less than 790 yuan per capita (constituting the bottom 17 percent of the income distribution), crop production contributed 66.4 percent of net income (Guizhou Statistical Bureau, 1998).

The 1990s have seen rapid growth in rural enterprises, as well as an unprecedented expansion of rural-urban and intra-rural migration. These developments have led some observers to conclude that off-farm wage earnings have played the major role in raising rural incomes and reducing rural poverty. Available statistics on the share of wages in rural household incomes do not give strong support to this conclusion (Table 2.4). During the 1990s the share of rural household income from wages fluctuated between 20 and 25 percent of net household income, with only weak indications of a secular increase (much of which may reflect the fact that rural off-farm employment was abnormally low in 1990). In the 1990s, then, wage income has not grown disproportionately, but at about the same rate as other sources of income.

Table 2.4: Percent of Rural Household Net Income Per Capita from Wage Earnings and Transfers

	1990	1991	1992	1993	1994	1995	1996	1997
Wages	20.2	n.a.	23.5	21.1	21.5	22.4	23.4	24.6
Transfers	3.6	n.a.	3.9	3.7	3.9	3.6	3.6	3.8

Sources: SSB rural household survey data, SSB(a) and SSB(b), various issues.

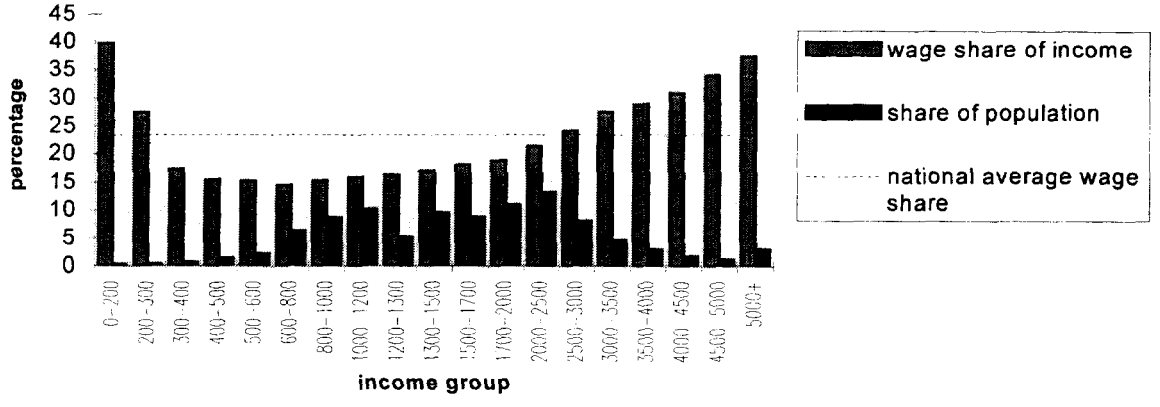
Data from the national rural household survey do not provide separate figures for remittances. Remittances are included in "transfer income." [27] Transfer income has remained fairly stable at less than 4 percent of rural household income in the 1990s. This suggests that remittances, like wages, have not grown disproportionately.

These national statistics suggest that wage and remittance incomes' shares of net rural household income have remained relatively stable, but they give few clues about the situation for poor households. Information on the share of wages by income group for 1996 reveals a complex picture of wage earnings among the poor. The very poorest households appear to rely heavily on wage employment as a source of income (Figure 2.4). For households with per capita net income of less than 200 yuan, the wage share is nearly 40 percent, as compared to the national average of 23 percent.

As income rises, the wage share quickly falls. By the time per capita income has risen to Y 300-400, the wage share is well below the national average. Since the population shares in the bottom income groups are very small—only 0.35 percent for the poorest group and 0.43 percent for the second poorest group—this decline cannot be detected unless data at the bottom of the income distribution are highly disaggregated. Once per capita incomes reach Y 600-800, the wage share begins to rise with income. Hereafter the wage share increases gradually, equaling or exceeding the national average only after reaching the top 20 percent of the income distribution.

[27] Data for Guizhou show that remittances from family members and relatives living away from home accounted for about 40 percent of "transfer" income, and less than 2 percent of net income in 1997.

Figure 2.4: Wages as a Share of Income by Income Group, 1996



Source: SSB rural household survey data.

Similarly disaggregated data for Shaanxi and Guangxi are consistent with this national pattern and provide additional information about the very poorest (Annex 2 Tables 2 and 3). In these provinces, as in the national sample, the bottom income groups have higher-than-average shares of wage income. In Shaanxi, for example, the poorest 1.6 percent of the sample earns nearly half its income from wage employment. The data for Shaanxi and Guangxi also reveal, however, that the high share of wage income for the very poorest income groups is due not to relatively high wage earnings, but to low net income from household production. Surprisingly, their gross revenues from household production are fairly high, exceeding those of the next lowest income group or groups. Yet net income remains low, because the costs relative to the revenues of household production are unusually high.[28]

This pattern implies that the very poorest households—those in the bottom 0.5 percent or 1 percent of the income distribution—may differ from households in the next lowest income groups. These households appear to have high gross but low net income from household production. The reasons for this could be several. Transitory income shocks, such as natural disaster, loss or theft of production inputs, or family illness could abnormally reduce gross agricultural revenues or abnormally increase the costs of production. Alternatively, low net revenues from farm production could be due to indebtedness. In these data the costs of production include repayments of interest and principal on production loans. Consequently, households with relatively large debt burdens could experience low net income despite earning reasonably high gross revenues. If indebted households eventually can pay off their debts, then their inclusion in the poorest income group would be temporary. Regardless of whether these households are

[28] Data on revenues and costs of household production are not available for the national sample, but here, too, the high share of wage income for the poorest income group is caused by unusually low non-wage income rather than by relatively high wage earnings. Wage income per capita for the poorest income group is 62 yuan, close to that of the next three lowest income groups, all of which have wage income of 60 to 70 yuan per capita. Non-wage income of the poorest group, however, is only 93 yuan per capita, while non-wage income for the second lowest group is double this amount, 185 yuan. Non-wage income continues to rise to 294 yuan, 384 yuan, and 470 yuan as one moves up from the second to the fourth poorest income group. Non-wage income for these groups is likely to be largely derived from household production.

affected by an income shock or indebted, their wage earnings serve as an important source of income to offset their low net earnings from production.

While the above data do not provide information about changes over time in the importance of wage income for the poor, they clearly indicate that by the mid-1990s wages constituted an important source of income for certain subgroups of the poor. Yet even for these subgroups, agriculture remains the dominant source of income. This explains why trends in agricultural GDP continue to have a significant impact on poverty.

C. TRENDS IN EMPLOYMENT

The 1990s have seen new developments in employment that, despite the economic slowdown in recent years, have created substantial new job opportunities for the rural population. These developments have contributed to the trends in rural income described above. The supply of labor has grown steadily but fairly slowly at rates of less than 1.5 percent annually overall, and of 1 percent or less in rural areas (Table 2.5). These growth rates are lower than those in the 1980s and reflect the impact of population planning policies on age cohorts now entering the labor force. The strict population policies initiated in 1980 should cause growth in the labor force to slow even further in the coming decades.

Nonagricultural Employment. While growth in the labor force has been relatively slow, macroeconomic growth in the early and mid-1990s, combined with policy liberalization, generated fairly rapid growth in labor demand. Growth in nonagricultural employment has received considerable attention, as it is seen as a way of providing employment for surplus rural labor. Trends in nonagricultural employment, however, are difficult to track because the official statistics are problematic. The official statistics count the number of workers whose main occupation is nonagricultural, but typically such workers also work part time in agricultural production. Thus the official statistics on the nonagricultural labor force overstate employment in nonagricultural activities (Zhou, 1997).[29] Furthermore, due to problems in statistical work at local levels, the official statistics on growth in township and village enterprises (TVEs) in the 1990s have been overstated. For this reason, in 1997 the MOA adjusted the official TVE statistics downward by a large margin. This statistical adjustment explains in part the sharp decline in official figures for rural enterprise employment in 1997.

[29] Zhou (1997), based on MOA survey of 4000 rural households in 8 provinces, estimates that 28 percent of the work time of so-called nonagricultural workers is spent in agriculture.

Table 2.5: Growth in China's Labor Force

	Economically Active Population		Rural Employed Persons	
	(1000s)	(annual growth)	(1000s)	(annual growth)
1990	644830	n.a.	472950	n.a.
1991	653990	1.4%	478220	1.1%
1992	661840	1.2%	483130	1.0%
1993	670330	1.3%	487840	1.0%
1994	678790	1.3%	487860	0.0%
1995	687370	1.3%	488540	0.1%
1996	696650	1.4%	490350	0.4%
1997	705800	1.3%	493930	0.7%

Note: The data in this table are the SSB's adjusted series, where the adjustments are based on the annual one percent sample surveys of the population. The series used in this table are *jingji huodong renkou* (economically active population) and *xiangcun congye renyuan* (rural employed persons).
Sources: SSB(a), various years and SSB(1997).

The data for private and individual enterprises are also weak. Increasingly fuzzy ownership structures, as well as strategic switching of registration between collective and private ownership, means that an enterprise counted in one year as private may the next year have been counted as a TVE, or *vice versa*. Furthermore, treatment of small-scale, seasonal household nonagricultural activities has been uneven over time and among regions. At times such activities have been included in the numbers on individual enterprises, and at other times not.

Despite these problems, the official statistics give an indication of broad trends (Table 2.6). These numbers suggest that rural employment in collective, private and individual enterprises grew substantially in the early 1990s, surpassing one-third of the rural work force by the mid-nineties. Partly as the result of the statistical adjustment and partly as the result of the macroeconomic slowdown, employment in rural enterprises fell in 1997. Even with this decline, in 1997 employment in rural enterprises was 22 percent higher than in 1990.

A notable feature of this employment growth is that more than half of it was created by private and individual enterprises. While TVE employment accelerated and then decelerated with the macroeconomic cycle, employment in private and individual enterprises continued to rise. By 1997 these enterprises employed 25 million more people than in 1990, and their share of rural employment had risen from only 3 percent in 1990 to over 8 percent. Even if some of this growth reflects the reclassification of collective enterprises as private, the evidence points to a qualitative increase in the importance of private and individual business that is likely to continue in the future.

Table 2.6: Growth in Rural Enterprise Employment

	Employment in Rural Enterprises				
	Total		Township and Village Enterprises	Private and Individual Enterprises	Percent of Rural Labor Force
	(1000s)	(annual growth)	(1000s)	(1000s)	(%)
1990	108690		92650	16040	23.0
1991	113410	4.3%	96090	17320	23.7
1992	124870	10.1%	106250	18620	25.9
1993	145420	16.5%	123450	21970	29.8
1994	148840	2.4%	120170	28670	30.5
1995	163870	10.1%	128620	35250	33.5
1996	173670	6.0%	135080	38590	35.4
1997	132800		91580	41220	26.9

Note: Prior to 1997 the official data reportedly overstated employment in TVEs. The TVE Bureau of MOA changed the coverage of the TVE data series in 1997, and so the 1997 figures are not fully comparable to those for earlier years.
Source: SSB(a), 1998.

A second notable development in the 1990s is the expansion of migrant employment. While estimates of rural migrant labor vary, they all show substantial growth—a doubling or tripling—since the late 1980s. Table 2.7 gives two estimates of migrant employment. The relatively conservative figures in the first two columns show migrant labor rising from 2.2 percent of the rural labor force in 1989 to over 5 percent in 1995-96. Estimates of Rozelle, *et al*, 1999 indicate that between 1988 and 1995 migrant employment rose from 5 to 12 percent of the rural labor force. The 1997 agricultural census gives numbers close to those of Rozelle, *et al*. The census found that in 1996 12.9 percent of rural workers were employed outside their township of residence (National Agricultural Census Office, 1998). These trends suggest that rural residents are increasingly willing to travel to find employment opportunities. In the long term, such labor movement will reduce geographical inequality in wage earnings.[30]

[30] Data on migrant labor include migrants employed in TVEs and other rural enterprises, and so they do not entirely reflect new job creation beyond that already captured by the data for rural enterprise employment.

Table 2.7: Estimates of Migrant Employment

	Ministry of Agriculture		Rozelle, *et al*	
	1000s	Percent	1000s	Percent
1988			20034	5
1989	8875	2.2		
1992	13785	2.8		
1994	22961	4.7		
1995	24495	5.0	58624	12
1996	25191	5.1		

Note: The figures for migrant labor from MOA are the numbers of people employed outside the village as contract or temporary workers (*waichu hetong, linshi gong*). The Rozelle, *et al*, numbers are from a nationally representative sample survey and include people who leave the village for at least one month during the year, but who retain ties with the village by returning during Spring Festival or during peak farming seasons. They exclude commuters who are employed outside the village but live at home. Note that these are counts of the number of people, not of standard labor days. Also, these numbers include migrants employed in rural enterprises, and so overlap with data in the previous table. Percentages are calculated by dividing by the number of rural employed persons (Table 2.5).
Sources: MOA(a), various issues and Rozelle, *et al*, 1999.

Although in the long term migration will continue to grow, in the short term migration has, like TVE employment, been affected by the economic slowdown. Weak aggregate demand and extensive layoffs by state and collective enterprises, prompted both by macroeconomic trends and by SOE reforms, have reduced employment opportunities in urban and coastal areas. Rising urban unemployment has resulted in a growing intolerance for rural migration by urban governments and populations. So as to protect urban workers, urban governments have in some cases tried to segment the labor market by requiring urban employers to hire migrants only for unskilled, menial jobs. These developments illustrate the sensitivity of rural off-farm employment both to urban reforms and to macroeconomic fluctuations.

Agricultural Employment. Trends in agricultural employment have received less attention than trends in nonagricultural employment. Although it is generally acknowledged that agriculture is the major employer in rural areas, it is often viewed as a passive reservoir for surplus labor and expansion of nonagricultural activities is seen as the main route for absorbing this surplus labor. The official statistics on employment appear to support this view (Table 2.8). They show that the share of rural workers employed in agriculture has declined markedly, from nearly 80 percent of the labor force in 1990 to 70 percent in 1997. They also show that agricultural employment rose during the economic slowdown in 1989-91, which hit rural enterprises particularly hard, fell when overall growth and employment in rural enterprises rebounded in the early 1990s, and edged upward in 1997, when TVE growth again slowed.

Table 2.8: Official Data on Employment in Agriculture (millions)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Employment in Agriculture	314.6	324.4	333.4	341.9	340.4	332.6	326.9	323.3	322.6	324.3
Percent of Rural Labor Force	78.5	79.2	79.4	79.3	77.7	75.2	73.2	71.8	71.2	70.6

Note: Workers are counted as employed in agriculture if agriculture is their main profession. The figures on agricultural employment are not adjusted to be in line with the one- percent sample population surveys, and so the data in this table are not comparable with those in Table 2.5.
Source: SSB(a), 1998, pp. 387-88.

These numbers, however, tell only a partial story. The official data on agricultural employment count the number of people whose main occupation is farming, and they do not capture the reallocation of labor time between different agricultural and nonagricultural activities. In order to gain a more accurate estimate of agricultural employment, Rawski and Mead (1998) calculated alternative estimates of agricultural employment. Their estimates, which use data on labor input per unit output from national surveys of production costs, suggest that trends over time in the level of agricultural employment differ from those implied by the official statistics. While the official statistics show a rise in agricultural employment in the late 1980s followed by a decline in the 1990s, Rawski and Mead's estimates showed that agricultural employment, here measured in standard labor years, fell in the 1980s and then began to rise in the early 1990s. Estimates calculated using labor per unit land area by Zhou Qiren similarly found that agricultural employment rose, rather than fell, in the early 1990s.[31]

The above studies are now several years old, and so a new set of estimates of agricultural employment have been calculated for this report. The estimates are based on a methodology similar to that of Rawski and Mead.[32] These new estimates also show positive net growth in agricultural employment in the early 1990s: between 1989 and 1996 agricultural employment grew 15 percent, or 22 million labor-years (Figure 2.5).[33] These estimates, which are conservative, suggest that between 1991 and 1996 agriculture generated roughly the same amount of new employment as did rural enterprises.

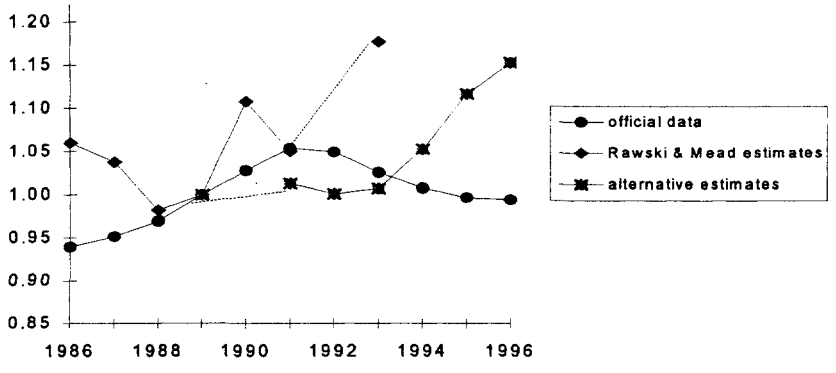
---

31 Zhou Qiren's estimates assume that the labor input coefficients remain unchanged at the 1986 levels, and so do not capture changes over time in labor productivity. Rawski and Mead's estimates, as well as the new estimates presented here, allow labor input coefficients to change over time.

32 Recent data on labor coefficients for some products are unavailable, and so the estimates for this study cover fewer farm products than Rawski and Mead. Thus the estimated absolute levels of employment are here lower than Rawski and Mead's. Changes over time are comparable under the assumption that for these products labor use per unit changed at the same rate as the average for products for which recent data are available.

33 The assumption of 300 workdays per year gives relatively conservative estimates of the increase in agricultural employment. Using 260 workdays per year gives an increase of 25 million labor years. Higher estimates also result if one assumes that for products with incomplete data, labor use per unit remained unchanged at the level in the last year for which data are available (1989 or 1991, depending on the product). In this case, net growth in agricultural employment between 1989 and 1996 is 33 million labor years.

Figure 2.5: Indices of Agricultural Employment, 1989=100



Source: See note to Table 2.9

This net growth in agricultural employment occurred despite higher efficiency of labor in the production of most farm products—on average for products included in these estimates, between 1989 and 1996 output per unit labor rose 22 percent. The major factors behind the growth in agricultural employment were increased production of relatively labor-intensive crops and expansion of animal husbandry and aquatic production. This can be seen in Table 2.9, which gives estimated growth in employment by product group. Use of labor in the production of major cereals remained more or less unchanged, while labor use in the production of minor grains, tubers and legumes fell. In contrast, labor use in vegetable, fruit, animal, and fish production each rose by 50 percent or more. In absolute terms, the largest increases in labor use were for vegetables and animal products.

These estimates of agricultural employment suggest that labor use in agriculture is not simply "passive," but responds actively to changes in the relative returns to different farming activities, and also to the returns of farm relative to off-farm activities. Most of the estimated growth in agricultural employment occurred after 1993, which years saw important agricultural reforms including a major liberalization of grain policies in 1992 and 1993 (Lyons, 1998; Rozelle, *et al*, 1996; Sicular, 1995; Watson and Findlay, 1995). These years were characterized by rising farm prices and the rapid expansion of free market trade in farm products, developments that raised the returns to agriculture, permitted diversification into high-value crops, and encouraged the expansion of agricultural employment.

Employment and the Poor. While the poor have undoubtedly benefited to some degree from the broad trends in employment described above, they have faced special challenges. One challenge arises because the supply of labor in poor regions has grown more rapidly than the supply of labor in other regions. This is especially true in poor minority regions, which have had relatively liberal population policies. Thus while the national rural labor force grew 1.3 percent annually between 1990 and 1997, the labor force in Ningxia grew 3.3 percent, Qinghai 2.5 percent, Guizhou 2.3 percent, and Xinjiang and Guangxi 2.0 percent (Table 2.10). Rapid growth in labor supply means that these regions must maintain either faster-than-average job creation or higher-than-average outflows of migrant workers in order simply to maintain existing employment levels.

Table 2.9: Estimated Change in Labor Use in Agriculture, 1989-96

	Percent Change in Labor Use	Absolute Change in Labor Use (millions)
Total	15.3%	21.9
Major grains	0.9%	.6
Other grains, tubers and legumes	-24.5%	-3.7
Oil crops	26.9%	1.9
Vegetables	36.8%	6.3
Fruit crops	170.7%	2.9
Other cash crops	4.0%	.7
Animal products	64.9%	11.7
Freshwater aquatic products	80.5%	1.6

Note: Products included in the calculations for total agricultural employment are: major grains (rice, wheat, corn); soybeans; tubers and other grains and legumes; oil crops (rapeseed, sesame, peanut); vegetables; fruit crops (apple, pear, citrus); other cash crops (cotton, ambary hemp, sugarcane, sugarbeet, flue-cured tobacco, tea, silkworm); animal products (pork, poultry meat, eggs, milk); and freshwater aquatic products. To avoid distortions due to inaccurate area statistics, estimates for most products are calculated using days of labor input per unit output multiplied by output quantity. Due to lack of data on input per unit output for vegetables and for tubers and other grains and legumes, estimates for these products use labor input per unit sown area times sown area. Days are converted to years by assuming 300 workdays per year. Note that many minor products such as beef, minor fruits, and ramie are not included, and so the estimated change in total labor use therefore implicitly assumes that the net change in labor use for such omitted products is zero.
Sources: SSB(a) and SSB(b), various issues; Rawski and Mead (1998), p. 769; The World Bank (1992), p. 71; Economic Research Service, U.S. Department of Agriculture, (personal communication).

The record of off-farm job creation in poor regions has been generally weak. During the 1990s growth of TVE employment in many poor provinces was slower than that nationally. Provinces that lagged most noticeably were Gansu, Shaanxi and Qinghai. Sichuan and Chongqing performed slightly better than the national average. The only poor province with growth in TVE employment that significantly exceeded the national average was Guangxi, which benefited from its proximity to Guangdong.

Job growth for individual and private enterprises in poor provinces has also been below average: in southwest and northwest China all but one province experienced below-average growth in employment in private and individual enterprises during the early 1990s. Despite the fact that poor regions lagged, however, their growth in such employment exceeded growth in the labor supply, and often by a large margin. Indeed, in Yunnan, Inner Mongolia, Shaanxi, Gansu and Ningxia, annual growth in employment by private and individual enterprises was well above 10 percent.

The extent to which the poor have benefited from the expansion of agricultural employment outlined above is unclear. A recent study using data for 1990 found that grain was the dominant source of income for the poorest income groups (The World Bank, 1997a). Systematic evidence on trends since 1990 is, however, unavailable. This period has seen the substantial diversification in agriculture away from grain, and evidence from the field reveals that at least some poor households have taken advantage of these trends to escape poverty (see Chapter 4).

While further research is needed to clarify how trends in agricultural employment have affected the poor, it is probably safe to say that these trends have varied among regions. Such variation would in part reflect differences among poor regions in their agricultural endowments. Some poor areas have such weak agricultural resource bases that, in the absence of subsidies, agricultural development is not financially viable. In these areas off-farm employment and migration provide more viable routes to escape poverty. In other areas, however, the problem is not the resource base, but economic constraints such as lack of credit to pay for inputs or necessary initial investments in water control, land improvement, and animal stocks; lack of appropriate technical information and training; and weak marketing support (Chapter 4). In combination with measures to overcome these constraints, agriculture has the potential to provide increased employment in such areas.

Table 2.10: Regional Growth Rates in the Labor Force and Off-farm Employment

	Growth in the Labor Force 1990-97	Growth in TVE Employment 1990-97	Growth in Individual and Private Enterprise Employment 1992-97
NATIONAL	1.3%	-0.2%	17.2%
North	1.2%	-4.3%	21.4%
Northeast	1.7%	-5.6%	29.1%
East	1.0%	1.3%	14.6%
Central	1.4%	0.3%	20.3%
Southwest	1.4%	1.7%	10.4%
Sichuan & Chongqing	0.7%	-0.5%	10.8%
Guizhou	2.3%	-2.1%	8.4%
Yunnan	1.9%	-1.8%	14.9%
Tibet	1.1%	0.0%	6.1%
Guangxi	2.0%	10.8%	6.4%
Northwest	1.7%	-3.8%	14.8%
Inner Mongolia	1.7%	1.4%	15.2%
Shaanxi	1.6%	-4.9%	18.2%
Gansu	1.3%	-8.3%	15.6%
Qinghai	2.5%	-3.2%	9.4%
Ningxia	3.3%	-2.5%	13.1%
Xinjiang	2.0%	-1.4%	3.8%

Note: National and regional growth rates are weighted averages. Provincial data for employment in individual and private enterprises are not available before 1992.
Sources: SSB(a), various issues; MOA, 1993; SSB(b), 1993.

Migration can offset these features of labor supply and demand in poor areas. Evidence on the extent to which the poor have participated in migration, however, is mixed. Some studies have found that migrants tend to come from poorer inland provinces and from poorer villages in those provinces, while others have found that migration is more likely from middle-income than from poor villages.[34] Most studies acknowledge that the poorest households face obstacles in finding migrant work because they typically have difficulty raising the funds needed to cover the

[34] Rozelle, *et al*, 1999, gives a summary of the literature on this question.

initial costs of transportation and job search, are hindered by low literacy levels, and have limited access to information about migrant work opportunities (The World Bank, 1997b). This may explain why some researchers have found that although migrants come disproportionately from low-income localities, they are usually not from the poorest households in those localities (Du and Bai, 1997).

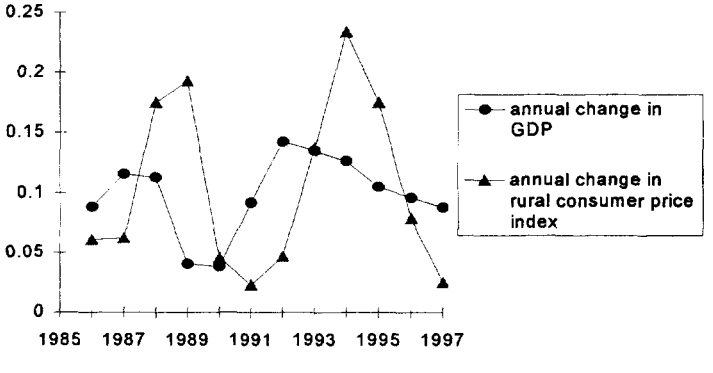
Finally, poor households have been held back from taking advantage of new employment opportunities both in agriculture and non-agriculture by the fact that their labor time is often absorbed by necessary, low-income, tasks. For example, poor households are more likely than richer households to travel long distances to reach the nearest water supply (Liu and Wu, 1997). This is especially true in mountain areas, where during the dry season it is not uncommon for households to devote four or more hours daily to this task. Similarly, in mountainous and hilly areas poor households often producing grain for subsistence can absorb a large share of family time, because distances between plots are far, the time required for cultivation of sloped land are high, and yields per unit land and labor low. Even when off-farm work is available, then, poor households' ability to participate may be constrained.

Under such conditions, investment in water supply, land terracing and other forms of basic infrastructure can have positive effects on employment and incomes. These investments allow poor households to reallocate work time from low-return subsistence tasks to more lucrative activities. Field investigations have shown that in villages that have participated in international donor-supported rural development projects providing water supply systems and land terracing, households begin to expand their animal husbandry production, start sideline activities, and look for off-farm employment. When asked why, they respond that the land and water supply investments have liberated their time and allowed them to pursue such activities.

D. INFLATION AND PRICES

Cycles of aggregate growth in China have been closely matched by inflationary cycles. As shown in Figure 2.6, rising inflation generally follows upswings in growth with a lag of about one year. Inflation is generally thought to reduce the real incomes of groups that hold cash-denominated savings or have fixed nominal incomes, and to transfer income from lenders to borrowers. The rural poor generally have low savings, are net borrowers, and, since most of their income is from production, do not have fixed nominal incomes. Thus inflation *per se* need not have a net negative effect on the real incomes of the rural poor (Cardoso, 1992).

Figure 2.6: Annual Change in GDP and Prices

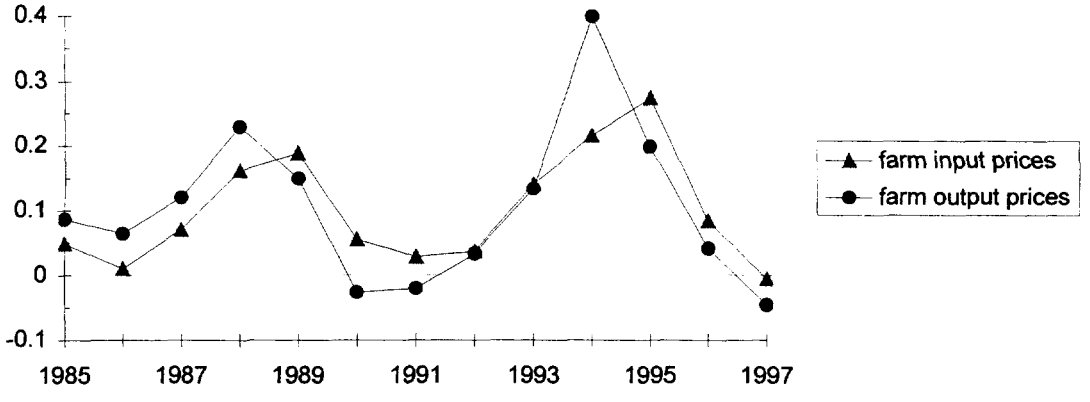


Source: SSB(a), 1998.

Inflationary cycles can nevertheless cause difficulties for the poor because during these cycles not all prices move together. The timing and amplitude of price cycles differs among

products. In China cycles in the level of prices for farm products have greater amplitude, and occur earlier, than do cycles in the prices of items that farmers buy. This can be seen in Figure 2.7, which shows the percentage changes in prices for farm products, farm inputs, and rural consumer goods. The rate of increase in rural output prices is higher during inflation peaks, and lower during troughs, than those of inputs and rural consumer goods. During troughs, for example, farm product prices often decline in absolute terms, a rare occurrence for inputs and consumer goods. The greater amplitude of farm product price cycles causes the terms of trade to move in favor of farmers during inflationary peaks, and against farmers during troughs.

Figure 2.7: Annual Change in Farm Output, Input, and Rural Consumer Prices



Source: SSB(a), 1998.

This cyclical pattern in the terms of trade is exacerbated by the fact that prices of farm products rise earlier, and fall earlier, than do the prices of inputs and rural consumer goods. Output prices tend to rise at the same time that growth accelerates, while prices for input and consumer good prices stabilize or even continue to fall. Thus on the upswing of macroeconomic cycles, the terms of trade for agriculture improves. Once the downswing begins, however, the lag between output prices and the prices of goods purchased by the rural population causes deterioration in the terms of trade.

These price patterns create a boom/bust environment for agriculture. They heighten variability in agricultural incomes, and for poor and near-poor farmers create periodic cash flow problems. In addition, they can undermine gains achieved under China's poverty programs. Production loans to help in the development of cash crops have been a common component of poverty interventions in rural China. Such programs usually provide credit for the initial purchase of inputs. In the face of cycles in the terms of trade, the success of such programs may depend critically on their timing. If farmers participating in the program borrow to purchase inputs during or soon after a trough, and if they then sell their output and repay the loans during a peak, they will do extremely well. If they borrow to buy inputs during or slightly after a peak and then sell their output during a trough, however, their cash receipts may be insufficient to repay the loan. Unfortunately, farmers, especially poor farmers with limited market experience, are most eager to

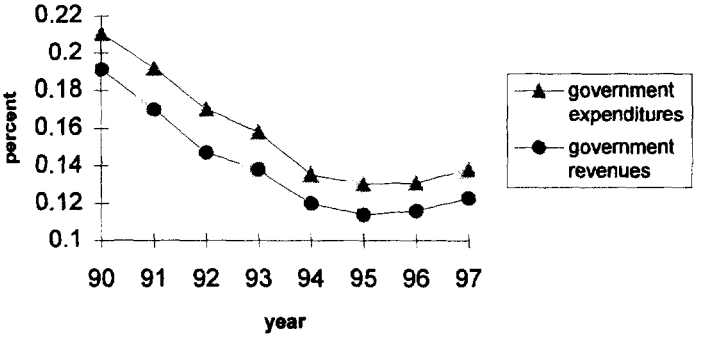
participate in such programs when output prices are rising or at a peak, not when they are falling or in a trough.

E. Fiscal Challenges in Poverty Reduction

During the 1990s the Chinese government has demonstrated a strong fiscal commitment to poverty reduction. This commitment has faced challenges on two levels. First, it has faced challenges at the central level because of ongoing fiscal deficits and the declining share of fiscal revenues in GDP. Second, it has faced challenges at the local level because of the extremely weak fiscal situation of poor counties.

The main types of fiscal funding for China's central poverty programs are (a) the Food for Work Program (*yigongdaizhen*) and (b) budgetary grants for poor area development. During the 1990s these two categories of funds, plus several other, smaller budgetary grant programs, have together increased substantially in both nominal and real terms (see Chapter 3). These fiscal funds have been supplemented by government-sponsored poverty loans, which are of roughly the same magnitude or even larger than fiscal funding, and which have also increased in both nominal and real terms.

Figure 2.8: Government Revenues and Expenditures as a Percent of GNP



Note: Revenues and expenditures follow IMF definitions and exclude extra-budgetary funds.
Source: The World Bank, 1999a.

The increase in central government funding of poverty reduction programs has occurred during a period of persistent budgetary deficits and decline in the level of fiscal revenues and expenditures relative to GDP (Figure 2.8). Indeed, China's budgetary revenues and expenditures relative to GDP are now low by international standards. Since 1990 the ratio of consolidated government revenues in GDP has declined from 19 percent to about 12 percent, with indications of a slight recovery in 1996/97. The ratio of consolidated government expenditures to GDP has followed a similar trend, while, as a result of ongoing deficits, remaining consistently higher than the ratio of revenues. These fiscal trends have created difficult tradeoffs among competing demands for government funds. In recent years these tradeoffs have been exacerbated by the weak economy and government efforts to provide a fiscal stimulus.[35]

[35] The fiscal series here exclude extra-budgetary revenues and expenditures; however, including extra-budgetary revenues (expenditures) does not reverse the decline in revenues (expenditures) relative to GNP. Furthermore, while extra-budgetary revenues have in general exceeded extra-budgetary expenditures, this surplus has been insufficient to offset the budgetary deficit.

Despite these fiscal trends, the central government has to date maintained and increased funding for poverty reduction. Maintaining funding, however, is only the first step in coping with fiscal pressures, because such pressures exist not only at the center but also at lower levels of government. Fiscal pressures are especially strong for poor counties, which face severe and persistent fiscal shortfalls (The World Bank, 1999b). In poor counties local government expenditures have exceeded revenues by a large margin (Park, *et al*, 1996; Liu and Wu, 1997). Poor counties have small revenue bases. Rural industry, an important source of revenues in wealthier parts of China, is underdeveloped, and the industrial enterprises that exist often operate in the red. On the expenditure side, poor counties face high nondiscretionary outlays for personnel on the government payroll, including local officials, teachers, health workers, and other social services personnel. Such expenditures generally account for well over half of local budgetary revenues (Liu and Wu, 1997); educational spending alone, most of which goes for teachers' salaries, often accounts for 40 percent to 50 percent of local budgetary revenues in poor counties. Even with budgetary transfers from higher levels, expenditures of poor counties usually exceed their revenues. The fiscal challenges facing three nationally-designated poor counties are described in Box 2.1.

Poor county governments employ a range of creative mechanisms to cope with their persistent and accumulating fiscal deficits. These mechanisms include deferring wages, borrowing from the budgets of various local government bureaus, and borrowing against the next year's budgeted fiscal transfers from higher levels of government (Park, *et al*, 1996; Liu and Wu, 1997; The World Bank, 1999b; field interviews).

The difficult fiscal situation of poor counties holds implications for the effectiveness with which central poverty funds are used. Fiscal poverty grants are channeled through the Ministry of Finance and ultimately are managed at the local level by the county Finance Bureau. Food for Work program funds have been managed at the local level by the county Planning Commission. While the LGPR system has input into decisions on the spending of these various funds, it does not directly manage them. Indeed, in some localities, LGPR's provincial Poor Area Development Offices (PADOs) report having limited access to information about how these funds are spent.

These arrangements create a "principal-agent" situation, that is, a situation where the "principals," the LGPR and PADOs, have weak control over the "agents," the county government agencies or offices that manage poverty funds. The LGPR and PADOs are responsible for seeing that funding for poverty reduction is used in ways that benefit the poor. Poor county governments, however, face different incentives and have different objectives. First, they face pressing expenditure demands, including simply paying back wages to employees on the government payroll. Second, revenue-starved county governments face strong incentives to use poverty funds in ways that quickly generate local fiscal revenues. The result has been an incentive to spend poverty funds on rural industry and TVEs.

Box 2.1: Fiscal Challenges in Three Poor Counties

The cases of three counties—Duan in Guangxi Province, Baoqing in western Hunan, and Wuqiao in Chongqing—illustrate in concrete terms the fiscal difficulties faced by poor counties in China. These three counties are nationally designated poor counties that receive funding under the central government's poverty reduction program. (Duan County also receives assistance through an international donor-supported project.) Statistics given here are for 1997 (see Annex 2 Table 2.4), and they probably give a relatively rosy picture as all three counties experienced improvement in their fiscal situations during the mid-1990s.

Despite growth in budgetary revenues in recent years, all three counties have experienced ongoing fiscal deficits. Their 1997 budgetary deficits ranged from 7 percent to 13 percent of budgetary revenues. Their accumulated deficits ranged from 40 percent to 124 percent of budgetary revenues, or from about 6 percent to 10 percent of county GNP.

These figures include budgetary transfers from higher levels of government and so greatly overstate local fiscal capacity. In all three counties budgetary transfers constituted more than half of budgetary revenues. In Duan and Baoqing, local budgetary revenues contributed less than one-third of total budgetary revenues. Local budgetary revenues in the three counties averaged only 3 percent of county GNP.

County officials reported that wage and pension obligations tie up a large share of fiscal resources. For example, in Duan County budgetary expenditures on wages and pensions for current and retired county employees were equal to nearly two-thirds of the county's budgetary outlays. The bulk of these employees are teachers, and as a result education accounts for a large proportion of county government expenditures. On average in the three counties, education absorbed 30 to 35 percent of budgetary expenditures, and in two of the counties education spending actually exceeded local revenues.

A substantial share of budgetary transfers to these counties is in the form of funding for poverty reduction, including poverty reduction grants from higher levels, the Food for Work (*yigong daizhen*) program, and stock transfer tax funds (*gupiao shoubiao zijin*), which are collected by the province and transferred to poor counties for use in poverty reduction. Together such funds account for 20-35 percent of all fiscal transfers, or 15-30 percent of total budgetary revenues, in the three counties. These figures highlight the significance of China's official poverty programs as a source of funds for poor counties. These figures also explain why governments in poor counties sometimes use poverty reduction funds to alleviate fiscal pressures rather than to address poverty.

Extra-budgetary funds are an important additional source of local revenue for poor (and non-poor) local governments in China. In Baoqing and Wuqiao extra-budgetary revenues were roughly the same size as local budgetary revenues (data are unavailable for Duan), and these two counties enjoyed a small extra-budgetary surplus. Yet extra-budgetary funds did not solve their fiscal problems. Even including extra-budgetary funds, local revenues are only 6-7 percent of county GNP. The extra-budgetary surplus is, moreover, considerably smaller than the budgetary deficit. Finally, extra-budgetary funds are typically earmarked or belong to a particular government agency or office, and so are not a perfect substitute for budgetary revenues.

Source: Author's calculations.

The central government has responded to these incentives by limiting the amount of poverty funds spent on rural industry. Yet even when poverty funds go to agriculture and basic infrastructure, the spending may not reach the poor. The returns to agricultural and infrastructure investments in nonpoor or even marginally poor townships tend to be higher, emerge more quickly, and be more easily taxable than the returns on such spending in the poorest townships and villages.

Recent fiscal reforms may have mitigated some, but not all, of these problems. In 1993/94 the government carried out a major reform of the fiscal and tax system. Key provisions of this reform were the adoption of a value-added tax and the regularization of revenue sharing between central and local levels of government. These reforms appear to have slowed or even reversed the secular decline in government revenues relative to GDP.

The fiscal reforms have had a mixed impact on poor county governments. On the one hand, the reforms have obliged local governments to share key revenue sources with the center, thus reducing the local revenue base. The center had originally planned to offset this reduction with fiscal transfers from richer areas to poorer ones, but the promised transfers have not materialized. On the other hand, the fiscal reforms have changed incentives at the local level by altering the categories of tax revenues retained at local levels. For example, while the reforms now require local governments to share revenues earned from industry with the center, revenues from special products taxes and slaughter taxes stay largely at the local level. These local taxes are derived from the production and sale of high-value agricultural products such as fruit, tobacco, specialty crops, and livestock, and they create incentives for poor counties to promote agricultural development. While the new division of revenues encourages local governments to invest in agriculture, however, it does not remove the fiscal bias against poorer townships and villages. Even in agriculture, the potential for revenue generation tends to be greater in townships and villages that are more accessible and have better physical and human capital resources. Moreover, while local governments may now have greater incentive to promote agricultural development, they have a bias towards those farm products that generate fiscal revenues (e.g., tobacco) rather than those that are economically efficient and of most benefit to farmers.

While the discussion above focuses on the fiscal system, similar problems exist in the financial system. Most of total poverty funding is in the form of loans. Agency problems arise in poverty loan programs, as they do in fiscal poverty programs. Reforms in the banking system have caused the Agricultural Bank of China (ABC), which manages poverty loans, to behave increasingly as a commercial, profit-oriented bank. Commercial banks worldwide view poor farm households as poor credit risks. Risk of non-repayment is high, and in China where land is not privately owned, poor households have little to offer in the way of collateral. Moreover, farm households are numerous and dispersed, the loan amounts are small, and administrative costs are high. The ABC therefore has negative incentives to direct poverty loans to poor farm households. These problems are compounded by the fact that the interest rate on poverty loans is low, so that such loans would be unprofitable even in the absence of the risk and transactions costs. In the past the government subsidized the ABC's losses due to the low interest rates on poverty loans, but now government subsidies do not fully cover the losses.

F. CONCLUSIONS AND RECOMMENDATIONS

The discussion above highlights the various ways in which macroeconomic factors can influence trends in poverty and alter the effectiveness of poverty interventions. Several broad conclusions emerge:

- Macroeconomic growth has been closely associated with the pace of poverty reduction, and so macroeconomic policies that promote growth should be seen as complementary to microeconomic poverty interventions. Macroeconomic policies that target regions with high concentrations of poor, such as recent infrastructure investment programs in central and western China, are especially constructive.

- Macroeconomic cycles have been an ongoing feature of the past two decades, and the poor are particularly vulnerable to such cycles. Counter-cyclical macroeconomic policies can be beneficial to the poor, especially when those policies focus on poor regions and are designed to assist lower income groups. Microeconomic poverty interventions should continue to help poor households reduce production risk, diversify their sources of income, and gain access to reliable sources of credit. The design of microeconomic poverty interventions should *anticipate* the possibility of macroeconomic fluctuations and project design should seek to promote financial and economic sustainability in the face of such fluctuations.

- Major macroeconomic initiatives of a structural nature, such as fiscal reforms, financial reforms, and labor market reforms, can have a significant impact on the poor even when they are aimed at sectors that seem far removed from the poor. The potential impact on the poor of such reform initiatives should be explicitly recognized, and new initiatives for structural reform should be subject to a poverty impact analysis.

- The role of agriculture as a source of employment and income for the poor should not be undervalued. Here the greatest potential lies in the development of high-value, labor intensive crops, horticulture, and livestock production. This potential can be promoted by efforts to ensure that farmers have better access to water, credit, capital and technology, and by allowing farmers to produce what is most profitable (see The World Bank, 1999b). The extent to which agriculture can generate income for the poor, however, varies substantially among regions, and agricultural development projects should be adopted only when they are economically viable.

- While agriculture remains the primary source of income for the poor, off-farm employment is now playing a growing role. Evidence suggests that wage earnings are critical to poor households not only as an ongoing source of cash income, but also as a means of offsetting transitory shocks to farm income. Recent trends reveal the increased importance of migration and of private and individual businesses as compared to TVEs. Poverty programs should recognize these trends and assist the poor to gain access to migrant jobs and to participate in private businesses either as entrepreneurs or employees. Encouraging labor mobility by eliminating administrative and other constraints to free mobility should be an important aspect of China's poverty reduction efforts. To give the poorest more opportunities to migrate in the longer term, the government could encourage the establishment of channels to link the poorest workers to off farm jobs.

- Poor county governments operate under severe fiscal constraints. Even with outside funding for poverty programs, they have difficulties helping the poor because they face pressure to use the funds to cope with fiscal shortfalls. Careful monitoring of poverty funds and closer targeting of those funds to townships and households would help insure that poverty funds reach the poorest households, but such actions should also be accompanied by measures that address the underlying fiscal difficulties in poor areas and provide incentives for local governments to assist the poor. Continued fiscal reforms are needed to broaden local tax bases and generate more budgetary revenue from various sectors, including agriculture and the private sector. The distributional consequences of intergovernmental fiscal transfers under the new tax system, including tax-sharing and rebate policies, should be assessed, and changes should be made so as to improve net fiscal flows to poor areas (The World Bank, 1999b).

3. POVERTY REDUCTION PROGRAMS IN CHINA

A. OVERVIEW

The Government has built up an ambitious poverty reduction program over the last two decades. While recognizing China's exemplary success in reducing poverty, this report (see Chapter 1) has concluded that the job is still far from complete. International standards indicate that there are still more than 100 million rural poor, concentrated in the western provinces and mountainous regions. To meet this challenge, it is clear that the Governments efforts must not diminish. To the contrary, achieving further major reductions in poverty will require stronger institutions, and a more targeted and concentrated program than the current one. The village and household based approach should continue and intensify, and its effectiveness needs to improve. This chapter has suggestions on ways to accomplish this including modifications in institutional arrangements, targeting, and program content.

A first step in improving the effectiveness of the program is to strengthen institutional arrangements. The program needs strong and effective leadership, oversite and accountability from the top levels of government, better control over the use of funds, improved coordination between funding channels, and a much stronger monitoring effort. Increasing funding for supervision and monitoring of poverty programs is essential. Poverty offices should be strengthened at the township level in order to have enough staff to properly oversee the quality of program works and activities. Institutional strengthening should be complemented by greater accountability through stronger and more independent financial and impact monitoring, contracted to an impartial government agency. Involving the poor in planning and monitoring is an essential aspect of successful programs and participatory approaches should be used much more extensively in all future government poverty reduction efforts.

A powerful measure to increase the impact of poverty alleviation programs would be to direct all poverty funding directly to poor townships within and outside of the nationally designated poor counties, instead of to the counties themselves. This would reduce leakage to the non-poor in the nationally-designated poor counties, and reach the poor living in non-poor counties who currently do not benefit from the national program.

The impact on the poor could be improved by changes in the types of interventions funded by current programs. One of the most effective means to address the problems of the absolute poor is through a set of multisectoral, and complementary interventions, delivered through a multiyear project approach. For the poorest, this approach should replace the large subsidized poverty loan program which has performed well below expectations. Access to credit is an essential part of poverty reduction measures, but the government efforts to run credit schemes do not look promising and government funds would be better spent supporting microcredit in other ways. Refinements in existing agriculture, health and education, labor mobility and voluntary resettlement programs could bring marked benefits, and these are detailed in Chapter Four.

B. Institutional Arrangements, Strategy, and Funding

China's poverty reduction program comprises a wide variety of actors, programs and funding channels. The Chinese Government has a strong commitment to poverty reduction, and most government ministries and agencies have special poverty reduction responsibilities and projects. The Ministry of Civil Affairs provides disaster relief and income maintenance support, and coordinates the distribution of relief grain through the Grain Bureau System. The Ministry of Education and the Ministry of Public Health administer some special programs to improve the education and health status of the poor. ABC offers subsidized loans (*tiexi daikuan)* for poor area development through a variety of funds administered by provincial bank branches and their networks of county- and lower-level banks. The Ministry of Finance (MOF) provides grant assistance. The Regional Office of the State Development and Planning Commission (SDPC) administers a Food-For-Work Program (FFW-*Yigongdaizhen)*, which assists with the building of roads and riverine transport, drinking water systems, irrigation works and other capital construction in poor areas. In addition, most of China's more developed coastal provinces and major municipalities are now supporting poverty reduction activities in specific poor provinces and regions, and a number of other domestic organizations are also involved in such work.[36] In addition, international donors and NGOs have played an increasing role in China's poverty reduction program throughout the 1990s (UNDP 1997a).

The State Council's Leading Group Office for Poverty Reduction (LGPR) was established in 1986 to provide greater coherence to the large number of poverty reduction initiatives and, in particular, to expedite economic development in the poor areas. LGPR is also the key agency responsible for coordinating the nation's funding for poverty reduction programs. Central government funding for the poverty reduction programs totaled more than $2 billion in 1998, was scheduled to reach $3 billion in 1999, and expected to reach $3.2 billion in 2000 (see Table 3.1). Since its establishment, LGPR and its executive agency, the Poor Area Development Office (PADO), has emerged as the principal advocate of China's rural poor. The central PADO comprises about 25 staff equally divided between six divisions (including the General, Policy Research, Planning and Finance, Statistics, Social Poverty Reduction, and Public Information divisions). In addition to the central PADO, the State Council funds another four poverty reduction units which operate within the LGPR orbit: the China Development Foundation for Poor Areas (30 staff), the Foreign Capital Management Center (30 staff), the Training Center Office (18 staff), and the Economic Development Service Center (15 staff).

Most poor provinces, prefectures, and counties have all established Leading Groups and PADOs after the central model, and many townships now have at least one "designated person" to handle poverty reduction work. The Guizhou PADO system, for example, comprises 2,489 staff of which 1,365 work full time on poverty reduction activities. The provincial PADO comprises 29 full time staff in five divisions. There are 106 full time staff at theprefectural level, and 420 full time staff within Guizhou's 48 nationally-designated poor counties. Within the 48 poor counties, some 555 townships have designated poverty reduction offices with 810 full time staff. The structure and staffing of Sichuan's PADO system is very similar to that of Guizhou, except that there are fewer full time staff at the township level. While theGuizhou PADO system averages 1.5 full time staff for each of its poor townships, Sichuan has on average only 0.5 full time staff in each of its 752 poor townships. With the exception of some lesser programs under their immediate control, the LGPR system does not directly implement poverty reduction projects

[36] These domestic organizations include the Foundation for Underdeveloped Regions in China (FURC), the All-China Women's Federation, Project Hope, Spring Bud, and many others.

and activities. Instead, most poverty reduction projects and activities are managed or implemented by the agencies responsible for them. Rural roads constructed under the FFW program, for example, are implemented by local staff of the Transport Bureau.

Strategy. While continuing the existing rural social and relief services, the poverty reduction strategy adopted during the Seventh Five Year Plan (1986-90) introduced a new emphasis on economic development programs in the poor areas. During this period, most of the government's subsidized loans for poverty reduction were channeled directly to poor households to develop agricultural production and agroprocessing. The Government's commitment to sustained efforts to eradicate poverty also figured prominently in the 8th Five Year Plan (1991-95). The 8th Five Year Plan reconfirmed and extended LGPR's central role as the coordinating body responsible for poverty monitoring and research, and the management of both domestic funding and international assistance for poverty reduction. Based on the belief that poor households could not, on their own, make the best use of poverty reduction funding (because, it was believed, they lacked the necessary technical and management skills and could not achieve economies of scale in operation), it was decided that most of the low interest loan funds would be channeled to small enterprises (that is, "economic entities") instead of poor households. Beginning in 1989, most of the low interest loan funding was therefore redirected toward collective enterprises and companies involved in agricultural production bases and the marketing of agricultural products (Park, *et al*, 1997).

The government's poverty reduction strategy gained greater definition through the 1994 National Plan for Poverty Reduction (8-7 Plan) which established the objective of lifting the majority of the remaining 80 million poor above the government's poverty line during the seven year period 1994-2000. The 8-7 Plan called for (a) assisting poor households with land improvement, increased cash crop, tree crop and livestock production, and improved access to off-farm employment opportunities, (b) providing most or all townships with road access and electricity, and improving access to drinking water for most poor villages, (c) universalizing primary education and providing basic preventive and curative health care, (d) graduating better-off counties in the coastal provinces from the newly-established list of nationally-designated poor counties, (e) improved management of available funding, including increased attention to the appraisal and financial viability of poverty reduction investment activities, greater recovery of loan funds and reduced leakage of poverty reduction funding to alternative activities, and (f) greater involvement and support from all government ministries and agencies, the coastal provinces and major municipalities, and other domestic organizations.

1996 National Poverty Reduction Conference. The State Council and the Party jointly held a National Poverty Reduction Conference in September, 1996. The Conference further increased the already high profile of poverty reduction as a key task for national development, and marked a new milestone in the political arrangements and support, funding, and strategies for that work. President Jiang Zemin and Prime Minister Li Peng delivered key note addresses, and the governors and party secretaries of each of China's western provinces attended the Conference. The Conference established a new "poverty reduction responsibility system" which confirmed that the leaders of the western provinces and of the poor regions and counties in those provinces would be held directly responsible for the effectiveness of the poverty reduction work in their jurisdictions. As shown in Table 3.1, the sharp increase in funding beginning in 1997 reversed a decade of decline in real funding for poverty reduction. In real terms, funding for poverty reduction jumped by over 50 percent in 1997, and recovered to the level of 1987.

President Jiang Zemin and Prime Minister Li Peng's addresses both emphasized the deepening of the poverty gap and the increased concentration of remaining poverty in the more remote and mountainous areas of central and western China during the 1990s (Chapter 1). To assist these remaining poor, the Conference emphasized two important changes. First, it was decided that assistance should be provided directly to poor villages and households ("*fupin daohu*"). The switch away from support for poor area enterprises and industrial projects, in favor of subsidized loans to households for crop and livestock production and agroprocessing, appears to have begun in 1997. Second, the Conference called for better management of poverty reduction funding and greater supervision of poverty reduction works and activities. The specific measures identified during the Conference to improve poverty reduction program management and supervision included institution building, annual reviews and audits, and village-level development planning coupled with village-level earmarked funding. Unfortunately, it appears that only limited institution building and no independent review and auditing has actually taken place since the 1996 Conference. However, some provinces have experienced the favorable impact of village-level development planning and increased supervision of program works and activities, and have initiated the institution building necessary for wider adoption of these measures.

The Central Government held a major poverty reduction conference in June 1999, which laid out the targets and key measures for the remaining eighteen months of the 8-7 Plan. The conference concluded that, of the remaining 42 million absolute poor, 20 million are to rise out of poverty by the end of the year 2000. The remaining 22 million includes the disabled and those who live in extremely harsh and remote conditions. To meet this target by the end of the year 2000, the conference reiterated the Government's commitment to targeting only impoverished villages and households, and confirmed that poverty funding must be more strictly focused on measures that can solve the food and clothing problems of the poor. Priority measures are to include investments in animal husbandry and aquaculture, microirrigation, and improved varieties for grain and cash crops. The conference also (a) strongly discouraged the use of poverty funds for industrial projects, (b) confirmed that microcredit will continue to be a part of the poverty program, provided standardized procedures are used, (c) noted the need for further strengthening of financial controls and auditing measures for all poverty funds, and (d) identified increased domestic investment and capital construction in the western provinces as a key aspect of poverty reduction efforts. The importance of grassroots party organizations, the cadre responsibility system, and twinning arrangements with wealthier areas was also emphasized.

Funding Sources and Allocation. In nominal terms, annual central government poverty reduction funding ranged between $1 to $1.5 billion during 1986-96, increased sharply in each year 1997-99, and totaled more than $20 billion during 1986-99. These funds comprise the FFW Program, MOF grants, and subsidized loans provided through ABC and the banking system. (They do not include funding from the Ministry of Civil Affairs for relief programs, or sectoral investments made by line ministries in poor areas). As shown in Table 3.1, the subsidized loans comprise around half the total funding in all years. Measured in constant yuan, total poverty reduction program funding remained stagnant or decreased in real terms until the second half of the 1990s when they recovered and then overtook their earlier level. Particularly sharp increases in the loan program were achieved place in 1997 and 1998. FFW increased sharply in the early 1990s and has risen steadily since then. MOF grants remained stagnant until 1997 when they increased by a substantial margin.

This central government funding is supplemented by provincial and lower level poverty funds, and the 1996 National Poverty Reduction Conference required that provinces and lower level governments provide matching funds in the amount of 30-50 percent of the national loan funds. However, the weak fiscal condition of many of the poorer provinces has made it difficult to reach this target, and both Yunnan and Sichuan fell short in 1997 (Annex 2 Tables 5 and 6).

Similar to the national statistics, in both Yunnan and Sichuan subsidized loans contribute the largest share of the total poverty funding, and this share rose in 1997. In Yunnan the subsidized loan funds (both state and local) comprised 47 percent of total poverty funding in 1997 and in Sichuan 62 percent. Other major sources were grant funds from the fiscal system, which in 1997 comprised (23 percent of Yunnan's poverty spending and 18 percent of Sichuan's), and FFW (14 percent and 18 percent respectively). Foreign funds and other grant funds comprised 8-15 percent of the envelope (see Annex 2 Tables 5 and 6).

Table 3.1: Central Government Poverty Reduction Funding (Y million)

Year	State Poverty Alleviation Loan Funds	Ministry of Finance Grant Funds [1]	Food-for Work Funds	Total Poverty Reduction Program Funds[2]		
				Yuan (Current)	Yuan (Constant 1997)	USD (Current) [4]
1986	2900	1000	900	4800	14583	1500
1987	3000	1000	900	4900	14018	1321
1988	3050	1000		4050	9860	1092
1989	3050	1000	100	4150	8469	1119
1990	3050	1000	600	4650	9081	985
1991	3550	1060	1800	6410	12237	1205
1992	3550	1120	1600	6270	11432	1157
1993	3550	1180	3000	7730	12396	1349
1994	4550	1240	4000	9790	12722	1152
1995	4550	1300	4000	9850	10894	1187
1996	5500	1300	3000	9800	10045	1181
1997	8450	2815	4000	15265	15265	1839
1998	10000	3315	5000	18315	18773	2207
1999 [3]	9700	3315	5000	24800	26056	2988
TOTAL	**68,450**	**21,645**	**33,900**	**130,780**	**185,830**	**20,280**

[1] MOF grant funds include Sanxi development funds and poor area development funds.
[2] Totals may not add due to rounding.
[3] Funding from individual sources does not sum to 1999 total. The 1999 total is based on a Government announcement in June, 1999. Funding from individual sources based on LGPR estimates.
[4] Using exchange rates for 1986-1999 of 3.2, 3.71, 3.71, 3.71, 4.72, 5.32, 5.73, 8.5, 8.3, 8.3, 8.3, 8.3, 8.3, 8.3.
Sources: LGPR, The World Bank estimates, South China Morning Post, 6/14/99, for 1999 total.

Inspection of national sectoral spending allocations from 1991-1995 shows that almost 60 percent of the total poverty spending (subsidized loans, FFW, and MOF poor area development fund grants) went to agriculture (29 percent) and industry (31 percent). Infrastructure spending represented 35 percent of the total with less than 2 percent spent on education and public health. (These figures exclude substantial funding from the Ministries of Education and Health for poor area education and health programs as well as funding for infrastructural investments in poor areas from sector ministries). Subsidized loans were concentrated on industry and agriculture, FFW on infrastructure, and MOF grants were spread more evenly among all the sectors (Park, 1999, and The World Bank calculations).

Similarly, poverty spending by sector in Yunnan shows a heavy concentration in agriculture and industry. In 1995 and 1997 these sectors absorbed about 60 percent of total poverty spending. Subsidized loans were concentrated most heavily in agriculture and industry, but all other sources of funds (fiscal grant funds, FFW, other grant funds) were also invested in these sectors (see Table 3.2). In 1997, agricultural lending increased and lending for industry declined. The focus of the poverty program on loan funds, and on lending for agriculture and industry, has meant that spending on rural infrastructure and health and education comprise a much smaller share of the envelope. (These figures exclude substantial funding from the Ministries of Education and Health for poor area education and health programs as well as funding for infrastructural investments in poor areas from sector ministries and bureaus). For example, in Yunnan spending on transport, drinking water, and health and education comprised only 7 percent, 3 percent and 5 percent of total poverty spending in 1997. Land improvement and water conservation works comprised 6 percent and 9 percent. Spending in these areas increased from 1995, but their relative share in total poverty spending decreased across the board. This is in part due to the sharp rise in poverty alleviation funds (which are mainly used for agriculture and industry) during a period when FFW funds stagnated after an increase earlier in the 1990s.

C. TARGETING

Dilution and Omission. Since they were first established in 1986, the national and provincial lists of poor counties have played an important role in organizing China's poverty reduction program and helped concentrate available poverty reduction funding in some of the areas of greatest need. The 1993 revised list of 592 nationally-designated poor counties included an additional number of extremely poor counties which had not previously received an appropriate share of central government support. However, the list of 592 poor counties is no longer an appropriate means of targeting available poverty reduction funding to China's remaining poor. Park, *et al* (1999) have shown that "targeting effectiveness has deteriorated over time and leakage has increased," and these trends were exacerbated by the new poor county designations in 1993. It is now evident that the current system of county-based targeting results in (a) a severe dilution of available poverty reduction funding for the half of China's remaining poor who reside in the nationally-designated poor counties, and (b) the near complete omission of central government poverty reduction funding for the other half of the poor who reside outside these poor counties. This severe problem could be largely resolved by switching to a system of township-based targeting which would direct the bulk of available funding to poor townships within and outside of the nationally-designated poor counties.

An ongoing SSB survey of China's nationally-designated 592 poor counties has shown that about half of China's remaining poor resided in these poor counties. This implies that in 1998 about 21 million of China's remaining 42 million poor were located in these counties. Most of the central government's poverty reduction funding is allocated to the nationally-designated poor counties, but is not specifically earmarked for the poor households or the poor townships within these counties. Instead, these funds are distributed both to poor and nonpoor townships within the poor counties. (Field visits suggest that nonpoor townships and better off villages closer in to the road system may in fact capture more than an equal share of the available poverty reduction funding.) Therefore, it appears that available poverty reduction funding is equally distributed to all 200 million rural inhabitants of the 592 poor counties. Since only about 21 million absolute poor resided in the poor counties in 1998, it is evident that assistance to the most needy was diluted by roughly ten-fold by the leakage of benefits to the nonpoor. This suggests that in 1998 only about one tenth, or $200 million, of the $2 billion of central government poverty reduction funding reached these 21 million poor.

Just as importantly, very little central government poverty reduction funding is provided to the other half of the poor residing outside the poor counties (since most such funding is earmarked for use only in the nationally-designated poor counties). Instead, most provinces use their own funding to assist the poor residing outside the poor counties. However, provincial funding levels are known to be very limited. The problem is quite severe in Sichuan, and LGPR has allowed the province to use 30 percent of its share of the central government's poverty reduction program funding to assist three extremely poor minority areas not included in the list of nationally-designated poor counties. Overall, however, the total poverty reduction assistance package available for the poor outside the nationally-designated poor counties is extremely limited.

Targeting All Poor Townships. Most of China's remaining poor reside in poor townships within and outside of the nationally-designated poor counties (Chapter 1). The Yunnan PADO, for example, estimates that 86 percent of the province's remaining poor in 1996 were concentrated in some 506 designated poor townships. (Some 396, or nearly four fifths, of these designated poor townships are located in the province's 73 nationally- designated poor counties.) Therefore, as a most crucial first step, it is recommended that most central government poverty reduction funding should be channeled directly to poor townships within and outside of the 592 nationally-designated poor counties, and all poor villages should be guaranteed access to these funds. Pilot tests of this switch from county to township based targeting should be undertaken immediately, and need not wait until the completion of the 8-7 Plan.[37] A switch to township targeting would substantially reduce leakage to the non-poor, even in the absence of programs that more effectively target poor households.

Switching to township targeting would also benefit the minorities who presently live outside the boundaries of both the poor counties and the minority regions, and thus currently receive neither poverty assistance nor special types of relief administered in minority regions.

Concerns have been raised that a switch from county to township targeting would increase the administrative costs of the program. The most obvious implication of township targeting would be the need for additional staff at the township level. Lack of staff at this level is currently one of the major weaknesses of the poverty loan program, and switching to township targeting would certainly necessitate staffing at the township level. However, the costs of doing so appear modest, particularly when set against the improvements in targeting that are likely to occur with this switch.

D. Poverty Programs And Instruments

This section summarizes the content, implementation and impact of China's main poverty programs in the 1990s, and focuses on the investment programs which aim to promote economic and income growth to lift the poor out of poverty on a sustainable basis. Relief programs, which target a small segment of the poor, are also discussed (although they are usually regarded as distinct from the main poverty program). Implementation of the programs has been a challenge for the government, and it is believed that the efficacy of all of the programs could be substantially improved. The subsidized loan program has met difficulties in achieving its

[37] There are limitations to the proposed switch to township targeting, including the correct identification of poor townships, infrastructure projects (such as roads, power lines, etc.) which extend beyond poor township boundaries, and the limited capacity of township governments. A pilot test of the switch to township targeting could identify such issues and allow time for their correction before nationwide implementation.

objectives. Lending to enterprises has done little to reduce poverty, and directing loans to poor households also has proved to be very difficult. These issues, compounded by low repayment rates under the program, convinced the Government to experiment with microcredit schemes, but these have also encountered serious difficulties. The FFW program could be improved by more explicit targeting of the poorest areas, and by refocusing its work on the types of programs that bring the greatest benefits to the poor. The MOF grant program is also believed to have encountered a number of implementation difficulties, though there is scant objective information available for that program. The relief program should remain a key element of the Government's efforts, and retaining the funding and focus of this program is essential to the wellbeing of China's most destitute population. International researchers have undertaken quantitative analyses of the effectiveness of China's poverty reduction program, and have found some indications of a significant impact on living standards.[38]

Subsidized Loans for Poverty Reduction

The subsidized loan program is the largest of the poverty programs and is viewed as the flagship of the Government's poverty alleviation efforts. The Government has invested about Y 68 billion in the program since its inception, and has placed considerable emphasis on trying to ensure the program reaches poor households and brings them clear benefits. However, this has proven to be extremely challenging, and the Government has tried different approaches to try to increase the effectiveness of the program.

Following earlier emphasis on issuing loans to households, in 1989 poor county governments began using a large of portion of their available subsidized poverty reduction loans to support the growth of county and township run enterprises in poor areas (Rozelle, *et al*, 1998). In 1992 and 1993, about half of the subsidized loans were lent to industrial enterprises. Of this amount, more than 60 percent went to county run enterprises and the rest went to township run enterprises (He and Wei, 1997). By the mid 1990s, this policy was recognized to have been less successful than originally envisioned. Many of the rural enterprises supported in the past with poverty reduction funding have been capital intensive, loss making firms with minimal poverty reduction impact. While the number of such firms is not known, it appears that poverty reduction program funding for poor county TVE development may have even led to a net decline in revenues in some poor counties. In addition, the use of government assistance for TVE development has reduced funds and other resources available for household farm production and off-farm production undertaken by small scale private enterprises, and may have contributed to distorted patterns of development of enterprises in poor areas.

[38] Jalan and Ravallion (1996) model household consumption using SSB household income panel data for 1985-1990 in counties targeted by Government poverty reduction programs. Controlling for household-level and community initial conditions, they find that households living in the nationally-designated (but not the provincially-designated) poor counties have a higher rate of consumption growth than would otherwise have been expected. There was actually very little or no growth in average consumption levels in the poor counties over the period, but Jalan and Ravallion show that consumption levels would have been expected to have declined in the absence of the poverty reduction program. Park *et al* (1999) analyzed a panel data set of all counties in China for the period 1981-95. Using regression analysis with controls for initial income per capita, initial grain production per capita, province-time dummies, and fixed county effects, they found that poverty reduction funding increased annual per capita income growth by 2.28 percent during 1985-92 and by 0.91 percent during 1992-95. Lacking data on the incidence of poverty by county, their analysis provides no evidence on the distribution of benefits within counties, and therefore does not indicate the extent to which poor households may have benefited from the program. Jalan and Ravallion, and Park *et al* note that their estimates may substantially overstate the impact of the poverty reduction program because they do not account for all public expenditures on poverty reduction (that is, administrative expenditures, local government counterpart funds, donor funds, and other "funds from a vast array of government and private initiatives" are excluded).

Recognizing the shortcomings of providing direct financial support, the government recently decided to severely curtail poverty reduction program funding for poor county TVE development. Instead, the more appropriate role for local governments is to establish a more favorable environment for poor county TVE development. The experience of those TVEs in poor areas which have better survived the current economic turbulence helps clarify what local government can do to facilitate TVE development. Relatively small enterprises with a more clearly defined ownership structure, operations based principally on local comparative advantage (such as cheap labor and local raw materials), and relatively large enterprises combining local resources with technology and market access provided by enterprises from more developed areas, appear to have been most successful in weathering the current economic challenges. It is therefore recommended that local governments support TVE development through (a) reforming TVE ownership and management, (b) allowing those enterprises which have negative equity and which have suffered from financial losses for a number of years to go bankrupt, and (c) encouraging local enterprises, which have operations consistent with local comparative advantage, to establish joint ventures with enterprises from more developed areas. Past experience indicates that local governments in poor areas are not well-equipped to successfully establish and manage enterprises by themselves. These local governments should therefore instead focus on simplifying the procedures for the establishment of private and collective enterprises, reducing the taxes and other extra burdens on enterprises, improving local infrastructure, and providing more training for local accountants, auditors and technicians.

The strategy to target enterprises rather than households is in part responsible for reports from many sources showing the very low share of loans that have directly benefited poor households in the 1990s. Indeed, before 1990, some surveys indicated that 45 percent of the loans reached poor households (and one survey taken in 1987 showed 92 percent of loans reaching poor households), whereas most surveys taken during the 1990s showed much lower shares. Many observers share the sentiment expressed by a provincial official (Park, *et al*,1997) that the failure of loans to reach poor households has been the rule and not the exception. Park cites survey results showing examples of counties where none of the loans had reached the poor, and of poor villages where the majority of the loans went to farmers of average wealth and not to poor farmers.

In recognition of these failures and seeking to redirect investment directly to poor households, the 1996 National Poverty Reduction Conference decided that 70 percent of subsidized loans should reach poor households and 70 percent should be in agriculture (as opposed to industry). Early indications are that provincial and county governments appear to be making progress but have not fully achieved these targets. For example, expenditure data for Yunnan summarized in Table 3.2 below shows the balance between agricultural and industrial spending did shift after 1996. However, sizeable lending for industry remained, and the composition of spending did not reach the 70/30 stated targets. Agricultural spending increased from 27 percent to 41 percent and industrial spending decreased from 32 percent to 23 percent. The shift was most pronounced in use of central poverty loan funds (agricultural spending increased from 31 percent to 51 percent), with other funding channels also registering an increase in favor of agricultural lending. Moreover, the large increase in lending for agriculture in 1997 has not necessarily led to the intended concentration of lending away from large enterprises and to households. Provincial officials indicate that large amounts of the agricultural lending went to agricultural production bases and that loans to households comprise less than 30 percent of total agricultural spending. However, a number of field investigations by Chinese and international

researchers indicate that the proportion reaching poor households is actually much lower, even as recently as 1998, when the new policy should have been fully established[39] (Kang, 1998).

There are a number of factors that have contributed to the program's difficulty in directing loans to poor households. The goal of the program is to both reach the poor and promote economic development, and this has led to sometimes conflicting objectives for local officials trying to carry out the program. For example, projects that will generate tax revenue have an obvious pull. Lower level officials are aware that past performance will be a criterion for more future loans, so they tend to pick projects that they perceive as bringing higher financial benefits regardless of whether or not such projects will help reduce poverty. The common perception that the poor are incapable of managing projects successfully also contributes to the preference for lending to enterprises (and richer households).

Table 3.2: Yunnan Poverty Program Funding—Sectoral Spending (Yuan million)

	1995						1996					
	Agriculture		Industry		Other		Agriculture		Industry		Other	
	Yuan	(%)	Yuan	(%)	Yuan	(%)	Yuan	(%)	Yuan	(%)	Yuan	(%)
Subsidized Loans	136	30.6	246.6	55.5	61.7	13.9	479.8	50.9	342.6	36.4	120	25.8
All Funding Sources	228	27.3	269	32.2	338.9	40.5	688.6	41.1	386.5	23.1	601	35.8

Note: Subsidized Loans refer to Central Government Poverty Reduction Funding. All Funding Sources include Central Government subsidized loans, MOF grants, FFW funds, and other. Other sectoral allocation includes investments in transport, commerce, health and education, land improvement, drinking water, and water conservancy.
Source: Yunnan Provincial Data (see Annex 2 Table 7).

Even when official policy succeeds in directing loans directly down to the household level, there are a number of factors which contribute to diversion of loans to nonpoor households. First of all, favorable loan terms (the annual interest rate is 2.88 percent) and large loan size leads to strong competition from the nonpoor. Procedures for loan application and approval are complicated, and this tends to discourage poor applicants. The problem of loan guarantees and collateral is also a significant factor. For example, to guarantee repayment of the loans, ABC requires physical collateral which often leads to exclusion of poor households from the program. And ABC's obligation to bear the burden of the repayment risk conflicts with its role as a commercial bank, and many loans are diverted to commercial purposes and to richer households. Moreover, in 1998, ABC began passing down the repayment risk to local cadres and governments, which in turn pass the risk down to village councils. Not surprisingly, village councils often balk at lending to poor households. Inadequate monitoring and supervision capability of the local PADOs exacerbates the problems in implementing these programs.

In addition to the difficulties in targeting the poor, repayment of the government loan programs has been an issue. The most extensive survey on repayment was carried out by the China Science and Technology Commission between 1991-1993. That survey indicated that repayment levels averaged 54 percent, which is well below sustainable rates. Overdue loans were greater than 100 percent of all loans coming to term. Repayment of loans to enterprises was the lowest at less than 40 percent. In addition to the lax supervision and monitoring efforts, low and

[39] For example, field investigation in two poor counties in Anhui province showed that the percentage of poverty loans issued in 1998 reaching households was only 19 percent and 14 percent respectfully (Yang, 1998).

negative real interest rates serve as a disincentive for repayment. Also, good repayment does not necessarily lead to additional loans (Park, 1998). Official data from Yunnan shows only a 39 percent repayment rate in 1997, with overdue loans representing over 100 percent of newly issued loans (see Annex 2 Table 6).

Microcredit Programs. In response to the growing realization that government poverty loan programs were not reaching the poor and to the low repayment rates of the programs, and awareness of successful microcredit programs in China and abroad, the government began experimenting with using the subsidized poverty loan funds for microcredit activities. The Government's use of subsidized poverty loan funds for microcredit has expanded rapidly. In 1997, the program included more than 80 counties, and had invested more than Y 100 million. By 1998, it was reported to have reached 200 counties, and total investment was about Y 800 million. Most government funded microfinance programs have used variations of the Grameen Bank approach, which has been employed successfully in other countries, and in some donor programs in China. Initially, the program was organized by the PADOs, which lent the funds directly to households.

Relatively high arrears rates in a number of the government's programs led to a recent switch in the microcredit system, and regulations now require that microfinance experiments using subsidized loans be undertaken by ABC, rather than the PADOs. Loan contracts are to be signed between the ABC and households. The role of the PADOs will be to focus on organizing households into groups and centers and facilitating loan repayment. This move addresses weaknesses in financial management and supervision, which has been one of the central problems in the government schemes. However, ABC's current institutional capacity is likely to hinder its ability to undertake Grameen type microfinance experiments as many county ABCs do not have agencies and staff at the township level. Moreover, the loan commission to be paid by ABC to the PADOs for their work in organizing groups and repayment is most likely too small to sustain their interest in microcredit.

Well designed microcredit programs can avoid many of the pitfalls seen in subsidized credit programs around the world, and which have plagued China's poverty loan program. In designing any future role for microcredit in the Government's poverty program, a number of points should be emphasized. First, microcredit on its own is unlikely to meet the needs of the absolute poor, and should be combined with other types of interventions in the poorest areas. Second, improved financial management, monitoring, supervision and internal auditing, backed up by intensive staff training, are key to the success of any microcredit program. Lax or non-existent systems made government experiments with microcredit vulnerable to spiraling repayment problems, and financial mismanagement. Third, programs should avoid the tendency to become top-down, and may wish to experiment with devolving responsibility for implementation to grassroots organizations. It probably would be advantageous for the PADOs to play a role in monitoring and supervising microcredit, but to have the actual programs managed by organizations outside the government structure. At a minimum, staff should be hired by open recruitment and not be appointed by county or other officials. One positive aspect of the Grameen model is that its participatory methods promote initiative among the poor by encouraging them to form groups, choose group leaders, and decide their own investments. If programs side step this "bottom-up" approach, this aspect is lost, and targeting and repayment can also suffer. Fourth, government programs have tended to charge rates of interest well below the level that would allow them to cover operating costs. This can lead to leakage of funds to the non-poor, and also threatens the sustainability of the programs. Finally, the current group based models can be quite costly, both to the poor and in terms of administrative costs (for example, through frequent group

meetings and repayment). Impact assessment should be undertaken to better understand the costs and benefits to the poor of existing programs, and to assess whether variations on the current models might be better suited to some areas.

In the longer term, mechanisms to provide credit for the poor could take many forms. Developing savings services could be even more important for poor farmers than credit services, but no savings should be organized until prudential regulation and supervision has been established. Reforming existing financial institutions in poor areas may be the most efficient way to reach large numbers of poor and near poor, but this should not preclude a future role for informal financial organizations that now lend to the poor. Some of the current temporary microfinance program offices could possibly be converted more permanent institutions, if they are able to meet appropriate performance and regulatory standards. Small, grass-roots organizations have the potential to play a role in piloting innovative techniques and their strong outreach is invaluable.

The Food-For-Work Program

The FFW program, implemented by the State Development Planning Commission, provides funding for infrastructure construction in poor areas. The program originally made use of left over commodity stocks which were distributed to counties, which used a coupon system to pay for inputs and labor done under the program. Funding from the program in the early years went almost entirely to rural roads, water, and land improvement. After large increases in the program beginning in the early 1990s, the program has diversified and includes investments in a much larger number of areas including water conservation, and even commerce, education and health. Central government funds are supposed to be matched by provincial and county funds. However, in most cases, matched funds are inadequate. This has meant that central funds are entirely used for construction inputs, and the shortage in funds is offset by the use of voluntary labor contributions from villagers. (In most areas of rural China, villages operate a "work day contribution system," with each villager obligated to work a certain number of days annually. FFW labor contribution is deducted from this annual requirement). Zhu and Jiang (1996) estimate that 40 percent of labor used for FFW construction is free labor. In general, the types of investment (for example, water, roads, land improvement) are made by national and provincial governments. County governments select the villages to participate in the program, and village committees make decisions on the allocation of project investments (for example, which areas should be terraced) and labor contribution. There have been few systematic evaluations of the FFW program, but most reports indicate that the program has done a relatively good job in constructing a good deal of infrastructure that has benefited poor areas (Park, 1998).

Impact on the Poor. From analysis based on data from FFW projects in the early 1990s, it appears that villages with more favorable economic conditions, those in more remote areas, and those with higher populations have been more likely to receive FFW projects (Zhu and Jiang, 1996). The poorest villages are less likely to receive these projects. In some cases it may be a rational economic decision to omit some of the poorest villages from FFW projects based on evaluation of economic returns. Building a road or providing electricity in a remote, sparsely populated village, for example, would in many cases not be the most efficient use of poverty reduction funds. Nevertheless, it would appear that the impact of the program on the poor could be improved by greater efforts to select poorer villages. Indeed, in the mid 1990s, more remote areas were said to be targeted for FFW projects, but results from these efforts have not yet been assessed.

Village committees are generally charged with selecting participants for labor work under FFW, and most assessments indicate this is done in an equitable manner. In general, each household is assigned a certain number of days of FFW work, based on the household's labor supply. However, because labor provided under FFW schemes is in many cases, unpaid labor, households with higher cash earnings sometimes choose not to participate and contribute an equivalent sum of money. Some observers have criticized the free labor contribution as a "labor tax" which falls disproportionately on the poor who are most likely to contribute labor to the scheme. While this tax may not be high, since typically the labor takes place in the off-season when there is limited alternative work to be done, the program would probably bring higher benefits to the poor if all work was paid, even if this reduced the total amount of infrastructure built. (Zhu and Jiang, 1996, Park, 1999). International experience has shown that public works schemes, using wage rates below the current wage, are very effective poverty alleviation measures. FFW would do well to experiment with such schemes in order to better reduce poverty and provide some insurance that those who have escaped poverty don't fall back below the poverty line. As such, using FFW as part of a public works scheme could form an important part of China's emerging social safety net.

The program is administered in a fairly top down manner, and in some cases the actual project investments are contrary to villagers expressed needs. For example, Zhu and Jiang document a case where villagers voiced a clear need and preference for more roads, but were instead told to build terraces by county officials. In addition, both domestic and international observers have suggested that infrastructure built under the program would have a greater effect if it were integrated with other investments that benefit the poor (Hardiman, 1998, and Project Leading Group, 1995).

Finally, there are also concerns that the expansion of the program in the mid 1990s, has diluted the effectiveness of the program and its impact on the poor, and led to some laxity in funds management. Zhu and Jiang point out that some of the investments included in FFW in the 1990s have no direct relation to poverty reduction (for example investments in rural post offices and some afforestation projects). Also, the large number of sectors and line ministries now involved means that the matching funds shortage has become more acute, and many projects are left unfinished, and project funding is often too diluted to have sufficient impact. Supervision of funds usage has also become more complicated and there have been reports of funds diversion (Kang,1998).

Ministry of Finance Grant Funds

MOF provides grant funds for investment in poor areas and it is believed that most of these funds are directed to poor counties. Poor Area Development Funds are the main component of the grant funds, and they totaled a little over Y 3 billion in 1998. A special fund for the poor "Sanxi" prefectures (in Gansu and Ningxia) has provided about Y 200 million per year. Additional budgetary support for poor areas is provided through earmarked grants for education, a revolving fund, and also tax incentives and budgetary subsidies. Table 3.1 shows trends in the Poor Area Development funds and Sanxi funds. MOF grant funds have grown very slowly, decreasing in real terms from the late 1980s and not recovering their 1986 value until 1998. MOF grant funding has not been carefully investigated, and there is little published evaluation of its efficacy. However, Park (1999) notes a number of implementation problems with the grant schemes including difficulty in raising counterpart funds, diversion of funds to pay administrative costs, unclear authority over fund use, slow and late delivery of funds not synchronized to project needs, and dispersion of funds which precludes economies of scale in project investments.

Rural Relief Programs

China's rural relief system, implemented by the Ministry of Civil Affairs and provincial and county Civil Affairs bureaus, is independent from the government's poverty relief program. Nonetheless, many recipients of the program are members of China's poor population. The bulk of the program targets those affected by natural disaster, such as earthquakes, flood and drought. A much lesser share of the rural relief program funding is directed to those considered truly destitute, who lack any means or potential to support themselves. (In Chinese, they are referred to as the "sanwu" or "three withouts.") Members of this second group are guaranteed food, clothing, housing, medical care, and funds for burial, and education (for orphans). These are referred to as the "five guarantees" in Chinese. Provincial governments provide most of the budgetary funds for the program, but the system also receives donations from other sources. Township level governments use funds allocated from the county Bureaus to purchase necessities (including grain, clothing and blankets) for relief recipients. It is generally prohibited to give money directly to relief recipients.

Snapshots of the program in Ningxia and Yunnan indicate that the program has increased in size over time, and that its functions have been maintained. In Ningxia, interviews with Jingyuan County officials indicated that most of the funds are used for disaster relief, and funds used for the "sanwu" group accounts for only a very small proportion of the total budget. In 1996, for example, the county had a total budget of about Y 1.22 million yuan for relief purposes, of which, Y 1.10 million was used for disaster relief, and only Y 0.12 million used for the "sanwu" group. In 1998, Y 1.01 million was used for natural disaster relief out of a Y 1.27 million total budget. Most funds for natural disaster relief money go towards food consumption. The Jingyuan County officials reported their belief that the effectiveness of the program has increased over time.

In Yunnan, interviews with county officials also indicated that the program has expanded in step with economic growth. The size of the provincial rural relief program budget increased from Y 46 million in 1990 to Y 132 million in 1998. As in Ningxia, most funds were used for disaster relief. In Luquan County, for example, the total budget for the relief program was Y 1.21 million, of which, Y 0.94 million was used for disaster relief. In 1998, the pattern was similar with Y 2.22 million used for disaster relief out of a total Y 2.99 million budget. However, provincial officials claim that an increase in the frequency of natural disasters has offset the budget increases. For example, in Luquan County, the total area affected by natural disaster increased from 39,000 mu in 1991 to 143,000 mu in 1998. In Yunnan, natural disaster relief activities mainly focus on food, clothing, housing and basic medical care.

Historically, the relief system has functioned well in providing a safety for the most destitute and preventing starvation during the most severe circumstances. It appears that concerns that reform of the grain marketing system might undermine the effectiveness of the system have not come to pass, and that funding (at least in the provinces cited above) has been maintained in real terms. It is important that the focus and the intensity of the program continue. Recent government pronouncements on intentions of setting up a stronger safety set, that would seem intended to cover rural as well as urban areas, are a positive sign.

E. A NEW APPROACH: IMPLEMENTING PROGRAMS TO MEET THE NEEDS OF THE POOR

Summary. Section D above points out a number of weaknesses in the current program which impede the effectiveness of the Government's poverty reduction efforts. One promising alternative is the multisectoral project-based approach. A number of donor supported projects have used this approach, and government officials have expressed interest in extending it throughout the domestic poverty program. Impact analysis of one donor supported project is still preliminary but appears positive, and suggests that wider adoption of the model is indeed warranted. Some funds from existing programs could profitably be used to this end. In particular, it is recommended that a large share of the subsidized poverty loan program be utilized to support multisectoral poverty reduction projects in China's poor townships. However, effective implementation of multisectoral projects will require substantial changes in current institutional arrangements for implementing the poverty program. In particular, it will require creation of project management offices with full involvement of the PADOs in the design, supervision and monitoring of projects. Improving the effectiveness of the existing programs described in Section D above will also require institutional changes. For these programs, it is recommended that the PADOs take on greater involvement in the planning, supervision and monitoring of programs, but not necessarily in their actual implementation.

Multisectoral Rural Development Projects

Experience with a number of large and small-scale projects in China during the 1990s suggests that one of the most effective means of assisting the absolute poor is through an integrated set of interventions in the form of a multiyear project.[40] The initial experience in China with such projects was through donor supported multisectoral projects, designed and implemented in a participatory manner. [41] The World Bank supported Southwest Poverty Reduction Project (SWPRP) and the Qinba Mountains Poverty Reduction Project (QBPRP), which are summarized in Box 3.1, are the largest scale examples of this new approach. In most cases, the multisectoral rural development project model includes an integrated program of investments in (a) upland agricultural development, using menus of field and tree crop and livestock activities to increase upland agricultural productivity, (b) labor-intensive construction of rural roads, drinking water systems, small scale irrigation, agricultural drainage works, and other rural infrastructure, (c) provision of off-farm employment opportunities through a voluntary system of enhanced rural labor mobility for the upland poor, (d) institution building and poverty monitoring, and (e) rural enterprise development. Improved access to basic education and health, and separate microcredit components, are also included in some donor supported projects.

---

[40] Single sector projects, such as the development of a newly irrigated area, can also be highly effective and much simpler to design and implement. However, most of the opportunities for single-sector poverty reduction projects have already been taken advantage of.

[41] These include projects supported by World Food Programme (WFP), UNDP, Asian Development Bank (ADB), The World Bank, and a number of other multilateral and bilateral donors.

Box 3.1: Multisectoral Rural Development Poverty Reduction Projects

Objectives and Design. The World Bank-supported SWPRP and QBPRP are grassroots poverty reduction projects assisting 61 nationally-designated poor counties (35 counties in Guangxi, Guizhou and Yunnan under SWPRP and 26 counties in Sichuan, Shaanxi and Ningxia respectively). The projects' main objectives are to introduce an integrated multisectoral poverty reduction project approach, and to assist some 5.2 million beneficiaries in these poor counties overcome poverty. Greater community participation has been encouraged by enabling project households and villages to make key decisions during project design and implementation (The World Bank, 1995 and 1997b).

Content. The multisectoral project approach comprises assistance for (a) increased upland agricultural productivity by providing project households with a menu of field and tree crop and livestock activities and through the support of provincial and regional applied agricultural research, (b) TVE development through support for labor-intensive enterprises with strong backward linkages to poor households and which meet environmental safeguards, (c) small scale rural infrastructure including roads, drinking water supply systems, irrigation and drainage works, and electrification, (d) greater access to off-own-farm employment opportunities through a voluntary system of labor mobility including a job placement system and monitoring of worker safety and living conditions, and (e) institution building and poverty monitoring through (i) improving the project management offices' (PMO) capabilities in project design, implementation and supervision, and (ii) strengthening the poverty monitoring system for the project areas by using improved SSB survey instruments. In addition, SWPRP includes a component to improve access to basic education and health services, and QBPRP includes a microfinance component to provide credit services to poor households for production activities.

Risks and Impact. The projects' two principal risks are their above-average complexity and very heavy demands on institutional capacity for project design and implementation. These risks have been successfully overcome by keeping each of the large number of activities as simple as possible, establishing a central PMO under LGPR with final responsibility for the projects, and a heavy emphasis on institution building. An independent Quality Assurance Panel assessment concluded that SWPRP implementation has been fully successful with several best practice features (The World Bank, 1997c). The late-1997 LGPR sponsored Second Working Conference on Poverty Reduction Projects also reconfirmed the overall success of SWPRP and QBPRP, and announced China's intention to extend the integrated multisectoral project approach to all of China's poor counties. Both projects are enabling significant improvements to the income levels and well-being of the intended beneficiaries, and the detailed poverty monitoring system data are allowing a rigorous quantitative assessment of the projects' impact. Other lessons learned are (a) the importance and effectiveness of the projects' institution building and supervision procedures (which is called the "*yanshou*" system), and (b) that the direct inclusion of the basic education and health services component had the favorable, but somewhat unanticipated, effect of greatly augmenting community participation. TVE development is the only project component which is performing poorly.

Source: Author's calculations.

Initial experience with this new approach has been favorable. Ravallion and Chen (forthcoming) have evaluated the impact of SWPRP. The analysis uses SSB data from 2000 project and non-project households to calculate returns to the household from project investment. The data covers three years of project implementation, but because of comparability problems between data in the first and subsequent years, only data from 1996 and 1997 was useable. The shortness of this period means that only preliminary conclusions are possible at present, but it will be possible to firm up the analysis as data for subsequent years of project implementation are gathered. The control group used in the analysis was a subset of the original SSB control group, and some control villages monitored by SSB were rejected as being too dissimilar to the project

villages. This makes possible to use the "double difference" method, which assumes that the control villages are representative of what would have happened in the project villages without the project, and thereby completely controls for initial conditions. The study found that the average income gain in 1997 represented 12 percent of the mean income in 1996 in the sampled project villages. While more definitive results will need to wait until data is available for the entire project period, it does appear that returns from the project are higher than from government poverty spending alone.

The Chinese authorities have expressed their intention to roll out the multisectoral approach over a larger area, and some provinces have begun experimenting with this approach. Plans for domestic multisectoral projects appear to include fewer sectors than the donor funded projects, and would not include social services and labor mobility. Evaluation of the donor-supported projects which include basic education and health care indicates that including these components increases villager's enthusiasm for the entire project. However, supervision of these components taxes institutional arrangements, and it may be more practical to continue to implement these components separately for domestically funded projects. Organized labor mobility has been included in donor funded projects with good result, and domestic programs may wish to consider support for this type of component.

Given the disappointing performance of the subsidized loan program, it is recommended that China consider using a portion of the subsidized loan funds blended together with grant funds to fund integrated multisectoral projects in the poorest areas. The multisectoral rural development projects are very demanding of design and implementation capacity and, at present, funding and institutional arrangements may not be adequate to enable an effective rollout of this approach. Better coordination between funding channels is necessary to enable the poverty program to direct sectoral components in an integrated manner to the poorest of the poor. Most critical to the successful implementation of this approach are strong institutional arrangements. Indeed, institution building and strong project management systems have been instrumental to the success of SWPRP and QBPRP. This has included establishment of effective project management offices (PMOs) and work stations (WS) at the provincial, county, township and village levels, and implementation of a rigorous works supervision and acceptance process referred to as the "*yanshou*" system. At present, the number of staff involved in specific poverty work at the provincial and county levels are probably sufficient to staff functional PMOs. At the township level, however, staffing is inadequate. Based on the experience of SWPRP and QBPRP and assuming this model is applied to all of China's poor townships, the estimated annual cost of strengthening township WSs to reasonable levels would be less than Y 100 million, or about 0.4 percent of total annual poverty reduction funding.[42] Reducing direct poverty funding by this amount would not significantly reduce the scale of the program, and would likely have a significantly positive impact on the effectiveness of the program.

Program-Wide Institutional Arrangements

The effectiveness of the entire poverty reduction program could be greatly improved through much stronger institutional arrangements. Despite its mandate to coordinate the nation's poverty reduction program, the LGPR system does not have (a) sufficient advance access to the detailed program information necessary to insure that all poverty reduction funding benefits the

[42] Assuming there are 4100 poor townships in China and costs of Y10,000 per year for a township based poverty reduction staff, the incremental cost of adding two full time poverty reduction staff to each of China's poor townships would be Y 82 million, or about 0.3 percent of current annual poverty reduction program funding.

poor, or (b) the staffing to properly oversee the quality of poverty reduction project works and activities. This limited control and inadequate staffing directly contributes to the (a) significant leakage of available funding to works and other uses which have little or no benefit to the poor, and (b) unacceptably large share of the works and activities which do benefit the poor but which are of inferior or substandard quality. The following are suggestions for modifications in institutional arrangements which may result in a more effective poverty program.

At the provincial and lower levels, officials often complain that the LGPR system has been given responsibility for ensuring that poverty reduction goals are achieved, but not sufficient control over the funding or the necessary staffing to fully complete this important mission ("Fupinban you zeren, mei you quanli").[43] The LGPR system has only limited access to data on the projects and activities undertaken through the FFW and MOF grant programs, and at best has only limited influence during the planning stage over the works and activities undertaken with subsidized loans provided through ABC. The current arrangement of relying on local bureaus and agencies to implement project works and activities must be maintained, but the LGPR system should play a greater role in the planning of how funds are to be used, and in the supervision and monitoring of their usage. It is therefore strongly recommended that, in order to raise the impact of the funds on the poor and reduce the leakage of funding to alternative uses, the LGPR system should take on a greater planning and supervisory role for the use of the funds.

Roles of Other Institutions. Forging stronger links with government line bureaus, academic and civic organizations involved in poverty work would increase LGPR's effectiveness in setting policy and implementing programs. For example, LPGR's policy making function could be strengthened by contracting research work to organizations with specialized knowledge, and incorporating research findings into their policies and strategies. It seems particularly unfortunate that the poverty reduction efforts of several government ministries is focussed on their "adopted" poor counties instead of on contributing to key research work and assisting with policy making in their areas of expertise. MOA, for instance, could make a far greater contribution to China's poverty reduction program by working with the LGPR system to create a development strategy for the karst region and to initiate a program of applied agricultural research for mountain areas.

The next generation of poverty work could include contracting the implementation of some small projects to grass roots and civic organizations. For example, Chinese "GONGOs" (that is, government organized NGOs) have proven successful at implementing poverty projects in a number of areas. Yet most of their funding is self-raised, and official poverty alleviation funds are not channeled through them. Experimenting with channeling a portion of the poverty funds through GONGOs and other grass roots organizations could enable the poverty program to try new and innovative approaches, and improve its outreach. Such an approach has proven highly successful in other developing countries, and could be particularly valuable to work in China's minority areas.

Accountability. Strengthening LGPR's oversight and control over poverty reduction should be complemented by reciprocal measures to increase LGPR's accountability by improving monitoring of the impact of the poverty program and the use of poverty funds. The monitoring

[43] The LGPR system's weak control is especially problematic as the MOF system and ABC face incentives that at times conflict with poverty program objectives. Low fiscal revenues and ongoing budgetary deficits in poor counties create pressure on the MOF system to direct funds so as to generate fiscal revenues and to cover county government staff remuneration. Administrative costs and low interest rates on poverty loans create disincentives for ABC to lend to the poor.

function should be contracted to an independent outside organization. Financial monitoring should trace the flow of funds, and determine whether the use of funds meets LGPR's guidelines. Impact monitoring could build on SSB's rural household survey, and LGPR should rely more heavily on those survey data in targeting its programs and evaluating their effectiveness.

Participation in Poverty Reduction

Development work around the world has found that allowing stakeholders a voice in project design, management, and evaluation improves results. Such approaches were not tried much in China before the 1990s, and still tend to occur primarily in programs funded by international organizations. Chinese and international researchers have noted the positive impact on projects when participation is encouraged (Wu, *et al*, 1997). Most of China's experiments with participation have been in project identification and preparation. Some projects are systematically developing strategies by creating a dialogue between experts and local beneficiaries. In many cases these result in a menu of options, which allows projects to adapt flexibly to local needs. The results of recent Participatory Poverty Assessments (PPA) in several villages in Guangxi, Yunnan and Ningxia are summarized in Annex 4. These village PPAs powerfully document the poor's own understanding of their experience with poverty, and highlight a number of significant weaknesses of poverty reduction activities and projects in their villages.

Less work has been done on building participatory institutions for project management, and the few experiments which have been undertaken have had mixed results. Local officials and experts are sometimes unhappy with what they perceive as a diminution of their authority, and China has very little precedent on which to model such independent institutions. On the other hand, there has been some success with institutions that combine local government and existing social networks, ranging from water management associations to small loan societies. Finally, monitoring and evaluation systems have very rarely tried participatory methods in China, and tend in general to lack qualitative input. The following observations and recommendations, if applied to future poverty reduction programs in China, might further increase benefits to the rural poor:

- Projects that bring management organization down to the village level typically respond more effectively to local needs.

- The most successful community participation builds on existing social networks. Small loan societies, for example, work better in groups that already have close social ties than in ad hoc combinations with no other interests in common (as often happens in China). Participatory institution building will also work best when it builds on natural community leadership.

- Local project officials need training programs both to learn participatory methods and to understand their goals. These methods are a significant departure from the usual cadre work style in China, and training programs need to show the benefits to local leaders.

- Attempts to build new participatory administrative units can be improved by building the interests of local government stakeholders into the project or by building more community input into existing institutions.

- Minority community participation is especially important to help projects adjust to local cultural differences. Representatives from the local Ethnic Affairs offices should also be built into project management teams in minority areas.

4. MEASURES TO INCREASE MOUNTAIN AREA PRODUCTIVITY

A. POVERTY IN MOUNTAIN AREAS

The majority of China's remaining absolute poor are believed to reside in mountainous counties and townships, low rainfall, and other areas with limited carrying capacity (Chapter 1). Achieving even subsistence levels of agricultural production in many of these areas is a difficult challenge. For the majority of the poor who will remain in these mountain counties and townships, measures to improve the productivity of the natural resource base and to augment education, health and nutrition can certainly help to increase well-being and household income levels. Labor mobility, through greater access to employment opportunities in better-off rural areas and in off-farm jobs in local and distant markets, is also an important means of overcoming poverty. In some of the most severely affected areas it appears that the carrying capacity of the land has been exceeded, and the government continues to fund programs which provide the very poorest of the people in such areas with opportunities for voluntary resettlement to newly developed areas with greater potential for successful agriculture. This chapter examines a variety of measures to accelerate poverty reduction through improvements and investments in mountain agriculture, improved access to basic education and health, labor mobility, and voluntary resettlement.

Regional Mountain Types. A 1986 LGPR-commissioned CAS study identified 21 core poverty zones, and grouped these zones into five mountain types (namely, the loess plateau, "east-west high-elevation plain, hills and mountains belt," southwest mountains, eastern hills and mountains, and Qinghai/Tibet) and one arid northwest type (see Map 4). The original CAS grouping can now be reconsolidated into the following four regional mountain types: (a) the eastern and central mountains, where strong economic growth and poverty reduction programs have sharply reduced the incidence of poverty, (b) the karst mountains[44] which (based on Shi, 1997) comprise the Wuling mountains region in Hunan and Hubei and the southwest mountains, (c) the loess uplands, which comprise the poor higher elevation areas of the loess plateau, and (d) the pastoral areas of Qinghai, Tibet, Xinjiang and some other provinces. To varying degrees, these poor mountain areas share the same development constraints of remoteness, a critical seasonal lack of water, high population-to-land ratios, and fragile environments, land use systems, and cultures (Annex 3). While all four regions have been recipients of national and international poverty reduction assistance programs, the eastern and central mountains have received more substantial support and benefited from more rapid overall economic growth than the other three mountain areas (ICIMOD 1994, Wang 1998). Absolute poverty is now concentrated in the karst mountains (according to Ren, 1998, about half of China's rural poor reside in the karst mountains), loess uplands, and pastoral areas. For example, of the 30 Sichuan counties still listed

[44] Karst landscapes occur on limestone which has been intensely eroded during former geological eras.

as poor in 1999[45], 12 are in the Liangshan karst mountains, 4 are in the Daba limestone mountains, and 12 are in the western pastoral region.

B. Strategy for Mountain Area Economic Development

Existing Strategies. China's long-standing efforts to protect its major watersheds and reduce poverty have led to several initiatives to design development strategies for mountain areas. MOA's 26 experimental zones for rural reform, for example, include five mountainous area zones (MOA(b)).[46] Since 1988, a comprehensive development approach has been pioneered in these zones. The Ministry of Water Resources (MWR) and the State Forestry Administration's (SFA) watershed management and forestry development strategies have also evolved from an engineering approach, with the initial sole aim of protecting water resources for the lower parts of the watershed or to afforest denuded slopes, to a comprehensive approach to the development of mountain areas.[47] In addition, the Ministry of Science and Technology (MOST) has recently proposed including a sustainable mountain development program (Han, 1998) into the Ninth Five Year Plan. Despite these efforts, there remains a need to integrate individual sector strategies into a more comprehensive multisectoral approach to mountain area development. Existing single-sector strategies have tended to underestimate the integrated nature of the problems, including resource constraints, market risks, watershed management costs and long-term population trends, and the opportunities (such as technology development) facing mountain communities. Most importantly, the specific problems of poor mountain areas have seldom been adequately taken into account.

County Government Decision-Making. Mountain county governments are major decision-makers in the implementation of sectoral and local economic development strategies. In the absence of a comprehensive national strategy for mountain area development, these governments tend to favor investment in better-off basin townships rather than in the poorer mountain townships. Mountain county governments' limited capacity for market analysis and the modest private sector in most poor counties contribute to the typically weak assessment of both agricultural development risks (for example, the promotion of some tree crops for which the market may soon become oversupplied) and opportunities. In addition, many local governments tend to view incoming programs simply as funding sources from which they assemble the funds to achieve their own development objectives. However, by doing so, they lose an important opportunity to learn from other interventions, particularly pilot project operations, carried out in similar environments. The current lack of a comprehensive national or regional framework for mountain area development within which to coordinate county, provincial, national, and donor-assisted programs is therefore a major weakness.

Need for a National, Long Term Development Strategy for Mountain Areas. Given the weaknesses of the existing single-sector approach and the constraints facing county government decision-making, *it is recommended that the Government integrate existing sector strategies into a national long-term strategy for the economic development of mountain areas. Such a strategy would serve as a basis to (a) assess the impact of national trends and policy changes on poor mountain areas, (b) prioritize national, provincial and donor investment, and*

---

45 Prior to 1997, Sichuan had 63 nationally and provincially-designated poor counties. During 1997-98, some 33 of these counties have reportedly "risen out of poverty."

46 The five mountainous zones are in Fujian, Guangdong, Guizhou, Hunan and Shaanxi.

47 MWR's Yangtze Watershed Management Program was started in 1989 (Annex 3), and SFA's Integrated Mountain Development Program started more recently.

(c) provide poor mountain counties with an appropriate framework within which to develop local strategies and programs.

Regional Strategies. Within the context of a national framework, the similarities within China's mountain areas also create an important opportunity for coordinated regional economic development strategies adapted to each mountain environment. For example, the loess plateau has already benefited from the development and implementation of such a regional strategy beginning in the 1970s. More than 300 research agencies and stations have been developing and testing a number of soil erosion control measures and improved agricultural production techniques. A land use and social data base has been established, and comprehensive land rehabilitation programs are being implemented in numerous small watersheds (The World Bank, 1992). The development of that strategy has been subsequently complemented by coordinated investments into economic development, watershed management and ongoing agricultural research in the loess plateau. Quite different agricultural technologies are required in the karst areas, and a regional initiative should now be taken under the national strategy to fund agricultural research and development for the karst areas where perhaps as many as half of the rural poor now live (see Box 4.1).

C. Recommendations for Improving Agriculture Program Effectiveness

Coordinated Project Approach

Line Agency Coordination. Most policy-makers, local governments and line agencies agree on the need for well-coordinated agricultural development programs, and agricultural development activities are increasingly being planned as integrated and multiyear programs. However, few of these programs are actually implemented in this way. Technical bureaus responsible for the implementation of single-activity programs tend to concentrate their limited budgets and human resources on small-scale pilot operations (often at the village-level) and provide support to demonstration farmers with good entrepreneurial capacity. While this approach has been successful in better-off areas, extension of these activities to remote households and poor mountain villages has often been rather limited in those poor counties where local government capacity is weak. More comprehensive and collaborative interventions are also constrained by government procedures, such as bureau responsibility and incentive systems which are related to their own technical area, the allocation of local project responsibility to one lead agency, and increasingly competitive commercial interests between bureaus. For example, the target of many forestry agency programs is defined in terms of the reafforestation of denuded sloped land, and this leads to a focus more on "wasteland" afforestation rather than farmers' specific forestry needs. As a result, few government-funded pilot projects in mountain areas actually cover a comprehensive range of activities,[48] and full scale interventions are often limited to a single component per year.

[48] However, SFA's experimental integrated mountain development program in 100 pilot counties represents a promising exception to this tendency.

Box 4.1: Key Features of Agricultural Development in the Karst Areas

Regional Scope. Karst areas occur in over 200 counties in 8 of China's 18 poor mountain areas, including the five southwest mountain ranges and the Wuling mountains region in Hunan and Hubei. There is scope and an urgent need for a regional strategy based on information and technology exchange between and within these areas.

Investment Decision-Making. Karst townships generally have little arable land. Neighboring non-karst townships with more arable land have much higher agricultural potential. As a result, county governments face a dilemma between investing in poverty reduction activities in poor karst townships, or in the development of better-off non-karst townships where immediate financial returns appear more attractive.

Agriculture Development Bottlenecks. The major agricultural development bottleneck in thekarst areas is the limited amount of arable land. Engineering solutions to the land constraint, such as manual terracing, are generally very expensive and may not be economically justified. Water supply for domestic use and irrigation is also seasonally limited. Improved technical packages for food crops are difficult to disseminate, market access is poor, and production inputs are expensive because infrastructure, information flow, and road access is very limited.

Development Potential. In the most severely affected areas, the carrying capacity of the land may have been exceeded and the government supports the voluntary resettlement of the local population to other areas. In other portions of the karst areas, the mild subtropical climate provides greater potential for subsistence agriculture. Recent development projects focused on the karst mountains (including the Ford Foundation-supported Upland Management Project in Yunnan, The World Bank-supported SWPRP, the New Zealand-Guizhou Integrated Land Use Systems Project, and domestic and international programs in the Wuling mountains) have shown that an integrated mix of agriculture, livestock, forestry, rural infrastructure, and credit interventions can improve living standards (see Box 4.4) while protecting the environment even in the context of high population pressure.

Priority Activities. Investment priorities include small water tanks, improved feeder roads and paths, livestock and fodder development, agroforestry, forage and subtropical tuber crops, nurseries for bamboo, fodder trees and other karst-specific species, improved markets for tree crop products, access to credit, and household income generating opportunities related to tourism and service provision. It is also very important that land use planning be improved and that land use rights for "wasteland" ("wasteland" is most commonly used for grazing, tree crop, or extensive crop production) be better defined.

Source: Author's calculations.

To overcome these weaknesses, *development projects in poor mountain townships should apply a formal project approach to poverty reduction promoting (a) multiyear financial support to an integrated set of activities (including field crops, tree crops, animal husbandry, and forestry) reflecting the needs of the absolute poor, (b) an equitable share of investment to individual poor villages, and (c) the participation of all households, from the absolute poor in remote areas to farmers with entrepreneurial capacity.* Such projects should be managed by

project leading groups in which all stakeholders are represented or, in the case of regional projects, by multi-agency commissions (such as the Sanxi Commission for the loess plateau and the Mountain-River-Lake Commission in Jiangxi).

Formal "Project" Approach and Village Development Plans. Administrative village development plans are a simple and efficient tool to achieve these objectives at the village level. Such plans (a) provide a village development framework within which funding can be arranged for several years and the poorest households are better able to participate, (b) fit easily into local governments' five-year economic development plans and the working culture of bureau staff, while the participatory planning process allows adjustments, (c) enable a rational basis for dividing township budgets amongst village plans in order to avoid inequitable concentration of investment and support services into a small number of pilot villages, and (d) establishes the design for, and enables monitoring of, equitable access to the project for all natural villages within the administrative village (see Box 4.2).

When designed in a participatory manner, village development plans provide households with equal opportunity to access resources (including land, water, loans, training, technical services) for economic activities (both on- and off-farm). *It is recommended that village plans should form the basis of township development projects in future poverty reduction programs, particularly in core poor townships.* Individual village development plans can then be aggregated up to township, county, and prefectural levels to develop larger scale projects. On the other hand, in better-off mountain townships with scattered poor households, an alternative simpler approach of combining line agencies' standard interventions with specific support to the small numbers of remaining poor may be more cost effective.

Box 4.2: *Cunji Guihua*—Working With Village Development Plans

A key instrument for effective targeting of project activities to the poorest households is the village development plan (VDP). Created through a participatory process which increases the involvement of all households in the village, the VDP introduces greater transparency into the selection of beneficiary households and activities, and establishes a framework for participatory monitoring of targeting (WFP and IFAD, 1995). Most administrative villages have the organizational capacity to orchestrate the completion of VDPs, and are also close enough to the grassroots to be able to effectively target project activities to poor households. Preparing a village plan is simple, quick, and inexpensive. More complex is the task of insuring that the poverty reduction activities are implemented on the basis of the VDPs.

VDPs have proven to be an important element of the successful implementation of the World Bank-supported SWPRP. The VDPs have formed the basis of project implementation at the local level, and have greatly facilitated household participation and the outreach of project investment to all households. In each village, with the participation of households, the VDP establishes a strategy for food security and income generation. Project implementation and monitoring is done on the basis of the village development plans (Ludian SWPRP PMO, interview). In order to increase transparency, the Guangxi Project Management Office published all 515 of its project area VDPs.

Source: Author's calculations.

Priority Investments. The success of the 8-7 Plan in providing an integrated set of agricultural assistance activities for mountain areas could be further improved through the reprioritization of investments to better reflect the expressed needs of the absolute poor. The most important possible changes are:

- Labor Use Efficiency. Investments (such as for drinking water systems and small tools) which allow households to reallocate labor to more productive tasks are crucial (Box 4.4). However, such investments do not always receive adequate priority or are not routinely included in poverty reduction program budgets. For example, 25,000 households in Wuxi County, Chongqing, must carry water more than 2 km/day during the dry season, and although Y 15 million in poverty reduction funds was allocated to Wuxi in 1998, only Y 1 million was available for drinking water systems (sufficient for only 1670 households to overcome their lack of access to drinking water).

- Animal Husbandry. The share of investment devoted to animal husbandry (including animal purchase, animal health services, and winter shelters in cold areas) does not always reflect its key role in China's mountain land use systems. For example, poverty reduction programs in northeast Yunnan typically allocate, on the basis of local Five-Year-Plans, more resources to forestry than to animal husbandry, and limit the latter to grazing animals (that is, beefcattle, sheep and goats). Unfortunately, these farmers' strong desire to invest in draft cattle and additional pigs has not received adequate support. In addition, the need of many poor households to recover from a loss of animal assets is well known. In Qinghai, for example, livestock losses average 5 percent per year, and in the winter of 1996 some households on the Tibetan Plateau lost 25 percent of adult goats, 70 percent of kids, 30 percent of lambs (Miller, 1998a).[49] However, credit to purchase replacement animals is often unavailable and not specifically funded by government poverty reduction programs.

- Land Improvement. Expanding the limited area of more fertile land (through terracing and other locally-adapted means, including supplementary irrigation) can be a key step for improving crop production. However, land development does not receive adequate funding relative to food crop inputs (such as seed and fertilizer) in many programs, and more balanced investment between arable land development and improved technology is required.[50]

- Crop Technology. Improved crop technical packages (such as improved seed and crop management practices) have mostly been focused on maize in the mountainous areas of western China. A combination of new varieties and crop management practices for a wide range of crops (including, for example, seed production for potatoes, and barley in northwest China) are required to develop a more diversified base of staple food crops and ensure long-term food security.

---

[49] Miller (1998b) estimates that over 3 million head of livestock died in the Tibetan Autonomous Region (TAR) in the disasterous winter of 1997, with some townships losing up to 70 percent of their livestock and some entire counties (for example, Nyerong County) losing 30 percent. Nagchu Prefecture lost about 1 million animals, or 15 percent of its total. Miller estimates that 20 percent (50,000 households) of Nagchu's population was below the poverty line before the 1997 snowstorms, but that about 40 percent (100,000 households) were facing poverty after their livestock losses.

[50] On the other hand, some poor farmers are very dissatisfied when they are "asked" to contribute large amounts of their labor to construct terraces (Wu *et al*, 1997). The lesson is that the poor farmers themselves should fully participate in the decision whether to construct terraces and, if so, what type of terrace to construct.

- Tree and Cash Crops. Tree or cash crop development is often encouraged at the expense of investment into other agricultural activities, and before market and financial analysis under local conditions has demonstrated their viability for poor farmers. Absolute poor farmers should not be encouraged to take loans for tree or cash crops unless market and financial analysis has demonstrated their viability.

The approach of combining technical improvements with small household loans, training and technical services, and village infrastructure can be an effective means of poverty reduction (Box 4.3). For example, in Baochao Township, Tongjiang County, Sichuan, a multisectoral poverty reduction project increased the number of households with access to nearby drinking water facilities from 30 percent in 1995 to 90 percent in 1997 (thereby freeing-up much labor power), assisted farm households with terracing, irrigation, access to credit to purchase animals and inputs for food and cash crop production, and provided farmer technical training. This integrated program resulted in an increase in average per capita net incomes from Y 315 in 1995 to Y 809 in 1997.

Improved Technology, Extension, and Training

Current Constraints. Access to improved technology and training are key to increasing the efficiency and effectiveness of agricultural interventions. However, current investment planning mechanisms, and limited local government budgets and human resources, severely restrict the scope and quality of technology improvement and training in most of China's mountain areas. Other key constraints include:

- Shortage of Appropriate Technology. There is great need for applied research and the development of low cost, low risk, simple agricultural technologies (including the adaptation of certain appropriate lowland technologies) specifically intended for mountain areas, but this need may not be adequately recognized in China. In part, this is because land use planners and rural credit programs appear to give excessive emphasis to "what to grow" at the expense of "how to grow it."[51] In addition, the concept of "appropriate technology" for mountain areas is not yet well established. China's green revolution technologies have often proven viable in basins and valleys within many mountain counties, and this has encouraged the view that applied technology for mountain areas comprises these same well-proven lowland technical packages. However, while some of the low cash-input technologies (for example, green manure, relay-cropping, and hand-transplanting) have proven appropriate to mountain areas, the high cost of many of the higher cash-input technologies (such as high levels of fertilizer use, hybrid varieties, and concentrated pig feed) may limit or preclude their widespread use by poor farmers in remote mountain areas.

[51] For example, the development of goat production is often planned simply in terms of the number of additional animals to be provided to farmers. However, successful and sustainable increases in goat production are critically dependent on improved tools and seed for improved fodder production, veterinary and technical training services, a small number of parent animals of higher genetic quality for cross-breeding, improved penning, and other "how to" measures.

Box 4.3: Impact of the Project Approach—Analysis of Cashflows for Three Poor Households

Analysis of household cashflows for three randomly selected poor households indicates significant financial returns for those receiving multiple forms of poverty assistance compared to those who are not.

Household A: Tongjiang County, Sichuan: Mushroom Cultivation (QBPRP village). This household clearly demonstrates the benefits of labor-saving interventions, and the introduction of a simple, low cost, high value, niche market agricultural technology. Household A has 3 mu of cultivated land (paddy rice, potato, wheat, maize, rape, vegetables) and 12 mu of forest land. In 1996, the household was self sufficient in grain, but its net cash surplus was just Y25 per capita derived from sale of surplus rice, wheat, rapeseed oil, and one pig. Drinking water was piped to the village in 1996, thereby saving the household 2 hours per day carrying water. The labor savings enabled the female household head to open a small store in 1997 with Y3,000 borrowed from relatives. In early 1998 the household took a QBPRP project loan of Y3000, undertook technical training, and invested in mushroom cultivation. By the end of 1998 their net cash income per capita had risen to Y877 derived largely from the mushrooms, with smaller profits coming from the store. The household also repaid the mushroom loan. The 1999 net cash income projection is Y2,456 per capita with complete repayment of all debt. Sensitivity analysis indicates that even if the mushroom price dropped by 67 percent the household would still break even on its mushroom enterprise.

Household B: Duan County, Guangxi: Grain, Goats, Pomelo (SWPRP village). Household B is typical of many in the karst where the most feasible agricultural interventions are in grain production, livestock and small areas of tree crops coupled with labor-saving activities. It shows that poverty investments in the karst are financially viable, but that the return on investment is lower and takes longer than for cases like Household A. In 1994 this household was among the absolute poor with less-than-subsistence levels of grain production and net cash income of Y83 per capita. In 1995 the household borrowed Y1,892 from SWPRP for a water cistern. The water cistern saves the household 4 hours per day collecting water, and thereby freed up much labor for farm work. During 1996–98 the household borrowed Y500 for maize production, Y1,000 for 4 goats and Y500 for 0.5 mu of pomelo. With improved terracing, the household was able to increase its grain production to 192kg per capita by 1998, and use part of the maize production to raise 3 pigs. Its future looks promising with a projected annual net cash flow surplus (after debt servicing) of Y6,804 (Y1,134 per capita) by 2002. However, the relatively large borrowings in relation to its net cash income mean that the household will have to manage its cash flow very carefully to break even in 1999 before revenues from the goats and pomelo begin to flow. The household is assisted by one member going to Xinjiang for work with a budgeted remittance of Y1,000 per year.

Household C: Wuxi County, Chongqing: Limited Cash Income Opportunities. This household is typical of many poor households in remote villages which have not been reached by poverty programs, and have no easy access to cash income opportunities. The household produces 210 kg of grain per capita (from maize, wheat, potato, sweet potato), vegetables for home consumption and feed for two pigs. There is no surplus cash income. Laboring at the State Forest Farm is the only source of cash other than sale of 1 pig. In April 1998 the farmer borrowed Y700 from the Rural Credit Cooperative for fertilizer and maize seed, but has been unable to repay it because the State Forest Farm still owes him Y1,050 in wages. Even if the farmer is paid, the household does not generate enough cash income to repay the loan and can only cover interest payments. The household owes school fees of Y340. As a result, it is in serious financial difficulty and is likely to slide further into poverty unless the farmer can find additional off-farm work, raise additional pigs for sale, or invest in other cash-generating enterprises.

Source: Author's calculations.

- Limited Availability of Grants. Domestic poverty programs generally have very limited grant funds for technical support, training and applied agriculture research in mountain areas.[52] In programs that do budget such activities, their implementation often lags behind production investments due to the difficulty of actually assembling the domestic grant funds. To overcome these funding constraints, assistance programs (both domestic and donor-supported) should be twinned with technical grant programs for research, extension and training.[53]

- Poor Information Flow. The dissemination of technical information within and between mountain areas has been constrained by (a) the dominance of technology flow from the lowlands to the uplands, (b) the hierarchical agricultural extension system which inhibits technology exchange between mountain areas, and (c) competing commercial interests between counties and provinces which often create powerful barriers to the release of information (for example, the sale of seed of new varieties). In addition, many research and extension agencies focus on technology (for example, crop and animal breeding, and increased use of agricultural inputs) which generates income for those agencies. This may come at the expense of other technology (such as use of green manure, legume intercropping and other soil fertility management practices, the use of local animal feeds, and animal grazing management practices) which may also be beneficial to farmers.

Key Technical Improvements. Important bottlenecks in many household production systems are limited fodder availability and poor feed quality during the cold winters (and overall forage biomass in semi-arid areas), excessively variable food crop yields, and low household labor productivity. These constraints could be reduced or overcome through simple technical improvements (Annex 3) in (a) fodder resource development for animal husbandry, (b) food crop diversification (such as virus-free potatoes) and improved crop establishment and management methods, and (c) improved but cheap tools and devices for production, post-harvest and transportation. The relevance of many such improvements to large areas provides the opportunity to disseminate key technologies relatively quickly. To assist with technology development, donor-assisted programs should devote a small part of their agricultural investment to grants for applied, on-farm research.[54] Such research should involve farmers, researchers, technical bureau staff, and local entrepreneurs. Two examples of relevant technology improvements are given in Box 4.4.

Information Dissemination. There is a major need to improve the dissemination of relevant agriculture technology already available in China. Individual research or project activities should be implemented as partnerships involving research institutes and county technical bureaus, enterprises or farmer technical associations. Extension programs should be budgeted into government-funded research projects, and should be a requirement for research providers to receive future funding. County technical bureaus should budget funds for technicians to visit other projects within their province or region to learn and bring back appropriate

52 The mountain agricultural research conducted under the Science and Technology poverty alleviation program since 1986 is an exception (Annex 3).

53 Examples include twinned IFAD credit and WFP grant projects, most of the LGPR-assisted programs in Shaanxi, and numerous bilateral projects.

54 On-farm research refers to research carried out with farm households in their fields.

technologies to their own county. Donors should build larger extension and technician training components into their projects, and ensure that pilot projects are well linked into larger domestic and donor-assisted poverty programs. This could include having technical facilitators among project management staff.

Box 4.4: Typical Technology Improvements for Karst Areas

Two typical examples of technology improvement for karst areas are:

Maize in Ludian County (in northeast Yunnan). The extension of the 'Ludan 1' hybrid maize variety in Ludian (with average yields of 7 tons per ha) has allowed significant gains in food security and the expansion of pig raising in high elevation villages. This success has been due to (a) the active and competitive Ludian Seed Company, (b) a maize breeding plan which (since 1979) has taken into account the need for acceptable taste (for direct consumption) and the County's high elevation (up to 2400 meters), (c) SWPRP financial support for farmer loans and seed multiplication, and (d) well-organized household training and technical support (also supported by SWPRP). To build on this success, the County's next step to improve food security is to supply improved potato parent seed to the mountain townships located at elevations higher than those tolerated by the new maize variety.

Fodder Trees in northwest Guangxi. Fodder trees and other agroforestry species are well adapted to karst environments. Guangxi University has used SWPRP research funds to test a range of planting systems and analyze feed value for two fodder tree species. A root-inducing technique has been identified to enable mass-production of seedlings for the better of the two species. As a result of the research, a company has been set up to sell fodder tree seedlings which will provide farmers with an additional source of high protein animal feed in the karst areas.

Source: Author's calculations.

Agricultural Extension. The scope and quality of agricultural extension and farmer training are seriously constrained by insufficient funds and limited operational resources (including technician numbers, equipment, and vehicles). Difficult access to remote areas hinders the frequency with which technicians can visit the field, while low salaries, poor living conditions in the field, and opportunity costs (such as being away from other activities which they may be involved in) are disincentives for technicians to spend time in the field. New approaches to extension for mountain areas are required, including training of multi-skilled (e.g. crops, animal husbandry, tree crops) technicians to deal with all agricultural extension issues when they visit remote villages, and ensuring that all villages can receive radio broadcast extension.

Farmer Training. The effectiveness of the current mix of training methods (demonstration farmers, lecture-style, and field training) could be improved through greater emphasis on practical, on-farm training. Since it appears that demonstration farmers do not always pass on their knowledge to other farmers, it is best for technicians to provide training directly to the farm population. Training materials could be improved by use of pictures and diagrams which semi-literate poor farmers can understand, and complemented by the establishment of small libraries at township or village cultural centers containing relevant technical information. For minority farmers unable to speak Han Chinese languages, training

materials should be provided in their local language. Farmer technicians should be given regular refresher training, and their certification should be encouraged if they are to charge for their services. Household training should also include household financial management, vocational and life skills training, particularly those which would enable them to develop off-farm enterprises (such as small businesses).

Recommendation. To improve the effectiveness and efficiency of poverty reduction programs, *it is recommended that the Chinese Government integrate a specific program of training grants, technical information transfer, and mountain area agricultural research into a larger program of agricultural development projects in core poor mountain townships.* This recommendation should be initiated during the remainder of the 8-7 Plan.

D. Market Analysis and Development

Market Analysis. Greater attention must be given to objectively assessing the viability of markets for a number of specialty products now being introduced and supported in poor mountain areas (Harkness, 1998). Particularly for some tree crops (including eucommia,[55] chestnuts, gingko, and tea), medicinal tubers, and other specialty products (Li Yucai, 1996), remote mountain areas face greater-than-average market risks including limited market access and channels, inadequate product differentiation, excessive transportation costs, oversupply, and price variability. Since the investment cycle for many of these products requires substantial initial investments and a long (often several years) maturation period before harvest, there is the serious risk that markets will deteriorate after the investment has been made but before full or even initial production begins. In addition, China's several hundred poor mountain counties compete with 300 nonpoor mountainous counties and over 600 hilly counties in largely unsegmented markets for these products. Unfortunately, the decision to invest in these products in poor mountain counties often lags that in better-off areas by several years, thereby increasing the likelihood that poor mountain counties' production will begin just as the market decline hits. On the other hand, there appear to be some other opportunities worth further market analysis include: small niche consumer markets for specialty mountain products;[56] improved processing capability (to maintain adequate levels of product quality); basic low-risk products (such as specialty maize, buckwheat, and pulse crops); development of local markets for fresh mountain products; and leather, silk, and products from fast-growing trees (including bamboo and poplar). Forestry products could be of increasing importance in mountain areas if production incentives for small holders result from the ongoing forestry sector reform (Li Zhou, 1996 and MOF, 1995).

Market Development. Market development and the provision of support services requires the nurturing of farmer technical associations and the private sector. Private operators, including individual farmers and small and regional enterprises, should also be encouraged to invest in agriculture-related supply, service, processing, and marketing activities.

Mountain counties often place much hope in the development of county-level agroprocessing. However, in doing so, they may overlook (a) the range of opportunities at other stages of producing and marketing agricultural and forestry commodities, from supply and production services to transportation and marketing, and in sectors other than agriculture and forestry, (b) the fact that marketing quality fresh products often creates more value for producers

[55] Eucommia is a tree whose bark and leaves have medicinal uses.

[56] LGPR supports organic farming products in Guizhou and Yunnan through a special funding scheme. The Forestry Bureau has supported pilot projects for quality specialty ("*minteyou*") products.

than agroprocessing, (c) the possibility that larger scale companies may have much better access to improved technology and viable marketing networks, and (d) the relevance of microenterprises for activities such as farmer services. Efficient services and agricultural input suppliers are as essential to poor regions as they are to more developed ones. Improved logistics in service provision, adapted to the remoteness of the client base, could significantly improve efficiency and reduce costs for mountain areas in the fields of information flow, transportation and market access. Successful examples range from the individual household scale (including pig breeding, tree nurseries, or small pump operation) to the regional scale (such as seed companies). Poor county governments should support the development of such enterprises primarily through the establishment of an enabling commercial environment.

Production Scale. There is an ongoing national debate as to whether larger-scale operators are in a better position than smallholders to increase production efficiency and to access markets (MOA(b) and Zhang, 1998). This question is of particular relevance to mountain areas, where there appear to be important opportunities for such operators to invest on sloped land to plant fruit trees, non-timber tree crops and commercial timber species. Some localities inShaanxi and Anhui appear to support the view that scattered smallholder production is better adapted to mountain systems, because their low production and labor costs can balance transportation costs and buffer high risk levels. On the other hand, some counties in Hunan, Guangxi and Yunnan strongly encourage larger-scale operators (including better-off farmers, urban investors, enterprises, administrative bodies, and teaching institutions) to establish commodity production bases. These investors often either set up various schemes of production shareholding arrangements with villages (Annex 3) or directly receive long-term land use rights. Another approach is to encourage commercial operators to invest into agriculture-related supply, service, processing and marketing activities for a broad clientele of smallholders (rather than to invest directly into agricultural or forestry production). While there is as yet no conclusion to this debate, and actual investments should in any case be market-driven, it is recommended that a careful analysis be undertaken of the poverty reduction impact of these several approaches. A significant reduction of poverty should be rigorously documented before any decision is made to use poverty reduction funding to support the establishment of commodity production bases.

E. Environmental Protection

Many mountain areas in China suffer degraded vegetation cover and high erosion rates, and Wu, *et al* (1997) have found that two thirds of China's "environmentally fragile" land is in the designated poor counties. Population density is greater than 110 people per square kilometer in half of the 368 mountainous nationally-designated poor counties, and exceeds 200 people per square kilometer in about 15 percent of these counties. There are a number of mountain ranges with very high population pressure in northeastern Yunnan, southwestern Sichuan, northwestern Guangxi, southern Ningxia, southern Gansu, southern Henan, and western Anhui. In these high elevation regions, the carrying capacity of the land and environment, which was initially rather limited, has been greatly exceeded.

As is often the case in mountain environments, the lack of reliable data makes the assessment of degradation or rehabilitation trends very difficult (Messerli and Ives, 1997). Most observers recognize that environmental degradation in China's mountain areas began in earlier decades (Li and Li, 1997) and centuries (Shen, 1998), and that activities other than farming, particularly logging[57] and mining are often major causes of this degradation. Recent research in

[57] About 500,000 ha of natural forest are lost each year (World Bank 1998).

Sichuan, for example, suggests that the cultivation of slopes causes only 20 to 40 percent of total erosion. Successful forest cover rehabilitation, erosion control programs, and community forestry research and experiments in China[58] demonstrate (a) which types of activities allow both sustainable resource use and equitable benefit sharing between households and other stakeholders, and (b) the importance of increased household participation and improved methods for local resource management. Successful watershed management programs are based on a positive combination of (a) the willingness of mountain households to invest their labor into the long-term improvement of the land they farm, (b) more clearly defined land use rights for sloped land, and (c) a wealth of experience gained by many technical agencies in comprehensive watershed management. Less expensive slope management technologies are becoming a necessity as labor opportunity costs increase in these areas, and there is a need for research on lower-cost and less labor intensive slope management methods.

Policy and Investment Decision-Making. Land use planners in mountain areas often use an outdated planning framework with only two categories of land use: flatland, which is to be used for crop production, and sloped land, which is to be used for tree crops, animal grazing and medicinal products. The high erosion risks linked to the development of commercial tree crops or medicinal tubers are often overlooked (Shen, 1998), and land use planning often does not adequately reflect the existing wealth of technical experience in watershed management. An example of a more favorable approach is the national decision to retrieve steeply sloping land (with slopes above 25°) from cultivation back to forestry uses (*"tuigeng huanlin"*). This policy was initiated in 1979 and has started to yield favorable results through the implementation of a diversified range of slope management options. This approach is compatible with smallholders' land use strategies which typically aim to concentrate farming activities on a central group of plots (Annex 3). Unfortunately, the government decided to expedite completion of this program following the 1998 summer floods. County-level agencies involved in local implementation of this program have strongly emphasized that retrieving sloped land from cultivation is a long-term process for which the government needs to supply long-term funding support.

F. Education, Health, and Nutrition

A variety of programs have led to significant improvements in the poor's access to basic education and health services and to better food security during the 1990s. The Ministry of Education and the Ministry of Health each administer special programs to improve the education and health status of the poor. In addition, Project Hope, Spring Bud, and other programs have funded the construction and repair of schools, the provision of desks and chairs, and tuition assistance for the poorest children in many of China's poorest areas. The Ministry of Civil Affairs provides disaster relief and income maintenance support, and coordinates the distribution of relief grain through the Grain Bureau system. It is believed that the Ministry of Civil Affairs' relief grain program has effectively eliminated the outbreak of any incidents of outright starvation throughout the poorest rural areas (see Chapter 3).

Despite these achievements, the educational, health and nutritional status of China's remaining absolute poor is deplorable. Low levels of educational attainment, poor health, and malnutrition are major contributors to, and at the same time partly the results of, absolute poverty in the rural areas. A number of studies have shown that a high proportion of remaining poverty is related to ongoing health problems or the loss of assets due to health expenses. Achieving poverty

[58] These include NGO (such as the Ford Foundation), bilateral (including German, New Zealand, and Australian), and multilateral donor-assisted projects.

reduction goals therefore requires that even greater levels of assistance be devoted to support for improved access to basic education, health and nutrition services for the absolute poor. International donor-supported poverty reduction programs have shown that activities to improve access to basic education and health services can be successfully integrated into larger multisectoral poverty reduction projects and are very warmly received by project beneficiaries (Box 3.1). The successful integration of basic education and health services into these multisectoral projects had the additional important payoff of better mobilizing the local community in support of the overall project and significantly enhancing beneficiaries' participation in all aspects of the projects.

Part of the problem is that poor counties lack adequate resources to deal with poverty. With fiscal decentralization, they must raise their own revenue locally to provide social services, but many have difficulty doing so because they already run fiscal deficits. For additional funding, they must turn to the central and provincial governments or raise local taxes and fees. As a consequence, fees paid by the poor for basic education and health comprise a very high share of their cash income. In poor rural areas, for example, private expenditures on education often account for one fifth of household net income, and roughly half of many households' discretionary income. Financial support for the rural health care system is far more limited than for education (expenditure for health care comprises only 4 percent of the average county's budget, or much less than the 30 percent spent on average for education). In 1993 total per capita health expenditure in the officially-designated poor counties was less than half the national average, and in the poor counties some 80 percent of these payments were made out-of-pocket, compared with 40 percent for the nation as a whole (The World Bank, 1997d). An additional problem with the rural healthcare system is that the salaries of health workers in clinics are tied to the amount of medicines that they prescribe, and thus poor households often end up paying for more than they need.

The Ministry of Education has established national implementation plans for achieving nine-year universal basic education (UBE) by 2010. However, in accordance with different regions' financial resources and abilities, the national plans allow for lesser degrees of UBE in China's poor areas. For the poorest 5 percent of the population, the national plan calls for only three- to four-year UBE. (For better-off areas, the national plan calls for achieving nine-year UBE by 2000.) In order to reduce inequalities in the provision of education, the Government should define a minimum level of provision for all children and should then ensure that there is adequate funding for this provision so that the disparity of needs and resources between richer and poorer areas is overcome. This would require that the central and provincial governments substantially increase the earmarked intergovernmental funds for compulsory education in the poor counties as part of the policy to achieve nine-year UBE throughout the country. The provincial governments should guarantee a minimum level of per-student funding for all counties in the province, at least at the primary and secondary levels and limit the differences in per-student public spending between counties through equalization support (The World Bank, 1999c).

Similarly, the "Health for All in 2000" program calls for the re-establishment of the rural cooperative medical insurance system in all areas of China and an increase in the training of students from rural areas in secondary medical schools. However, these targets alone will certainly not be sufficient to upgrade basic health services and status in the poorest areas to acceptable levels in the near future. Instead, the current situation of inadequate public funding of essential services, even for cost-effective prevention and treatment programs which have large public returns, must be addressed directly and urgently in the poorest areas. The central and provincial governments should increase their assistance to the poor areas in support of a limited

set of health services directed at the principal causes of morbidity and mortality. At a minimum, this should include increased public funding for the control of infectious disease, overall disease surveillance and reporting, health information and education, and the strengthening of the basic infrastructure of the health system in the poorest areas.

G. Poverty Reduction Through Labor Mobility

The increase in labor mobility in the late 1980s and 90s has provided another route to poverty alleviation. Labor mobility can be a very a effective method of poverty alleviation, and poverty programs could do a better job in helping the poorest to participate in this trend. A common saying claims that when one household member finds an off-farm job, the entire household is freed from poverty. To date, most migration from poor areas has occurred spontaneously, under individual initiative, and has not been organized by government departments. The poorest face obstacles in finding migrant work because of lack of funds and access to information. In addition, spontaneous migration can be particularly risky for the poor, who tend to have less education and be more vulnerable to exploitation. Labor bureaus do organize migration, but their efforts have not really benefited the poorest, because while they may operate in poor counties, they lack have incentives to reach out to the poorer villages. They normally do not provide loans for migration, and charge fees that often put opportunities out of reach for the poorest. Government poverty loan programs have not traditionally lent for labor mobility. (Kang, 1998, and interviews with labor officials in Shaanxi and Guizhou). There certainly is a need for safe and secure migration channels for the poor, and inclusion of some labor mobility in China's poverty program would be a positive step. Provided the capacity for effective monitoring and supervision can be built up, integrated poverty projects targeted at the absolute poor could include components to place the poorest workers in safe off-farm jobs.

H. Poverty Reduction Through Voluntary Resettlement

Poverty Reduction Through Voluntary Resettlement Programs

When There Are No Other Options. The severity of the poverty and environmental destruction in the uplands of Ningxia's Xihaigu Region, Gansu's Dingxi Region, Yunnan's Zhaotong Prefecture, Guizhou and Guangxi's karst mountains, and other locations scattered across China is extreme and overwhelming. The upland population greatly exceeds the carrying capacity of these lands and, in most years, they simply would not survive without government assistance and relief grain. In all years, the population suffers terribly from excess morbidity and mortality, few children attend school, and very few attain literacy. The public health system is ineffective, drinking water is often inadequate and unsafe, and other basic infrastructure is also grossly deficient. Voluntary resettlement of people from these most-severely affected upland areas has become an increasingly important poverty reduction method in China. These are areas where achieving subsistence levels of production and environmental stabilization would be extremely difficult and costly, and perhaps not possible. Resettlers in the northwest typically move to newly irrigated land, and in the southwest to underutilized hillsides being opened up for smallholder and larger-scale plantation agriculture.

Scale. The largest and earliest of these schemes has been supported for nearly two decades by the Sanxi Program in Ningxia and Gansu. During the Sanxi Program's first decade (1983-1992), more than 500,000 people were resettled to newly irrigated lands. Several other provinces have initiated voluntary resettlement programs during the 1990s. For example, since 1993, Guangdong has provided resettlement opportunities for about 200,000 upland poor of the

Qingyuan Region to underutilized agricultural lands and to off-farm employment opportunities in a newly developed poverty reduction enterprise zone. Guangxi's voluntary resettlement program also began in 1993, and has so far provided more than 200,000 poor from 22 mountainous counties with opportunities to move to underutilized lands. Shaanxi began its voluntary resettlement program in 1998, and has already moved more than 20,000 poor from the northern Baiyu mountains and the southern Qinba mountains. Hebei, Zhejiang, and Shandong also have voluntary resettlement programs, and in total more than one million poor had taken advantage of these programs by the end of 1996.

Based on the perceived successful experience and acceptable costs of the voluntary resettlement program, the Chinese government is now considering the continuation and expansion of the program. In addition to the 680,000 settlers planned for the second decade of the Sanxi Program, the central government may provide support for resettlement of at least another half million absolute poor. However, the provinces have requested assistance for resettlement of as many as five million upland absolute poor, including 300,000 in Guizhou, another 200,000 in Guangxi and 100,000 in Guangdong, and similar numbers in Sichuan, Xinjiang, Shaanxi, and Inner Mongolia. Ningxia has recently proposed to resettle one million upland poor through its "1236 Scheme," but funding limitations and other constraints may limit the actual number of resettlers to a small portion of this target. Similarly, Yunnan would like to move 1.2 million upland poor, but confirmed funding and concrete plans exist only for about 60,000.

Organization and Operation. The central government reviews and provides partial funding support for provincial plans for poverty reduction through voluntary resettlement, and the provincial governments take responsibility for detailed planning, funding and implementation. Whenever possible, local resettlement is preferred to long-distance resettlement. In the Sanxi Program, for example, four fifths of the settlers have moved short distances of 200 km or less to newly irrigated lands within the Dingxi and Xihaigu regions, and the other fifth have relocated from the Dingxi Region to newly irrigated areas in Gansu's Hexi Corridor some 500 km to 1000 km to the northwest. Resettlement is on a strictly voluntary basis and, in practice, the number of households wishing to resettle greatly exceeds available slots. Particularly after villagers become aware of neighbors who have benefited from resettlement, large numbers of families seek to move to newly developed lands and selection often becomes very competitive. Preference is in principle given to very poor families with sufficient labor power to open up new land, and to families from areas lacking access to safe drinking water, deficient in fuel for cooking and heating, or suffering extreme soil erosion problems. Settler families typically retain use rights to their old rainfed lands for the first two or three years after relocation, and regulations most often allow them to reverse their decision and return to those lands at any time during this initial period. Settlers receive at least partial assistance with transport of family members and their belongings, first year housing, farm inputs and machinery. Electrification, agricultural extension services, education, health and other social services are typically established in settler townships and villages during the second and third year after relocation.

Costs and Impact. Total resettlement costs per person have averaged between Y 3000 in Guangdong to Y 4000 in Gansu and Ningxia (including Y 2600 for developing newly irrigated lands and Y 1300 for resettlement). The Guangxi government has reportedly provided over Y 400 million so far for its program, with costs of about Y 2700 per settler. Most of the voluntary resettlement programs appear to have been very successful in providing opportunities for large

numbers of upland farm families to permanently escape absolute poverty.[59] For example, random sample surveys of 752 settler households in 1986 and 337 settler households in 1990, conducted by the Population Research Institute of the Ningxia Academy of Social Sciences (Yan, 1991), have documented the success of the Sanxi resettlement program in the Xihaigu Region. The surveys show that the average settler enjoys a substantial increase in income within the first three years of relocation, and most have few regrets about having made the move. The most common complaint voiced by those surveyed has been the lack of primary schools during the first years after relocation. Provincial authorities confirm that in some cases inadequate funding has delayed the planned establishment of social services, but note that schools, health centers and other services are generally adequate in areas settled for more than three years. Gansu provincial authorities have also experienced difficulty interesting minority people—who comprise a disproportionate share of Gansu's absolute poor—in resettlement. Recent efforts to offer resettlement to entire minority villages, instead of integrating small numbers of minority households into Han communities, have proven more successful.

Improving Voluntary Resettlement

Voluntary settlement appears to be an appropriate and effective tool in cases where other forms of help cannot achieve a sufficient or sustainable improvement in the poor's well-being. Nonetheless, even in those circumstances, voluntary settlement is a major social upheaval. There are a number of measures which should be taken before, during and after resettlement which can ease this transition and improve the effectiveness of this poverty reduction tool.

Work in the Emigration Areas. One of the most important tasks in voluntary resettlement is providing potential migrants with full information so that they can make an appropriate decision about whether to move. Chinese programs have become increasingly aware of this need, but still often fail to get full information to potential migrants, in part because written materials that spell out the responsibilities of both migrants and government are often not made available. Information materials should include criteria for the choice of migrants, levels and types of compensation, infrastructure plans for the immigration area, and land tenure arrangements. They must also make it very clear that people may choose not to participate.

Full information in advance will help minimize the resettlement failure rate, where migrants return to their original homes. Such failures are socially disruptive, as well as being expensive for voluntary resettlement programs. Existing programs typically have return rates of up to 15 percent (this is significantly better than the first years of earlier programs, but still could be improved).

Resettlement plans should consider the long-term effects of the resettlement on emigration areas. Resettlement should not leave villages of only families lacking the ability or labor power to emigrate, which might possibly result in a deepening of poverty. Resettlement plans should also consolidate the gains of lowered population by redividing good agricultural land among remaining families (while still allowing for the return of a certain portion of settlers), and encouraging environmental restoration on steeper slopes.

---

[59] One indicator of the program's success is that the number of upland poor now actively seeking to resettle greatly exceeds available opportunities. Another is that very few resettlers choose to return to their old rainfed lands. For example, only between 5 to 10 percent of those moving to the Hexi Corridor have chosen to return to the Dingxi Region. Those settlers returning from the Hexi Corridor reportedly had excessively high expectations of immediate improvements in their income levels and standards of living.

Paving the Way: Compensation and Infrastructure. Voluntary resettlement will be more successful when compensation amounts are adequate to cover real expenses, or when loans are arranged with realistic repayment terms. This has often been a difficulty in existing programs, where lack of funds pushes down compensation amounts, or where resettlers find themselves with loans they had not expected (perhaps because they had not been adequately detailed in the information materials). In particular, many migrants struggle with low compensation levels for moving expenses, new housing, and hand tools.

In most cases, resettlers will not have agricultural income from their new land for at least a year, and sometimes for three or more years on plantations. Programs need to guarantee minimal incomes to resettlers during this transition period, usually by finding local labor opportunities for them. Failure to do this will contribute to the reverse flow of migrants back to their home areas.

Basic infrastructure—including roads, water, electricity, schools, and clinics—should also be ready when migrants arrive. Chinese projects have improved significantly on this over the last decade, but still often experience some problems. It would be better to delay resettlement if infrastructure is delayed, rather than increase risks to resettlers by bringing them in before the basics are in place.

Well-prepared resettlement opportunities attract settlers of all kinds, and programs generally have to deal with people who want to come but have not gone through project procedures, and who may not come from designated project emigration areas. The rate of such unplanned settlers may have been as high as 40 percent in the Sanxi program, although more recent programs have apparently held the rate down. These unplanned settlers may be attractive to local officials because they are usually not as poor as designated project families. For the same reason, however, they can be an obstacle to achievement of the goals of poverty reduction and environmental improvement in mountain areas. Early delineation and enforcement of a clear policy about unplanned migrants can minimize the problem.

Economic Sustainability. Successful voluntary resettlement is possible only when the newly-developed receiving area establishes the prerequisites for sustainable agricultural production. As a first step, migrants need appropriate, household-level agricultural training. They are almost always moving to agricultural conditions and techniques that are new to them, and the level of training at first should be very basic.

There is also the risk that the drive to reduce poverty through voluntary resettlement may encourage the development of new lands which may not be environmentally sustainable or economically justified. In southern China, most of the less steeply sloped and more fertile lands have already been developed. The remaining more steeply sloped and less fertile land to be planted to large stands of coffee, tea, and tropical fruits may be subject to severe erosion or limited yields. Consideration must also be given to the markets and commercial viability of increased coffee, tea, and tropical fruits production. In northern China, a number of voluntary resettlement programs depend on the development of high lift irrigation schemes. The Jingtai Phase II irrigation scheme in Gansu, for example, must lift water an average of more than 450 meters up from the Yellow River in order to irrigate some 33,000 ha of previously uncultivated land. Lifting the water requires an enormous amount of electric power, and an economic analysis has shown that the costs of field crop production exceed gross output values by a substantial

margin (when electric power is costed at its opportunity value). However, the government provides very large annual subsidies for this electric power, and this has allowed the 150,000 resettlers in the Jingtai Phase II irrigation area to quickly rise above the poverty line (The World Bank, 1992). Portions of Ningxia's proposed "1236 Scheme" would also require lifting water by as much as 470 meters, and it is recommended that the economic justification for such a high lift be carefully reviewed.

ANNEX 1: QUANTITATIVE TRENDS

Annex 1 Table 1: Income and Expenditure Level by Province, 1996

	Mean Income (Yuan)	Mean Expenditure (Yuan)	Ratio (%) (Exp./Inc.)
National	1927.08	1572.00	81.57
North			
Beijing	3561.94	2564.51	72.00
Tianjin	2999.68	1957.39	65.25
Hebei	2054.95	1398.94	68.08
Shanxi	1557.19	1174.29	75.41
Northeast			
Liaoning	2149.98	1763.57	82.03
Jilin	2125.56	1513.19	71.19
Heilongjiang	2181.86	1537.30	70.46
East			
Shanghai	4846.13	3867.84	79.81
Jiangsu	3029.32	2414.43	79.70
Zhejiang	3462.99	2701.69	78.02
Anhui	1607.72	1309.35	81.44
Fujian	2492.49	1913.25	76.76
Jiangxi	1869.63	1553.10	83.07
Shandong	2086.31	1652.51	79.21
Central			
Henan	1579.19	1206.43	76.40
Hubei	1863.62	1636.41	87.81
Hunan	1792.25	1736.71	96.90
Guangdong	3183.46	2584.16	81.17
Hainan	1746.08	1288.98	73.82
Southwest			
Chongqing	1491.01	1349.88	90.53
Sichuan	1459.09	1349.88	92.52
Guizhou	1276.67	1068.09	83.66
Yunnan	1229.28	1209.16	98.36
Tibet	1350.82	773.02	57.23
Guangxi	1703.13	1399.07	82.15
Northwest			
Inner Mongolia	1602.34	1437.62	89.72
Shaanxi	1165.10	1097.59	94.21
Gansu	1100.59	986.34	89.62
Qinghai	1173.80	1052.33	89.65
Ningxia	1397.80	1235.67	88.40
Xinjiang	1290.01	1346.57	104.38

Source: Author's calculations

Annex 1 Table 2: Incidence of Rural Poverty in China, Using Average Per Capita Income, 1990-97

Poverty lines (in 1985 PPP US $)	1990	1991	1992	1993	1994	1995	1996	1997
				Headcount (%)				
0.5/day	3.78	5.00	3.83	4.58	4.50	3.63	1.82	2.11
0.66/day\a	10.41	11.53	9.71	9.89	9.25	7.75	4.15	4.21
0.71/day\b	13.72	14.96	12.96	12.83	11.81	9.97	5.59	5.44
0.75/day	15.76	17.08	15.00	14.70	13.43	11.36	6.55	6.26
1/day	31.25	31.70	30.13	29.10	25.90	21.80	15.04	13.49
1.25/day	47.74	47.49	44.56	43.81	37.46	33.13	25.36	22.59
1.5/day	62.28	61.69	58.58	56.85	50.46	44.70	36.02	32.32
1.75/day	73.29	72.64	69.76	67.47	62.10	55.46	46.14	41.87
2/day	80.96	80.37	77.91	75.68	71.46	64.68	55.32	50.82
2.25/day	86.18	85.66	83.63	81.82	77.15	72.14	63.38	58.90
2.5/day	89.73	89.28	87.61	86.29	82.45	77.95	70.25	66.00

\a Equivalent to the government poverty line for 1996.
\b Equivalent to the government poverty line for 1997.
Source: Author's calculations.

Annex 1 Table 3: Incidence of Rural Poverty in China, Using Average Per Capita Expenditure, 1990-97

Poverty lines (in 1985 PPP US $)	1990	1991	1992	1993	1994	1995	1996	1997
				Headcount (%)				
0.5/day	7.22	7.78	7.21	7.79	7.46	6.24	3.43	4.14
0.66/day\a	16.50	16.68	16.34	16.21	14.84	12.66	7.89	8.56
0.71/day\b	20.87	20.99	20.8	20.44	18.51	15.82	10.38	10.95
0.75/day	23.53	23.04	23.47	23.01	20.73	17.74	11.97	12.47
1/day	42.82	40.79	40.92	40.83	34.90	31.00	24.31	24.23
1.25/day	60.57	57.95	57.92	56.69	50.51	44.92	37.32	36.78
1.5/day	73.70	71.31	71.07	69.17	64.24	57.68	49.49	48.71
1.75/day	82.28	80.38	80.02	78.26	74.58	68.09	60.11	59.26
2/day	87.73	86.27	85.87	84.58	80.54	75.98	68.98	68.18
2.25/day	91.24	90.10	89.70	88.89	85.78	81.76	76.11	75.43
2.5/day	93.56	92.65	92.27	91.82	89.49	85.93	81.67	81.14

\a Equivalent to the government poverty line for 1996.
\b Equivalent to the government poverty line for 1997.
Source: Author's calculations.

Annex 1 Table 4: China's Rural Poverty Gap Index Using Average Per Capita Income, 1990-97

Poverty lines (in 1985 PPP US $)	1990	1991	1992	1993	1994	1995	1996	1997
				Poverty gap (%)				
$0.5/day	0.739	1.243	0.897	1.428	1.459	1.074	0.594	0.837
$0.66/day\a	1.815	2.809	2.193	2.718	2.668	2.104	1.118	1.351
$0.71/day\b	2.721	3.731	3.000	3.480	3.362	2.700	1.447	1.657
$0.75/day	3.311	4.334	3.539	3.985	3.816	3.091	1.674	1.863
$1/day	8.312	9.223	8.272	8.427	7.743	6.145	3.895	3.813
$1.25/day	14.555	15.298	13.906	14.046	12.422	10.394	7.139	6.638
$1.5/day	21.345	21.890	20.219	20.128	17.689	15.155	11.070	10.107
$1.75/day	28.019	28.396	26.531	26.159	23.223	20.156	15.363	13.965
$2/day	34.185	34.436	32.470	31.857	28.691	25.161	19.793	18.019
$2.25/day	39.695	39.856	37.860	37.089	33.898	29.986	24.202	22.124
$2.5/day	44.530	44.625	42.645	41.795	38.498	34.502	28.471	26.163

\a Equivalent to the government poverty line for 1996.
\b Equivalent to the government poverty line for 1997.
Source: Author's calculations.

Annex 1 Table 5: China's Rural Poverty Gap Square Index Using Average Per Capita Income, 1990-97

Poverty lines (in 1985 PPP US $)	1990	1991	1992	1993	1994	1995	1996	1997
				Poverty gap square (%)				
$0.5/day	0.270	0.581	0.403	0.886	0.924	0.607	0.395	0.681
$0.66/day\a	0.433	1.154	0.852	1.357	1.379	0.998	0.577	0.845
$0.71/day\b	0.743	1.511	1.146	1.651	1.655	1.235	0.696	0.956
$0.75/day	0.960	1.753	1.349	1.851	1.840	1.394	0.778	1.033
$1/day	3.078	3.771	3.333	3.745	3.557	2.397	1.637	1.808
$1.25/day	6.099	6.842	6.004	6.455	5.854	4.519	3.029	3.034
$1.5/day	9.749	10.461	9.408	9.730	8.680	7.056	4.892	4.669
$1.75/day	13.740	14.383	13.138	13.312	11.820	9.881	7.108	6.629
$2/day	17.835	18.400	16.996	17.012	15.150	12.889	9.572	8.831
$2.25/day	21.871	22.360	20.834	20.699	18.779	15.988	12.192	11.201
$2.5/day	25.733	26.153	24.539	24.275	22.101	19.088	14.888	13.667

\a Equivalent to the government poverty line for 1996.
\b Equivalent to the government poverty line for 1997.
Source: Author's calculations.

Annex 1 Table 6: Incidence of Rural Poverty in China by Province Using Average Per Capita Income, 1991

	Headcount (%) 1985 PPP $/day							Mean Income (Yuan)
	$0.50	$0.66\a	$0.75	$0.80	$0.90	$1.00	$1.25	
National	5.00	11.89	17.11	20.04	25.55	31.72	47.46	709
North								
Beijing	<0.1	<0.1	0.67	0.80	1.12	1.58	3.63	1422
Tianjin	0.12	0.33	0.63	0.88	1.72	3.18	10.01	1169
Hebei	7.27	13.43	17.90	20.49	26.29	32.69	49.67	657
Shanxi	7.48	16.99	23.66	27.44	35.58	43.95	62.87	568
Northeast								
Liaoning	1.62	4.36	8.15	9.55	12.70	16.25	26.74	897
Jilin	4.13	8.65	11.92	13.82	18.14	23.04	37.27	748
Heilongjiang	9.18	14.30	17.83	19.84	24.25	29.04	42.02	735
East								
Shanghai	<0.1	<0.1	<0.1	<0.1	<0.1	0.30	1.49	2003
Jiangsu	1.30	4.10	6.89	8.65	12.70	17.17	28.34	921
Zhejiang	1.43	3.57	5.00	5.80	7.57	9.50	15.06	1211
Anhui	14.75	27.82	37.06	42.13	52.43	61.92	79.21	446
Fujian	0.30	1.35	4.37	5.79	9.07	12.92	25.10	850
Jiangxi	0.15	0.29	2.63	4.26	9.46	15.08	34.46	703
Shandong	0.13	4.12	7.51	9.74	14.60	19.80	35.19	764
Central								
Henan	11.83	21.74	28.51	32.30	40.35	48.45	66.19	539
Hubei	2.52	9.03	13.49	16.18	22.46	29.74	50.20	627
Hunan	0.38	3.13	7.26	10.05	14.96	21.22	40.33	689
Guangdong	<0.1	0.34	0.89	1.42	3.28	6.24	15.78	1143
Hainan	0.45	3.79	8.32	11.22	16.26	22.67	40.66	730
Southwest								
Sichuan	2.87	11.18	17.23	20.78	28.73	37.33	58.34	590
Guizhou	11.10	23.48	32.74	37.99	48.95	59.29	78.21	466
Yunnan	7.87	17.33	23.98	27.73	35.76	43.94	62.41	573
Tibet	4.38	11.56	16.91	19.87	26.10	32.35	47.11	707
Guangxi	1.93	7.00	12.66	16.03	21.18	28.26	47.94	658
Northwest								
Inner Mongolia	5.88	13.73	19.34	22.53	29.53	36.95	55.12	618
Shaanxi	9.01	17.96	24.80	28.82	37.74	47.11	67.84	534
Gansu	13.92	29.02	39.45	45.02	55.92	65.40	81.32	446
Qinghai	8.18	17.75	24.68	28.64	37.19	45.95	65.30	556
Ningxia	13.27	22.74	28.75	31.95	38.53	44.98	59.45	590
Xinjiang	8.24	16.33	21.54	24.36	30.23	36.13	50.11	703

\a Equivalent to the 1991 government poverty line.

Source: Author's calculations.

Annex 1 Table 7: China's Rural Poverty Gap Index by Province Using Average Per Capita Income, 1991

	Poverty gap (%) 1985 PPP $/day						
	$0.50	$0.66\a	$0.75	$0.80	$0.90	$1.00	$1.25
National	1.24	2.90	4.34	5.22	7.07	9.23	15.29
North							
Beijing	<0.05	<0.05	0.30	0.32	0.39	0.49	0.88
Tianjin	0.04	0.08	0.13	0.17	0.29	0.50	1.64
Hebei	1.77	3.79	5.26	6.12	8.04	10.19	16.36
Shanxi	1.38	3.84	5.88	7.09	9.81	12.82	20.98
Northeast							
Liaoning	0.45	1.02	1.86	2.29	3.27	4.39	7.76
Jilin	0.74	2.06	3.08	3.68	5.05	6.61	11.26
Heilongjiang	3.35	5.33	6.67	7.41	9.04	10.81	15.72
East							
Shanghai	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.18
Jiangsu	0.30	0.83	1.40	1.79	2.78	4.00	7.54
Zhejiang	0.17	0.72	1.16	1.42	2.01	2.66	4.56
Anhui	3.69	7.81	10.87	12.64	16.51	20.61	30.71
Fujian	0.07	0.22	0.51	0.79	1.52	2.47	5.70
Jiangxi	<0.05	<0.05	0.31	0.50	1.20	2.30	6.66
Shandong	0.00	0.75	1.37	1.81	2.93	4.36	8.92
Central							
Henan	3.09	6.40	8.72	10.06	12.99	16.14	24.43
Hubei	0.48	1.71	2.89	3.62	5.37	7.44	13.90
Hunan	0.05	0.37	0.95	1.42	2.65	4.19	9.42
Guangdong	<0.05	0.05	0.12	0.18	0.41	0.84	2.71
Hainan	0.06	0.45	1.13	1.66	2.82	4.49	9.88
Southwest							
Sichuan	0.42	1.82	3.36	4.32	6.59	9.24	16.98
Guizhou	2.25	5.75	8.52	10.17	13.89	17.94	28.24
Yunnan	1.28	3.94	6.01	7.23	9.96	12.97	21.05
Tibet	0.90	2.52	3.98	4.86	6.88	9.13	15.25
Guangxi	0.12	1.04	2.13	2.88	4.69	6.69	12.93
Northwest							
Inner Mongolia	1.19	2.93	4.62	5.62	7.89	10.44	17.56
Shaanxi	2.04	4.71	6.78	8.00	10.82	13.99	22.76
Gansu	2.74	7.13	10.50	12.45	16.70	21.13	31.71
Qinghai	1.43	4.13	6.25	7.50	10.33	13.47	21.96
Ningxia	3.32	6.81	9.16	10.46	13.23	16.10	23.34
Xinjiang	1.89	4.00	5.86	6.91	9.18	11.60	17.90

\a Equivalent to the 1991 government poverty line.
Source: Author's calculations.

Annex 1 Table 8: China's Rural Poverty Gap Square Index by Province Using Average Per Capita Income, 1991

	Poverty gap square (%) 1985 PPP $/day						
	$0.50	$0.66\a	$0.75	$0.80	$0.90	$1.00	$1.25
National	0.58	1.19	1.76	2.12	2.74	3.78	6.84
North							
Beijing	<0.01	<0.01	0.29	0.30	0.31	0.33	0.45
Tianjin	0.03	0.04	0.05	0.07	0.10	0.15	0.46
Hebei	0.60	1.52	2.22	2.63	3.57	4.63	7.74
Shanxi	0.43	1.21	2.06	2.59	3.82	5.26	9.47
Northeast							
Liaoning	0.26	0.45	0.59	0.77	1.19	1.69	3.27
Jilin	0.18	0.69	1.13	1.40	2.02	2.75	4.97
Heilongjiang	1.71	2.83	3.57	3.98	4.88	5.84	8.52
East							
Shanghai	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03
Jiangsu	0.14	0.31	0.50	0.63	0.97	1.43	2.79
Zhejiang	0.03	0.20	0.37	0.48	0.74	1.04	1.97
Anhui	1.31	3.17	4.61	5.46	7.38	9.52	15.40
Fujian	0.03	0.07	0.08	0.15	0.36	0.67	1.88
Jiangxi	<0.01	0.01	0.07	0.11	0.21	0.50	1.89
Shandong	<0.01	0.26	0.44	0.58	0.83	1.36	3.24
Central							
Henan	1.34	2.68	3.82	4.48	5.97	7.61	12.21
Hubei	0.18	0.45	0.88	1.17	1.87	2.73	5.57
Hunan	0.02	0.08	0.21	0.32	0.67	1.19	3.18
Guangdong	0.01	0.02	0.03	0.05	0.10	0.19	0.64
Hainan	0.02	0.10	0.25	0.39	0.68	1.25	3.37
Southwest							
Sichuan	0.12	0.41	0.92	1.26	2.15	3.25	6.80
Guizhou	0.64	2.03	3.22	3.95	5.66	7.62	13.25
Yunnan	0.29	1.25	2.12	2.65	3.91	5.35	9.57
Tibet	0.34	0.89	1.44	1.79	2.65	3.68	6.75
Guangxi	0.01	0.27	0.57	0.80	1.48	2.28	4.98
Northwest							
Inner Mongolia	0.42	0.87	1.55	1.97	2.98	4.16	7.71
Shaanxi	0.65	1.79	2.71	3.27	4.56	6.06	10.52
Gansu	0.75	2.49	3.97	4.86	6.91	9.21	15.49
Qinghai	0.34	1.35	2.25	2.80	4.09	5.58	9.97
Ningxia	1.13	2.79	4.01	4.70	6.21	7.83	12.14
Xinjiang	0.70	1.34	2.18	2.68	3.81	5.07	8.57

\a Equivalent to the 1991 government poverty line.

Source: Author's calculations.

Annex 1 Table 9: China's Rural Poverty Incidences by Province Using Average Per Capita Income, 1996

	Headcount (%) 1985 PPP $/day							Mean Income (Yuan)
	$0.50	$0.66	$0.75\a	$0.80	$0.90	$1.00	$1.25	
National	1.83	4.53	6.31	8.21	11.54	15.01	25.44	1927
North								
Beijing	<.1	0.56	0.77	0.91	1.29	1.79	3.79	3562
Tianjin	<.1	0.20	0.30	0.37	0.58	0.91	2.58	3000
Hebei	0.88	2.45	3.88	4.88	7.22	9.95	17.84	2055
Shanxi	1.31	4.50	7.54	9.65	13.92	18.37	31.54	1557
Northeast								
Liaoning	0.82	1.88	2.85	3.57	5.40	8.74	14.85	2150
Jilin	1.48	3.25	4.69	5.66	7.91	10.50	18.03	2126
Heilongjiang	3.02	5.30	6.69	7.54	9.36	11.35	17.19	2182
East								
Shanghai	<.1	<.1	<.1	<.1	<.1	<.1	0.83	4846
Jiangsu	<.1	<.1	<.1	<.1	1.04	2.62	7.00	3029
Zhejiang	<.1	<.1	<.1	0.10	1.22	2.48	5.93	3463
Anhui	0.15	1.11	2.73	4.13	6.92	11.08	23.66	1608
Fujian	<.1	0.36	0.54	0.68	1.07	1.69	4.76	2492
Jiangxi	0.16	0.42	0.72	0.98	1.83	3.31	10.81	1870
Shandong	<.1	0.53	1.92	2.79	4.67	6.78	13.21	2086
Central								
Henan	0.95	2.57	4.25	5.55	8.93	13.28	25.01	1579
Hubei	0.41	1.45	2.65	3.62	6.17	9.42	19.49	1864
Hunan	0.20	0.75	1.52	3.41	4.33	7.45	16.92	1792
Guangdong	0.03	0.09	0.15	0.20	0.36	0.66	2.58	3183
Hainan	1.79	5.34	8.18	10.02	14.01	18.29	29.44	1746
Southwest								
Chongqing	1.24	3.94	6.57	8.44	12.36	17.07	31.25	1491
Sichuan	1.24	4.17	7.01	9.02	13.56	18.51	33.04	1459
Guizhou	2.31	8.34	12.77	15.56	21.69	28.46	46.69	1277
Yunnan	8.50	17.60	22.91	26.04	32.39	38.75	53.69	1229
Tibet	2.63	5.72	10.13	12.88	18.84	25.35	42.80	1351
Guangxi	1.16	3.86	6.38	8.12	12.11	16.57	26.75	1703
Northwest								
Inner Mongolia	3.04	6.84	9.28	10.81	14.20	18.04	29.57	1602
Shaanxi	5.87	12.66	17.45	20.50	27.23	34.66	54.03	1165
Gansu	8.73	19.25	22.67	26.16	33.69	41.66	60.70	1101
Qinghai	5.68	12.93	17.72	20.74	27.34	34.55	53.24	1174
Ningxia	8.45	14.26	18.48	20.97	26.09	31.32	44.30	1398
Xinjiang	14.27	22.70	27.35	30.02	35.34	40.54	52.64	1290

\a Equivalent to the 1996 government poverty line

Source: Author's calculations.

Annex 1 Table 10: China's Rural Poverty Gap by Province Using Average Per Capita Income, 1996

	Poverty gap (%) 1985 PPP $/day						
	$0.50	$0.66\a	$0.75	$0.80	$0.90	$1.00	$1.25
National	0.56	1.17	1.68	2.04	2.91	3.96	7.22
North							
Beijing	<0.05	0.25	0.30	0.33	0.41	0.53	0.96
Tianjin	<0.05	0.08	0.10	0.11	0.15	0.21	0.49
Hebei	0.25	0.57	0.87	1.09	1.64	2.33	4.62
Shanxi	0.31	0.88	1.47	1.92	3.07	4.37	8.44
Northeast							
Liaoning	0.33	0.56	0.77	0.92	1.31	2.11	4.02
Jilin	0.55	0.97	1.32	1.56	2.13	2.84	5.10
Heilongjiang	0.76	1.59	2.10	2.41	3.08	3.81	5.88
East							
Shanghai	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.30
Jiangsu	<0.05	<0.05	<0.05	<0.05	<0.05	0.22	1.12
Zhejiang	<0.05	<0.05	<0.05	<0.05	0.07	0.25	1.03
Anhui	<0.05	0.14	0.34	0.53	0.74	1.56	4.67
Fujian	<0.05	0.13	0.17	0.19	0.27	0.38	0.91
Jiangxi	0.06	0.11	0.16	0.21	0.33	0.55	1.76
Shandong	0.22	0.01	0.15	0.29	0.67	1.17	2.91
Central							
Henan	0.33	0.65	0.96	1.21	1.87	2.79	6.08
Hubei	0.11	0.29	0.49	0.65	1.12	1.78	4.28
Hunan	0.05	0.14	0.25	0.37	0.67	1.18	3.65
Guangdong	<0.05	<0.05	<0.05	<0.05	0.07	0.11	0.38
Hainan	0.41	1.13	1.78	2.24	3.32	4.61	8.45
Southwest							
Chongqing	0.33	0.83	1.34	1.72	2.26	3.50	7.58
Sichuan	0.31	0.84	1.38	1.80	2.55	3.89	8.22
Guizhou	0.33	1.24	2.32	3.06	4.78	6.81	12.95
Yunnan	1.46	4.28	6.14	7.29	9.72	12.31	19.12
Tibet	0.65	0.55	1.41	2.04	3.57	5.42	11.14
Guangxi	0.27	0.77	1.27	1.64	2.58	3.75	7.42
Northwest							
Inner Mongolia	0.48	1.55	2.31	2.79	3.87	5.09	8.79
Shaanxi	1.50	2.88	4.29	5.21	7.27	9.64	16.59
Gansu	1.96	4.86	6.32	7.45	9.94	12.71	20.46
Qinghai	0.93	2.94	4.38	5.31	7.38	9.73	16.58
Ningxia	2.26	3.51	5.00	5.92	7.88	9.96	15.54
Xinjiang	4.25	7.74	9.75	10.94	13.35	15.81	22.00

\a Equivalent to the 1996 government poverty line.

Source: Author's calculations.

Annex 1 Table 11: China's Rural Poverty Gap Square by Province Using Average per Capita Income, 1996

	Poverty gap square (%) 1985 PPP $/day						
	$0.50	$0.66\a	$0.75	$0.80	$0.90	$1.00	$1.25
National	0.35	0.56	0.75	0.89	1.22	1.64	3.06
North							
Beijing	<0.01	0.23	0.24	0.25	0.27	0.31	0.46
Tianjin	<0.01	0.06	0.07	0.07	0.08	0.10	0.18
Hebei	0.15	0.25	0.36	0.43	0.63	0.88	1.81
Shanxi	0.15	0.33	0.51	0.66	0.95	1.48	3.24
Northeast							
Liaoning	0.28	0.35	0.42	0.47	0.61	0.71	1.55
Jilin	0.41	0.56	0.69	0.78	1.00	1.28	2.24
Heilongjiang	0.26	0.66	0.92	1.08	1.43	1.81	2.91
East							
Shanghai	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.23
Jiangsu	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.25
Zhejiang	<0.01	<0.01	<0.01	<0.01	0.01	0.03	0.24
Anhui	0.01	0.03	0.08	0.10	0.11	0.30	1.29
Fujian	<0.01	0.10	0.11	0.12	0.14	0.18	0.34
Jiangxi	0.05	0.07	0.08	0.09	0.13	0.19	0.51
Shandong	<0.01	0.00	0.02	0.04	0.13	0.28	0.91
Central							
Henan	0.25	0.35	0.45	0.52	0.73	1.03	2.18
Hubei	0.06	0.11	0.17	0.22	0.36	0.56	1.43
Hunan	0.03	0.06	0.09	0.05	0.19	0.33	1.13
Guangdong	0.01	0.01	0.02	0.02	0.03	0.04	0.11
Hainan	0.18	0.42	0.65	0.81	1.22	1.74	3.47
Southwest							
Chongqing	0.19	0.34	0.51	0.63	0.58	1.01	2.63
Sichuan	0.16	0.32	0.49	0.63	0.67	1.15	2.91
Guizhou	0.09	0.25	0.58	0.84	1.48	2.30	5.03
Yunnan	0.34	1.42	2.26	2.80	4.00	5.33	9.11
Tibet	0.33	0.07	0.27	0.44	0.94	1.61	4.01
Guangxi	0.13	0.29	0.45	0.57	0.89	1.32	2.93
Northwest							
Inner Mongolia	0.10	0.49	0.81	1.02	1.50	2.07	3.82
Shaanxi	0.72	0.92	1.51	1.90	2.81	3.88	7.21
Gansu	0.75	1.87	2.53	3.06	4.24	5.59	9.57
Qinghai	0.21	0.94	1.53	1.94	2.86	3.94	7.27
Ningxia	0.94	1.17	1.85	2.29	3.26	4.34	7.39
Xinjiang	1.71	3.58	4.72	5.40	6.82	8.30	12.16

\a Equivalent to the 1996 government poverty line.
Source: Author's calculations.

Annex 1 Table 12: Rural Population Squared Poverty Gap

	1991	1996
National	**1.19**	**0.56**
North	**1.32**	**0.27**
Beijing	0.01	0.23
Tianjin	0.04	0.06
Hebei	1.52	0.25
Shanxi	1.21	0.33
Northeast	**1.36**	**0.52**
Liaoning	0.45	0.35
Jilin	0.69	0.56
Heilongjiang	2.83	0.66
East	**0.76**	**0.03**
Shanghai	0.01	0.01
Jiangsu	0.31	0.01
Zhejiang	0.20	0.01
Anhui	3.17	0.03
Fujian	0.07	0.10
Jiangxi	0.01	0.07
Shandong	0.26	0.00
Central	**1.05**	**0.17**
Henan	2.68	0.35
Hubei	0.45	0.11
Hunan	0.08	0.06
Guangdong	0.02	0.01
Hainan	0.10	0.42
Southwest	**0.77**	**0.49**
Chongqing		0.34
Sichuan	0.41	0.32
Guizhou	2.03	0.25
Yunnan	1.25	1.42
Tibet	0.89	0.07
Guangxi	0.27	0.29
Northwest	**1.75**	**1.45**
Inner Mongolia	0.87	0.49
Shaanxi	1.79	0.92
Gansu	2.49	1.87
Qinghai	1.35	0.94
Ningxia	2.79	1.17
Xinjiang	1.34	3.58

Source: The State Statistical Bureau's annual sample survey of rural households income.

ANNEX 2: MACROECONOMIC STATISTICS

Annex 2 Table 1: Rates of Growth in GDP by Sector, 1990-97

	Total	Primary	Secondary	Tertiary
1990	3.8	7.3	3.2	2.3
1991	9.2	2.4	13.9	8.8
1992	14.2	4.7	21.2	12.4
1993	13.5	4.7	19.9	10.7
1994	12.6	4.0	18.4	9.6
1995	10.5	5.0	13.9	8.4
1996	9.6	5.1	12.1	7.9
1997	8.8	3.5	10.8	8.2
Average annual growth, 1990-97	11.2	4.2	15.7	9.4

Note: Growth is in constant prices.
Source: SSB(a), various issues.

Annex 2 Table 2: Composition of Household Net Income Per Capita by Income Group, Shaanxi, 1996

Income group	Percent of households Surveyed	Average per capita net income (yuan)	Wage Income		Gross income from household production (yuan)	Costs of household production (yuan)
			Yuan	%		
<300	1.6	165	81	48.8	810	601
300-500	6.0	415	86	20.8	738	336
500-800	22.6	671	126	18.7	947	349
800-1000	18.8	897	159	17.7	1169	392
1000-1500	30.4	1218	233	19.1	1478	453
1500+	20.6	2060	315	15.3	2438	669

Note: Sample size is 2,220 households.
Source: Shaanxi Statistical Bureau, 1997.

Annex 2 Table 3: Composition of Household Net Income Per Capita by Income Group, Guangxi, 1996

Income group	Percent of households Surveyed	Average per capita net income (yuan)	Wage Income		Gross income from household production (yuan)	Costs of household production (yuan)
			Yuan	%		
<300	0.6	207	55	26.6	944	800
300-500	1.6	423	106	25.2	702	391
500-600	2.4	553	104	18.9	848	383
600-800	6.9	707	95	13.5	1040	419
800-1000	9.1	910	99	10.9	1321	509
1000-1500	27.8	1242	152	12.2	1688	597
1500-2000	21.8	1739	245	14.1	2110	661
2000-2500	13.3	2222	355	16.0	2619	814
2500-3000	7.5	2726	379	13.9	3127	901
3000-4000	5.8	3413	520	15.2	4077	1352
4000-5000	2.3	4408	811	18.4	5019	1554
5000+	1.1	7800	670	8.6	8549	1927

Note: Sample size is 2,310 households.
Source: Guangxi Statistical Bureau, 1997.

Annex 2 Table 4: Fiscal Statistics for Three Poor Counties, 1997
(million yuan, unless noted otherwise)

	Du'an, Guangxi	Baoqing, Hunan	Wuqiao, Chongqing
Population (thousands)	620	274.7	597
County GNP	716.81 (1996)	410.75	1298.97
Per capita rural household income (yuan)	807 (1996)	1062	1401
Budgetary revenues, total	102.29	72.59	72.61
of which: local budgetary revenues	26.82	16.87	32.90
fiscal transfers	75.47	55.72	39.71
of which: fiscal poverty grants	4.37	4.48	2.30
Yigong daizhen	4.31	10.25	5.10
Stock tax funds	n.a.	5.0	3.61
Budgetary expenditures, total	110.0	79.41	82.33
of which: education expenditures	32.61	22+	24.39
Current budgetary deficit	7.71	6.82	9.72
Accumulated budgetary deficit	40+	40.44	89.94
Extra-budgetary revenues	n.a.	13.24	43.40
Extra-budgetary expenditures	n.a.	12.99	42.03

Note: Local revenues exclude the central VAT and consumption taxes. Fiscal transfers include the returned share of these central taxes.
Sources: Field interviews and China Agriculture Development Bank, 1997.

Annex 2 Table 5: Sichuan Poverty Alleviation Funds 1996 and 1997 Sichuan Poor Area Assistance Program— Breakdown by Source of Funds

	1996		1997	
	RMB mn	% share	RMB mn	% share
Subsidized Loan Funds	**462.3**	**52.8**	**972.3**	**62.3**
National Poverty Alleviation Loan Funds [a]	424.9	48.5	890.4	57.1
Local Poverty Alleviation Loan Funds	37.4	4.3	81.9	5.2
Fiscal Grant Funding	**139.7**	**15.9**	**280.5**	**18.0**
Ministry of Finance Grant Funding	57.0	6.5	154.6	9.9
Finance Poor Area Development Fund Revolving Fund	30.0	3.4	24.8	1.6
Province, Prefecture, County, Fiscal Funds for Poverty Reduction [b]	52.6	6.0	101.1	6.5
Food for Work	**262.4**	**29.9**	**286.1**	**18.3**
Local Food for Work Counterpart Funds	**70.6**		27.2	
Foreign Funds	**11.9**	**1.4**	**20.9**	**1.3**
World Bank Loans			19.9	
Other Grant Funds			**86.4**	**5.5**
Other Funds			**24.3**	**1.6**
TOTAL	**876**	**100**	**1,560**	**100**

\a Includes current year as well as relending of proceeds from previous years.
\b Includes local finance bureaus counterpart funds.
Source: Author's calculations.

Annex 2 Table 6: Yunnan Poverty Alleviation Funds 1995 and 1997 Yunnan Poor Area Assistance Program— Breakdown by Source of Funds

	1995		1997	
	RMB mn	% share	RMB mn	% share
Subsidized Loan Funds	**465.6**	**44.9**	**1,032.1**	**47.0**
National Poverty Alleviation Loan Funds [a]	462.0	44.6	980.5	44.6
Provincial Poverty Alleviation Loan Funds	3.6	0.3	51.6	2.3
Fiscal Grant Funds	**181.0**	**17.5**	**516.7**	**23.5**
Ministry of Finance Grant Funding	46.0	4.4	72.9	3.3
Finance Poor Area Development Fund Revolving Fund	57.7	5.6	84.3	3.8
Province, Prefecture, County, Fiscal Funds for Poverty Reduction [b]	77.3	7.5	359.4	16.4
Food for Work	**292.7**	**28.2**	**312.3**	**14.2**
Of which Food for Work Counterpart Funds from local sources	**172.1**		**169.1**	
Foreign Funds	**97.5**	**9.4**	**177.5**	**8.1**
Other Grant Funds			**74.2**	**3.4**
Other Funds			**84.2**	**3.8**
TOTAL	**1,037**	**100**	**2,197**	**100**

\a Includes current year as well as relending of proceeds from previous years.
\b Includes local finance bureaus counterpart funds.
Source: Author's calculations.

Annex 2 Table 7: Yunnan Sectoral Breakdown of Poverty Alleviation Funds

	Total Investment RMB million				Subsidized Poverty Loans \a RMB million				Fiscal Grants RMB million				Food For Work RMB million			
	1995	%	1997	%	1995	%	1997	%	1995	%	1997	%	1995	%	1997	%
TOTAL	**836**		**1,676**		**444**		**942**		**99**		**162**		**293**		**314.3**	
Agriculture	**228.0**	**27.3**	**688.6**	**41.1**	**136.0**	**30.6**	**479.8**	**50.9**	**37.0**	**37.4**	**65.4**	**40.4**	**54.9**	**18.8**	**68.4**	**21.8**
Agriculture Enterprises	24.8	3.0	40.4	2.4	13.2	3.0	27.6	2.9	9.2	9.3	12.4	7.6	2.5	0.8	0.5	0.1
Grain production	91.3	10.9	361.6	21.6	70.1	15.8	280.8	29.8	15.4	15.5	42.2	26.0	5.9	2.0	8.7	2.8
Livestock	52.0	6.2	129.7	7.7	39.4	8.9	89.6	9.5	1.6	1.6	7.7	4.7	11.1	3.8	13.0	4.1
Forestry	48.8	5.8	110.7	6.6	14.8	3.3	54.8	5.8	5.5	5.6	7.2	4.5	28.4	9.7	33.1	10.5
Others	35.9	4.3	86.6	5.2	11.8	2.6	54.6	5.8	14.5	14.7	8.3	5.1	9.6	3.3	13.5	4.3
Industry	**269.2**	**32.2**	**386.5**	**23.1**	**246.6**	**55.5**	**342.6**	**36.4**	**18.5**	**18.7**	**8.1**	**5.0**	**4.1**	**1.4**	**4.2**	**1.3**
County owned enterprises	164.1	19.6	250.4	14.9	154.9	34.9	219.4	23.3	6.1	6.2	2.2	1.3	3.1	1.0	3.4	1.1
Township and village Enterprises	105.1	12.6	136.1	8.1	91.7	20.6	123.2	13.1	12.4	12.5	5.9	3.7	1.1	0.4	0.8	0.3
Transport	**87.3**	**10.4**	**121.4**	**7.2**	**1.8**	**0.4**	**0.0**	**0.0**	**1.1**	**1.1**	**18.0**	**11.1**	**84.4**	**28.8**	**93.7**	**29.8**
Commercial and Service	**7.9**	**0.9**	**24.8**	**1.5**	**6.5**	**1.5**	**11.0**	**1.2**	**0.2**	**0.2**	0.0	**0.0**	1.2	**0.4**	**0.5**	**0.2**
Health and Education	**15.0**	**1.8**	**83.0**	**5.0**	**1.2**	**0.3**	**1.9**	**0.2**	**10.9**	**11.0**	**26.1**	**16.1**	2.9	**1.0**	**1.8**	**0.6**
Other	**228.8**	**27.4**	**371.5**	**22.2**	**52.1**	**11.7**	**106.7**	**11.3**	**31.4**	**31.7**	**44.5**	**27.4**	**145.2**	**49.6**	**145.7**	**46.4**
Land improvement	64.2	7.7	97.6	5.8	1.9	0.4	0.8	0.1	8.2	8.3	21.0	13.0	54.1	18.5	55.2	17.5
Drinking water	35.7	4.3	55.5	3.3	0.6	0.1	4.2	0.4	1.5	1.6	9.7	6.0	33.6	11.5	33.6	10.7
Hydropower	101.8	12.2	157.7	9.4	42.3	9.5	83.0	8.8	10.9	11.0	9.6	5.9	48.6	16.6	47.7	15.2
Technical Training	5.1	0.6	9.2	0.6	1.0	0.2	0.5	0.1	2.8	2.8	3.0	1.8	1.3	0.4	1.3	0.4

\a Central Government.
Source: Author's calculations.

ANNEX 3: IMPROVED TECHNOLOGY, RESEARCH, AND EXTENSION NEEDS FOR MOUNTAIN AGRICULTURE

A. INTRODUCTION

It is believed that the bulk of China's poor live in mountain areas (Annex 3 Table 1) and derive their livelihood from agriculture. The development and extension of improved technologies represents an important opportunity for increasing mountain area agricultural productivity and incomes, and improving the well-being of a large share of China's remaining poor. China's mountain farming systems differ according to the regions and mountain types in which they occur. While each farming system has its own characteristics, most face similar production constraints. Some of these can be overcome by providing households with greater access to credit, but others require a complex mix of technical innovations, social and policy changes. Inadequate technology is a significant constraint. A study undertaken by LGPR, for example, found that half of the poverty reduction activities in three Guizhou counties failed, and that inadequate technology explained 60 percent of these failures (Li and Li 1997). This Annex summarizes land use patterns in China's mountain agriculture, outlines opportunities for improved technology, and indicates related research and extension needs. In addition to these technical and economic opportunities themselves, it is also vital that poor households become better equipped to take advantage of them (UNDP 1997a). This requires stronger human resource development at individual and community level, better information access, enhanced participation in economic and resource management decision-making, equitable land tenure arrangements, access to credit, and continued improvement of the policy framework (LGPR 1994).

B. LAND USE PATTERNS

Available Land Use Data. County and township statistics are the major source of land use data for many poverty reduction projects. Unfortunately, these statistics are often significantly flawed because aerial photographs are not generally available and much of the land designated as "wasteland" (that is, land deemed to be available for afforestation or pasture development) is actually farmed to some extent. China's satellite assessment of arable land (Wang and Wu 1992) showed very large discrepancies between reported and actual cultivated land areas. Guizhou, China's most mountainous province, had the largest discrepancy with actual cultivated area being 2.62 times the reported area. Even with these uncertainties regarding land use data, it is clear that farming system patterns and production constraints are closely related to population density, the ratio of cultivated area to total land area, and animal assets per household.

Regional Types. A 1986 CAS study (Jiang 1989) identified 21 poor areas within China, and grouped these into five mountain areas and one arid area (see Annex 3 Table 2 and Map 4). This study proposes that these five mountain areas be consolidated into four mountain types by (a) grouping together the eastern and central mountains, (b) including the Wuling Mountains into the karst mountains (Shi 1997), (c) considering all pastoral areas as a single regional type, and (d) designating the loess uplands as the higher elevation, poorest sections of the Loess Plateau. The northwest arid lowlands comprise an important fifth poor region.

Population Densities. Population pressure is generally high in most mountain counties. Population density exceeds 110 persons/km^2 in half of the 368 mountainous national-poor counties, and exceeds 200 persons/km^2 in 15 percent of these counties (many of which are located in northeast Yunnan, southwest Sichuan, northwest Guangxi, southern Ningxia, southern Gansu, southern Henan and western Anhui). The arable land to total land ratio is less than 15 percent in four fifths of these 368 counties, and less than 5 percent in one fifth of the counties. (Over half of the 40 counties with less than 5 percent of cultivated land are located in Guangxi, Guizhou and Yunnan.) As a result, about three quarters of the 368 counties have less than 2 mu of cultivated land per capita, and one quarter of the counties have less than 1 mu per capita. On the other hand, some 66 of the 368 counties have densities less than 50 persons/km^2. Most of these counties with low population density are located in pastoral regions from Xinjiang to Yunnan, and in three subtropical mountain ranges in southern Yunnan, southwest Yunnan and northeast Guangxi.

Scale of Diversity in Farming Systems. The diversity of farming systems is high at all spatial scales from mountain regions to farmers' fields. Each regional mountain type covers a wide range of latitude and elevation. For example, the karst area ranges from 500 meters in subtropical northwest Guangxi to over 3,000 meters in temperate montane northwest Guizhou and northeast Yunnan. Within a county, elevation is a major factor differentiating farming systems. Cropping intensity may decrease from 2 or 3 crops per year in a valley floor to 1 crop or less at higher elevations. In southwest China, wheat or rice (the staple food crops at lower elevations) is replaced by maize at medium elevations and by potatoes and buckwheat at high elevations. In the central and eastern mountains and the karst mountains, major productivity and cash income differences occur between low elevation irrigated paddy-based systems, and rainfed maize-potato systems on hill slopes. In addition, farmers in neighboring counties or townships often use different varieties and crop rotations due to the limited exchange of technical information arising from poor access and weak communications infrastructure.

Diversity within Farms. Integrated farming systems (crops, tree crops, and livestock) have primarily been developed by mountain households in the non-pastoral areas to spread their production risks. In such systems, subsistence agriculture is combined with cash crop production, and modern inputs are integrated with traditional farming practices. Such integrated systems generally allow higher overall production with lower risk (for example, risks from pests, disease, and climatic events) than monocrop systems, with lower levels of external inputs. By generating a wider range of marketable products, diversified systems also spread market risk. They also enable better nutrition for poor households by providing a wide range of consumable products.

Annex 3 Table 1: Numbers of Mountain Counties and Poor Counties by Province

Province/ Municipality	Number of Counties			Nationally-Designated Poor Counties				Poor Mountain Counties as a share of:	
	Rural Counties	Mountain Counties	Hill Counties	Total	Mountain	Hill	Plain	Nationally-Designated Poor Counties	All Mountain Counties
Beijing	8	3	3	-					0
Tianjin	5	-	1	-					-
Shanghai	6	-	-	-					-
Hebei	138	30	21	39	17	3	19	44	57
Shanxi	101	53	40	35	11	17	7	31	21
Inner Mongolia	85	4	63	31	3	17	11	10	75
Liaoning	44	11	16	9	3	4	2	33	27
Jilin	41	15	15	5	1	0	4	20	7
Heilongjiang	67	20	29	11	0	3	8	0	0
Jiangsu	64	-	18	-					-
Zhejiang	64	28	19	3	3	0	0	100	11
Anhui	67	19	18	17	4	2	11	24	21
Fujian	61	48	16	8	8	0	0	100	17
Jiangxi	84	41	27	18	12	2	4	67	29
Shandong	95	53	25	10	6	0	4	60	11
Henan	116	17	32	28	9	9	10	32	53
Hubei	68	36	24	25	23	1	1	92	64
Hunan	90	42	39	10	9	1	0	90	21
Guangdong	79	44	17	3	2	0	1	67	5
Guangxi	81	43	51	28	24	4	0	86	56
Hainan	17	5	6	5	3	2	0	60	60
Sichuan	142	84	66	31	24	7	0	77	29
Chongqing	30	13	8	12	8	2	2	67	62
Guizhou	80	80	1	48	48	0	0	100	60
Yunnan	123	116	10	73	71	2	0	97	61
Tibet	77	67	11	5	5	0	0	100	7
Qinghai	39	39	0	14	14	0	0	100	36
Shaanxi	90	24	51	50	28	18	12	56	117
Gansu	76	49	14	41	35	3	3	85	71
Ningxia	18	8	-	8	8	0	0	100	100
Xinjiang	85	8	1	25	5	0	20	20	63
TOTAL	2,141	1,000	642	592	384	97	119	65	38

Source: SSB (1991).

Annex 3 Table 2: The 21 Poor Areas and the Proposed 5 Regional Types

21 Poor Regions Identified by CAS (of which 18 Regions selected by LGPR)	Regional Type \a	Elevation (m) Min.	Max.	Provinces	Number of Counties	Poverty-Reduction Program Funding Sources \b Domestic	Donor Assisted
A. Loess Plateau							
*Central and eastern Gansu (Dingxi)	3	1500	3000	Gansu	40	Tianjin	UNDP, WB, Canada
*Southern Ningxia (Xihaigu)	3	1500	3000	Ningxia	8	Fujian	UNDP, WB, WFP, Canada, NGOs
*Northern Shaanxi loess hills	3 & 5	1000	2000	Shaanxi	30	MOST, Jiangsu	UNDP, WFP, WB
*Lüliang mountains	3	1000	3000	Shanxi	24		WB, WFP
B. East-West Plain-Hill Contact Belt							
Bashang sand dunes	5	1400	1700	Hebei	18		
*Taihang mountains	1	200	2000	Shanxi, Hebei	39	MOST	Australia, NGOs
*Qinba mountains	1 & 2	1000	3000	Sichuan, Shaanxi, Hubei, Henan	73		UNDP, WB, FP/IFAD
*Wuling mountains	2	500	2000	Sichuan, Hunan, Hubei, Guizhou, Chongqing	47	MOA	WFP/IFAD
C. Southwest							
*Wumeng mountains	2	1500	5000	Yunnan, Guizhou, Sichuan	36		WB, NGOs
*Jiuwan dashan mountains	2	1000	2000	Guizhou, Guangxi	17	SFA	
*Northwest Guangxi mountains	2	200	1500	Guangxi	41	CAS, Guangdong	UNDP, WB, NGOs
*Southeast Yunnan mountains	2	1500	3000	Yunnan	19	Shanghai	EC, Germany, WFP, NGOs
*Hengduan mountains	2 & 4	1000	5000	Yunnan, Sichuan	13		NGOs
D. Eastern Hills and Mountains							
*Yimeng mountains	1	200	1500	Shandong	14	MWR	Germany
*Dabie mountains	1	200	1500	Anhui, Henan, Hubei	40	MOST	UNDP, WFP/IFAD, Germany, Netherlands
*Jinggang hilly mountains	1	50	1500	Hunan, Jiangxi	59	MOST	Germany
*Fujian and Guangdong hilly mountains	1	50	2000	Fujian, Guangdong	49		
E. Qinghai and Tibet High Altitude Mountains							
*Tibet	4	3000	7000	Tibet	77		UNDP, EC, Canada, NGOs
Qinghai	4	3000	5000	Qinghai	19	Liaoning	UNDP, WFP, EC, Canada, Australia, NGOs
F. Inner Mongolia and Xinjiang Arid Areas							
*Sandy region of SE Inner Mongolia	4 & 5	1000	3000	Inner Mongolia	51	Beijing	UNDP, WB, WFP
W Xinjiang arid area	4 & 5	1500	3000	Xinjiang	27	Shandong	UNDP, CIDA
TOTAL					741		

"*" *indicates region selected by LGPR as one of 18 poor regions*

\a China Poverty Study Regional Types: 1: Eastern and Central Mountains, 2: Karst, 3: Loess Uplands, 4: Pastoral Areas, 5: NW Arid Lowlands

\b *This list is not exhaustive and does not include several programs started after 1997.*

Sources: Jiang 1989, Ren 1998, UNDP 1997a and interviews.

Land Use Patterns. These diversified farming systems share a common "infield/outfield" land use pattern in which household labor and soil fertility inputs are concentrated on a central group of intensively-farmed plots (that is, the "infield"). These central plots are usually terraced, and often cover 5 to15 percent of total land area. Terraces reduce the impact of climatic accidents on crops through improved moisture retention during drought, reduced erosion and soil nutrient losses during heavy rain, and are easier to cultivate than sloping land. Sloping land (that is, the "outfield") is devoted to uses, including animal grazing, forestry, bush-fallow cultivation, other marginal crop production, and gathering activities, which require fewer and reduced levels of inputs. This infield/outfield pattern is not observed in the pastoral areas where there is a seasonal use pattern in different elevation belts.[60] Nor does it occur in the traditional slope agriculture systems of several ethnic groups in southwest China (for example, the Yi and Miao in northeast Yunnan) which are based on balanced use of scattered hill slope plots.

The Absolute Poor. Many of the absolute poor live in micro-watersheds which have very uneven quality of agricultural resources and infrastructure. This has resulted in the uneven accumulation of productive assets, particularly animals, but also tools, economic and timber trees, and access to water sources (Li 1998). Many of these differences occur between natural villages (or village groups). Each natural village tends to have a small number of households with more productive assets, better technical skills, more labor, and a food surplus, as well as absolutely poor households with less of each of these assets (particularly animals) and food deficits. For example, in very poor SWPRP villages, about half of the households did not raise cattle (before the project). The poorest households are also those who tend to sell assets and do not readily renew them when prices or yields are low. For example, in some SWPRP villages in 1998, more than half of the households could not afford to buy a pig for fattening due to low agricultural incomes the previous year. Poor households often have less labor available due to poor health and nutrition and a high ratio of dependents. Equal access to cultivated land is an important safety net for the poor in China (Burgess 1998), but many of the absolute poor have an extremely small area of cultivated land per capita (for example, in southwest China). This is often because land has not been reallocated since the early 1980s.

Food Security. Except in paddy-based land use systems, food security remains a substantial problem in mountain areas. A simple assessment of grain availability is given in Annex 3 Table 3. In the karst and the central and eastern mountains, rice-based land use systems enable food security with one crop per year (even in areas with high population densities). A grain surplus may occur in lower elevation areas where double-cropping is possible due to use of hybrid varieties. In the loess uplands, the spring wheat-based system averages less than 200 kg grain per capita, and regularly encounters crop failure due to drought. Maize/potato-based systems provide less than 200 kg grain per capita above the elevation limit where multiple cropping can be practiced. Frequent yield losses occur and households at all elevations remain at risk of grain deficit due to adverse climatic events (such as drought or flood). This is compounded by inadequate storage systems for staple crops. Even households with adequate average food supply often do not have enough assets or other means to recover rapidly from adverse climatic events. The effects of such events can be felt for several years because, following a year of grain deficit, households having to purchase grain will have less disposable income to purchase

[60] The absence or only limited presence of this seasonal pattern is an important limitation in the resource base in the karst, central and eastern mountains, and the loess uplands.

chemical fertilizer and other inputs. This, in turn, will result in reduced yields during the following year.

Land Use Intensification. Agricultural intensification in mountain areas is occurring due to three factors. First, rapid economic development in the lowlands creates an incentive to develop cash crop production. Second, high population growth rates of some ethnic groups (such as in southern Ningxia, where Hui birth rates are 2.2 percent per year according to Lu and Xue, 1997) and large family sizes require households to increase their levels of subsistence production. Third, farmers are investing, with government support, into improved slope management. In infield/outfield land use systems the combination of labor-intensive farming practices and access to modern inputs[61] creates five means of agricultural intensification on the central plots. These are (a) expanding terraces, (b) use of chemical fertilizer, (c) use of higher-yielding varieties, (d) raising more animals to increase organic manure and draft power for crop production, and (e) interplanting trees and cash crops. Slope agriculture practiced by minority ethnic groups in southwest China appears to be evolving either towards adoption of the terraced pattern or towards expansion of village tree crop belts. In all of these cases, land use intensification leads to progressive reduction of cultivation on non-terraced sloping land and the replacement of marginal crops by tree crops and animal grazing.

Animal Assets. In the karst and the central and eastern mountains, most farmers view the integration of animal husbandry with crop production as their preferred means of intensification. In southwest China, minimum household livestock production for home consumption, cash income generation, and draft power is generally 2 pigs and 1 draft animal (that is, 7 sheep equivalent units—SEUs). Unfortunately, many households are below this minimum (for example, poor villages in northeast Yunnan averaged 6 SEUs per household in 1994, and 5 in northeast Sichuan in 1996—see Annex 3 Table 3). In the pastoral areas, the poverty line is 25 SEUs per person. In the loess uplands of southern Ningxia, households average 10 SEUs (The World Bank 1997). This is marginally below the equivalent cash value of one year's household grain consumption.[62] As a result, households with this level of assets cannot compensate for a year of crop failure. Increasing stock numbers in the rangelands is problematic since animal densities already exceed the resource base in many villages, and coupled with climatic events, result in widespread overgrazing (Miller 1998b). Further study of rangeland ecology, grazing management, and alternative feed supply in the pastoral areas is required. Improved grazing management practices combined with a strategy of voluntary resettlement, development of irrigated fodder resources and improved management of communal land (including sloping land) should be considered prior to increasing animal numbers.

---

[61] Poor households purchase varying amounts of chemical fertilizer according to their annual incomes. Distance from roads does not appear to be a major obstacle to fertilizer use as whole families carrying fertilizer bags on their backs are frequently seen on mountain paths.

[62] One household consumes approximately 1,925 kg of grain per year, with an average market value of Y2,310. 1 SEU has an average value of Y200 for 40 kg of live weight.

Annex 3 Table 3: Main Features of Regional Mountain Types

	Central and Eastern Mountains	Karst Mountains	Loess Uplands	Pastoral Uplands
Handicaps				
Remoteness	Less remote	Very remote	Remote	Very remote
Lack of water	Dry season	Dry season	Semi-arid, dry season	
Population pressure	Very high	Low to very high, increasing	High, increasing	Low
Historical Degradation	Important	Important in most subregions	Important	Locally important
Land Use Patterns	Infield/outfield	Infield/outfield or slope agriculture	Infield/outfield	Winter/summer pastures
	1. Rice	1. Rice	Spring grain/potatoes	
	2. Maize/potatoes	2. Maize/potatoes		
	Forestry, agroforestry	Agroforestry	Rangeland	Rangeland
Bottlenecks				
Animal Husbandry	Winter forage, low animal assets	Winter forage, low animal assets	Overall biomass, low animal assets	Winter forage, loss of animal assets, animal housing
Food Security	Water conservancy	Supplementary irrigation, improved seed, upland soil improvement, post-harvest	Water harvesting, improved seed	
Slope Management				
Land use change	*Concentration on terraced center*	Concentration on terraced center or slope agroforestry	*Slow, concentration on terraced center*	*Winter intensification*
Engineering Potential	Medium, hand-terracing	Low, hand-terracing	High, mechanized terracing	None
Other potential	High, forestry, hedges	High, agroforestry, grazing management	Low, hedges, grazing management	
Market Potential				
In-county	High	Medium	Low	Low
Industrial products	High	Medium	Medium	Medium
Specialty products	High	High	Low	High

Examples of Current Land Use in Poor Villages \a					
Main Crop	Paddy	Corn/Potato	Paddy	Corn/Potato	Spring Wheat
Arable land/capita	1.1	1.3	1.0	1.2	4.9
Cropping index %	100	150	150	100	90
Yield ton/ha	4.5	2.5	3.5	2.2	0.6
Grain production kg/capita	330	325	350	176	176
Food grain kg/capita	215	276	228	150	150
Cattle/household	0.5	0.7	0.7		1.3
Pig/household	2.1	2.0	2.0		0.3
Goat-sheep/household	0.3	0.5	0.5		3.4
Total animal assets SEU	4.9	6.0	6.0		10.2

\a Derived from project village data in SWPRP and QBPRP.

Source: Author's calculations.

Production Bottlenecks. The following bottlenecks limit agricultural production for most poor households:

- Efficient Use of Labor. Land use intensification requires gains in efficiency of household labor use, especially for women. In many poor households, efficient use of labor for productive activities is limited by time spent in carrying water, transportation, and inefficient production methods (e.g. absolute poor households usually have few metal tools, and the use of animals for transportation is absent in some regions).
- Fodder Resources. In the loess uplands, the cold, semiarid climate limits the overall biomass available for animals and fuel. In the three other regions, the availability and the quality of fodder in winter are an important constraint for developing and maintaining animal assets. In maize/potato systems, large quantities of maize stover are available for animal consumption, but have very low palatability and digestibility.
- Crop Establishment. Spring drought may affect sowing times, and an uneven start to the summer rainy season often causes poor crop yields. Where growing seasons are short, the use of late-maturing varieties, and relay-cropping systems often require sowing crops when risks of low temperature are still high, and planting delays can expose crops to risk of frost and cold temperatures prior to harvest. Low soil fertility is an added constraint. The yellow podzolic earths of the high-elevation karst mountains are acidic and often waterlogged. In paddy-based systems, waterlogging and cold irrigation water can reduce paddy yields and limit production to one crop per year (for example, in the Wuling mountains).

Historical Degradation. Degraded vegetation cover and eroded soils mainly occur in highly populated counties. Such degradation has often been due to poor land management in the past. For example, deforestation during the seventeenth century for charcoal production in the semiarid upper Yangtze catchment has been a significant contributor to soil erosion today (ICIMOD 1994). However, significant degradation also occurred in the 1960s and 1970s when government recognition of diversified mountain agriculture's role in soil conservation largely waned (Leeming 1985, Han 1998). Many counties have monitored past degradation and recent recovery of the vegetation cover. For example, in Tongjiang County, Sichuan, the forest cover rate decreased from 50 percent in the 1940s to 18 percent in the 1970s, but has since recovered to 35 percent in 1998. In Tongjiang, as in many other counties, a policy focus on grain production resulted in the extension of grain cultivation onto steep slopes in the 1960s when up to 60 percent of the land area in Tongjiang mountain townships was under slash and burn. During this period, animal assets decreased substantially in many areas (Leeming 1985), and traditional off-farm migration and commercial transactions were disrupted. This period also resulted in the loss of many community-based regulatory mechanisms for land use and natural resource management. This still negatively impacts on many mountain communities today.

Access to Resources. Unclear use and management rights on sloping land, pasture, natural or commercial forests, and water resource systems limit their productive and sustainable use (MOA 1997, Yang 1997). Clarification of use rights between individuals, collectives (ranging from villager group to township), and the state has been ongoing for several years. As a result of frequent land reform since 1949 and the different interpretation of land ownership changes in different areas, land use rights and access rights to other resources are handled differently by different provinces and even by neighboring villages (ADB 1998). In many areas, this makes it difficult to assess which collective or village-level organization has land allocation rights, and how this effects on-going redistribution of rights. Unclear ownership has resulted in reduced access to communal resources by poor households in some areas, and reduced security of land

tenure contracts. In many provinces, long-term land use rights on communal land are being auctioned to individual households, but lack of transparent auction procedures mean that poorer households are unlikely to benefit from such auctions.

User Rights. In the forestry sector, many provinces (such as Guangxi and Hebei) are actively encouraging shareholding production arrangements. Under such arrangements, investors with access to credit bring in capital, individual households or local collectives receive land shares, and workers receive labor shares. Shareholding arrangements are welcome by communities where they allow improved management of remote forestry land and create employment. However, there are concerns that while shareholding households may retain their formal use rights on a piece of land, they may not fully benefit in the income derived from it (Li 1996b). Resource access rights are particularly unclear for grassland (Banks 1997). Communities have often allocated individual use rights, but retained traditional patterns of use on these common lands. In some provinces (such as parts of Qinghai), communities are formally or informally allocating grassland to individual households. In pastoral areas, privatization and enclosure of pasture is an important task of local governments. In other regions, grassland may be auctioned or contracted. While these changes aim to improve grassland management their impacts are complex, and may also reduce small-holder access to former communal pasture and other resources (such as water sources).

C. AGRICULTURAL TECHNOLOGY

Framework for Improved Technology. This section gives examples of relevant appropriate technologies for mountain areas in China, many of which have similar technology needs. This is not a comprehensive list, but is derived from the productivity and sustainability constraints described above (tools, fodder, crop establishment, and slope management), coupled with the need for a wide range of low-cost, low-risk technologies specifically developed for mountain areas.

Tools and Transportation. Poor households without adequate tools, transportation and essential micro-infrastructure (such as drinking water systems) mainly need capital for the purchase or construction of these items. Considerable scope exists for the introduction of simple, low-cost tools from other parts of Asia and China, including plastic tools and water distribution systems (such as pipes and low-cost drip irrigation systems), buckets, containers, and nets which are often absent in mountain villages. Transportation can be improved in many areas through improved paths for horses and donkeys, cemented footpaths on steep slippery terrain, and ropeways.

Fodder and Feed. China's national demand for fodder development continues to gain recognition. For example, MOA's new nationwide "three-pronged structure" program (*sanyuan jiegou*) recommends the introduction of a variety of forage crops into cropping systems (MOA, 1994). Mountain areas are not specifically targeted by this program, but will benefit from it (Wang and Wang, 1998). Potential areas for technology improvement range from improved fodder varieties, cropping and land use systems, to storage and processing, feeding systems and pasture management. Experience from research and pilot projects is now becoming available. For example, a nationwide program to identify appropriate domestic and introduced fodder species and varieties was conducted in the mid-1980s (SGWS, 1986). Several aid programs in Guizhou province, including the New Zealand-assisted Integrated Land Use Systems (ILUS)

project (Annex 3 Box 1), have contributed simple new technologies to integrated cropping-livestock-tree crop farming systems for karst areas. However, extension system activities in most areas are limited to large-scale improved pasture, straw ammoniation and fermentation, and industrial pig feed. Small areas of fodder relay-cropped with grain or grown on earth terrace edges would be less costly to maintain than improved pasture. Quality hay could be developed despite the heavy summer rains if adequate tools and storage are used. Low-cost shredders and urea-salt licking blocks to improve the use of crop straw and other by-products are an alternative to cement straw ammoniation tanks. The loess uplands need to introduce drought-tolerant biomass-producing crops (e.g., sorghum), improved technology packages for alfalfa production, and salt-tolerant fodder varieties. The karst mountains have further potential to identify fodder tree species and develop improved intercropping systems. Improved grazing management methods are also needed.

Food Crops. Specific opportunities for improved food crop technology in mountain areas include:

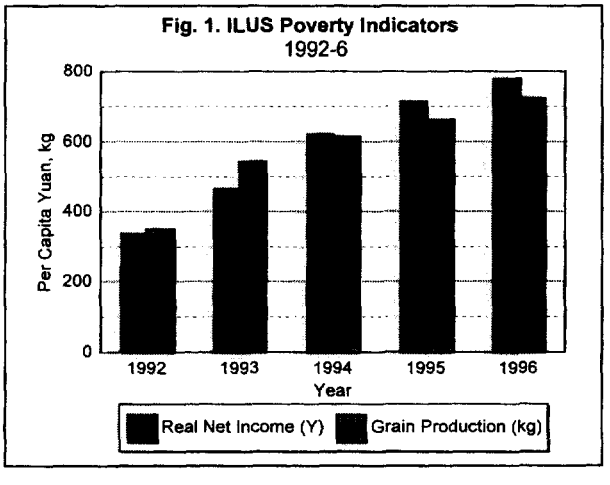
- Crop Establishment. Many improved crop establishment technologies are already available (such as plastic tents for raising of seedlings, use of manure as potting and transplanting media, plastic mulch, small water tanks combined with terracing and drainage for irrigation of maize and other crops) in existing extension programs. However, there is potential for further innovation, such as simple improvements in composting methods (such as the use of lime and urea) which could improve the degradability of organic manure with high contents of ferns, pine needles and other acidic material. Di-ammonium phosphate is widely used as a maize "starter" fertilizer in cold environments in western countries, but not in China.
- Lower-Cost Maize Technology. Adoption of hybrid maize is lower in poor areas due to higher production risks and the weakness of existing extension programs. As a result, average adoption rates for hybrid maize were only 52 percent in Yunnan and 60 percent in Guizhou in 1996, compared to 86 percent on average for China (MOA, 1996). Different maize technologies are required according to different household circumstances. For example, households with a regular food surplus readily adopt hybrid maize and sell the product to purchase rice for home consumption. At high elevations, poor farmers with a food deficit have difficulties in sustainable adoption of hybrid maize because inputs are expensive. Maize transplanting and use of plastic mulch is required so that the crop cycle is shortened to fit into the growing season. The introduction of very-early maturing maize hybrids adapted to human consumption would be a major improvement for Chinese mountain farmers. High-yielding very-early maturing maize genetic material is widely available in Western counties, but has not been widely used by Chinese maize breeders. At lower elevations with subtropical climates, open-pollinated varieties should be made more widely available to poor farmers. For example, these varieties are being extended in southern Yunnan, but are also needed in lower-elevation valleys in northern Yunnan.
- Potato Technology Packages. Extension of virus-free potatoes by MOA has been on-going since 1988, but low soil fertility and poor post-harvest storage remain limiting factors. Potassium sulfate is the most common potassium fertilizer due to its use in tobacco production. However, it is too expensive for subsistence potato production. Potassium chloride may be more appropriate, but has not been widely researched. Research is needed to improve on-farm potato storage because the storage period is limited to 3 months, except in the northwest semiarid climates.

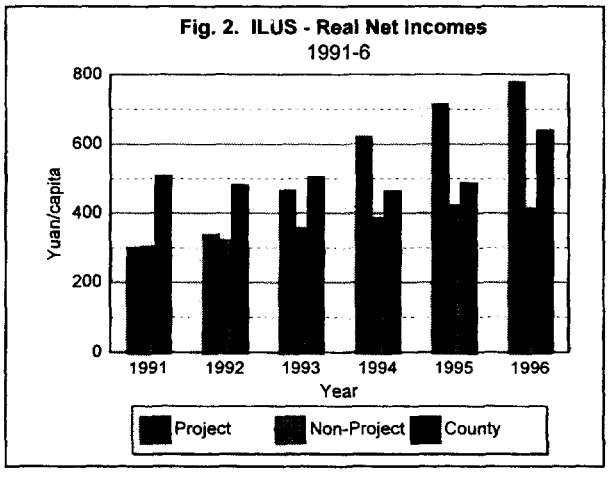
Annex 3 Box 1: Technology for Integrated Land Use Systems in Guizhou Karst Areas

The New Zealand-assisted Guizhou Integrated Land Use Systems (ILUS) project provides an example of an integrated farming systems approach to poverty reduction in karst areas. It assisted farmers at four sites (Dushan, Longli, Qingzhen, Huaxi) in Guizhou to develop appropriate mixes of cropping, livestock, tree crops, and forestry to diversify their food supply and income sources to achieve food security and increase cash incomes. ILUS introduced improved technology, a farmer and technician training program, a revolving credit fund for farmers to purchase inputs, and equipment provision. A key feature was strong collaboration and an integrated approach to poverty alleviation by the Agriculture, Animal Husbandry, and Forestry Bureaus at provincial, prefecture, county and township levels.

The ILUS approach emphasized the integration of appropriate technology or farming practices into the existing farming systems. It focussed on technology or practices already being used in other parts of Guizhou, China, and overseas that were simple, affordable, practical, and could be easily understood and implemented by poorly educated farmers. Such practices included use of green manures; 2-step rice planting; new rice, maize, rape varieties; improved seedling production; plastic mulch for row crops; relay and inter-cropping systems; erosion and water control through contour cultivation; biological erosion control measures; under-cropping in orchards; improved tree crop management; improved livestock management; pig and cattle breeds; mating; grazing management; animal health; supplementary feed; and wasteland development through oversowing with low fertility species. A "train-the-trainers" approach was used with training provided to provincial, county, and township technicians, who in turn, conducted regular on-farm training totaling more than 12,000 person-days for project and non-project farmers.

As a result of ILUS, real net incomes of project farmers increased 2.75 times from Y304/capita in 1991 to Y836 in 1996 (Fig. 1). In 1991, net incomes/capita for 3 of the 4 sites were below the poverty line (the fourth site was just above it), but by 1996 all sites were at least double the net income poverty line. Average grain production doubled from 352 kg/capita in 1991 to 724 kg/capita in 1996 (Figure 1), with most households achieving grain surpluses in 1996. Real net incomes of project farmers increased faster than non-project farmers and county averages (Figure 2), with the latter increasing by 80 percent and 33 percent respectively over the five years. There was a 2-3 year lag in income growth between project and non-project farmers, due to the lag time for diffusion of ILUS technologies into adjacent non-project villages.





ILUS has enabled its farmers to achieve food security and increased their disposable cash income giving them more flexibility for purchasing farm inputs, buying material possessions to improve their quality of life, or for investing their profits into education of their children. Community-wide social benefits have also accrued with one village building and operating its own school from income generated by the project, while another village has invested in electricity supply.

Source: Author's calculations.

- Quality Seed for Minor Crops. Wheat varieties adapted to high elevations, buckwheat, oats, rye and beans are important staple crops for mountain farmers. Specific breeding programs for these crops may not be cost-efficient, but research into improved crop management, seed storage and packaging, and improved varietal selection would allow substantial yield gains for poor farmers.

Slope Management. Many current watershed management methods are technically successful, but are often expensive. For example, terrace construction on the loess plateau is completely mechanized and costs are relatively low, but stone-walled terraces in rocky landscapes require a large investment in materials, skilled labor, and voluntary farm labor. Operational costs can also be high (for example, for pumping irrigation water for fruit and nut tree production intercropped with food crops in Xingtai County in the Taihang mountains, Hebei). However, low-cost techniques (such as agroforestry systems using hedges and contour line cropping) used for erosion control in many countries are only just beginning to be used in China. Examples include hedges planted on terrace edges (such as mulberry trees for silk production in Sichuan) and tree planting along contour lines. Control of soil erosion using hedges is considered to be "one important technology for sustainable mountain agriculture" by Cai (1998) and listed as one of five priority topics for Guizhou's agriculture (Wang and Wang, 1998). Water resource agencies are starting to advocate contour line plowing in Chongqing (CEIS, 1998), and the Guizhou ILUS project has successfully demonstrated the willingness of farmers to adopt contour line sowing for food crops.

Tree Technology. A continued effort is required for the improvement and dissemination of fruit and nut varieties adapted to market requirements. There is much potential for improved production in the wider adoption of modern tree nursery technology, from parent material breeding to transplanting yield potential (The World Bank, 1998). The availability of quality seedlings is key to subsequent technical improvements.

D. RESEARCH AND EXTENSION

Research and Extension System. Under recent government restructuring, the agricultural research institutes of the Chinese Academy of Agricultural Sciences and the extension network under the Ministry of Agriculture are just two of the many organizations which now have mandates for research and extension. The Science and Technology system is responsible for agricultural research planning and financing, and directly manages the "poverty reduction through Science and Technology" program. Research funds can be applied for by research institutes (at national to prefecture level), universities, other teaching institutions, and commercial companies. According to the 1993 Agricultural Extension Law, agencies involved in agricultural extension include the research and teaching institutions; the Ministries of Agriculture, Forestry, and Water Conservancy; the Science and Technology mass organization ("*kexie*") and the related network of farmer technical associations; the supply and marketing cooperatives; commercial companies; State forestry farms; and the media. The counterpart organizations ("*duikou danwei*") with direct sponsoring relationships with specific poor areas are another important channel of technical extension.

Other National Programs. In addition to the activities undertaken by this large number of agencies involved in research and extension, there are several other large-scale national programs. These include the MOA Food-and-Clothing program ("*wenbao gongcheng*"), the

Science and Technology poverty reduction programs, the MWR Yangtze Watershed Management Program (covering 2,200 small watersheds in 120 counties), and the MOA ammoniated straw program. Unfortunately, the integration of results from pilot programs and research activities into these large-scale programs has been limited by shortage of funds and inadequate information channels.

MOA's Extension System. MOA's national extension resources have tended to focus on maintaining grain production, with little attention being given to the extension needs of mountain counties and townships. For example, Agrotechnology Extension Centers have been built in 1990 counties, but their establishment only began in the mountain counties of some provinces (such as Hunan) in 1995. Similarly, sales of agricultural inputs account for about 50 percent of China's overall extension budget, but are very limited in mountain counties. With reduced government support and limited income from commercial activities, county extension agencies have extremely limited operational budgets unless they participate in a national or provincial program, or link up with commercial operators (such as seed companies). Extension activities are often planned at national or provincial-level giving little option for county or township stations to adapt such activities to the specific needs of their area. For example, Guizhou's 1997 crop extension plan included 6 items (hybrid rice and maize, rice and maize high yield packages, relay-cropping, plastic and straw mulch, balanced fertilizer application, and pest and disease control). Options for individual counties to adapt these activities to their local needs is limited to choosing among these items. National or provincial funding support for other items is not available.

Food-and-Clothing Program. The 8-7 Plan envisioned that a wide range of MOA activities were needed in poor areas. In practice, the national Food-and-Clothing program has evolved into MOA's principal program in poor counties. Its budget includes subsidies for plastic mulch (equivalent to 20 percent of the market price) for hybrid maize production and extension operating costs. By 1994 the program had been implemented in 471 counties in 16 provinces (Wang and Cui, 1996). Many county governments and some prefectures also provide seed subsidies (equivalent to 40 to 60 percent of the market price). The program has significantly influenced national and local viewpoints on mountain agricultural technology. Most importantly, the program's primary objective was to engineer a switch from providing relief grain in food deficit areas to subsidizing agricultural inputs to achieve food self-sufficiency in such areas. County governments are responsible for county-level grain self-sufficiency, and many (such as in Yunnan) have located the program in lower-elevation townships which have higher production potential. An exception is Hubei which selected 298 poorer townships out of 1692 to benefit from the program (MOA, 1994). The resulting production increases have led to wide acknowledgement of plastic-mulched maize as the major technical improvement for mountain areas (ICIMOD, 1994; LGPR, 1997), but has come at the expense of providing a wider range of appropriate technology for poor farmers. Unfortunately, it appears that positive and negative lessons from the program have not been adequately disseminated (Lu, 1994; Lu and Xue, 1997). For example, well adapted maize varieties and suitable agroforestry species have not been widely extended as yet. Similarly, counties need to be aware of the environmental risks of increased run-off, soil erosion, and depletion of soil nutrients due to use of plastic mulch without balanced fertilizer applications.

The Science and Technology Poverty Reduction Program. The Science and Technology Poverty Reduction Program started in 1986 and operates in 95 mountainous counties (including 6 pilot counties) in the Taihang, Dabie, and Jinggang mountains and in northern Shaanxi. Each province and pilot county has set up a Mountain Development Office. Provincial programs include the Yunnan Science and Technology Poverty Reduction Plan (which started in 1995 and operates in 103 of Yunnan's 506 poor townships), and Guangxi's 1211 Program, which started in 1996 in 28 counties (MOST, 1998). Each program consists of microprojects contracted by individual research institutions and implemented jointly with county or township science and technology offices in a few villages. Grant funding levels are about Y100,000 to Y200,000 per township per year. LGPR loans are also made available to these projects. Pilot village projects in Yunnan, Guangxi and Shanxi include comprehensive development activities for the improvement of grain crops, tree crops and animal husbandry; drinking water facilities; and, sometimes, primary education. Microprojects include development of specialty mountain products, animal breeding, and seed production facilities. Nationally-funded microprojects usually provide grants to individual counties to focus on a county-specific tree crop or animal commodity.

Appropriate Mountain Technologies. The current status of the research and extension system presents opportunities and challenges for the development and dissemination of appropriate technology:

- Linking Research and Extension to the Market. Linkages between research, extension and market requirements for agricultural products are weak. Poverty reduction programs have a role to play in nurturing such linkages. They can commission relevant research and farmer training (such as crop production, management, and post-harvest methods to improve product quality, and improved marketing systems), and strengthen village-to-village information and technology exchange (which is currently weak).
- Fodder. The enormous demand for animal fodder necessitates the establishment of relevant national and regional programs. Technical change will require the identification and exchange of existing farmer knowledge, applied research and agricultural extension. The operation of the forage seed sector by the animal husbandry extension system has proved inefficient. Instead, commercially-viable seed companies should be encouraged to include forage species in their operations.
- Diversified Food Crop Technology. Government-funded research has an important role to play in the introduction of earlier-maturing maize genetic material. Commercially-managed, larger-scale seed companies are more likely to be interested in non-hybrid maize varieties and secondary crops than county-owned companies currently are (because the large size of the market will make these crops attractive even though the profit margin is lower). The current top-down crop extension system does not allow for farmers' traditional practices and innovations to be identified or taken into account. In particular, the specific needs of the absolute poor and the indigenous knowledge of minority ethnic groups are rarely considered (Li and Li, 1997). Poverty reduction programs need to set up or commission on-farm research and farmer-based extension methods to address the needs of such groups.
- Slope Management. The scale and importance of soil erosion offers an opportunity to set up national or regional programs related to improved soil erosion control using biological methods (such as hedges and contour line farming). The existing network of pilot watersheds could allow rapid expansion of research and extension activities in these fields.

- Tree Technology. Distortions in tree seedling prices should be removed by moving tree nursery management from government agencies to commercial operators and farmers. However, government-funded research does have a role to play in enhancing and managing exchange of improved genetic materials.

Combining Technical Improvements with Access to Credit. To gain maximum benefit from technical innovations, poor households must also have improved access to credit to invest in new technology, coupled with appropriate training, and provision of technical services. Household cashflow analysis (Annex 3 Table 4) demonstrates that poor households can quickly increase their cash incomes by receiving appropriate combinations of such inputs.

Annex 3 Table 4: Cashflow Models for Three Typical Households

Cashflow for Household A: Tongjiang County, Sichuan

Household members: 4 Dependents: 4 persons — 1997 Net Cash Income/capita: Y25

Cultivated land: 3 mu (1.5 mu paddy, 1.5 mu dryland) — 1997 Grain Production/capita: 475 kg

Loans: 1997 Y3,000 for small business (borrowed from family, interest free)

1998 Y3,000 for mushrooms (borrowed from QBPRP, 0.24%/month)

	1996	1997	1998	1999	2000	2001	2002
Cash Income:							
Rice	272	272	272	272	272	272	272
Wheat	121	121	121	121	121	121	121
Potato/sweet potato	0	0	0	0	0	0	0
Maize	0	0	0	0	0	0	0
Rape	233	233	233	233	233	233	233
Vegetables	0	0	0	0	0	0	0
Mushrooms	0	0	16,899	16,899	16,899	16,899	16,899
Pigs	900	900	900	900	900	900	900
Small business	0	11,000	12,500	12,500	12,500	12,500	12,500
Off-farm work	300	300	0	0	0	0	0
Income –Total	1,826	12,826	30,925	30,925	30,925	30,925	30,925
Expenditure:							
Rice	198	198	198	198	198	198	198
Wheat	180	180	180	180	180	180	180
Potato/sweet potato	101	101	101	101	101	101	101
Maize	77	77	77	77	77	77	77
Rape	209	209	209	209	209	209	209
Vegetables	222	222	222	222	222	222	222
Mushrooms	0	0	8,301	8,000	8,000	8,000	8,000
Pigs	336	1,200	724	724	724	724	724
Small business	0	9,500	9,500	9,500	9,500	9,500	9,500
Education fees	320	1,000	1,200	1,200	1,200	1,200	1,200
Agri. Tax	36	36	36	36	36	36	36
Exp. Before debt servicing - Total	1,679	12,723	20,748	20,447	20,447	20,447	20,447
Debt Repayment:							
Capital	0	0	5,000	1,000	0	0	0
Accumulated Interest	0	72	95	0	0	0	0
Subtotal	0	72	5,095	1,000	0	0	0
Expenditure – Total	1,679	12,795	25,843	21,447	20,447	20,447	20,447
Annual Surplus	147	31	5,082	9,478	10,478	10,478	10,478
Surplus/loss carried forward	0	147	178	5,260	14,738	25,216	35,694
Cashflow Surplus/Loss	147	178	5,260	14,738	25,216	35,694	46,172
Cash Income/capita	25	30	877	2,456	4,203	5,949	7,695

Price Sensitivity Analysis on Mushrooms (Gross Margin after Debt Servicing)

	Price (Y/kg)			
	Current	**-50%**	**-67%**	**-75%**
Dried mushrooms (60% production)	24	12	8	6
Fresh mushrooms (40% production)	3.3	1.65	1.0	0.83
Gross Margin (2,400 bags)	16,899	4,215	(141)	(2,073)

Cashflow for Household B: Duan County, Guangxi

Household members: 7 Dependents: 6 persons — 1994 Net Cash Income/capita: Y285

Cultivated land: 4 mu (dryland) — 1994 Grain Production/capita: 114 kg

Loans: (all borrowed from SWPRP, interest 0.24%/month) — 1994 Grain Consumption/capita: 49 kg

1995 Y1,892 for water cistern — 1995 Y500 for 0.5 mu pomelo

1997 Y1,000 for 4 goats — 1998 Y500 for maize seed, fertilizer

	1997	1998	1999	2000	2001	2002
Cash Income:						
Goats	0	210	420	630	840	840
Pigs	1,800	1,800	1,800	1,800	1,800	1,800
Pomelo	500	600	600	810	1,125	1,650
Timber	100	100	100	100	100	100
Bamboo	350	350	350	350	350	350
Remittance	0	0	1,000	1,000	1,000	1,000
Income – Total	2,750	3,060	4,270	4,690	5,215	5,740
Expenditure:						
Animal feed	800	800	450	450	450	450
Fertilizer	200	350	350	350	350	350
Transport	50	50	50	70	100	120
Maize seed	0	40	40	40	40	40
Other	200	200	200	200	200	300
Education fees	900	1,500	1,500	1,500	1,500	0
Agri. Tax	100	100	100	100	100	100
Exp. before debt servicing – Total	2,250	3,040	2,690	2,710	2,740	1,360
Debt Repayment:						
Capital	0	500	1,131	1,131	1,131	0
Accumulated Interest	0	43	95	63	37	0
Subtotal	0	543	1,226	1,194	1,168	0
Expenditure – Total	2,250	3,583	3,916	3,904	3,908	1,360
Annual Surplus	500	(523)	354	786	1,307	4,380
Surplus/loss carried forward	0	500	(23)	331	1,117	2,424
Cashflow Surplus/Loss	500	(23)	331	1,117	2,424	6,804
Cash Income/capita	83	(4)	55	186	404	1,134

Note:

Debt repayment and interest to be repaid in lump sum at end of loan term.

Difference in cash income/capita 1994-7 is largely due to cost of school fees in 1995-7.

Cashflow for Household C: Wuxi County, Chongqing

Household members: 5 Dependents: 5 persons — 1997 Net Cash Income/capita: Y0

Cultivated land: 2.5 mu (dryland) — 1994 Grain Production/capita: 210kg

Loans: 1998 Y700 for maize seed, fertilizer (borrowed from RCC, interest 1.008%/month)

	1997	1998	1999	2000	2001	2002
Cash Income:						
Maize	0	0	0	0	0	0
Wheat	0	0	0	0	0	0
Potato/sweet potato	0	0	0	0	0	0
Rape	22	22	22	22	22	22
Vegetables	0	0	0	0	0	0
Pigs	0	300	600	600	600	900
Off-farm work	1,050	1,050	1,050	1,050	1,050	1,050
Income –Total	1,072	1,372	1,672	1,672	1,672	1,972
Expenditure:						
Maize	278	278	278	278	278	278
Wheat	37	37	37	37	37	37
Potato/sweet potato	300	300	300	300	300	300
Sweet potato	32	32	32	32	32	32
Rape	30	30	30	30	30	30
Vegetables	23	23	23	23	23	23
Pigs	157	157	237	237	237	317
Off-farm work	30	30	30	30	30	30
Education fees	0	340	340	340	340	340
Collective tax	116	116	116	116	116	116
Agri. Tax	52	52	52	52	52	52
Exp. Before debt servicing - Total	1,055	1,395	1,475	1,475	1,475	1,555
Debt Repayment:						
Capital	0	0	0	0	0	0
Accumulated Interest	0	49	217	217	300	384
Subtotal	0	49	217	217	300	384
Expenditure – Total	1,055	1,444	1,692	1,692	1,775	1,939
Annual Surplus	17	(72)	(20)	(20)	(103)	33
Surplus/loss carried forward	0	17	(55)	(75)	(95)	(198)
Cashflow Surplus/Loss	17	(55)	(75)	(95)	(198)	(165)
Cash Income/capita	3	(9)	(13)	(16)	(33)	(28)

Assumptions:

Repayment of loan capital deferred but interest payments made.

Investment in maize production and feed supply enables additional pig production in 2000-2002.

Off-farm work income remains steady at Y1,050/year.

Source: Author's calculations.

ANNEX 4: PARTICIPATORY POVERTY ASSESSMENTS [63]

A. OBJECTIVES AND METHODOLOGY

Objectives. A participatory poverty assessment (PPA) team was commissioned by DFID China Programme in order to inform DFID and the World Bank policies and programmes in China. The PPA team spent three weeks in Guangxi, Yunnan and Ningxia, alongside a World Bank supervision mission, conducting participatory rural appraisal (PRA) research in poor villages. The objectives of the PPA team were two-fold: to undertake a detailed analysis of poverty in selected poor villages; and to assess the impact of the World Bank-assisted poverty projects. To achieve these objectives, several key questions and themes formed the basis of fieldwork: who are the poor and why are they poor; what are the poor's livelihood's coping strategies and how effective is institutional support for the poor; and what are the poverty constraints of the poor and to what extent are their needs being met by poverty alleviation work. The PPA team spent several days in each province at the village level, selecting fieldwork sites on the basis of poverty ranking in the township, ethnic make-up, and level of the World Bank-assisted projects.

Methodology. The methodology adopted by the PPA team consisted of three levels: interviews with county and township officials; group discussions with villagers; and individual farmer household interviews. Interviews with relevant county departments and with the county PMO's allowed the PPA team to undertake a stakeholder analysis of poverty alleviation work. Group discussions with villagers were based on a variety of PRA methods, and were designed to elicit villager's views on poverty and the constraints they faced. Individual household interviews enabled the PPA team to gain a detailed understanding of poor villagers' household economy and livelihood coping strategies.

Conclusions. The comprehensive and detailed data gathered through participatory rural research is an important resource in understanding the rural poor's experience and understanding of poverty, and analysing the weaknesses of poverty projects which do not adequately take the poor's livelihood strategies or poverty needs into account. This data can be summarized in several major themes.

B. UNDERSTANDINGS OF POVERTY AND POVERTY CONSTRAINTS

Differences Between Officials and Villagers in Their Definitions of Poverty. The official definition of poverty rests on two criteria: annual cash income and annual grain consumption. However, these criteria do not adequately represent the vulnerability of the rural poor, nor do they measure quality of life or well-being. Villagers' understanding of poverty is

[63] Annex 4 is the unedited Executive Summary of Beynon, Zheng et al (2000). Beynon, Zheng et al's full report details and substantiates their many observations and findings. Although there are some factual errors in Annex 4, it was decided that no substantive changes would be made to Beynon, Zheng et al's original text.

more complex, including factors such as: quality of house; access to water, electricity and roads; conjugal and family relations; education and technical knowledge; health and access to health care.

Causes of Poverty. Officials' perceptions of the causes of poverty focused mostly on community level factors: natural resources; climate; infrastructure. The perceived 'low quality' of the rural poor was also emphasized. Villagers' perceptions of the causes of poverty focused on the specific situation of poor households; different stages of the domestic life cycle (newly-divided family, school-age children, elderly couple); ill-health, mental illness or death in family; lack of investment or credit; lack of land or labour; poor family relations; bad household economy management; laziness.

Poverty Constraints. Villagers' discussions on the poverty constraints they faced can be divided into three major aspects: infrastructure (water, roads and electricity); capacity-building (investment and credit); and provision of services (education, health, agricultural extension). The many and inter-related poverty constraints facing poor villagers points to the extent to which their needs are being unmet by existing poverty alleviation projects. Whilst the impact of small scale rural infrastructure projects has been positive, projects designed to increase the production capacities of the poorest households have had mixed results, and the impact of projects on the provision of services has been negligible (due to the restricted nature of these projects).

C. World Bank-Assisted Projects and Stakeholders

Infrastructure. The impact of the World Bank-assisted projects to develop the local infrastructure has been positive and appreciated by villagers. The projects for water storage have been particularly successful in that they are not only improve water access for domestic and productive use (thus improving hygiene and land productivity), they also cut the labour burden considerably, particularly for women who are more responsible for fetching water.

Capacity-Building. The World Bank-assisted projects focus on the provision of credit to improve poor villagers' production capacities and its impact has been mixed. Whilst some villagers appreciate the provision of credit and new income-generating activities, a credit-based approach has three major weaknesses: the poor exclude themselves because they cannot take on the risk of a loan or are excluded by officials who worry about repayment; there is poor targeting of loans because the poorest cannot access these projects and there is poor promotion of the loans leading to privileged information; and many credit-based projects depend on household labour which is often a major constraint for poor families.

Services. The education and health components in Guangxi and Yunnan were not large, and resources were mainly channeled into improving the basic fabric of schools and health clinics. However, the PPA team's fieldwork identified a crucial contradiction between improving the quality of facilities and widening access to the poorest. The Ministry of Education's apparent policy to centralize and rationalize rural schools to improve their quality has lessened the access of the poorest children to these schools, a situation that is not ameliorated by the World Bank-assisted education subsidies for the poorest students. The quality of local health clinic doctors is so poor that villagers are willing to bypass the local level and go straight to county hospitals; the upgrading of health clinic facilities and equipment has not been matched by significant investment into doctor training and salaries.

Stakeholders in the Poverty Projects. County and township level officials working on the poverty projects expressed dissatisfaction and frustration with the projects in informal discussions with the PPA team. Local level officials have no participation in the design of poverty projects and are given inadequate funds to oversee implementation. There seems to be a lack of participation at all levels in the poverty project process.

D. Production Systems and Production Constraints

Production Systems and Options. There was a strong correlation between income, production inputs and production options. Those farmers with greater access to cash or credit were able to invest in production inputs to maximize yields and to diversify into other income-generating activities. This relates to the extent to which farmers are able to take risks by participating in loan-based projects or trying out a new activity. The poorest households were unable to take these risks because they were already indebted or had no security in the event of failure. Given that the expansion of livestock is a conventional way out of poverty, the PPA team found several problems associated with promoting livestock as a major part of a poor family's economy.

Infrastructure Production Constraints. The main production constraints identified by the villagers were: water (for improving land productivity), roads (for improving market access), electricity (for utilizing labour time), and agricultural training and technical services (for raising productivity). The gendered access to vital agricultural extension and technical training was noticeable; increasing the number of technicians and training classes will not necessarily improve women's access to these services.

Household Economy Constraints. There were several productions constraints at the household level. Land was a significant constraint in Guangxi and Yunnan, in terms of amount, quality and use of land. Labour was also a significant constraint for many of the poorest families (reinforcing the need to avoid an emphasis on the problem of surplus rural labour), in terms of amount and quality; single-headed households were particularly hard hit by labour constraints. Access to credit was a major production constraint; the paradox was that the poorest families could not access low-interest loans and were the most vulnerable to usury.

Importance of Social Relations in the Household Economy. The strength of a family's social relations was fundamental in their household production and livelihood coping strategies, and in their ability to overcome the constraints mentioned above of land, labour, assets and access to credit. The PPA team found that, generally, better off families were able to draw on agnatic and particularly affinal ties for informal loans or gifts of money and food, as well as the borrowing of horses, cows or tractors, the exchange of labour, and support in times of sudden crises. The importance of a family's social network was replicated at the village level. The example of one village in Guangxi illustrates the vital role that connections with officials and access to assets and information play in a village's benefits from poverty projects (see Beynon, Zheng et al, 2000).

E. Food Security and Safety Nets

Food Scarcity, Sufficiency and Security. Official statistics claim that only around 5% of the rural population are still suffering from food shortages; the PPA team found that figure to underestimate the extent of absolute shortages and food shortages in certain grains. Many families

interviewed either did not have enough to eat at all for some months of the year, experienced shortages in certain grains, had to sell essential grain for needed cash, had to sell their labour power in return for food, or were forced to exchange high-value grains for more low-value grains. Many families also depended on relative lending or giving them rice and wheat every year. Families who produced sufficient food most years or had some surplus, however, also considered themselves vulnerable to disasters. Only those families with a diverse family economy could be classified as food secure.

Safety Nets. The PPA team found evidence of central and local government policies working for the poorest families, as well as the work of international and national charities and the Chinese twinning project (in which rich cities sponsor poor areas). However, the informal safety nets of village community cooperation and extended family networks were the most important and effective safety nets. The PPA team did not gather detailed data on the workings of village committees, but given the importance of informal and local safety nets in alleviating poverty and sudden crises, it could be that poverty projects should seek to support these structures and poverty alleviation capacities and not undermine them by going straight to the household.

Importance of Social Relations in Poverty Safety Nets. As with household production constraints, the extent of a family's extended network of relatives is fundamental in determining their ability to withstand poverty shocks and depend on their own coping strategies rather than turning to formal government channels.

F. Labour Mobility

Different Perceptions of the Value of Labour Mobility. Officials are enthusiastic in their promotion of labour mobility as a rapid and effective means of overcoming rural poverty. Villagers, on the other hand, were much more ambivalent about the value of labour mobility. There were fears of being exploited, and an appreciation that labour mobility can only be a temporary solution and that the development of the village and household economy was the prime objective. Most villagers undertook labour mobility out of necessity, not choice; for simple subsistence, to repay debts, to build up capital, and to build a new house.

Categorization of Labour Mobility. Villagers categorized labour mobility into three distinct paths: permanent work with salary, pension and the transfer of household registration away from the village; casual work that is long-term and usually far away; and seasonal work that can be skilled or unskilled but usually local. Permanent work is the most prized for its security and prestige. Casual work has enabled some families to build new houses and invest in the household economy but the dangers of casual work are manifold. Seasonal work is necessary for many households to supplement income during the hard months.

Impact of Labour Mobility. The PPA team did observe the positive impact of successful labour mobility; new houses, specialized productions, high production inputs. However, there were also many stories of being cheated or exploited, and hard and dangerous work.

Constraints on Labour Mobility. The paradox admitted by labour mobility officials was that the better off families and the better off villages benefited from the labour mobility projects because of the constraints of educational level, access to information, travel costs, and lack of labour. Again, it is worth pointing out that some families cannot take advantage of labour

mobility because they lack adult labourers. There was also a strong gender difference in labour mobility; in Yunnan and Ningxia over 80% of the migrants were male. The impact of urban unemployment on the potential for rural labour mobility to alleviate poverty were noted by both officials and villagers. The macro economic employment situation is having a significant effect on rural labour mobility.

G. EDUCATION

Access and Educational Costs. The proportion of family income spent on school fees is increasing; there is a greater burden on family and more indebtedness as a result of higher fees. Those families with several school-age children were often identified as one of the poorest families in the village during village wealth-ranking. School fees are the most important factor in non-attendance, drop outs and late starters.

Access and Labour Needs. The labour needs of a family often determines non-attendance and drop outs of children, irrespective of their ability to pay the school fees. This seemed to be particularly true for girls. It could be that the strict division of labour in the rural family means that a girl becomes a productive labourer earlier than a boy and is more vulnerable to being withdrawn from school to offset labour shortages.

Access and Distance to School. The PPA team found a clear correlation between distance to school and the willingness of parents and children to continue with study. The burden of a long journey, and a long day without food, is considerable for small children. Therefore, the Ministry of Education's policy of rationalizing schools in the quest for cost-effective and high-quality education is actually decreasing access to schools for remote or small villages and for poorer children whose parents cannot afford the higher fees of these new schools.

Access and Discrimination. Both poor and ethnic minority children seemed to experience some form of discrimination at school. The provision of ethnic minority education in poor areas appears to be poor and there are few structures in place to help ethnic minority children to adjust to the Han Chinese language or to develop multicultural education.

Access and Gender Discrimination. There continues to be widespread discrimination in girls' access to school and the length of time they can study. The PPA team found numerous examples in every village visited. However, whilst the unwillingness of parents to invest in daughters is a major factor in this gender discrimination, other factors are also at work: the gender of the teachers (most are male); the unequal targeting of subsidies to boys (noticeable in Yunnan); and the labour tasks assigned to women which take girls out of education early.

Access and Quality. Villagers whose children went to the new schools built through the World Bank-assisted education projects were appreciative of the better quality of these schools, but better quality comes at the price of higher fees and more centralized schools. Thus, the PPA team found there was a fundamental contradiction between the quality of education and broad coverage of schools. In some villages the local school point had been closed by the Ministry of Education because the falling numbers meant it was not cost-effective. However, since the school point closures, not all children go on to the 'complete primary schools' because of the cost, distance, fear of discrimination and outside places.

H. HEALTH AND HEALTH CARE

Importance of Good Health. The importance of good health was stressed by many villagers. Families who had a member chronically ill or seriously ill were often identified as the poorest in the village because of the high costs of health care and the loss of labour involved.

Factors in Ill-Health. The major factors in ill-health, identified by the villagers were: poor nutrition; the heavy labour burden and lack of time for relaxation for women; the prevalence of women's reproductive health problems; the high cost and poor quality of health care persuading the rural poor not to see a doctor; and mental health.

Problems in the Rural Health Care Structure. The three main constraints in the rural poor's access to health care were: physical constraints of remote location and poor transport; the poor quality of local health care forcing villagers to go to the township or more usually the county seat for treatment and consultation; and the high costs of health care which was attributed to the health clinic doctor being dependent on drug sales for his income.

The Inter-Relation of Health and Poverty. The effects of poor nutrition and hard labour on the health of the rural poor was visible to the PPA team, and point to the importance of developing labour saving devices and of investing more attention to the question of food security as opposed to claiming the problem has been overcome. The high costs of health care also impact negatively on the poorest in that minor complaints develop into serious illnesses; the PPA team found no evidence of any rural health insurance scheme.

Women and Health. Health officials in Yunnan and Ningxia emphasized that women were the most likely group to become seriously ill; the proportion of women suffering some form of reproductive illness was quoted by one female villager as being over 90%. The PPA team's fieldwork data suggests that women's health is compromised by: overwork; poor nutrition; reluctance to invest in own health; lack of specialist and female doctors and post-natal care. The strong correlation between women's domestic and agricultural work responsibilities and their ill-health point to the importance of targeting women for labour saving devices and new technology to ease their labour burdens.

I. GENDER ISSUES

Gender Mainstreaming. Throughout their main report (Beynon, Zheng et al, 2000), the PPA team analyse the impact of poverty projects on women, women's understanding of poverty, well-being and poverty constraints; the particular burdens women face in production; their unequal access to labour mobility, health, education and agricultural extension.

Need for Involvement of the Women's Federation. The continued gender inequality in work, education, technical knowledge and health, points to the failure of poverty projects to adequately address the poverty constraints and needs of rural women. This suggests that the exclusion of the Women's Federation (WF) from any position of decision-making or participatory power may have been detrimental to the success of the various projects. This point was made forcefully by WF officials in all three provinces.

ANNEX 5: POLICIES FOR POVERTY REDUCTION IN CHINA[64]

A. EXECUTIVE SUMMARY

The China Poverty Study examines trends in poverty and the effectiveness of poverty programmes undertaken by the LGPR and the World Bank, particularly during the 1990s. It follows an influential study on poverty in China undertaken by the same organisations at the start of the decade (World Bank, 1992). This new report has been produced at an important juncture as the government of China is re-evaluating its poverty reduction strategy and has recently announced the establishment of a new initiative for the development of China's most impoverished western region. The recommendations presented in the main report emphasise the need for strengthening poverty reduction interventions directed towards the interior provinces, and in particular towards highland and mountainous regions where China's absolute poor are concentrated, and where a number of factors (remote location, poor environment and infrastructure, as well as social and cultural factors) interact to make further poverty reduction increasingly difficult.

The alleviation of poverty in the interior provinces is a critical priority if the government is to achieve its overall poverty reduction objectives and to raise the living standards of the poorest members of the population. While supporting the need for regionally focused interventions, this supplement draws attention to other aspects of the poverty problem which increasingly require attention. It highlights the problem of poor people located outside geographically targeted poor regions, in both rural and urban areas; and it emphasises the multi-dimensional nature of poverty, focusing on human aspects (such as health and education status, and forms of exclusion by gender and ethnicity, for example) which are not captured in the conceptualisation of poverty underlying current policy, nor reflected in income and consumption based poverty indicators.

---

[64] This paper has been commissioned by the United Nations Development Programme as a supplement to the China Poverty Study—a joint report issued by the World Bank based on a tripartite study undertaken in October and November 1998 by the government's Leading Group for Poverty Reduction (LGPR), the World Bank and UNDP. This supplement is the result of recent collaboration between UNDP and the International Labour Organisation (ILO). It expands on specific topics considered by UNDP to deserve greater consideration in the development of China's future poverty reduction strategy. Where there is general agreement with the main report the data and findings are not repeated here, but reference is made to the main report where appropriate. Written by consultants and staff from UNDP and ILO, this supplement draws extensively on a special contribution from the professors Keith Griffin and Azizur Rahman Khan. Additional sections were written, and revisions made, by Terry McKinley, Hu Angang, and staff members of UNDP Beijing and ILO Geneva. Sarah Cook revised and redrafted the report. While the supplement responds to major issues and concerns raised by UNDP, the analyses and conclusions presented in the report are those of the authors, and do not necessarily reflect the views of UNDP.

Despite China's exemplary economic progress since 1978, abject poverty persists and is becoming more difficult to eliminate, while new forms of poverty—in cities and in rural counties not designated as poor—have emerged. In the past, the widespread distribution of poverty made it possible to achieve substantial reductions through economic growth and the broad geographical targeting of resources. Today the majority of the absolute poor live in areas cut off from the economic mainstream, and may also lack labour (due to illness or disability, for example), and the basic skills or resources necessary to secure a livelihood. Their problems are deeply rooted or structural in nature and thus not easily be solved by broadly targeted interventions.

The dominant approach to poverty reflected in government policy towards poor regions views poverty primarily as a result of the lack of reform. By contrast, the new forms of poverty which have arisen in the context of economic transition and marketisation may be regarded largely as a consequence of reform processes. Such poverty may be more transitory in nature, reflecting the inability of individuals to cope with greater risks associated with market transition and the simultaneous erosion of collective or state provided social support. Population groups facing new forms of poverty and vulnerability include the rural population living outside designated poor counties, migrants and the newly emerging urban poor. Gender, age and disability are additional factors which make certain groups of people more vulnerable to poverty.

In keeping with UNDP's commitment to human development, the analysis and recommendations presented in this supplement reflect broader, multi-dimensional concepts of poverty and development as articulated in the UNDP's Human Development Reports and Poverty Report (UNDP, 1997b, 1998). In these reports, human poverty is defined as the denial of opportunities and choices most basic to human development—to lead a long and healthy life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others. Interventions to reduce human poverty must not only increase incomes but also strengthen the overall asset base of the poor (including financial, human, social, cultural and environment assets), raise education and health status, and address other forms of exclusion or disadvantage – such as gender, ethnicity, age and disability—which exacerbate poverty and prevent the full participation of individuals in the development process.

In addition to integrating human development issues into the overall analysis of poverty, this report seeks to locate poverty reduction strategies within the broader context of China's overall economic growth strategy. It draws on research which suggests that the segregation of the poverty reduction programme from other government policies frequently leads to contradictions between them, reducing the effectiveness of anti-poverty interventions. Economic policy has sought primarily to foster growth, often by shifting resources away from poor areas through unfavourable investment and pricing policies, and then returning some resources to them through specific interventions. Sustainable poverty reduction will require policies which are better integrated into a national economic development strategy.

Rather than focusing principally on poverty and poverty reduction in poor regions, this supplement is based on a detailed study of the relationship between growth, inequality and poverty reduction throughout China. A central argument is that the unequal pattern of growth – both within and between regions – has significantly weakened the potential poverty reduction effect of income growth. Thus, despite the remarkable levels of growth sustained throughout the

period under consideration, per capita income growth lagged behind the growth in per capita GDP with the poorest people being largely excluded from sharing the benefits.

A major reason for the exclusion of the poor from the benefits of growth lies in the stagnation of agricultural output and fluctuating terms of trade for agricultural products. This has led to a change in the composition of rural incomes and, in turn, to an increase in inequality—both at a household and regional level. Growing inequalities and the related slow down in poverty reduction are exacerbated by the structure of public finances. The system of taxation is highly regressive, both within and between rural and urban areas, while other urban reforms (in wage and housing policies, for example) also lead to increasing income and wealth differentials. Furthermore, continued restrictions on migrant activities in urban areas and the exclusion of migrants from many basic services increase poverty in both rural and urban areas. Given the diverse and changing nature of poverty, and the context of growing inequality in the distribution of income, the regional targeted strategy will be inadequate to achieve further significant and sustainable poverty reduction.

Recommendations

The analysis of poverty trends and policy presented in this supplement suggests the need for a significant reorientation of the national poverty reduction strategy. Emphasis should be placed on designing a more comprehensive policy framework for poverty reduction so that poverty reduction policies become an integrated part of the nation's overall economic policy. This policy framework must be sensitive to the need for continued rapid growth but must include measures to ensure that the pattern of growth is pro-poor. Such a framework should include an array of policies along the following lines:

- reversing policies (such as privileges and tax concessions) which favour coastal regions, and providing incentives to increase investment in the interior provinces and the agricultural sector;
- the generation of employment in poor areas, the countryside and small towns through labour-intensive enterprise development and public works schemes;
- the development of infrastructure in poor regions which should in turn raise the returns to investment and attract further funding to these areas;
- stimulating the rural economy, particularly through altering pricing policies which discriminate against agriculture, and the removal of barriers to the growth of agricultural output;
- some redistribution of resources towards poor regions in order to improve the provision of, and access of the poor to, public services including basic health and education, and social assistance;
- adjusting land distribution policies where necessary to ensure that the allocation of use-rights does not become increasingly unequal over time, and that women's access to land is guaranteed;

- institutional developments to promote the participation of the poor in the growth process, for example through greater access to credit institutions, markets and information;

- relaxation of restrictions on labour mobility, and on migrant activities and access to services in urban areas;

- fiscal reforms which are sensitive to their distributional impact, both at the household and regional level, combined with shorter term measures to increase the allocation of resources to poor areas.

Continued economic growth, even if this is pro-poor, will not be sufficient to solve the existing problems of income disparities and poverty. The current situation calls for more effective micro-level interventions, including targeting of poverty reduction funds and greater participation by the poor in poverty-reduction programmes. Policies are needed which address not only income poverty but also the broader dimensions of human poverty. An approach which combines targeted measures with pro-poor macroeconomic policies may more effectively address the extreme poverty that has remained impervious to general economic prosperity and has not been addressed by the broad geographically-based allocation of resources.

The kind of programmes and policy instruments which can be used to focus poverty alleviation activities on poor families and villages rather than the non-poor population in poor areas might include the following:

- transfers to individuals who lack productive capacity, e.g. through age and disability, and are thus dependent on support whether from the state, local government, community or family. Other population groups may need short term assistance in the case of sudden shocks or transitory poverty;

- direct provision of basic public services to the poor such as public health and immunisation services, basic education, information and job training;

- investments in basic infrastructure (such as water supply and irrigation, rural roads and bridges, electricity and power supplies) which are most directly relevant and accessible to the poor;

- microcredit programmes which provide households with affordable credit often in conjunction with additional training, information and opportunities for organising and participation in local decision making;

Effective realisation of poverty reduction objectives will depend on the participation of poor people in project decision-making, design and implementation. Participation of local groups can lower the costs of implementing and monitoring programmes, as well as fostering local initiatives for further development. Such groups can also play an important role in monitoring the use of funds and ensuring accountability.

There is also a need for more systematic monitoring and evaluation of poverty and poverty reduction programmes. This requires improved data collection and better methodologies

for monitoring changes in human and income poverty, as well as improved analysis of the impact and cost effectiveness of specific interventions. Greater use should also be made of participatory methods which enable the poor themselves to contribute to the monitoring and evaluation process.

The set of measures advocated in this report are unlikely to reduce the rate of growth and do not aim to reduce the savings rate. The emphasis is on increasing the productivity of investments. Limits have been advocated on the use of public funds for financing subsidies and transfers. At the same time, however, some commitment must be made to strengthening redistributive mechanisms and to increasing investments in basic infrastructure and human resource development in poor areas.

In the early years of the twenty-first century, China's biggest challenge will be the growth of insecurity among its people, especially those in poverty who face a multitude of problems including low and unstable incomes, unemployment or job insecurity, high health care costs and limited support in old age. Despite the doubling of China's GDP, and with the coastal areas approaching income levels of the middle-income countries, those people who remain in poverty face greater risks. The opportunities and rewards provided by an increasingly market-based economy in an era of globalization are distributed ever more inequitably. The sense of insecurity of the population is likely to become more pronounced, with implications for consumer demand, savings and economic growth. This feeling of insecurity also has the potential to lead to social instability. Thus addressing inequalities in opportunities, redressing some of the imbalances of the market led policies, and making continued efforts to integrate the poor into the growth process must be priorities for the Chinese government.

The 1999 UNDP Human Development Report stresses the need to adopt appropriate strategies and growth patterns in order to achieve globalization with a human face. As China is poised to enter the World Trade Organization, which will lead to further integration into the global economy, meeting these challenges becomes an increasingly urgent priority.

B. Poverty and Poverty Reduction in China

Trends in Income Poverty

In the initial years after economic reforms were introduced in 1978, China enjoyed remarkable growth of output and income per capita, accompanied by an equally remarkable reduction in poverty measured in income terms. In the decade from the mid-1980s, however, this pattern changed. China's economic growth continued to be very rapid, but progress in poverty reduction slowed substantially. Furthermore, while the general trend has been towards a reduction in poverty, this has not been uniform over time, regionally or between rural and urban sectors.

There is widespread agreement about the general trends in poverty among government Chinese agencies, international development institutions and independent scholars, even if the details of quantitative estimates vary. Official Chinese estimates point to a continued significant reduction in poverty in both rural and urban areas since the mid-1980s, although at a slower pace than previously. World Bank estimates suggest a sharp decline in the incidence of poverty up to 1984, after which the poverty incidence remained virtually constant for the rest of the decade. A

recent independent study—on which this report draws heavily and which uses more detailed data and a more comprehensive definition of income than that used in official estimates[65]—has found that the rate of poverty reduction in the late 1980s and the early 1990s slowed significantly in rural areas, and that poverty ceased to fall and perhaps even increased slightly in urban China.

Initial gains in poverty reduction were closely linked with rapid growth in the rural sector, together with institutional arrangements that ensured that the benefits were quite widely distributed. The subsequent slowdown in poverty reduction, despite continued rapid growth, is therefore disappointing. Examining the relationship between trends in growth and poverty reduction suggests that growth, rather than anti-poverty policy, was the major determinant of poverty reduction in the initial period. In this supplement, we suggest that the subsequent slowdown is closely related to the pattern of growth and in particular to the increase in inequality. The regional pattern of poverty reduction is linked to macro-economic policies that, despite regionally targeted poverty programmes have favoured the rapid development of the coastal regions. From the mid-1980s, as China became increasingly integrated into the global economy, much of the impetus for growth came from exports and foreign direct investment, both of which were concentrated in the richer coastal provinces. As long as unbalanced macro-policies continue, poverty in the western regions cannot be resolved solely through regionally focused programmes.

The overall trends in poverty tell us little about the depth and nature of poverty. As the main report indicates (see Chapter 1), the majority of the remaining absolute poor reside in rural areas and are disproportionately concentrated in western regions, particularly in highland, remote or ecologically fragile areas. These are also areas with a high concentration of ethnic minority populations. The task of reducing poverty in these regions appears increasingly difficult owing to interacting forms of disadvantage and exclusion. The main characteristics of poor households in these regions include the following: they tend to have few productive assets, to be dependent on crop cultivation and to have limited opportunities for moving labour off the land or diversifying into activities with higher returns; they have limited human resources with poor health and education status. While landlessness is not a major feature of poverty in China, land controlled by the poor is often limited in quantity or of low quality.

It is also clear, however, that a significant incidence of poverty exists outside poor regions—in non-poor rural areas, and in cities among both urban residents and migrants. The definition of poverty in regional terms focuses attention on chronic deprivation caused by the lack of reform. The process of transition towards a market oriented economy is giving rise to new forms of poverty, increasing the numbers of transitory poor and of those who are vulnerable to falling into poverty in both rural and urban areas. Available evidence suggests that in China's populous heartland, including provinces such as Hunan, Hubei and Jiangxi, rural and urban poverty rose between 1988 and 1995 (Khan, 1998).

---

[65] Official Chinese estimates are those of the State Statistical Bureau. World Bank estimates are from World Bank,1992 and from the main report by the World Bank, UNDP and the Leading Group for Poverty Reduction, 1999. The independent study referred to is based on two surveys carried out by an international group of economists in collaboration with the Economics Institute of the Chinese Academy of Social Sciences. The results are reported in Khan, 1998; Khan, et al.,1999; and Khan, (forthcoming). The data used in this study includes components of personal income which are excluded from official estimates of personal income (such as urban subsidies); because these have been declining in importance over time, official estimates of the growth rate of personal income may overstate the true rate of growth, and consequently may not accurately represent the full scale of poverty.

The guarantee of employment under the 'iron rice bowl' has meant that poverty has only recently been recognised as an urban problem. There is now significant evidence of an increase in urban poverty, particularly since the mid-1990s, largely related to redundancies associated with state enterprise restructuring. Given the variation in living standards and prices between China's cities, defining and measuring urban poverty is problematic. In addition, rural migrants—who tend to be among the poorest of the urban population—are not included in official urban statistics, an omission that leads to the underestimation of poverty. Nonetheless, data from various sources and using different measures of poverty indicate similar upward trends. Two main sources of information on urban poverty are, first, unemployment data (where the assumption is often made that there is a significant correlation between unemployment and poverty); and second a focus on what is happening to the incomes of households at the bottom end of the income distribution.

Data on laid-off (*xiagang)* workers and unemployment give some indication of the trends and scale of the problem, although clearly we should not assume that all those facing transitional unemployment actually fall into poverty. The number of officially registered urban unemployed workers rose from 4.2 million in 1993 to 5.7 million in 1998, a growth of 36 per cent. In 1997, approximately 44 per cent of registered unemployed workers did not receive unemployment benefits, with only 3.2 million people receiving benefits averaging Y49 each, or about 9.1 per cent of the average wage. The total number of laid-off workers in China was 3 million in 1993, increasing to approximately 18 million in 1997, of which12.18 million were laid off from state-owned enterprises (SOEs). Currently, approximately 8.9 million laid-off workers still cannot find jobs and the monthly benefit received by such workers averaged Y82.7 in 1997, or about 15.3 per cent of a worker's average wage. The areas most severely affected by unemployment are the heavy industrial bases in the industrial north-east, although the problem is widespread. In 1998, for example, the provinces with the highest number of unemployed workers were Liaoning (1.44 million), Heilongjiang (1.08 million) and Hunan (985,000).

Combining data on the official urban unemployed, laid-off workers, and estimates of unemployment among the rural labour force in urban areas would raise the real unemployment rate significantly. According to a demographic sample survey, the urban unemployment rate of the rural labour force was 1.5 per cent or about 800,000 people in 1997. Adding together all three categories of unemployed workers brings the number to approximately 15.4-16.4 million giving a real unemployment rate of 7.9-8.5 per cent in 1998.

Despite the concentration of new unemployment in the old industrial areas, there is a clear correlation between regional and urban poverty. The provinces with the highest urban unemployment rates include not only the north-eastern industrial regions, but also poor interior provinces such as Gansu, Shaanxi and Guizhou. Evidence suggests that the urban poor are disproportionately located in cities in poor regions where per capita income levels are 30% of the average for urban residents; these areas may account for as much as 85 per cent of the urban poor.

Evidence on changing income levels among different income quintiles points to an increase in insecurity among low-income urban residents. Urban price and living standards survey data suggest an increase in poverty particularly among households in the lowest deciles—in 1996 37.5 per cent of urban households experienced a drop in income in 1996, with 54 per cent of households in the lowest income quintile experiencing such a decline, as against only 3.8 per cent in the top quintile. In 1997 60 per cent of households in the lowest quintile experienced a decline in income, compared to 20 per cent in the top quintile (SSB, 1997; 1998). Similarly, Khan (1998) finds not only an increase in the number of urban poor, but that the average income

shortfall of the urban poor increased by as much as 40 per cent and their average living standard declined. Given the slower growth and rise in unemployment since 1997 these trends may well have worsened.

Human Poverty—Indicators and Trends

The above discussion has focused on trends in income poverty—defined relative to a basic poverty line. China has continued to rely on the relatively narrow definition of income poverty embodied in such headcount measures for evaluating the incidence and trends in poverty, and for targeting poverty interventions. This conceptualisation of poverty is open to criticism primarily on the grounds that it ignores important non-income features of poverty and well-being. Income based indicators provide only a partial picture of the changes in poverty, and conceal the increasingly complex nature of poverty in China's economic transition.

An alternative approach is required which reflects a broader and multidimensional conceptualisation of poverty and development as articulated in UNDP's Human Development and Poverty Reports. Human poverty is defined as the denial of opportunities and choices most basic to human development—to lead a long, healthy life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others. Emphasis is on the multi-dimensional nature of poverty, including income levels, basic achievements of human and social development such as health and education outcomes, the status and well-being of women and men, and the ability of all people to participate in development processes. Overcoming human poverty is about strengthening the capabilities and participation of the poor to enable them to cope with adversity such as disease, economic shock, natural disaster, conflict or discrimination. A strategy for human poverty reduction is concerned not only with increasing and utilising physical and financial resources, but also emphasises the importance of improving the overall asset base of the poor—strengthening, for example, their personal, social, cultural, institutional and environmental resources. It also focuses attention on institutional forms of exclusion or disadvantage which exacerbate poverty—such as those relating to gender, ethnicity, age and disability—which will not be overcome by increases in income alone.

It is widely acknowledged that China started the reform era with good social development indicators in comparison with many countries at similar levels of income. Nonetheless, there remain significant aspects of human poverty that will require greater effort and more focused interventions to eradicate, and which may even be exacerbated by an exclusive focus on reducing income poverty. The main report (see Chapter 1) describes the 'deplorable' education, health and nutrition status found among China's absolute poor. In many poor townships and villages, the percentage of illiterate or sick people is higher than the percentage of income poor. In 1996, 16 per cent of adults remained illiterate, and surveys carried out in the early 1990s suggest that about 14 per cent of children were underweight and 22 per cent of women were anaemic. These population groups are disproportionately concentrated in poor regions. Inadequate infrastructure exacerbates these problems—for example ill health and high levels of disability in poor areas are closely related to the lack of access to drinking water, to mineral or nutritional deficiencies, and to the lack of basic health and education facilities and information. According to a survey by the State Statistics Bureau, among the 170,000 administrative villages in designated poor counties, 20 per cent have no acceptable roads, 8 per cent have no electricity, two-thirds have no telephone and tap water, 14 per cent do not have primary schools, and one fourth are without clinics or doctors.

Indeed, rather than a steady reduction in these aspects of poverty, there is some evidence of worsening indicators during the reform period. There has been a clear decline in access to resources for basic human development—such as health and education—and growing gender disparities for example in access to basic education in poor regions. There is also increasing evidence that ill-health has emerged as a major cause of poverty among vulnerable populations—either due to excessive health expenditures or through the loss of labour as a result of illness.

A second major concern with per capita income measures based on the household as a unit of analysis is that they conceal differences in well-being or access to resources within the household, for example, by gender, age and ability or disability. They thus hide differential levels of deprivation and vulnerability among certain groups. The main report, for example, states that 'Available evidence does not suggest that women are greatly over-represented among the poor, though poverty does exacerbate society-wide problems of lower rates of female participation in education, higher relative female infant mortality rates, and higher rates of maternal mortality.' An alternative conceptualisation of poverty which considered health and education outcomes as themselves indicators of poverty would recognise the greater levels of female poverty described here, and consider policies to address this directly.

Examining a broader range of indicators, such as health and education, as well as outcomes for individuals, provides a clearer picture of patterns of poverty and deprivation. The evidence suggests that resources are not equally distributed among household members, while poverty at the household level frequently exacerbates inequalities arising from existing social and cultural norms, reinforcing areas of disadvantage. This is seen particularly starkly in unbalanced sex ratios at birth (with fewer females particularly among higher order births) and in lower levels of school attendance among girls.

There is also a clear correlation between human poverty and income poverty. The poor are in need of enhancing their basic individual capabilities in order to take advantage of new economic opportunities. The key productive assets of the rural poor in China are usually their labour and land. A great majority of households remain impoverished because they either lack sufficient productive land or have a key working member who is seriously ill or disabled. Families that have been able to raise their income above the poverty line are vulnerable to falling back into poverty due to preventable symptoms of human poverty—such as illness or illiteracy. Illiteracy hampers people from securing regular off-farm employment, from migrating to obtain better jobs, or even from being more productive in agricultural activities. Thus not only does the lack of access to basic education and health services hamper people's access to income generating opportunities; it also threatens to erode the gains that have been made in overcoming income poverty, and may therefore reduce long term growth. On the other hand, improving human resources clearly contributes to increases in income. For example, one statistical analysis shows that a 0.1 per cent increase in the enrolment rate of school-age children leads to an increase in per capita income of 0.35-0.59 per cent.

At an individual and household level, poverty is strongly related to the labour endowment and other productive resources of individuals. Poverty policies which target individuals or households solely on the basis of their productive capacity—the main focus of the government's poverty alleviation policies—will inevitably fail to reach some groups of the poor who lack labour—for example due to age, ill-health or disability—or other productive resources. While the majority of poor people may be assisted through improved access to productivity enhancing assets (for example, micro-credit programmes) or through interventions which increase the

productivity of their existing assets (improvements in infrastructure, for example), other individuals, particularly the elderly and disabled, will need to rely on direct transfers whether from family, community or the state. These distinctions between individual capabilities and resources need to be considered in the design and targeting of anti-poverty interventions.

Reasons for the Slowdown in Poverty Reduction

In the context of sustained and rapid growth, the slower pace of poverty reduction, whether described in income or human terms, may be regarded as disappointing. Explanations for the slowdown in rural poverty reduction, and the factors which have prevented the poor in China from benefiting more fully from the country's remarkable growth, are discussed in this section. Explanations relate both to the pattern of growth and to the way the benefits of growth are distributed—which are in turn affected by agricultural stagnation and a relative fall in rural incomes, growing income disparities and uneven regional development, and regressive fiscal policies.

First, the growth of per capita income lagged far behind the growth of per capita GDP. While the latter increased by 8.1 per cent a year between 1988 and 1995, the annual growth of per capita income was much lower, namely, 4.7 per cent in rural China and 4.5 per cent in urban areas. While income growth should have had poverty reducing effects, the low response of personal incomes to the increase in GDP meant that the positive poverty reducing effects of increased incomes could be offset by the rise in inequality. If personal incomes had grown 80 per cent as fast as GDP, rather the actual 60 per cent, it would have been easier to absorb the effect of increased inequality.

While data is not available to document the precise mechanism leading to the gap between the growth of GDP and that of personal income, it is likely that this is largely a consequence of China's forceful drive to achieve higher rates of savings and investment. This drive required a redistribution of income away from households in favour of the public and private business sectors. The period of rapid reduction in poverty—1978 to 1984—witnessed a growth in personal incomes in excess of the growth in GDP and a reduction in the domestic savings rate from 34 per cent of GDP to 32 per cent[66] During the period from1988 to 1995, when performance in poverty reduction deteriorated and there was slower growth in personal income than in GDP, the savings rate rose from 32 per cent of GDP to a staggering 42 per cent.

Despite the slower growth rate of per capita income, this level of growth would have had a larger impact on poverty were it not for the sharp increase in income inequality—the second major reason for the slow down in poverty reduction. During the period 1988-1995, the Gini coefficient increased from 0.34 to 0.42 in rural China and from 0.23 to 0.33 in urban China. That is, rural inequality increased by more than 23 per cent and urban inequality increased by more than 43 per cent. Given the real increase in per capita personal income from 1988 to 1995, if inequality in the distributions of income within the two sectors had remained unchanged over the period the proportion of the rural population in poverty at the end of the period would have been only half as high as it actually was, and the proportion of the urban population in poverty would have been close to zero[67] In other words, in rural areas the increase in inequality reduced by half

[66] The savings are declined from 34 per cent in 1978 to 28 per cent in 1981 and then rose to 32 per cent in 1984.
[67] These statistics are based on a simulation exercise. See Griffin and Khan, 1999.

the poverty reduction that would have resulted from the actual growth in income had there been no change in inequality.

The main reason for the increased income inequality in rural areas lies in the changing composition of rural incomes linked to the slower growth in agricultural output. (See Chapter 2 for in-depth analysis on agriculture and rural income.) During this period, China witnessed stagnation in the farming sector, with agriculture's share in GDP decreasing from 22.6 per cent in 1985 to 11.6 per cent in 1998, while agriculture's share in the total net income of rural households declined from 75 per cent to 57.2 per cent. Between 1988 and 1995, as household income from farming declined sharply as a share of total rural household income, other (non-agricultural) sources of income rose in importance. Largely due to China's relatively equal system of land distribution, farm income is more equalising than other sources of income in the countryside. These new sources of income, on the other hand, benefit members of the rural population with access to opportunities—often those with a more favourable initial resource endowment. Income from wages and non-farm entrepreneurial sources therefore tend to be more disequalizing than agricultural income, so that the relative fall in farm income contributed to a rise in income disparities within rural areas.

Furthermore, wage employment and non-farm rural activities tend to be concentrated in the richer regions, provinces and counties. Particularly from the mid-1980s as China became increasingly integrated into the global economy much of the impetus for growth came from exports and foreign direct investment, both of which were concentrated in the richer coastal provinces. The concentration of wage and non-farm employment in these areas has thus contributed to growing inequality between rural areas. Conversely, in poor regions the population lacks access to non-agricultural employment opportunities: hence, their comparatively sluggish income growth and the negative impact of declining returns to agriculture which is their main income source.

What accounts for the relative fall in farm income? This was a result of a sharp decline in the growth rate of agricultural output which, in turn, was caused by a drop in public investment in agriculture and weaker incentives for producers. The improvement in agricultural terms of trade which was pivotal in explaining agricultural growth in the early years of the reforms came to a halt and was reversed after the mid-1980s. It was only in 1994 that agriculture's terms of trade again improved, helping to end the agricultural stagnation that had lasted nearly a decade. Had it not been for this change in relative prices, poverty in rural China in the mid-1990s would have been greater than it was. In the light of these patterns, the current low prices for agricultural products give rise to concerns. Since 1997, the prices of agricultural products have fallen by about 12 per cent, and in 1998, rural per capita cash income from agricultural products decreased by 7.2 per cent. These trends may heighten the vulnerability of low income farmers to falling into poverty, and exacerbate the poverty of those dependent on agriculture.

Third, the structure of public finances has been a further source of increased inequality in the countryside contributing to the slow down in poverty reduction. Per capita income of rural Chinese households is only two-fifths that of urban Chinese households, yet the former pay more in taxes than they receive in transfers while urban households receive a significant net subsidy. Furthermore, even within rural areas net taxes are highly regressive: the top decile of the rural population appropriates 133 per cent of all net subsidies, while the two poorest deciles pay nearly half of all net taxes.

In urban areas, the increase in poverty is associated with reforms in the wage system, the dismantling of the subsidies and welfare services guaranteed under the 'iron rice bowl' and labour market readjustments which have led to an increasingly unequal distribution of income and wealth. The increase in inequality in urban areas has outweighed the potentially poverty-reducing effect of the growth in personal income. During the period under review, the distribution of urban wages became more unequal as an undifferentiated wage structure was gradually replaced by a structure with wage differentials. This was essential in order to improve incentives and on balance proved desirable. The disproportionate effect of the change in the wage structure could have been offset by reshaping the distribution of net subsidies and transfers to households. Between 1988 and 1995, subsidies declined from 39 per cent to only 11 per cent of household income, but for a number of reasons the subsidies that were retained (notably, housing subsidies) were far more unequally distributed than the subsidies that were abolished (e.g. food subsidies). During this period, there was also a major change in the housing market: private ownership of housing expanded greatly and public provision of housing declined. The housing reform in urban China has thus created an unequal distribution of housing ownership, exacerbating the unequal distribution of wealth.

A fifth factor which has limited the benefits of growth for the rural poor are continued restrictions on migrant activities in urban areas. Over the past decade, more job opportunities were created in urban than in rural areas. Between 1990 and 1998, urban employment increased by 24.4 per cent, while the growth rate of rural off-farm employment was only 4.2 per cent and employment in agriculture declined by 9.3 per cent. The government has become more tolerant of the presence of unauthorised migrants in urban areas, a factor which has almost certainly helped reduce overall poverty. Rural poverty would have been more severe if there had been less rural-to-urban migration. First, there would have been more competition in the countryside for rural job openings, and second, there would have been a smaller flow of wages from urban to rural areas.

Since urban household surveys are generally limited to official residents, thus excluding migrants from their samples, it is impossible to arrive at an accurate estimate of migrant living standards although it does seem that on average they are worse off than official urban residents. This is in part because they are excluded from regular employment and relegated to low-paying jobs or to the informal sector as well as being denied access to basic urban services. In many cases, migrants not only have to pay for the education, health and housing services they receive, but frequently build their own schools, clinics and housing in order to access these services. While much migration to urban areas is circular or cyclical, with migrants' returning to rural areas after a period of work in the cities, some migration is longer term. Denying long term migrants official residence status affects not only the wage-earners but also their children who may have limited access to education and thus to future job opportunities.

Finally, natural disasters may trigger or exacerbate poverty. Many poor areas of China suffer frequent natural disasters which are a major problem both for those people in poverty and for those who are close to the poverty line, or vulnerable to income or livelihood shocks. In 1998, 310 poor counties were severely hit by natural disasters, in some cases pushing over 50 per cent of the affected populations into poverty; of the 31 poor counties in Hunan province, 27 were hit by natural disasters and 1 million people were driven below the poverty line.

C. China's Poverty Reduction Strategy

The Chinese government's strategy for the reduction of poverty focuses principally on administrative units designated as poor, with the objective being to raise average incomes in these areas above a set level, and hence to eliminate poverty. Details of this strategy and the specific mechanisms for intervention are provided in the main report (see Chapter 3). In addition to this regionally targeted programme, a range of other policies and programmes exist including general systems of social assistance and insurance which aim to address wider problems of poverty and insecurity in both urban and rural areas. While the main focus of discussion in this report is on the regional strategy, it is important to recognise the role of other programmes and institutions in alleviating poverty and insecurity, particularly among regions and population groups not included within the scope of the regional programme. These are discussed briefly below (60-61).

The Chinese Government's commitment to poverty eradication has been demonstrated through the activities and budget allocations provided, particularly under the '8-7' poverty reduction plan. Official sources report that the policies implemented over the past few years have enjoyed considerable success—for example, in raising 5 million rural poor above the poverty threshold each year during the first two years after the National 8-7 Plan for Poverty Reduction was adopted by the State Council in January 1994. There has, however, been little independent monitoring and evaluation of the programme which is essential in order to understand more clearly the impact of the interventions on different population groups, the cost-effectiveness of the programmes, the precise mechanisms through which poverty reduction is achieved, and whether those moving out of poverty are doing so in a permanent and sustainable way.

In response to evaluations which have taken place, and recognising the increasing difficulty of alleviating the remaining poverty in poor regions, the government is currently reviewing and adjusting its approach to poverty reduction in an effort to make the work more effective for the coming decades. While still far from achieving the ultimate objective of poverty eradication, the government has renewed its commitment to the goal of raising 10 million people to a basic living standard in the year 2000, while strengthening its longer term strategy for poverty elimination. It has also announced the establishment of the Western Region Development Office to promote further investment in the interior western regions.

In this section we highlight some limitations in China's current strategy for poverty reduction. Some of the issues raised have been acknowledged by the government, and are discussed in the main report (see Chapter 3). Others, based on the preceding analysis, receive stronger emphasis here than they have been given elsewhere. A central argument presented here is that the separation of the government's poverty reduction policies from overall economic policy inevitably reduces the effectiveness of the poverty reduction strategy. A second concern is that the conceptualisation of poverty is limited principally to a focus on income-based measures, and neglects other dimensions of human poverty. Third, the unit of aggregation—the county—obscures significant variations among communities and households while also increasing the leakage of benefits away from the poor.

Limited Geographic Coverage

As discussed in the main report, China's official anti-poverty strategy has a strong regional focus based on the assumption that poverty is primarily a rural problem and, in particular, is associated with ecologically fragile or remote, highland regions. This definition of

the poverty problem has led to a policy focus on raising average incomes in 592 designated poor counties through a variety of micro-economic interventions. Anti-poverty programs in China have therefore tended in effect to be regional development programs. It is recognised that the actual scope of poverty alleviation activities extends beyond these 592 counties, with each province selecting additional poor counties. However, these activities are subject to the same problems discussed here, while they also depend primarily on local resources, thus placing additional pressures on the already strained finances of poor provinces.

The spatially defined strategy inevitably excludes significant groups of poor people, namely the rural poor who live outside the designated poverty counties and the urban poor. The State Statistical Bureau estimates that one-third of the rural poor live outside the 592 nationally designated poor counties while some independent studies suggest that half the rural poor live outside poor counties. On the other hand, by the end of 1997, rural per capita income in 152 designated poor counties had exceeded the national poverty line of Y500 at 1990 constant prices. The urban poor, the other group excluded from the scope of the strategy, (although still small in absolute terms) has been the most rapidly growing group of poor people in China in recent years.

In addition to the more spatially diverse nature of poverty, the analysis developed in this report has highlighted new forms of poverty emerging as a consequence of economic reform, rather than arising from the lack of reform. Rapid transition since the early 1980s has exposed a large section of the population, particularly rural residents, to new risks associated with market liberalisation; at the same time, collective welfare services which had previously provided some minimum level of security, have been eroded. Growing regional and household level inequalities, together with demographic change (notably the ageing population) and mass population mobility are putting increasing pressure on previous mechanisms for relief and poverty alleviation. These changes are leading to the emergence of new groups who are increasingly at risk of short-term poverty, and potentially of falling into longer term poverty traps, but who may be located outside the regions of concentrated poverty and thus fall outside the scope of the government's current poverty reduction efforts. Such groups highlight the need to look at the country as a whole rather than at regions defined as 'poor', and to disaggregate at the level of the individual and household rather than the locality.

Ineffective Targeting of Benefits to the Poor

A major constraint on the effectiveness of China's anti-poverty programme is the leakage of benefits away from the poor, and the lack of mechanisms for targeting resources to the level of the household or individual (see Chapter 3). While many poor people are excluded by virtue of their location from the benefits of anti-poverty programmes, there is evidence that even within the designated poor counties the poor do not necessarily benefit from the interventions and funds. Instead, the focus has been on raising average incomes in poor counties as a whole, in the expectation that this will trickle-down and benefit poor people indirectly. While the reluctance of the Chinese government to direct resources to the household may in part reflect a desire to avoid creating dependency or returning to the permanent subsidies of the 'iron rice bowl' system, it is also clear that this approach has been informed by a perception that the poor lack the technical or management skills necessary to make use of these resources. Resources have therefore been allocated to enterprises rather than to households, and many anti-poverty activities see most of the intended benefits going to the non-poor who are better placed to access resources and to influence the decision making or implementation process. The result has been a substantial and avoidable

leakage of benefits to the non-poor, with better-off households, enterprises and townships frequently the main beneficiaries of such programmes.

Reforms are needed to reduce such leakage. A shift in the focus of poverty interventions from the county to smaller units such as the township, village or household would be a first step in addressing this problem. The priority is to ensure that economic resources reach the poor—whether through the direct provision of resources, increasing the value of their existing assets or enhancing their productivity. The need for better targeting particularly of households has been recognised by the LGPR since 1996, with efforts being made to find appropriate policy instruments. The principal instrument used to date is micro-credit schemes which in some cases (particularly in conjunction with complementary activities such as the provision of training and information) has proved effective in channelling resources directly to poor households (for further discussion, see 106-112 below).

Directing poverty interventions towards smaller units such as the household requires more refined mechanisms for identification of the poor. However, there are also ways to ensure that interventions which are not specifically targeted towards poor households are better designed to benefit the poor. In particular, a range of investments in public goods—including infrastructure, health and education facilities, information and the development of markets and institutions—are essential in enhancing the productivity of assets on which the poor depend, thus reducing income poverty. Such investments may also enhance capabilities and thus reduce human poverty (see 84-105 below for a further discussion of social and infrastructure investments). The importance of interventions such as health and education to poor households is clearly articulated in the main report which describes villagers' preferences for health and education components to be included in multi-sectoral programmes, as well as noting their enhanced participation in the projects when such components are included (Box 3.1). Recognising these interactions may create additional mechanisms for enhancing the participation of the poor in projects and for achieving more sustainable poverty reduction.

The Separation of Poverty Programmes from Economic Policy

The major limitation of the government's anti-poverty strategy identified here is the segregation of targeted poverty programmes from overall economic policies. The approach taken by the Chinese government has been to concentrate on increasing the aggregate level of output and then devising specific policies to remedy particular problems as these arise during the process of adjustment and transition. Thus general economic policies pursued by the government are designed to foster rapid growth, often by shifting resources away from the poor, while specific interventions under the poverty reduction programme attempt to return to the poor some of the resources originally diverted from them.

For example, investment patterns and preferential fiscal policies have generally favoured the development of coastal regions at the expense of the interior. Government investment tends to favour capital-intensive rather than labour-intensive industry, the former being concentrated largely in coastal regions and having limited direct benefits for the poor. Funds used for poverty reduction are a fraction of those invested in capital-intensive or resource-intensive industries which create relatively few jobs and thus have a limited impact on poverty reduction. Policies which encourage private domestic and international investment for these activities would potentially free some public funds for investment in pro-poor labour intensive projects that would

provide immediate employment opportunities, as well as improving infrastructure that could contribute to the longer-term development of the local economy in poor regions.

A preferred approach to poverty reduction would be to design an overall economic strategy that simultaneously takes into account the effects of policy on growth, poverty and income distribution. In other words, poverty reduction should become an integral part of China's overall economic strategy. This approach would also require more systematic analysis of how the pattern of reform and growth affects poverty. Many problems faced by the poor are exacerbated in the process of rapid growth and transition, while processes of change may themselves give rise to new forms of poverty and vulnerability. Examples already referred to include increasing inequality, vulnerability (particularly to market risks), declining access to basic health and education, rising poverty in urban areas, and serious environmental degradation. Thus an alternative, more integrated approach is needed to broaden the development objective so that it not only includes growth but also a reduction in both income and human poverty, a better distribution of economic and social opportunities—by geographic area and by social group and gender, and an improved natural environment. In this way, a set of policies can be developed which aim to integrate goals of growth, human development and poverty reduction.

Co-ordination with Other Welfare Programmes

Related to this segregation of the anti-poverty programme is the general lack of co-ordination with a range of other social sector, social assistance and poverty related interventions. As noted above, in addition to the poverty reduction programme under the LGPR and the associated provincial poor county assistance, a number of anti-poverty or development programmes are located within other central, provincial and local government departments and agencies. These include the Civil Affairs system which co-ordinates the distribution of relief grain and other programmes of social assistance and support; the State Education Commission and Ministry of Health. In urban areas, Civil Affairs provides relief and social assistance while the Ministry of Labour and Social Security has responsibility for the welfare of poor workers. In addition, China's mass organisations and other new charitable, non-governmental and volunteer agencies are becoming increasingly prominent in poverty and welfare related activities. For example, the All China Federation of Trade Unions (ACFTU) provides retraining programmes for unemployed urban workers; the All China Women's Federation (ACWF) with its extensive local networks plays an important role in the reduction of female poverty through training, the establishment of cash crop production bases to assist female producers, and provision of credit and farm inputs. Some poverty alleviation loans are channelled through the Disabled Person's Federation (DPF), which provides various forms of support to disabled people, including income support, job advice and training, and medical assistance.

However, these interventions are relatively fragmented, limited in scope and coverage, and often rely for funding on scarce local resources or on collective fees raised from rural households. In rural areas, welfare provision by formal governmental and collective institutions is limited to only 2.4 per cent of the rural population and averages 16 yuan per capita compared to 90 per cent coverage and 514 yuan per capita in urban areas. In restricting rural welfare coverage to minimum levels of assistance, the assumption is that the main sources of livelihood protection can be self-provided. Locally generated funds are used for assistance to poor households, support for education and health care, the provision of homes for disabled or elderly people without families and even the establishment of insurance programmes such as pensions. Fiscal decentralisation and dependence on local resources mean that the level and quality of service

provision have become more uneven across localities. Poor regions without rural enterprises have limited capacity to raise additional funds for relief or welfare provision except through levies on already poor households or through transfers from higher levels of government or external agencies. Greater integration or co-ordination among activities may provide opportunities for enhancing the effectiveness of existing poverty reduction and welfare programmes.

D. Macro-Policy Recommendations for Poverty Reduction

The above analysis of poverty trends and of China's anti-poverty policy to date suggests the need for a significant reorientation of the national poverty reduction strategy. Here we outline some key elements of a revised strategy to address the issues raised above. The strategy first recognises that growth is an essential basis for poverty reduction. However, for growth to lead to effective and sustainable poverty reduction it is necessary to integrate a pro-poor growth strategy into overall economic policy and to ensure that the poor can participate in the growth process. A comprehensive package of macro policy measures are thus required, which must also be complemented by more targeted micro level interventions (discussed in section E).

Economic Growth and Distribution

First, China's poverty reduction strategy should become an integral part of the nation's overall economic policy. The alternative situation, in which general economic policy and targeted poverty interventions continue to be out of step, will ultimately mean that the aims of poverty reduction are not fulfilled. For example, if the incentives which currently favour the regional concentration of investments in coastal regions were altered, more resources could be attracted to poor areas, their incipient development would be accelerated, and with it their ability to attract further investment. In other words, it is likely that investing in development would be more effective than directly targeting funds to poor areas when incentives are biased against them. Similarly, as will be discussed below, altering pricing policies which discriminate against poor areas could significantly increase incomes in these areas. In developing the new Western Regional Development Initiative, particular attention should be paid to the relationship between regional and overall economic policies.

Second, maintenance of a high growth rate is a critical component of any poverty reduction strategy. China has maintained a high growth rate despite crises in other parts of Asia. Two factors are important in preserving this rate of growth. First, while China has become more integrated into the world economy and considerably more open to foreign direct investment, it has not liberalised international capital flows, nor has it become dependent on foreign capital for financing its high rate of investment. Indeed, despite the very large inflow of foreign capital, domestic savings in China continue to exceed domestic investments. In effect, the inflow of foreign capital has increased the already considerable international reserves which have substantially protected China against the currency fluctuations that have afflicted several other Asian countries. Second, it is almost certain that demand for exports will be a less important source of growth in future than it has been in the recent past. The Government has already recognised the need to promote domestic demand to substitute for export demand, and has taken measures including large scale infrastructure projects (funded through bond issues) and incentives to expand the private housing market. The impact of these interventions should be monitored to ensure that poverty reducing as well as growth enhancing objectives are met.

Third, attention must also be paid to the pattern of growth to ensure that the poor share in the benefits of growth. The experience of poverty reduction in East Asia and China suggests that poverty can be dramatically reduced by combining rapid economic growth with pro-poor policies. The pro-poor growth pattern should be labour-intensive, generate employment, improve social welfare provision, and enhance the self-reliance and capacity to participate in development processes of poor people. Public works schemes (as in cash or food for work programmes) are one mechanism for providing income generating opportunities in poor areas, while also developing infrastructure which may encourage further investment and growth.

In order to enable poor households to share in the benefits of growth, there is a strong case for reducing, and preferably eliminating, the difference between the rate of growth of GDP and the growth of personal income. This does not imply that the average savings rate should be reduced, but rather that no further efforts should be made to increase the already high savings rate. Priority should be given instead to increasing the productivity of investment. Greater public investment in essential infrastructure would almost certainly raise the return on investment in poor areas. Furthermore, policies that generate higher personal incomes should lead to a more rapidly expanding domestic market thus establishing a basis for future growth.

Stimulating Rural Growth

Given the continued concentration of the poor in rural areas, stimulating continued growth in the rural economy is essential for further poverty reduction. Boosting the farm economy through improved incentives and additional resources would go a long way towards reducing rural poverty through its equalising effect on incomes within rural areas as well as between rural and urban sectors. The growth rate in agricultural output has declined since the mid-1980s partly because of lower public funding for agriculture and partly because of a deterioration in the agricultural terms of trade. Terms of trade could be improved by allowing market forces, rather than public interventions, to determine the prices of agricultural products. Market forces already determine most commodity prices, but grain and cotton are still subject to government control, and production quotas (although no longer required by the central government) remain in place in many provinces. Eliminating administrative controls could, under certain circumstance, improve the agricultural terms of trade, raise incomes in the poor central and western provinces that specialise in grain production and encourage greater diversification of activities, both on-farm and off-farm, which would relieve some of the pressure on the land. However, liberalisation of prices needs to be accompanied by the development of mechanisms, institutions and the provision of information which enable farmers in poor regions to participate in markets and to adjust rapidly to market and price signals.

It is also important that agricultural growth in China continues to be based on relatively equal access to land. This has been a major reason for the equalising effect of farm income. While land use rights are now quite secure, some improvements may be necessary to encourage efficiency and investment. The current system, which allows for limited redistribution, will lead to growing inequality over time. Changing demographic and economic conditions require continuous redistribution. Further tenure reforms should therefore take into account the need to maintain flexibility in allocating land to households. It is also important to ensure that land contracts guarantee women their rights to land, since they are increasingly responsible for agricultural activities while male family members obtain off-farm employment.

Non-farm activities have been an important source of growth in rural China. However, they have also been a source of inequality due to their regional concentration. Greater effort is needed to ensure that in the short term non-farm activities are promoted in interior provinces. An increased emphasis on, and more even distribution of, public investment in transportation, power and communications could help stimulate economic activities in rural areas. If the accelerated growth of the rural economy is made the focus, this would have the additional benefit of reducing the incentives for the rural population to migrate. Ensuring rural development would thus be the most equitable and effective way of reducing the rising number of migrant labourers in the cities. On the other hand, if urban incomes continue to grow more rapidly than in the countryside, there will be increased incentives to migrate, higher urban unemployment and a weakening of other policies intended to reduce poverty.

Regional Development Policy: Reducing the Imbalance

An important dimension of regional inequality in China has been the uneven rate of growth between the eastern provinces and the central and western provinces. The slow development of the central and western regions has been a serious obstacle to reducing poverty in these provinces where much of China's absolute poverty is concentrated. Increasing disparities in regional income do not simply reflect higher factor productivity in the eastern provinces. Many of the disparities arise from policies that are biased against the poor provinces. For example, special privileges—originally designed to attract foreign direct investment—in the form of tax concessions and the repatriation of profits were for a long period restricted to the rich coastal provinces and their Special Economic Zones. Artificial administrative obstacles, rather than competitive disadvantages, prevented less developed regions from competing on equal terms for investment, while holding down producer prices for grain hindered the development of the central and western provinces. Similarly, poor regions often received an unfavourable price for their natural resources—the development of the poor areas of Shanxi, for example, was hampered by the low price paid for locally mined coal. Both efficiency and equity would be increased if such discriminatory policies were eliminated.

Unfortunately, the poorer regions are now so comparatively lagging behind that merely eliminating existing discrimination is unlikely to be sufficient to raise them to prosperity. Poverty reduction will continue to require regional development policies as part of an integrated economic development strategy. If these poorer regions are to close the economic gap, more pro-active measures are called for. These could include measures such as directed credit to support 'infant' activities in poor regions, and the redirection of public investment in infrastructure. Existing public investment strategies for less-developed areas also need to be reviewed. Central government policies to promote the development of the interior western regions under the Ninth Five-Year Plan, have been directed towards competitive market activities, and towards capital-intensive industries that could be more efficiently managed by the private sector. The government should instead concentrate its resources on infrastructure, public sector and human resource investments, which would in turn improve the conditions for private investment, rather than trying to engage directly in market activities. This should be a consideration in the newly proposed Western Region Development Initiative.

Reforming Regressive Fiscal Policies

It is recognised that the fiscal system is in need of reform, and that fiscal reforms must be sensitive to their distributional impact—both at a regional and household level. The current

decentralised tax system has led to poor counties being unable to generate sufficient revenue to cover expenditures. Local governments have incentives to support revenue generating (rather than poverty reducing) activities (see Chapter 2), further limiting the resources available to poor counties and townships for welfare expenditures or social sector investments. Furthermore, this situation distorts the incentives for the use and targeting of poverty alleviation funds. Local governments prefer to reap rapid financial returns on their investment in order to stimulate short term growth, at the expense of ensuring benefits reach the poorest.[68]

At a household level the current distribution of taxes and subsidies is a source of increased inequality and aggravates poverty. An average household in rural China is subjected to a net tax while an average household in urban China receives a net subsidy, even though urban households are much better off than rural households. Furthermore, net taxes in rural China are highly regressive whereas net subsidies in urban China are highly progressive. Thus the combined tax-and-subsidy system accentuates poverty and inequality in both rural and urban areas. Of particular concern is the highly unequal distribution of urban net subsidies. Had these subsidies been evenly distributed among all households in 1995, 94 per cent of the increase in the Gini ratio of urban income distribution between 1988 and 1995 would have been avoided. An even distribution of urban subsidies would not only reduce income inequality, it would also help reduce urban poverty quite significantly. Furthermore, if the large net subsidies received by high-income households in urban areas were eliminated, more resources would be available to support the poor.

While more fundamental reform of the fiscal system is required, in the short term a transfer payment system could help to bridge the tax gaps between or among different regions and strengthen transfers to central and western areas. A set of principles for the usage of transfer payments could be laid out to ensure adequate allocation to public services that would benefit the poor, and to provide support to poor households, the disabled and the elderly, stipulated in policies such as the 'five guarantees', without imposing additional burdens on other poor households. In conjunction with such measures, a minimum standard for public services, basic living standards and benefits for both the rural and urban population would be useful. Such a scheme—to provide minimum living allowances to poor households—has been initiated in cities and introduced in some wealthier rural areas but is also locally financed, and thus not feasible in poor areas in the absence of a transfer mechanism.

Promoting Employment and Labour Mobility

A strong bias against employment creation in the urban industrial sector has been a major source of inequality and poverty in urban China during the 1990s; it has also resulted in high levels of unemployment. The government has started taking action to deal with the problems arising from unemployment and laid-off workers, as well as with urban poverty. Policies are evolving rapidly and include redundancy payments or benefits from the enterprise for a limited period, followed by unemployment benefits, and finally—for those still unable to find work—a minimum allowance provided through the Civil Affairs system. The intention is to replace enterprise based benefits with unemployment insurance within approximately two years. While the transition to an insurance based system may place heavy pressures on the budget, from the standpoint of the overall efficiency and transparency of the system, there is little to be gained from making redundant workers the responsibility of their previous employer. It is preferable to

[68] For a further discussion of the fiscal system, see UNDP (1996b).

replace this concealed, and possibly inefficient, system of unemployment compensation by an open, transparent system from the moment the worker becomes redundant.

Currently coverage and benefits under the minimum living allowance programme are limited, but some resources are being made available from the budget to finance basic levels of provision and coverage is gradually being expanded. However, benefits depend largely on the capacity of local governments to pay. Unless resources are substantially redistributed through the central government budget, it will be impossible to ensure either that the payments will be sufficiently high to provide protection from serious poverty or that benefits will be comparable between poor and rich regions.

A second possible measure to address the problem of rising unemployment is a large-scale public works programme designed to improve the infrastructure of poorer localities and neighbourhoods. This would help create domestic demand to compensate for the anticipated slower growth of export demand while also helping to reduce the competitive disadvantage of poorer locations.

A third possible measure is to encourage the development of small scale or micro-enterprises and self employment in urban areas. Promoting labour-intensive small scale enterprises would help to absorb the surplus labour force and laid-off urban workers. Policies to promote micro-enterprises will increase self-employment and the establishment of household businesses, all of which contribute to the local economy, particularly in the provision of services—a currently underdeveloped sector in China. Supportive measures should include the public provision of credit, technology and training. Such programmes would have to be carefully designed to minimise the subsidy element and to avoid the burden on public resources becoming too high. In addition, the government should provide various branches of the private sector with more equal opportunities and remove obstacles to market access. Small and medium-sized financial institutions could also be developed to deliver financial services to small scale borrowers.

One major feature of the reform process in China has been the relaxation of previously stringent controls on labour mobility. People have been encouraged to move from the most densely populated poor rural areas into other rural areas and small towns rather than to the large metropolitan areas. During the 1990s, public policy has become more tolerant of migrants moving to the cities, who have been allowed to seek employment primarily outside the state sector. They have, however, generally been denied official residence status and access to most public services. As a result, the urban labour market has become compartmentalised, migrants are relegated to less formal modes of employment or to low-income self-employment, and are likely to be among the poorest and most disadvantaged of urban residents.

China's reluctance to grant migrants official residence status arises largely from the fear of encouraging even more rapid migration from rural areas, thus increasing competition for jobs and resources in urban areas. Yet the existing policy of denying residence status to migrants cannot be a long-term solution, and could potentially lead to social discontent in the cities as well as exacerbating both urban and rural poverty. On the other hand, recent data from the State Statistical Bureau suggest that the total population of migrants may have started to fall fairly rapidly, possibly as a result of greater competition for jobs from the urban unemployed. The implications for rural areas of the loss of migrant incomes may be to exacerbate rural poverty and income differentials. One approach is to tackle the root cause of the problem by raising incomes

in the countryside and by reducing the subsidies and privileges associated with urban employment and formal residence. This would need to include the abolition of artificial restrictions on migrants such as residence certificates, access to education, information about jobs, training and accommodation.

E. MICRO-LEVEL INTERVENTIONS

Improved Targeting of Benefits to the Poor

The Chinese government has recognised the need to ensure that the poor benefit more directly from poverty reduction interventions and acknowledged the limitations of its current strategy in this regard. It has been understandably averse to directing targeted transfers to the poor, largely through a fear of creating dependency. However, it currently lacks appropriate alternative mechanisms for ensuring that poverty reduction activities reach those whom they are primarily intended to benefit. Since many of the remaining absolute poor are located in areas of extreme poverty, economic growth alone, no matter how pro-poor, is unlikely to resolve their problems. Moreover, with market transition giving rise to new forms of risk, vulnerability and poverty, and widening socio-economic differentials, conventional methods of geographical targeting are no longer adequate to eliminate poverty.

There is clearly a need for direct transfers to specific groups of poor people. A minority of the poor or vulnerable—such as those without labour capacity due to age or disability—will never benefit from poverty reduction programmes which aim to increase income through productive employment. The only way to address the poverty of such groups is through income transfers or consumption support—whether from the state, local government, social organisations or through informal networks and family. Such targeted transfers or programmes of social assistance will necessarily be of a longer term nature and should ultimately form part of a social security or welfare system which addresses the needs both of those who permanently lack labour or other resources, and of those who encounter short term difficulties.

However, there are alternative ways of ensuring programmes benefit the poor which do not include direct transfers. These can include interventions which focus on enhancing access to resources and the productivity of assets—the most widely used mechanism being microcredit programmes (see 106-112 below) which have spread rapidly in China in recent years. In addition, interventions or general expenditures on economic and social infrastructure (irrigation, roads, health and education facilities for example) can be better designed to ensure that the poor share in the benefits, and that they have access to the services provided and to relevant information. Other types of intervention can help deal more directly with problems of human poverty, such as public health programmes which address malnutrition, preventable morbidity and illiteracy—problems of poverty which are not necessarily resolved by raising household incomes. These are discussed in the following section.

Education and Health for Poverty Reduction[69]

China's successful record of raising social and economic indicators prior to the initiation of reforms is widely recognised. One consequence of the economic reforms, however, has been the erosion of the public provision of health and education services, particularly in rural areas. The rural poor have been the most adversely affected. The main report points to the deplorable state of nutrition, health and education in poor regions, and emphasises the importance of strengthening interventions in these areas (see Chapter 4). However, the complex interactions between human resources and growth has received relatively little attention in the poverty reduction strategy, while health and education have not been prominent components of the regional multi-sectoral strategy. From a human poverty perspective, basic education and health are critical elements in overcoming poverty in their own rights; however, there is also considerable evidence pointing to the role of human resources in enabling the poor to participate in and contribute to the process of economic development. Some level of basic health and education are thus preconditions for sustainable and permanent poverty reduction and growth. Furthermore, the decline in access to adequate and affordable health care is increasingly widely regarded as a cause of poverty—either through the large expenditures that rural households must pay in the event of serious illness, or through the loss of labour due to untreated health problems.

Government resources for education and health in poor areas are grossly inadequate. Since 1995, the central government has channeled additional funds into education in poor areas, earmarking Y3.9 billion for capital spending through the year 2000 for the Compulsory Education in Poor Provinces Project, with matching local funds intended to raise the total to Y10 billion. As a proportion of GNP this constituted only about 2.5 per cent in 1997—well below the 4 per cent target set for the year 2000 by the State Council. Furthermore, the reliance on matching local funds places a further strain on already over-stretched local resources which are generally used to pay salary costs rather than improving the ability of the poor to access services.

Fees paid by the poor for basic education are an extremely high percentage of their cash income. In poor rural areas, private expenditures on education account for 15-20% of household net income. However, if household educational expenditures are taken as a proportion of discretionary income—income available after subtracting expenses for necessities such as food, shelter and health—the percentage rises to 40-50%. This high level of costs exacerbate other inequalities, in particular leading to lower access for girls to even primary education.

The regional targets for achieving universal basic education (UBE) in China also need to be reviewed from a poverty reduction perspective. Although the 1995 Education Law of the Ministry of Education calls for achieving universal basic education as a national target by the year 2000, the poorest regions are only expected to achieve three to four years of UBE, while the target for richer regions is nine-years. In order to strengthen the poverty-reducing impact of basic education programmes, the first priority should be the achievement of six-years UBE in all poor townships and villages. Such a focus would require greater equalisation of resources across regions, as well as the need to address problems of access for poor people.

---

[69] The original draft of this section was written by Terry McKinley based on material he produced for the China Poverty Study; on Ray Yip, UNICEF "Joint UNICEF/World Bank Assessment and Supervision of the On-going Project for the Strengthening of Primary Health Care in Poverty Areas", 1998; and on the UNICEF paper by DAA Brock, "Post-MTR Review of Directions in Education Planning, Management and Financing", 1998.

Qualitative aspects of education programmes in poor areas also require special attention. To address specific local circumstances and needs, more flexibility in forms of education should be explored, such as part-time boarding schools, all-girl classes and minority classes in primary and secondary schools, and reform of the curricula. The primary goal should be the practical elimination of rural illiteracy for the younger generation, with the achievement of this target serving as the principal measure of effectiveness.

Healthcare in China has also become increasingly expensive, with poor rural areas being particularly disadvantaged. Actual expenditures per person have risen by a factor of 2.5 since 1978. Most village health clinics are now privately run, and often provide only limited services which may be of poor quality. Clinics lack essential medicine and equipment, and health workers lack adequate training. These factors act as a disincentive to the poor in seeking medical help, with delays in seeking treatment often resulting in the need for more expensive care. In Wuxi County, Sichuan, for example, about 95 per cent of clinics cannot test for blood pressure, a situation which is typical of many poor counties. Another major problem with the current healthcare system is that the salaries of healthcare workers in clinics are tied to the amount of medicine that they prescribe, so that households may pay for more than they need. The poor spend a higher proportion of their income on health care than the non-poor but, despite the fact that they are more likely than the non-poor to suffer from serious illnesses—particularly from infectious and parasitic diseases, their use of health services is much lower. Many diseases go untreated, potentially leading to disability or death, or families incur expenses that plunge them deeply into debt and poverty.

These problems are recognised by the government which is beginning to respond, for example, by re-establishing a rural co-operative medical insurance scheme roughly modelled on the health care system of the collective era. This new scheme is intended to improve access of the rural population to basic health services. However, as currently designed, there is little guarantee of improved access for the poorest. Initial problems with the new village-level co-operative health insurance programs have arisen as many farmers are unwilling or unable to pay the fees. For the programme to improve the quality of services and access for the poor, it will need to be developed on the basis of providing practical services to meet common needs. Annual fees should be nominal, and government subsidies will be needed. Just as importantly, medical workers' salaries should be independent of the amount of medicine they prescribe or the services they dispense. Better supervision mechanisms are required for village and township health centres in order to assure good quality services.

In order to strengthen the poverty-reducing impact of basic health programmes, public funding must be focussed as a matter of priority on a set of essential, low-cost interventions, such as the Expanded Programme on Immunisation, hepatitis B immunisation, oral re-hydration, immunisation of expectant mothers against tetanus, and promotion of iodised salt, vitamin A and iron supplements. Other priority areas would be information about nutrition and basic health, and maternal and child health services. In urban areas, the government should change the hospital subsidy to a scheme whereby the healthcare costs of the poverty population are directly subsidised. Innovative ways of using information technology may also have potential for enhancing the efficiency of health and education services and are therefore worth further exploration.

Health, nutrition and education interventions should be closely integrated with other components of a general anti-poverty programme and be made essential components of multi-

sectoral regional poverty reduction programmes. Their direct contribution to poverty reduction, together with their longer term productivity enhancing role, make them critical elements in a sustainable poverty reduction strategy. The evidence from the World Bank report also points to the priority given by the poor to such interventions which may in turn enhance their participation in other programmes.

Directing Rural Infrastructure to the Poor[70]

Over the last 10 years, substantial infrastructure has been built in poor counties in rural China. Paved roads now extend to most counties and to many remote townships. Electricity reaches into many remote villages where previously it was considered a luxury reserved for township governments. New land has been opened up owing to newly installed irrigation systems, and water-conserving concrete channels have replaced many of the former earthen canals. Nonetheless, essential infrastructure is still lacking in many poor areas, and the provision of basic infrastructure is frequently biased against the poor or the poor derive limited direct benefit.

Infrastructure development has been a key element in the government's anti-poverty programmes. As part of an integrated rural development process, however, infrastructure is of limited use without other inputs to alleviate poverty. The reverse is also true. The priority in developing infrastructure is to ensure that the poor benefit, both directly and indirectly. This means that the true benefits (economic and social) rather than only the short term financial returns on investments must be fully taken into account. It also implies that the poor should have a voice in decisions about the type of infrastructure that they need. It must also be recognised that men and women will frequently have different priorities concerning infrastructure, depending in particular on the gender division of labour. Local conditions will also determine the appropriate technologies for any region.

Priority areas of infrastructure development in poor regions would generally include: access roads, domestic water supply, irrigation, electricity, telecommunications. The priority given to each will vary by locality although in general the latter two are likely to be of lower priority. Initial emphasis should be on

- Infrastructure which promotes food security, including land improvement projects to enhance food production (such as terracing, tree planting, irrigation canals, drainage systems, and grain storage facilities) and access to markets, and

- A supply of safe drinking water which brings large immediate benefits directly related to people's health and productivity. Lack of potable water is often associated with high incidences of intestinal and other illnesses, as well as with certain deformities or disabilities in areas where available sources have high natural mineral toxicity. Livestock production may also improve as animals gain access to water.

[70] This section is based on a draft written by Terry McKinley but drawing heavily on Richard Hardiman, "Overcoming Poverty: Infrastructure", paper commissioned by UNDP for the China Poverty Study, November 1998.

- The main report also acknowledges the benefits of infrastructure in freeing up people's time to engage in other activities. This is often particularly true of water projects, where an accessible source of water frequently saves considerable time especially for women.

A key reason for the marginalisation of the poor from the benefits of infrastructure investment is their often remote location which increases the costs of providing them with infrastructure. Public investment is frequently focused on large infrastructure projects designed to serve sizeable groups of people that are relatively easily accessible. Some forms of infrastructure, such as roads and electricity, are built up as a network, with extensions added only to existing facilities. For example, major county highways are built between cities, and then roads built to townships, and only as the last step are feeder roads linked to poor villages These processes may lower the cost per person, but do not necessarily enhance the access of the poor and thus the immediate poverty-reduction impact.

Under-investment frequently stems from not fully taking into account all the benefits (economic and social as well as financial) to be derived from building infrastructure in poor areas. The benefits, in terms of both generating income and improving individual well-being, can be substantial—improving people's productivity, lightening work loads, enhancing people's health, or stimulating economic activity, for example.

To improve targeting of the poor, projects can be designed that are more readily accessible and affordable to the poor, but which generate sizeable immediate benefits. Such infrastructure projects can be of small scale and low cost, using local labour and simple technologies which facilitate easy repairs, for example, wells and rain storage tanks, small reservoirs or cisterns, terracing and drainage works. The two approaches to reaching the poor—immediately through small-scale projects and in the longer term through large-scale schemes—should be regarded as complementary.

Although irrigated land has expanded greatly in the 1990s, small irrigation works are still badly needed in many poor regions. Many of the irrigation systems built in earlier decades are in a state of disrepair and only about 30 per cent of irrigation water reaches the root zone. Yet national funding for repairs and renovation is earmarked for large irrigation systems. Small-scale systems, based on diverting water from mountain streams or pumping it from underground sources, can be linked to individual households at a cost of only Y150-200 per household. Special attention should also be paid to constructing cisterns and tapping alternative water sources in villages where there are seasonal shortages.

With improved land and water supply and an increasing marketable surplus, the demand for rural roads becomes more pressing. Lower-grade feeder roads to villages can quickly contribute to significant income improvements for farmers. Village access roads are generally low-cost, narrow gravel roads of up to 15 kilometres in length. Although not costly, they often have multiple benefits: they increase access to markets, health centres and schools; reduce transport costs for marketing produce and getting agricultural inputs; they allow the transport of heavy materials, such as building materials, cement and fertiliser; and facilitate the installation of other infrastructure such as electricity and telephone lines. A gravel road costs about Y70,000 per kilometre —much less than a tarmac road at Y280,000 per kilometre, or a cement road at Y1.54 million per kilometre.

Unlike road projects, electricity and telecommunications projects are not typicallylabour-intensive. For electricity, labour costs average about 10 per cent of the total. Stringing electricity to remote villages can be expensive (Y40,000/km), and the immediate benefits limited. Electricity has the biggest impact on townships and villages that have road access and the potential to start small-scale enterprises but these are rarely located in the poorest areas. While telecommunications may generally be considered a lower priority in poor regions, it is nonetheless important to start considering the ways in which technology and information systems can be used to the advantage of the poor and for poverty reduction. Some examples might include the provision of information about market prices, medical and public health issues and distance learning facilities.

Decisions on infrastructure projects should include active inputs from the poor themselves. The poor tend to have least voice in any decisions about the type or location of infrastructure. However, they are usually the best placed to know what kind of project would be of greatest immediate benefit. Having been involved in the decision-making, they are more likely to contribute labour and local materials to the project, and more likely to maintain it in the future. A dispute over where to locate a village access road in one Chinese township illustrates the need to consult villagers when making decisions about infrastructure. The township government had decided that the road should connect to the township. An influential local entrepreneur wanted the road to pass by his factory. However, the villagers wanted the road to connect to a neighbouring town in a different township administration zone because that was where their children were schooled, the nearest health clinic was located and their goods marketed. Under the auspices of a foreign-financed project, villagers were allowed to participate in the work and their wishes prevailed.

The financing and Organization of infrastructure further reduces the benefits to the poor. Much of the funding for rural infrastructure is provided through low-interest loans channelled from the Central Bank through the Agricultural Development Bank (ADB) and the Agricultural Bank of China (ABC). Because such loans have to be paid back to the Central Bank, banks are reluctant to lend directly to poor households. Instead, the loans go to local enterprises, thus excluding the poor from participation.

The financing of rural roads provides an illustration of the need for a well-defined budget mechanism to finance infrastructure. The government strategy has focussed on developing a national road network linking provincial cities, county centres and townships and upgrading and expanding the highways that link major cities. The Ministry of Transport and provincial transport bureaus finance national highways, provincial highways and roads to townships. Investment banks provide loans for 60 per cent of the costs of major highways, and provinces use a vehicle road tax to finance provincial highways. However, transport bureaus are not responsible for financing sub-township roads, such as access roads to poor villages. Poverty reduction funds can be tapped for this purpose, but are not specifically earmarked for road construction. Moreover, no funds are provided explicitly for maintaining sub-township roads. Poverty reduction funds from the State Council, through the Ministry of Finance and the central bank, and financing from county governments account for about half of the funds put up for village access roads—usually for the costs of materials only. Townships contribute the other half of the financing, but this usually takes the form of unpaid community labourers. There is a dilemma for village labourers in providing unpaid labour: a significant number could be earning Y10-20 per day by providing unskilled labour in towns or cities. With a strong need for a feeder road, farmers can be encouraged to donate their labour to complete the project. However, if they were paid

nominal wages, this would inject income into poor villages, which would otherwise have to be provided through poverty reduction loans or micro-credit.

The installation of infrastructure is frequently not undertaken as part of an integrated rural development strategy that would allow villagers to derive the greatest benefit from both physical infrastructure and public services such as education, health, agricultural extension and credit. Enabling township governments to develop a long-term comprehensive plan for rural development would improve this situation. Part of the problem stems from the lines of demarcation set for the tasks assigned to institutions. For example, while the Water Resources Bureau is responsible for bringing water up to the field gate, the Agricultural Bureau does not have a similar responsibility to apply the water in the fields. Consequently, giving greater responsibility to farmer-led water-use associations could enhance the overall efficiency of water delivery.

Micro-finance

Micro-credit programmes have had notable successes in directly providing poor households with affordable credit and encouraging their self-organisation, and have thus become a widely favoured method of poverty reduction both with the government and among donor organisations. In 1996, in an effort to direct poverty reduction funds to poor households, the LGPR explicitly endorsed the use of micro-credit activities through variations of aGrameen Bank model (see Chapter 3).

The success of such programmes lies partly in the fact that they encourage the direct participation of the poor, both in allowing recipients of loans to choose their own investments and in encouraging them to form their own village-level organisations. Participatory methods have characterised many of the projects, particularly those with donor involvement. Repayment rates are high in comparison with those of many rural financial institutions and national poverty loan programmes. A number of such programmes have successfully targeted poor women, and organisations such as the China Women's Federation have played an important role in pioneering these initiatives.

There has been great variation among micro-credit programmes in China, and no one model could be applicable to such a diverse country. However, recent experience points to several areas where improvements can be made in government-funded programmes. First, the lessons learned from the multitude of micro-credit activities need to be more systematically monitored and evaluated, possibly through closer co-operation between the LGPR and the People's Bank of China to foster greater oversight and support. The provision of credit needs to be accompanied by other activities, such as training in financial management.

Second, a key question concerns whether micro-credit programmes are making a real difference in poor people's lives. The real test of the success of a micro-finance system should be whether it serves as a tool for the poor to gain control over assets and become economically self-sufficient. By themselves, however, micro-credit programmes are not necessarily effective in reaching the poorest. Much of the evidence suggests that the main problem faced by the poor in accessing credit is not that commercial interest rates are too high, but that they lack collateral and have few connections with formal financial institutions. For these reasons, when interest rates are subsidised the immediate beneficiaries are the non-poor who are more likely to have collateral and good connections. A more integrated approach is needed that combines access to credit with

the provision of additional services and training. For example, some of the more successful programmes have provided marketing advice and technical support for production activities as well as a forum for the wider exchange of information.

A third concern is whether microcredit activities are operationally and financially sustainable. Although micro-credit repayment rates are high, many of the institutions lending to the poor are not financially sustainable. The transaction costs of making many small loans are high. As noted above, commercial interests rates are not the main obstacle to credit for the poor, and subsidising interest rates in the name of making credit cheaper to the poor is not conducive to the sustainability of microcredit programmes. Subsidies should instead be used to support administrative and training costs, particularly at the initial or expansion stage of microfinance operations. In poor areas, where the rates of return on investment tend to be low, studies need to be undertaken in order to determine the kind of subsidies that are appropriate.

With higher interest rates and better financial management, micro-credit could become better integrated into China's rural banking system and thereby become a more sustainable mechanism over the longer term. However, reforms such as more effective financial supervision and internal auditing should not be instituted in a top-down manner that will erode one of the great strengths of micro-credit projects, namely, the way they promote the participation, independent initiatives and self-organisation of the poor.

An important consideration for the general character of China's anti-poverty programme is that the government and LGPR should increasingly involve Chinese non-state social organisations in the implementation of poverty reduction activities. Non-financial institutions have a role in facilitating the organisation of group activities, while established rural financial institutions like the Agricultural Bank of China and Rural Credit Cooperatives can be encouraged to extend their lending and saving services. Programmes are needed that not only promote the active participation of the poor and build up their productive assets, but also deliver financial services to them in a cost-effective and sustainable way. The involvement of organizations of poor people (such as farmers' associations and rural cooperatives) in delivering microfinance services, either independently or in cooperation with formal financial institutions, will be the key to enhancing the outreach, effectiveness and sustainability of microfinance operations.

F. Institutional Issues and Poverty Reduction

Participation and Social Organisations

As mentioned above, some micro-credit schemes have been instrumental in increasing people's participation in local decision-making. In pilot schemes, members have formed their own groups and chosen their own leaders. Such self-Organization is in line with recent developments in China that have enhanced local participation in government. The implementation of the village election law has already enabled rural dwellers in more than 60 per cent of China's nearly one million villages to exercise some degree of self-government. The flourishing of village social organisations such as micro-finance groups helps strengthen the general trend toward greater local democracy. Building collective self-reliance is not easy, however. It is based on mutual trust among the members of the association and confidence in the leaders that they choose to represent them. The associations must be based on the effective participation of all members. In other words, every member should feel that he or she has a voice in the group's major decision-making.

Foreign-funded projects, working in villages throughout the developing world, have developed a number of successful participatory methods over the past twenty years.[71] These methods enable external agents to act in such a way as to facilitate villagers' own decision-making instead of resorting to the conventional method of giving advice. These approaches can also be useful for government authorities seeking to promote self-reliance at the local level. Since the mid-1990s, some Chinese researchers have successfully applied such new methods, and a network of researchers in the south west has already had significant success. There exists considerable potential for adopting such methods in the design and implementation of the government's poverty alleviation strategy.

Local groups can not only lower the costs of implementing and monitoring poverty alleviation programmes, but also foster greater local initiative for production and economic development. In addition, they can help strengthen the ability of society to cope with various threats to its security, such as economic crises or natural disasters. It is thus important for the government to promote opportunities for and efficiency of community participation.

The main report also notes the role that Chinese non-state social organisations can increasingly play in carrying out poverty reduction activities (see Chapter 3). Voluntary social organisations have recently proliferated in China. One million such organisations of various kinds are estimated to have emerged throughout the country, dealing with a range of issues such as environmental problems and social welfare. Such organisations can prove to be valuable partners in poverty reduction efforts, since they often have a special commitment and capacity to work at the grassroots level. For example, Project Hope is provides assistance for building schools and promoting access to basic education in poor areas. The All China Women's Federation has an impressive network for outreach to women throughout the country. Furthermore, non-governmental organisations in Hong Kong are showing more interest in supporting work at the grassroots level in China, for example their mobilisation of substantial funds for relief in connection with the 1998 floods.

The government is currently in the process of redefining its role vis-à-vis community and social organisations, including modifying the regulatory framework for social organisations relevant to China's changing socio-economic environment. This should be an important first step in providing such organisations with the scope and resources to contribute to social development. In this process, experiences from other countries as well as the experiences of Chinese organisations should be carefully studied.

Monitoring, Supervision and Co-ordination

As noted above, there has been relatively little attempt systematically to monitor changes in the incidence of poverty, or to evaluate the government's poverty reduction programmes. There is also little monitoring of whether people who move out of poverty are able to maintain this position. The data required to assess the cost-effectiveness and impact of specific

[71] It is worth noting that the term "participation" can have very different meanings in different contexts. A UNDP paper ("Re-engineering Participation" 1997) described a scale of participation, from simple mobilisation at one extreme, to empowerment with active involvement of villagers in decision making and implementation at the other extreme.

interventions, and to understand which interventions lead to sustainable poverty reduction are currently not collected or are inadequate.

New efforts have already been initiated, in conjunction with the State Statistical Bureau, to collect data which will allow the better monitoring of changes in poverty, and thus assist in the evaluation of programmes. The focus of this exercise is primarily on income and consumption measures of poverty, and on the development of appropriate methodologies for establishing poverty lines and related indices of poverty. Data collection and analysis is already being undertaken in poor regions. Further work is required to extend the poverty monitoring work to urban areas, to establish better measures of urban poverty, and in particular to collect data on migrants in urban areas.

Alternative approaches to poverty, discussed in this supplement, also have implications for data collection, monitoring and evaluation. In particular, it is necessary both to ensure a sufficient degree of disaggregation at the household and individual level, in order to capture differences—for example by age, gender and individual capability—in the allocation of resources, in the impact of interventions and in welfare outcomes. It is therefore necessary to define a broader set of indicators which take into account the non-income dimensions of poverty.

Furthermore, taking into account the experiences and perceptions of those living at low levels of income, for example, can assist in understanding key dimensions of change in the poverty reduction process. In understanding and monitoring these broader dimensions of poverty, greater use can be made of participatory methods which enable the poor themselves—ultimately those who should be affected by the interventions—to contribute their experiences to the monitoring and evaluation process. Exercises such as the World Bank's 'Consultations with the Poor' as well as the work of the PRA (Participatory Rural Appraisal) Network in south west China provide useful models and resources for developing such an approach.

Similarly there is a role for greater participation of poor people in the planning, implementation and supervision of poverty programmes. There is clearly a need to establish good mechanisms of accountability to ensure that funding and resources are not diverted from poverty reduction purposes. However, tighter supervisory and regulatory mechanisms which contradict incentives in the wider economic and bureaucratic system may be costly and ineffective. The key approach must be to generate incentives to use resources for poverty reduction purposes. Here bottom up mechanisms for participation and accountability, with the poor involved in decision making, design and implementation of projects, as well as in subsequent monitoring and evaluation, have the potential to contribute both to more sustainable poverty reduction interventions, and to act as a more effective regulatory mechanism—at least below the county level—than tighter top-down supervision.

Finally, greater mechanisms for institutional and inter-agency communication or co-ordination need to be built into the system. This includes co-ordination between different government agencies concerned with poverty alleviation, relief, health and education, for example; as well as between government agencies, mass organisations, non-governmental, non-profit and other social organisations. Greater co-ordination has the potential to strengthen the multi-sectoral approach to regional development in poor areas, to consolidate the use of resources and to develop a more comprehensive system of social protection and safety nets for the newly emerging poor and vulnerable in other regions and urban areas.

BIBLIOGRAPHY

Agriculture Development Bank of China. 1997. *China Agriculture Development Bank 1997 Statistical Yearbook.* Beijing: China Statistics Publishing House.

Asian Development Bank. 1998. *Land Use and Land Tenure Policy in Fujian Province.* Final Report: ADB T.A. 2408-PRC, Manila: Asian Development Bank.

Banks, A. 1997. "Land Tenure and Sustainable Agriculture in Marginal Environments: The Case of Western China." Paper presented at the 41st Australian Agricultural and Resource Economics Society Conference, mimeo.

Bardhan, Pranab. 1996. "Research on Poverty and Development Twenty Years after Redistribution with Growth." In Michael Bruno and Boris Pleskovic, eds., *Annual World Bank Conference on Development Economics, 1995.* Washington, D.C.: The World Bank: 59-72.

Beynon, Louise, Zheng Baohua, Lu Caizhen, Zhao Yaqiao and Liu Jinlong. July 2000. "Understanding Rural Poverty and Poverty Constraints in China." A Report commissioned by DFID China Programme.

Burgess, Robin. 1998. "Market Incompleteness and Nutritional Status in Rural China." London School of Economics, mimeo.

Cai, Qiangguo. 1998. "One Important Technology Measure for Mountain Agriculture Sustainable Development." In Proceedings of the 1998 International Symposium on Resource Development and Protection of Mountainous Areas, Shijiazhuang.

Cardoso, Eliana. March 1992. "Inflation and Poverty." NBER Working Paper No. 4006.

Chen, Shaohua and Martin Ravallion. "Data in Transition: Assessing Rural Living Standards in Southern China." *China Economic Review,* 7 (1996):23-56.

Cheng, Enjiang. 1998. "Microfinance Program of Qinghai Community Development Project." Draft paper.

China Economic Information Service. "New Farming Method for Reducing Soil Erosion." Beijing: CEIS, November 27, 1998.

China Western Human Resources Development Center. 1998. "Xiaoe Xindai Zai Woguo Fupin Gongzuo Zhong Chuangxin Yu Guifan de Tansuo." *Jingji Kaifa Luntan* 1:35-84.

Du Ying and Nansheng Bai. 1997. *Zouchu Xiangcun.* Beijing: Economic Science Publishing House.

Guangxi Statistical Bureau. 1997. *Guangxi Statistical Yearbook 1997.* Beijing: China Statistics Publishing House.

Guizhou Statistical Bureau. 1998. *Guizhou Statistical Yearbook 1998*. Beijing: China Statistics Publishing House.

Han, Deqian. 1998. "Resource Utilization and Sustainable Development of China's Mountainous Areas." In *Proceedings of the 1998 International Symposium on Resource Development and Protection of Mountainous Areas*, Shijiazhuang.

Hardiman, Robert. 1998. "Rural Infrastructure." Paper prepared for UNDP.

Harkness, James. December 1998. "Recent Trends in Forestry and Conservation of Biodiversity in China." *China Quarterly* 156:911-934.

He, D. and Wei L. 1997. "Microfinance and Changes to China's Poverty Alleviation Methods." In W. Liu, ed., *The Theory and Experiments of Microfinance in Rural China.* Beijing: China Economic Publishing House.

Helleiner, Gerald K. December 1987. "Stabilization, Adjustment and the Poor." *World Development* 15(12):1499-1513.

Hu, Angang and Ping Zhou, forthcoming. *Society and Development: Disparities in Social Development in China.* Zhejiang People's Publishing House.

Hu, Angang et al. 1998. *Employment and Development.* Liaoning People's Publishing House.

International Centre for Integrated Mountain Development. 1994. "Proceedings and Papers from the 1993 International Forum on Development of Poor Mountain Areas." Beijing: LGPR, CAS, and ICIMOD.

Islam, Rizwanul. 1990. "Rural Poverty, Growth and Macroeconomic Policies: The Asian Experience." *International Labour Review* 129(6):693-714.

Jalan, Jyotsna and Martin Ravallion. 1999. "Are the Poor Less Well Insured? Evidence on Vulnerability to Income Risk in Rural China." *Journal of Development Economics* 58:61-81.

——— 1996. "Are there Dynamic Gains from a Poor-Area Development Program?" *Policy Research Working Paper 1695.* The World Bank, Policy Research Department, Poverty and Human Resources Division.

Jiang, Dehua. 1989. "Classification and Development of China's Poor Areas." Beijing: Tourism and Education Press.

Kanbur, S.M. Ravi. December 1987. "Structural Adjustment, Macroeconomic Adjustment and Poverty: A Methodology for Analysis." *World Development* 15(12):1515-1526.

Kang Xiaoguang. 1998. "The Commentary on China's Poverty Alleviation." Paper prepared for UNDP, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences.

Khan, Azizur R. 1998. "*Poverty in China in the Period of Globalization: New Evidence on Trend and Pattern.*" Issues in Development Discussion Paper 22, International Labour Organization, Geneva.

Khan, Azizur R., Keith Griffin and Carl Riskin. May 1999. "Income Distribution in Urban China During the Period of Economic Reform and Globalization." *American Economic Review*, Papers and Proceedings.

Khan, Azizur R. and Carl Riskin. *Inequality and Poverty in China in the Age of Globalization.* New York: Oxford University Press, 2000.

Leading Group for Poverty Reduction. "National Report on Sustainable Development, June 1997: Poverty Alleviation." Beijing: Administrative Center for China's Agenda 21, 1997.

Leading Group for Poverty Reduction. 1989. *Outline of Economic Development in China's Poor Areas.* Beijing: Agricultural Publishing House.

Leeming, F. 1985. "Development in the Mountains." In *Rural China Today.* London: Longman.

Li, Ou. 1998. "Targeting the Real Poor and Sustainable Poverty Alleviation - Experiences with Participatory Approaches to Project Planning and Implementation." Report of the Mountain River Lake/GTZ Cooperation Project of Sustainable Mountain Development, mimeo.

Li, Yucai. 1996. "Forecast of Domestic and International Market Requirements for Economic Forest Products." In *Forestry Development Strategy for the 21st Century.* Beijing: China Forestry Publishing House.

Li, Zhenyu and Li Lianchang. 1997. *Theory and Practice of Poverty Reduction through Science and Technology.* Beijing: Agriculture Publishing House.

Li, Zhou. 1996. "China Forestry: The Way Out." In *Forestry Economics* 1 No. 1.

Lin, Justin, Fang Cai and Zhou Li. 1997. "Social Consequences of Economic Reform in China: An Analysis of Regional Disparity in the Transition Period." Unpublished report for UNDP, Beijing.

Lipton, Michael and Martin Ravallion. 1995. "Poverty and Policy." In J. Behrman and T.N. Srinivasan, eds., *Handbook of Development Economics*, Volume III. Elsevier.

Liu, Wenpu and Guobao Wu. 1997. *Diqu Jingji Zengzhang He Jianhuan Pinkun.* Taiyuan: Shanxi Economics Press.

Lu, Dadao and Xue Fengqi. 1997. "Main Poverty Alleviation Policies and Economic Development in Poor Areas." In *China Regional Zoning Development Report.* Beijing: Commercial Press.

Lu, Rongsen. 1994. "The Application of Plastic Film Technology in China." Kathmandu: ICIMOD, mimeo.

Lyons, Tom. September 1998. "Feeding Fujian: Grain Production and Trade, 1986-1996." *China Quarterly* 155:512-545.

Messerli, B. and J.D. Ives. 1997. *Mountains of the World: a Global Priority.* London and New York: Parthenon Publishing.

Miller, D. J. 1998a. "Nomads of the Tibetan Plateau Rangelands in Western China. Part 2: Pastoral Production Practices." Mimeo.

——— 1998b. "Hard Times on the Plateau." In *Chinabrief* 1:17-22.

Ministry of Agriculture (a). *China Agriculture Statistical Documents* (various years). Beijing: China Agriculture Publishing House.

——— (b). *China Agricultural Yearbook* (various years). Beijing: China Agriculture Publishing House.

——— 1993. *China Township and Village Enterprise Yearbook, 1993.* Beijing: China Agriculture Publishing House.

Ministry of Forestry. 1995. "Comprehensive Forestry Development in Mountain Areas and Poverty Elimination." In *China's Agenda 21: Forestry Action Plan.* Beijing: China Forestry Publishing House.

Ministry of Science and Technology. May 1998. "Proceedings of the Conference on China Mountain Technology Development." Hebei: MOST.

National Agricultural Census Office.. 1998. "Cong Nongye Pucha Kan: Woguo Nongye He Nongcun Jingji." *Zhongguo Tongji* 2: 10-12, 16, reprinted in *Renmin Daxue Fuyin Ziliao (F2): Nongye Jingji* 4:27-30.

Office of the Leading Group of Microcredit Poverty Alleviation of Yunnan Province. July 1998. "General Introduction and Prospects on Microcredit Poverty Alleviation Program in Yunnan Province." Mimeo.

Park, Albert. June 1998. "Rural Financial Market Development in China." Paper prepared for The World Bank, mimeo.

Park, Albert, Sangui Wang and Guobao Wu. 1999. "Regional Poverty Targeting in China." Unpublished manuscript. University of Michigan.

——— "Assessing China's War on Poverty." Draft unpublished manuscript. University of Michigan.

Park, Albert, Scott Rozelle, Christine Wong and Changqing Ren. 1996. "Distributional Consequences of Reforming Local Public Finance in China." *China Quarterly* 147:751-778.

Project Leading Group. October 1995. "Research Report on The World Bank Special Credit for Anti-Poverty." Unpublished manuscript, SPC.

Ravallion, Martin and Shaohua Chen. "A Preliminary Assessment of the Gains from the Southwest China Poverty Reduction Project." Paper prepared for The World Bank, forthcoming.

Rawski, Thomas G. and Robert W. Mead. 1998. "On the Trail of China's Phantom Farmers." *World Development* 26 (5):767-781.

Ren, Jizhou. 1998. "Strategy and Recommendations for Sustainable Agricultural Development in the Southwest Karst." Report to China Engineering Academy, mimeo.

Rozelle, Scott, Guo Li, Minggao Shen, Amelia Hughart and John Giles. June 1999. "Leaving China's Farms: Survey Results of New Paths and Remaining Hurdles to Rural Migration." *China Quarterly* 158:367-393.

Rozelle, Scott, L. Zhang and J. Huan. September 1998. "China's War on Poverty." Paper prepared for the conference, Socialism with Chinese Characteristics: China in Transition. Logan: Utah.

Rozelle, Scott, Albert Park, Jikun Huang and Hehui Jin. 1996. "The Changing Role of the State in China's Transitional Commodity Economy." Unpublished manuscript.

Shaanxi Statistical Bureau. 1997. *Shaanxi Statistical Yearbook 1997*. Beijing: China Statistics Publishing House.

Shen, Guofang. 1998. "Comprehensive Mountain Development and Rehabilitation and Sustainable Forestry Development." In Wei Dehan, ed., *The New Agricultural Technology Revolution*. Beijing: China Agriculture Publishing House.

Shi, Shan. 1997. "Poverty Alleviation and Mountain Area Development." In Zhao Qiju, ed., *Proceedings of the China Poverty Alleviation Theory and Strategy Conference.* Kunming: Yunnan Science and Technology Press.

"Sichuan Pinkun Xian Jingji Kaifa Touzi Laiyuan He Touzi Zongliang Tongji Biao," 1998. Chengdu: Sichuan PADO, mimeo.

Sichuan Grassland Working Station. 1996. "Collected Documents on Pasture and Animal Husbandry." Chengdu: Sichuan Department of Agriculture, mimeo.

Sicular, Terry. 1995. "Redefining State, Plan and Market: China's Reforms in Agricultural Commerce." *China Quarterly* 144:1020-1064.

State Office for Integrated Agricultural Development. 1997. "Documents on Integrated Agricultural Development, Part III." Beijing: Agricultural Publishing House.

South China Morning Post. June 1999. "Poverty Can Never Be Fully Wiped Out."

State Statistical Bureau (a). *Chinese Statistical Yearbook* (various years). Beijing: China Statistics Publishing House.

——— (b). *China Rural Statistical Yearbook* (various years). Beijing: China Statistics Publishing House.

——— 1997. *China Labor Statistical Yearbook.* Beijing: China Statistics Publishing House.

——— 1991. *China County Rural Economic Statistical Outline.* Beijing: China Statistics Publishing House.

The World Bank. 1999a. *China, Weathering the Storm and Learning the Lessons: A Country Economic Memorandum.* Washington, D.C.: The World Bank.

——— 1999b. *Rural China: Transition and Development.* Washington, D.C.: The World Bank.

——— 1999c. *Strategic Goals for Chinese Education in the Twenty-first Century.* Report No. 18969-CHA, Washington, D.C.: The World Bank.

——— 1998. *Forestry Development in Poor Areas.* Project Appraisal Document Report No. 17506-CHA, Washington, D.C.: The World Bank.

——— 1997a. *Income Distribution in China.* Report No. 16685-CHA, draft report.

———1997b. *Qinba Mountains Poverty Reduction Project.* Staff Appraisal Report No. 16390-CHA, Washington, D.C.: The World Bank.

——— 1997c. "Post-Approval Quality at Entry Assessment: Final Report." Washington, D.C.: The World Bank, mimeo, November 5, 1997.

——— 1997d. "Financing Health Care: Issues and Options for China." Part of the *China 2020 Series*, Washington, D.C.: The World Bank.

——— 1996. "Poverty in China: What Do the Numbers Say?" Background Note, Washington, D.C.: The World Bank.

——— 1995. *Southwest Poverty Reduction Project.* Staff Appraisal Report No. 13968-CHA, Washington, D.C.: The World Bank.

——— 1994. *China: GDP Per Capita.* Report No. 13580-CHA, Washington, D.C.: The World Bank.

——— 1992. *China: Strategies for Reducing Poverty in the 1990s*. Washington, D.C.: The World Bank.

United Nations Development Programme. 1999a. *Human Development Report*. New York.

——— 1999b. *China Human Development Report 1999*. Beijing: China Financial and Economic Publishing House.

——— 1998. *UNDP Poverty Report 1998: Overcoming Human Poverty*. New York.

——— 1997a. "Poverty Alleviation in China: A Compendium of Programs Supported by International Donors." Beijing: UNDP.

——— 1997b. *Human Development Report*. New York.

United Nations Children's Fund. September 1998. "Post-MTR Review of Directions in Education Planning, Management and Financing." Paper written by Daa Brock.

Wang, Guoliang. 1998. "Speeding up the Poverty Alleviation Process and Promoting the Integrated Development of Mountainous Areas." In *Proceedings of the 1998 International Symposium on Resource Development and Protection of Mountainous Areas*, Shijiazhuang.

Wang, Lian and Cui Jian. 1996. "Theoretical Framework for the Economic Development of Underdeveloped Regions." In *China Poverty Alleviation and Poverty Reduction Development Series 1*, Guangzhou: Jinan University Press.

Wang, Tiansheng and Wang Yao. 1998. "Problems in Modern Intensive and Sustainable Agricultural Construction of Guizhou." In *Proceedings of the 1998 International Symposium on Resource Development and Protection of Mountainous Areas*, Shijiazhuang.

Wang, Tong and Wu Ziping. 1992. "An Economic Analysis of the Progressive Decrease in the Quantity of China's Cultivated Land." Beijing: Economic Science Publishing House.

Watson, Andrew and Christopher Findlay. 1995. "Food and Profit: The Political Economy of Grain Market Reform in China." Unpublished manuscript.

World Food Programme/International Fund for Agriculture Development. 1997. "China: A Preliminary Provincial Vulnerability Analysis." Beijing: World Food Programme.

Wu, Guobao, Changqing Ren and Zhou Li. 1997. "Study on Poverty Alleviation Since Post-Reform Rural China." Unpublished manuscript, Rural Development Institute, Chinese Academy of Social Sciences.

Yan, Quanshan. 1991. "Supervision Report of Resettlement of Projects Increasing the Amount of Irrigated Fields by the Yellow River in Ningxia in 1990." Yinchuan: Ningxia Academy of Social Sciences.

Yang, Shuncheng. 1997. "Social Forestry and Poverty Alleviation." Chengdu: Sichuan Science and Technology Press.

Yang, Qiulin. 1998. "Rural Poverty Alleviation Credit System." Paper prepared for UNDP.

Yip, Ray. November 1998. "Joint UNICEF-World Bank Assessment and Supervision of the On-going Project for the Strengthening of Primary Health Care in Poverty Areas". Draft report.

"Yunnan Pingkun Xian Jingji Kaifa Touzi Jiegou He Xhiyong Tongji Biao." 1995 and 1997. Kunming: Yunnan PADO, mimeo.

"Yunnan Pingkun Xian Jingji Kaifa Touzi Laiyuan He Touzi Zongliang Tongji Biao." 1995 and 1997. Kunming: Yunnan PADO, mimeo.

Zhang, Jianwu. 1998. "System Change and Economic Development in Poor Mountain Areas." *China's Underdeveloped Regions* (1):48-51.

Zhao, Yaqiao. 1998. "International Assistance for Poverty Alleviation." Paper prepared for UNDP.

"Zhongguo Pingkun Diqu Nongcun Daolu Fazhan Guihua Ji Zhengce Yanjiu." 1998. Draft Paper prepared for Guojia Fazhan Jihua Weiyuanhui Conghe Yunshu Yanjiusuo.

Zhou, Qiren. 1997. "Jihui yu Nengji: Zhongguo Nongcun Laodongli de Jiuye he Liudong." *Guanli Shijie* 5:81-101, reprinted in *Renmin Daxue Fuyin Ziliao (F102): Laodong Jingji yu Renli Ziyuan Guanli* F102, 11:25-45.

Zhu, Ling and Jiang Zhongyi. 1996. "Public Works and Poverty Alleviation in Rural China." Nova Science Publishers.

——— 1995. "Yigongdaizhen In China: A New Experience with Labour-intensive Public Works in Poor Areas." *Development Policy Review* 13:349-370.

Distributors of World Bank Group Publications

Prices and credit terms vary from country to country. Consult your local distributor before placing an order.

ARGENTINA
World Publications SA
Av. Cordoba 1877
1120 Ciudad de Buenos Aires
Tel: (54 11) 4815-8156
Fax: (54 11) 4815-8156
E-mail: wpbooks@infovia.com.ar

AUSTRALIA, FIJI, PAPUA NEW GUINEA, SOLOMON ISLANDS, VANUATU, AND SAMOA
D.A. Information Services
648 Whitehorse Road
Mitcham 3132, Victoria
Tel: (61) 3 9210 7777
Fax: (61) 3 9210 7788
E-mail: service@dadirect.com.au
URL: http://www.dadirect.com.au

AUSTRIA
Gerold and Co.
Weihburggasse 26
A-1011 Wien
Tel: (43 1) 512-47-31-0
Fax: (43 1) 512-47-31-29
URL: http://www.gerold.co/at.online

BANGLADESH
Micro Industries Development Assistance Society (MIDAS)
House 5, Road 16
Dhanmondi R/Area
Dhaka 1209
Tel: (880 2) 326427
Fax: (880 2) 811188

BELGIUM
Jean De Lannoy
Av. du Roi 202
1060 Brussels
Tel: (32 2) 538-5169
Fax: (32 2) 538-0841

BRAZIL
Publicacões Tecnicas Internacionais Ltda.
Rua Peixoto Gomide, 209
01409 Sao Paulo, SP.
Tel: (55 11) 259-6644
Fax: (55 11) 258-6990
E-mail: postmaster@pti.uol.br
URL: http://www.uol.br

CANADA
Renouf Publishing Co. Ltd.
5369 Canotek Road
Ottawa, Ontario K1J 9J3
Tel: (613) 745-2665
Fax: (613) 745-7660
E-mail: order.dept@renoufbooks.com
URL: http:// www.renoufbooks.com

CHINA
China Financial & Economic Publishing House
8, Da Fo Si Dong Jie
Beijing
Tel: (86 10) 6401-7365
Fax: (86 10) 6401-7365

China Book Import Centre
P.O. Box 2825
Beijing

Chinese Corporation for Promotion of Humanities
52, You Fang Hu Tong,
Xuan Nei Da Jie
Beijing
Tel: (86 10) 660 72 494
Fax: (86 10) 660 72 494

COLOMBIA
Infoenlace Ltda.
Carrera 6 No. 51-21
Apartado Aereo 34270
Santafé de Bogotá, D.C.
Tel: (57 1) 285-2798
Fax: (57 1) 285-2798

COTE D'IVOIRE
Center d'Edition et de Diffusion Africaines (CEDA)
04 B.P. 541
Abidjan 04
Tel: (225) 24 6510; 24 6511
Fax: (225) 25 0567

CYPRUS
Center for Applied Research
Cyprus College
6, Diogenes Street, Engomi
P.O. Box 2006
Nicosia
Tel: (357 2) 59-0730
Fax: (357 2) 66-2051

CZECH REPUBLIC
USIS, NIS Prodejna
Havelkova 22
130 00 Prague 3
Tel: (420 2) 2423 1486
Fax: (420 2) 2423 1114
URL: http://www.nis.cz/

DENMARK
SamfundsLitteratur
Rosenoerns Allé 11
DK-1970 Frederiksberg C
Tel: (45 35) 351942
Fax: (45 35) 357822
URL: http://www.sl.cbs.dk

ECUADOR
Libri Mundi
Libreria Internacional
P.O. Box 17-01-3029
Juan Leon Mera 851
Quito
Tel: (593 2) 521-606; (593 2) 544-185
Fax: (593 2) 504-209
E-mail: librimu1@librimundi.com.ec
E-mail: librimu2@librimundi.com.ec

CODEU
Ruiz de Castilla 763, Edif. Expocolor
Primer piso, Of. #2
Quito
Tel/Fax: (593 2) 507-383; 253-091
E-mail: codeu@impsat.net.ec

EGYPT, ARAB REPUBLIC OF
Al Ahram Distribution Agency
Al Galaa Street
Cairo
Tel: (20 2) 578-6083
Fax: (20 2) 578-6833

The Middle East Observer
41, Sherif Street
Cairo
Tel: (20 2) 393-9732
Fax: (20 2) 393-9732

FINLAND
Akateeminen Kirjakauppa
P.O. Box 128
FIN-00101 Helsinki
Tel: (358 0) 121 4418
Fax: (358 0) 121-4435
E-mail: akatilaus@stockmann.fi
URL: http://www.akateeminen.com

FRANCE
Editions Eska; DBJ
48, rue Gay Lussac
75005 Paris
Tel: (33-1) 55-42-73-08
Fax: (33-1) 43-29-91-67

GERMANY
UNO-Verlag
Poppelsdorfer Allee 55
53115 Bonn
Tel: (49 228) 949020
Fax: (49 228) 217492
URL: http://www.uno-verlag.de
E-mail: unoverlag@aol.com

GHANA
Epp Books Services
P.O. Box 44
TUC
Accra
Tel: 223 21 778843
Fax: 223 21 779099

GREECE
Papasotiriou S.A.
35, Stournara Str.
106 82 Athens
Tel: (30 1) 364-1826
Fax: (30 1) 364-8254

HAITI
Culture Diffusion
5, Rue Capois
C.P. 257
Port-au-Prince
Tel: (509) 23 9260
Fax: (509) 23 4858

HONG KONG, CHINA; MACAO
Asia 2000 Ltd.
Sales & Circulation Department
302 Seabird House
22-28 Wyndham Street, Central
Hong Kong, China
Tel: (852) 2530-1409
Fax: (852) 2526-1107
E-mail: sales@asia2000.com.hk
URL: http://www.asia2000.com.hk

HUNGARY
Euro Info Service
Margitszgeti Europa Haz
H-1138 Budapest
Tel: (36 1) 350 80 24, 350 80 25
Fax: (36 1) 350 90 32
E-mail: euroinfo@mail.matav.hu

INDIA
Allied Publishers Ltd.
751 Mount Road
Madras - 600 002
Tel: (91 44) 852-3938
Fax: (91 44) 852-0649

INDONESIA
Pt. Indira Limited
Jalan Borobudur 20
P.O. Box 181
Jakarta 10320
Tel: (62 21) 390-4290
Fax: (62 21) 390-4289

IRAN
Ketab Sara Co. Publishers
Khaled Eslamboli Ave., 6th Street
Delafrooz Alley No. 8
P.O. Box 15745-733
Tehran 15117
Tel: (98 21) 8717819; 8716104
Fax: (98 21) 8712479
E-mail: ketab-sara@neda.net.ir

Kowkab Publishers
P.O. Box 19575-511
Tehran
Tel: (98 21) 258-3723
Fax: (98 21) 258-3723

IRELAND
Government Supplies Agency
Oifig an tSoláthair
4-5 Harcourt Road
Dublin 2
Tel: (353 1) 661-3111
Fax: (353 1) 475-2670

ISRAEL
Yozmot Literature Ltd.
P.O. Box 56055
3 Yohanan Hasandlar Street
Tel Aviv 61560
Tel: (972 3) 5285-397
Fax: (972 3) 5285-397

R.O.Y. International
PO Box 13056
Tel Aviv 61130
Tel: (972 3) 649 9469
Fax: (972 3) 648 6039
E-mail: royil@netvision.net.il
URL: http://www.royint.co.il

Palestinian Authority/Middle East
Index Information Services
P.O.B. 19502 Jerusalem
Tel: (972 2) 6271219
Fax: (972 2) 6271634

ITALY, LIBERIA
Licosa Commissionaria Sansoni SPA
Via Duca Di Calabria, 1/1
Casella Postale 552
50125 Firenze
Tel: (39 55) 645-415
Fax: (39 55) 641-257
E-mail: licosa@ftbcc.it
URL: http://www.ftbcc.it/licosa

JAMAICA
Ian Randle Publishers Ltd.
206 Old Hope Road, Kingston 6
Tel: 876-927-2085
Fax: 876-977-0243
E-mail: irpl@colis.com

JAPAN
Eastern Book Service
3-13 Hongo 3-chome, Bunkyo-ku
Tokyo 113
Tel: (81 3) 3818-0861
Fax: (81 3) 3818-0864
E-mail: orders@svt-ebs.co.jp
URL: http://www.bekkoame.or.jp/~svt-ebs

KENYA
Africa Book Service (E.A.) Ltd.
Quaran House, Mfangano Street
P.O. Box 45245
Nairobi
Tel: (254 2) 223 641
Fax: (254 2) 330 272

Legacy Books
Loita House
Mezzanine 1
P.O. Box 68077
Nairobi
Tel: (254) 2-330853, 221426
Fax: (254) 2-330854, 561654
E-mail: Legacy@form-net.com

KOREA, REPUBLIC OF
Dayang Books Trading Co.
International Division
783-20, Pangba Bon-Dong,
Socho-ku
Seoul
Tel: (82 2) 536-9555
Fax: (82 2) 536-0025
E-mail: seamap@chollian.net

Eulyoo Publishing Co., Ltd.
46-1, Susong-Dong
Jongro-Gu
Seoul
Tel: (82 2) 734-3515
Fax: (82 2) 732-9154

LEBANON
Librairie du Liban
P.O. Box 11-9232
Beirut
Tel: (961 9) 217 944
Fax: (961 9) 217 434
E-mail: hsayegh@librairie-du-liban.com.lb
URL: http://www.librairie-du-*liban.com.lb*

MALAYSIA
University of Malaya Cooperative Bookshop, Limited
P.O. Box 1127
Jalan Pantai Baru
59700 Kuala Lumpur
Tel: (60 3) 756-5000
Fax: (60 3) 755-4424
E-mail: umkoop@tm.net.my

MEXICO
INFOTEC
Av. San Fernando No. 37
Col. Toriello Guerra
14050 Mexico, D.F.
Tel: (52 5) 624-2800
Fax: (52 5) 624-2822
E-mail: infotec@rtn.net.mx
URL: http://rtn.net.mx

Mundi-Prensa Mexico S.A. de C.V.
c/Rio Panuco, 141-Colonia Cuauhtemoc
06500 Mexico, D.F.
Tel: (52 5) 533-5658
Fax: (52 5) 514-6799

NEPAL
Everest Media International Services (P.) Ltd.
GPO Box 5443
Kathmandu
Tel: (977 1) 416 026
Fax: (977 1) 224 431

NETHERLANDS
De Lindeboom/Internationale Publicaties b.v.-
P.O. Box 202, 7480 AE Haaksbergen
Tel: (31 53) 574-0004
Fax: (31 53) 572-9296
E-mail: lindeboo@worldonline.nl
URL: http://www.worldonline.nl/~lin-deboo

NEW ZEALAND
EBSCO NZ Ltd.
Private Mail Bag 99914
New Market
Auckland
Tel: (64 9) 524-8119
Fax: (64 9) 524-8067

Oasis Official
P.O. Box 3627
Wellington
Tel: (64 4) 499 1551
Fax: (64 4) 499 1972
E-mail: oasis@actrix.gen.nz
URL: http://www.oasisbooks.co.nz/

NIGERIA
University Press Limited
Three Crowns Building Jericho
Private Mail Bag 5095
Ibadan
Tel: (234 22) 41-1356
Fax: (234 22) 41-2056

PAKISTAN
Mirza Book Agency
65, Shahrah-e-Quaid-e-Azam
Lahore 54000
Tel: (92 42) 735 3601
Fax: (92 42) 576 3714

Oxford University Press
5 Bangalore Town
Sharae Faisal
PO Box 13033
Karachi-75350
Tel: (92 21) 446307
Fax: (92 21) 4547640
E-mail: ouppak@TheOffice.net

Pak Book Corporation
Aziz Chambers 21, Queen's Road
Lahore
Tel: (92 42) 636 3222; 636 0885
Fax: (92 42) 636 2328
E-mail: pbc@brain.net.pk

PERU
Editorial Desarrollo SA
Apartado 3824, Ica 242 OF. 106
Lima 1
Tel: (51 14) 285380
Fax: (51 14) 286628

PHILIPPINES
International Booksource Center Inc.
1127-A Antipolo St, Barangay, Venezuela
Makati City
Tel: (63 2) 896 6501; 6505; 6507
Fax: (63 2) 896 1741

POLAND
International Publishing Service
Ul. Piekna 31/37
00-677 Warzawa
Tel: (48 2) 628-6089
Fax: (48 2) 621-7255
E-mail: books%ips@ikp.atm.com.pl
URL: http://www.ipscg.waw.pl/ips/export

PORTUGAL
Livraria Portugal
Apartado 2681, Rua Do Carmo 70-74
1200 Lisbon
Tel: (1) 347-4982
Fax: (1) 347-0264

ROMANIA
Compani De Librarii Bucuresti S.A.
Str. Lipscani no. 26, sector 3
Bucharest
Tel: (40 1) 313 9645
Fax: (40 1) 312 4000

RUSSIAN FEDERATION
Isdatelstvo <Ves Mir>
9a, Kolpachniy Pereulok
Moscow 101831
Tel: (7 095) 917 87 49
Fax: (7 095) 917 92 59
ozimarin@glasnet.ru

SINGAPORE; TAIWAN, CHINA MYANMAR; BRUNEI
Hemisphere Publication Services
41 Kallang Pudding Road #04-03
Golden Wheel Building
Singapore 349316
Tel: (65) 741-5166
Fax: (65) 742-9356
E-mail: ashgate@asianconnect.com

SLOVENIA
Gospodarski vestnik Publishing Group
Dunajska cesta 5
1000 Ljubljana
Tel: (386 61) 133 83 47; 132 12 30
Fax: (386 61) 133 80 30
E-mail: repansekj@gvestnik.si

SOUTH AFRICA, BOTSWANA
For single titles:
Oxford University Press Southern Africa
Vasco Boulevard, Goodwood
P.O. Box 12119, N1 City 7463
Cape Town
Tel: (27 21) 595 4400
Fax: (27 21) 595 4430
E-mail: oxford@oup.co.za

For subscription orders:
International Subscription Service
P.O. Box 41095
Craighall
Johannesburg 2024
Tel: (27 11) 880-1448
Fax: (27 11) 880-6248
E-mail: iss@is.co.za

SPAIN
Mundi-Prensa Libros, S.A.
Castello 37
28001 Madrid
Tel: (34 91) 4 363700
Fax: (34 91) 5 753998
E-mail: libreria@mundiprensa.es
URL: http://www.mundiprensa.com/

Mundi-Prensa Barcelona
Consell de Cent, 391
08009 Barcelona
Tel: (34 3) 488-3492
Fax: (34 3) 487-7659
E-mail: barcelona@mundiprensa.es

SRI LANKA, THE MALDIVES
Lake House Bookshop
100, Sir Chittampalam Gardiner Mawatha
Colombo 2
Tel: (94 1) 32105
Fax: (94 1) 432104
E-mail: LHL@sri.lanka.net

SWEDEN
Wennergren-Williams AB
P. O. Box 1305
S-171 25 Solna
Tel: (46 8) 705-97-50
Fax: (46 8) 27-00-71
E-mail: mail@wwi.se

SWITZERLAND
Librairie Payot Service Institutionnel
C(im)tes-de-Montbenon 30
1002 Lausanne
Tel: (41 21) 341-3229
Fax: (41 21) 341-3235

ADECO Van Diermen EditionsTechniques
Ch. de Lacuez 41
CH1807 Blonay
Tel: (41 21) 943 2673
Fax: (41 21) 943 3605

THAILAND
Central Books Distribution
306 Silom Road
Bangkok 10500
Tel: (66 2) 2336930-9
Fax: (66 2) 237-8321

TRINIDAD & TOBAGO AND THE CARRIBBEAN
Systematics Studies Ltd.
St. Augustine Shopping Center
Eastern Main Road, St. Augustine
Trinidad & Tobago, West Indies
Tel: (868) 645-8466
Fax: (868) 645-8467
E-mail: tobe@trinidad.net

UGANDA
Gustro Ltd.
PO Box 9997, Madhvani Building
Plot 16/4 Jinja Rd.
Kampala
Tel: (256 41) 251 467
Fax: (256 41) 251 468
E-mail: gus@swiftuganda.com

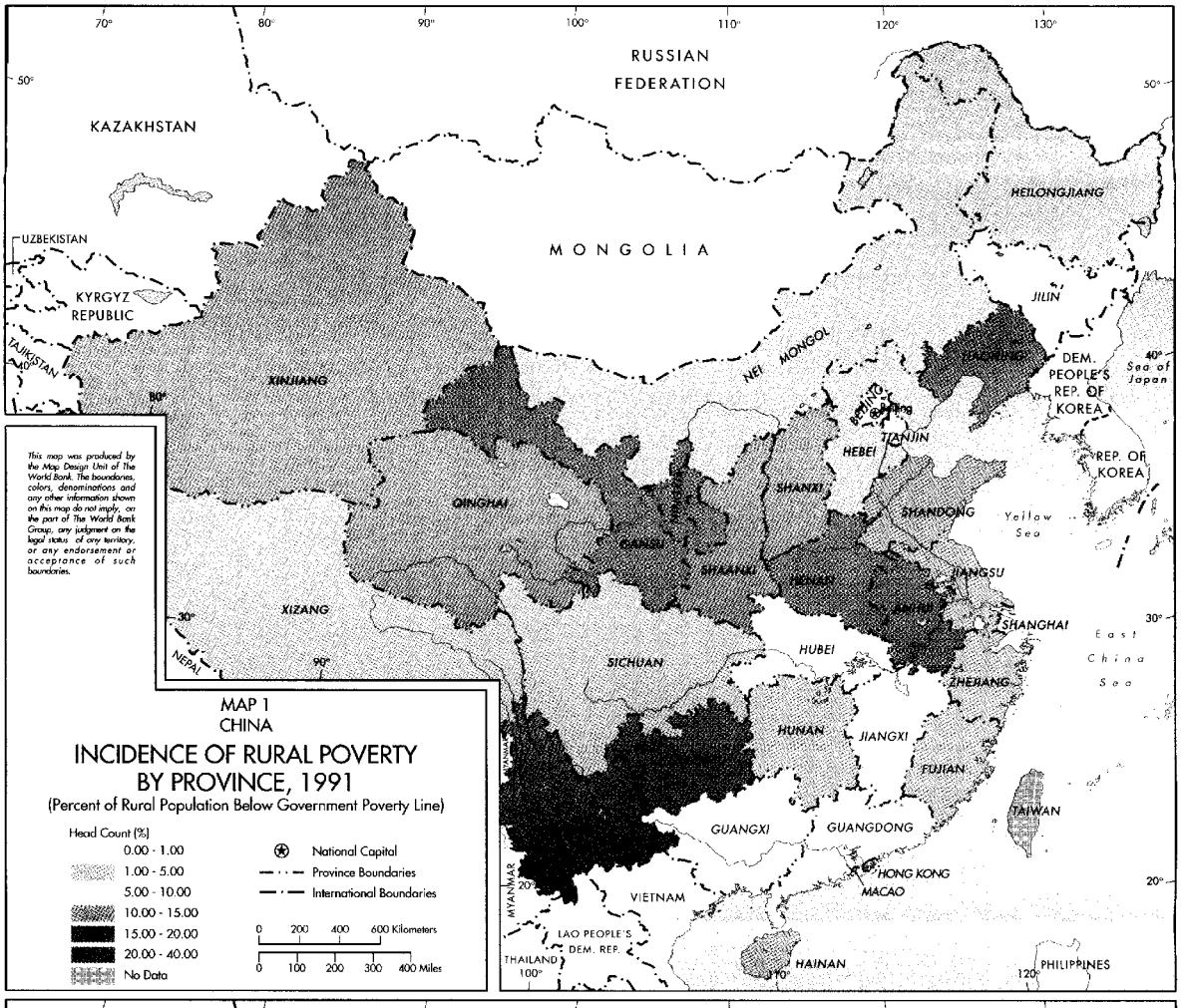
UNITED KINGDOM
Microinfo Ltd.
P.O. Box 3, Omega Park, Alton,
Hampshire GU34 2PG
England
Tel: (44 1420) 86848
Fax: (44 1420) 89889
E-mail: wbank@microinfo.co.uk
URL: http://www.microinfo.co.uk

The Stationery Office
51 Nine Elms Lane
London SW8 5DR
Tel: (44 171) 873-8400
Fax: (44 171) 873-8242
URL: http://www.the-stationery-office.co.uk/

VENEZUELA
Tecni-Ciencia Libros, S.A.
Centro Cuidad Comercial Tamanco
Nivel C2, Caracas
Tel: (58 2) 959 5547; 5035; 0016
Fax: (58 2) 959 5636

ZAMBIA
University Bookshop, University of Zambia
Great East Road Campus
P.O. Box 32379
Lusaka
Tel: (260 1) 252 576
Fax: (260 1) 253 952

ZIMBABWE
Academic and Baobab Books (Pvt.) Ltd.
4 Conald Road, Graniteside
P.O. Box 567
Harare
Tel: 263 4 755035
Fax: 263 4 781913



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

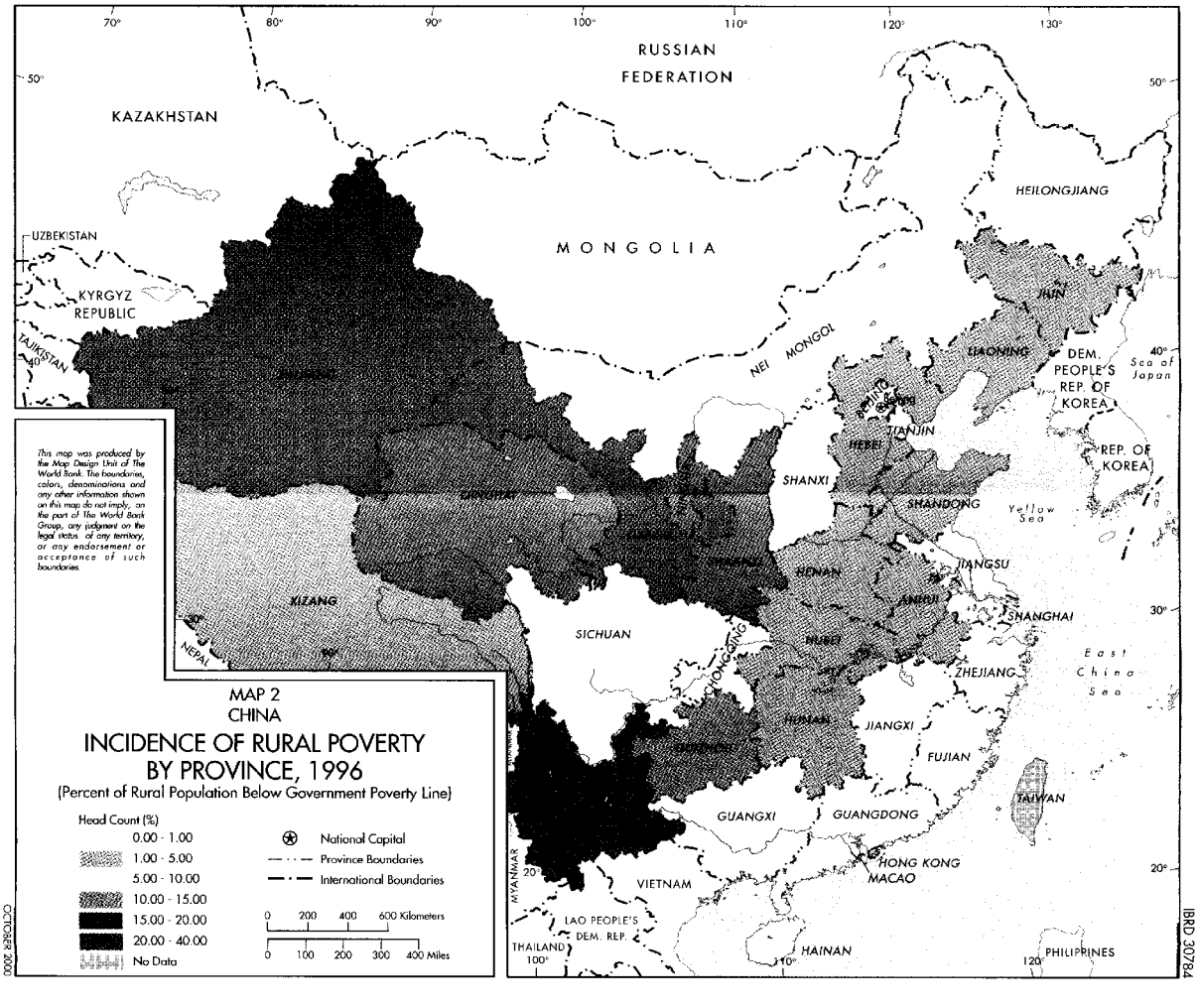
MAP 1
CHINA

INCIDENCE OF RURAL POVERTY BY PROVINCE, 1991

(Percent of Rural Population Below Government Poverty Line)

Head Count (%)
- 0.00 - 1.00
- 1.00 - 5.00
- 5.00 - 10.00
- 10.00 - 15.00
- 15.00 - 20.00
- 20.00 - 40.00
- No Data

- National Capital
- Province Boundaries
- International Boundaries



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

MAP 2
CHINA

INCIDENCE OF RURAL POVERTY BY PROVINCE, 1996

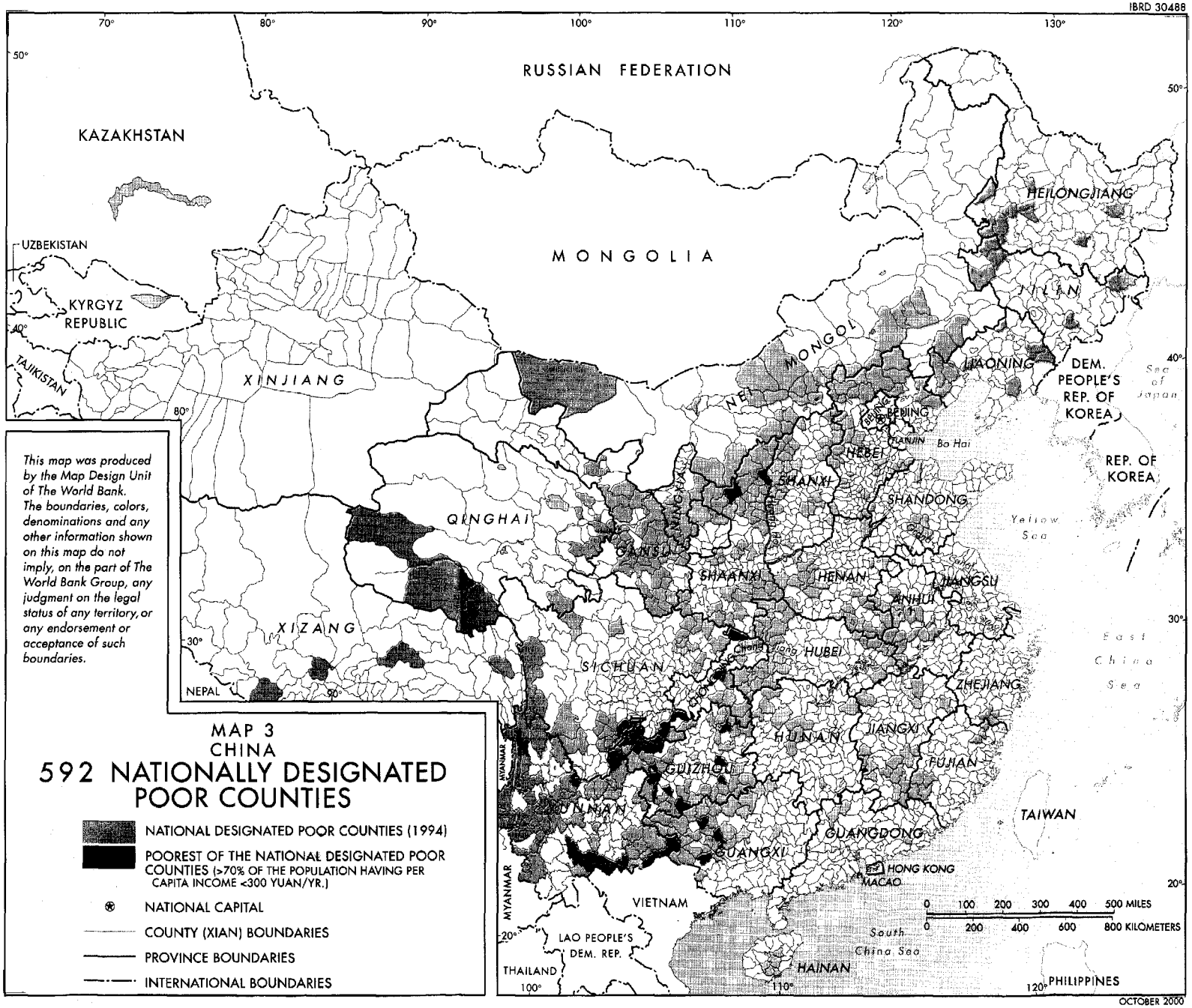
(Percent of Rural Population Below Government Poverty Line)

Head Count (%)
- 0.00 - 1.00
- 1.00 - 5.00
- 5.00 - 10.00
- 10.00 - 15.00
- 15.00 - 20.00
- 20.00 - 40.00
- No Data

- National Capital
- Province Boundaries
- International Boundaries

OCTOBER 2000

IBRD 30784



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

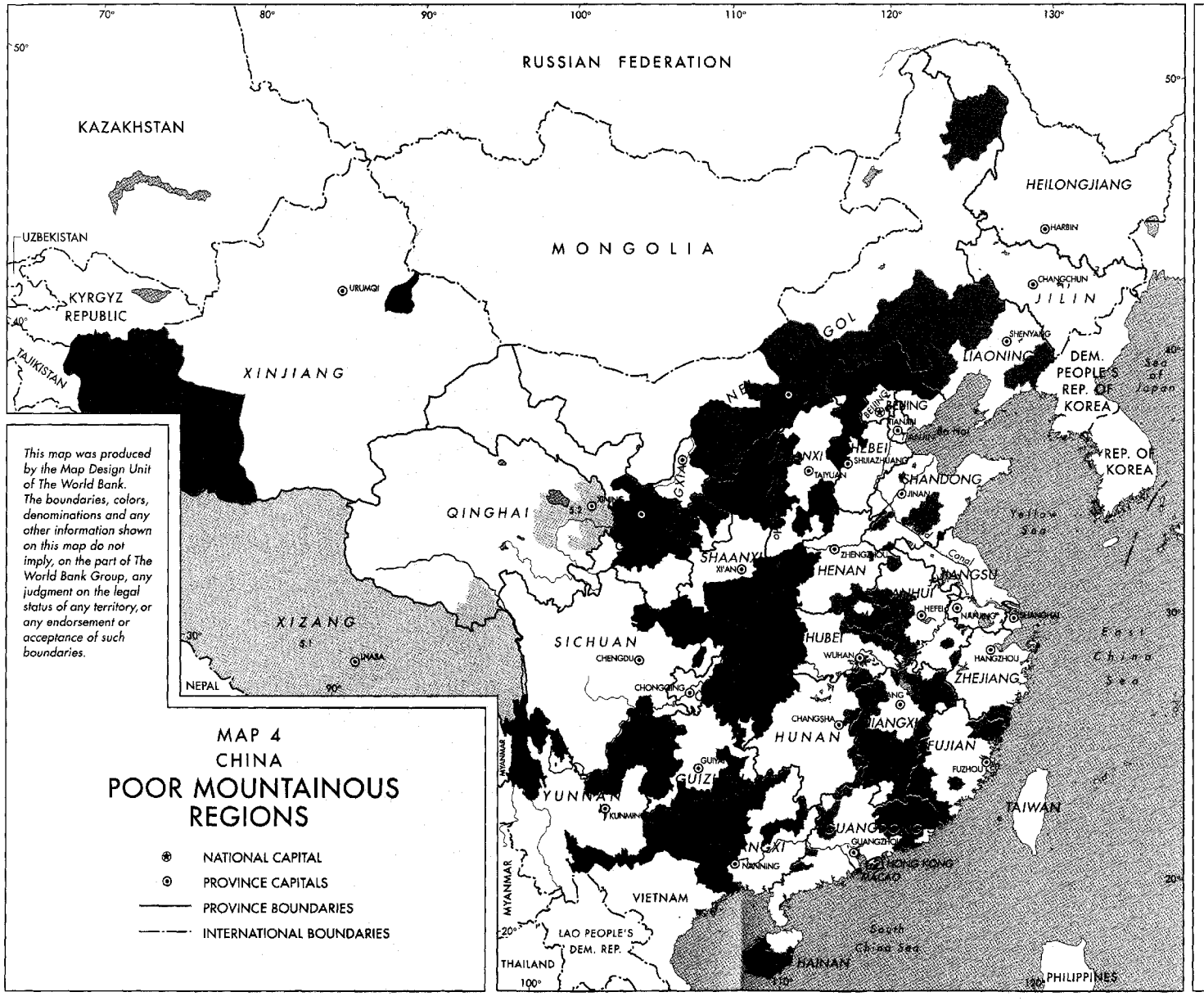
MAP 3
CHINA

592 NATIONALLY DESIGNATED POOR COUNTIES

- NATIONAL DESIGNATED POOR COUNTIES (1994)
- POOREST OF THE NATIONAL DESIGNATED POOR COUNTIES (>70% OF THE POPULATION HAVING PER CAPITA INCOME <300 YUAN/YR.)
- NATIONAL CAPITAL
- COUNTY (XIAN) BOUNDARIES
- PROVINCE BOUNDARIES
- INTERNATIONAL BOUNDARIES

OCTOBER 2000

IBRD 30489



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

MAP 4
CHINA
POOR MOUNTAINOUS REGIONS

- NATIONAL CAPITAL
- PROVINCE CAPITALS
- PROVINCE BOUNDARIES
- INTERNATIONAL BOUNDARIES

1. Loess Plateau
- 1.1 Central and eastern Gansu (Dinxi)
- 1.2 Southern Ningxia (Xihaigu)
- 1.3 Northern Shaanxi Loess Hills
- 1.4 Luliang Mountains

2. East-west plain, hills and mountain belt
- 2.1 Bashang sand dunes
- 2.2 Taihang mountains
- 2.3 Qinba mountains
- 2.4 Wuling mountains

3. Southwest Karst Mountains
- 3.1 Wumeng mountains
- 3.2 Jiuwan Dashan mountains
- 3.3 Northwest Guangxi mountains
- 3.4 Southeast Yunnan mountains
- 3.5 Hengduan mountains

4. Eastern hills and mountains
- 4.1 Yimeng mountains
- 4.2 Dabie mountains
- 4.3 Jinggang hilly mountains
- 4.4 Fujian and Guangdong hilly mountains

5. Qinghai and Tibet high altitude mountains
- 5.1 Tibet
- 5.2 Qinghai

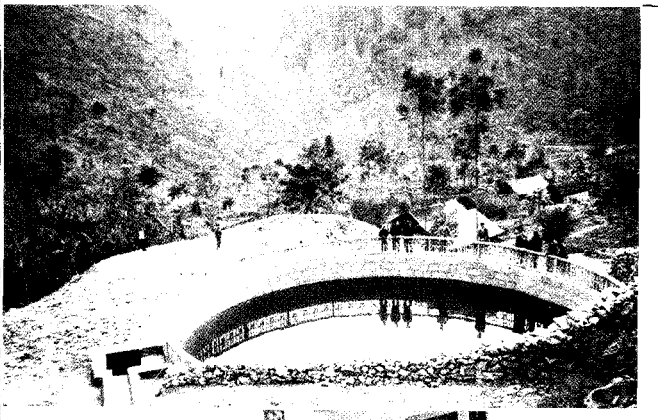
6. Inner and Mongolia and Xinjiang arid areas
- 6.1 Sandy region of SE Inner Mongolia
- 6.2 West Xinjiang arid area

0 100 200 300 400 500 MILES
0 200 400 600 800 KILOMETERS

OCTOBER 2000

Many Solutions

School attendance nearly doubled in Pinglan Village after completion of the new school building (Lingyun County, Guangxi).



Small scale water storage systems supply drinking water during dry season in the Karst Mountains and improve health (Lingyun County, Guangxi).

Labor-intensive small enterprise development can provide off-farm employment opportunities and a market for local farm production. This worker earns Y450 (about US$50) per month making mosquito coils from ground tree leaves (Baojing County, Hunan).

Village health stations can greatly improve health and the availability of basic health services in remote areas. However, the establishment of sustainable cooperative health care programs (and collective health insurance schemes) remains a major challenge in the poorest areas (Liuzhi County, Guizhou).

Labor-intensive construction of rock-wall terraces can increase agricultural productivity, but is a costly solution (Xuanhan County, Sichuan).

THE WORLD BANK

1818 H Street, N.W.
Washington, D.C. 20433 USA

Telephone: 202-477-1234

Facsimile: 202-477-6391

Internet: www.worldbank.org

E-mail: feedback@worldbank.org

UNITED NATIONS DEVELOPMENT PROGRAMME

2 Liangmahe Nanlu
Beijing 100600 CHINA

Telephone: 86-10-6532-3731

Facsimile: 86-10-6532-2567

Internet: www.unchina.org

E-mail: registry.cn@undp.org

ISBN 0-8213-4925-2