Document of
The World Bank

Report No: ICR000031

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-44850 IDA-32330)

ON A

LOAN / CREDIT

IN THE AMOUNT OF

US$16 MILLION AND SDR22.2 MILLION

(US$30 MILLION EQUIVALENT)

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR THE

FOURTH RURAL WATER SUPPLY AND SANITATION PROJECT

March 16, 2007

Urban Development Sector Unit
China Country Management Office
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 22, 2007)

Currency Unit = Yuan

Yuan 1.00 = US$ 0.13

US$ 1.00 = Yuan 7.8

Fiscal Year

January 1 - December 31

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CPMO	Country Project Management Office
CPO	Central Project Office
CPS	Country Partnership Strategy
DFID	UK Department for International Development
ERR	Economic Rate of Return
FRR	Financial Rate of Return
FYP	Five-Year Plan
GoC	Government of China
HDI	Human Development Index
JMP	Joint Monitoring Program
KASH	Knowledge and Advocacy for Sanitation and Hygiene
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MOH	Ministry of Health
NDRC	National Development & Reform Commission
NGOs	Non Government Organizations
NPO	National Project Office
NPHCCO	National Patriotic Health Campaign Coordination Office
NPV	Net Present Value
O&M	Operation and Monitoring
PAD	Project Appraisal Document
PDO	Project Development Objectives
PPMO	Provincial Project Management Office
PPIAF	Public-Private Infrastructure Advisory Facility
PSP	Private Sector Participation
QAG	Quality Assurance Group
RAP	Resettlement Action Plan
RWSS 4	Fourth Rural Water Supply and Sanitation Project
SARS	Severe Acute Respiratory Syndrome
UNICEF	United Nations Fund for Children
UNDP	United Nations Development Program
VCD	Video Compact Disk
WHO	World Health Organization

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China
FOURTH RURAL WATER SUPPLY PROJECT

CONTENTS

A. Basic Information

Country:	China	Project Name:	FOURTH RURAL WATER SUPPLY PROJECT
Project ID:	P057352	L/C/TF Number(s):	IBRD-44850, IDA-32330
ICR Date:	03/05/2007	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	CHINA
Original Total Commitment:	USD 46.0M	Disbursed Amount:	USD 43.4M

Environmental Category: B

Implementing Agencies:
National Project Office

Cofinanciers and Other External Partners:

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	11/20/1998	Effectiveness:	11/24/1999	11/24/1999
Appraisal:	03/29/1999	Restructuring(s):		
Approval:	06/03/1999	Mid-term Review:		09/20/2002
		Closing:	06/30/2005	12/31/2006

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Development Outcome:	Low or Negligible
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	**Overall Borrower Performance:**	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Health	3	
Primary education	3	
Sanitation	3	
Water supply	91	
Theme Code (Primary/Secondary)		
Other human development	Secondary	Secondary
Rural services and infrastructure	Primary	Primary

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	James W. Adams	Jean-Michel Severino
Country Director:	David R. Dollar	Yukon Huang
Sector Manager:	Keshav Varma	Keshav Varma
Project Team Leader:	Thomas L. Zearley	George N. Plant
ICR Team Leader:	Thomas L. Zearley	
ICR Primary Author:	Joanna Mclean Smith	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document**)**

The **development objective** of RWSS 4 was to reduce the time and cost for people in poor rural areas to obtain clean, safe water supply, while improving related sanitation and health behaviors through education and pilot investments.

The **key (outcome/impact) performance indicators** were:

1. Number of villagers newly served by project-supplied water meeting national rural water quality standards;
2 (a). Number of sanitary latrines constructed in villages in the project counties in addition to the school and household demonstration latrines constructed in each village under the project; and
2 (b). Percentage point improvement compared to the baseline period in key water-related health behaviors.

Revised Project Development Objectives (as approved by original approving authority)

The PDO and Key Indicators were not revised during implementation.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	# of villagers served by project supplied water meeting national rural water quality standards			
Value quantitative or Qualitative)	0	3.1 million in the four participating provinces		3.39 million
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	The figures are the design capacity of the water supply facilities to be reached over 10 to 15 years, which is 9% more than projected at appraisal. The number of villagers benefiting from project-supplied water by June 30, 2006 is **2.5 million**.			
Indicator 2 :	# of sanitary latrines constructed in villages in the project counties			
Value quantitative or Qualitative)	0	10,500		17,552
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	The total number of latrines constructed both under the project and by villagers themselves was 67% more than projected at appraisal.			
Indicator 3 :	% improvement in key water-related health behaviors			
Value quantitative or Qualitative)	0	5%		Ranged from 9% to 33% compared to baseline period.
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	For **housewives** washing hands before food preparation increased by 33%, keeping dishware clean by 32% and keep water containers clean by 26%. For **schoolchildren**, knowledge of both washing hands before eating and after defecating increased by 9% and 35% respectively.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	# of water supply systems functioning			
Value (quantitative or Qualitative)	0	288		296
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	By the end of the project, the number of water supply systems functioning was 5% greater than targeted at appraisal.			
Indicator 2 :	% of water systems meeting tariff covenant by the 2nd full fiscal year of operations			
Value (quantitative or Qualitative)	0	80%-100%		52%
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	Fujian – 100%; Guizhou – 83%; Hainan – 31%; Anhui – 31%			
Indicator 3 :	# of sanitary school latrines constructed beyond project target			
Value (quantitative or Qualitative)	0	132		151
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	A total of 19 school latrines were constructed beyond the project target, 14% more than targeted at appraisal.			
Indicator 4 :	# of sanitary household latrines constructed beyond project target			
Value (quantitative or Qualitative)	0	NA	10,542	17,401
Date achieved	11/24/1999	06/30/2006		06/30/2006
Comments (incl. % achievement)	A total of 6859 latrines were built beyond the project target, 65% more than targeted at appraisal.			

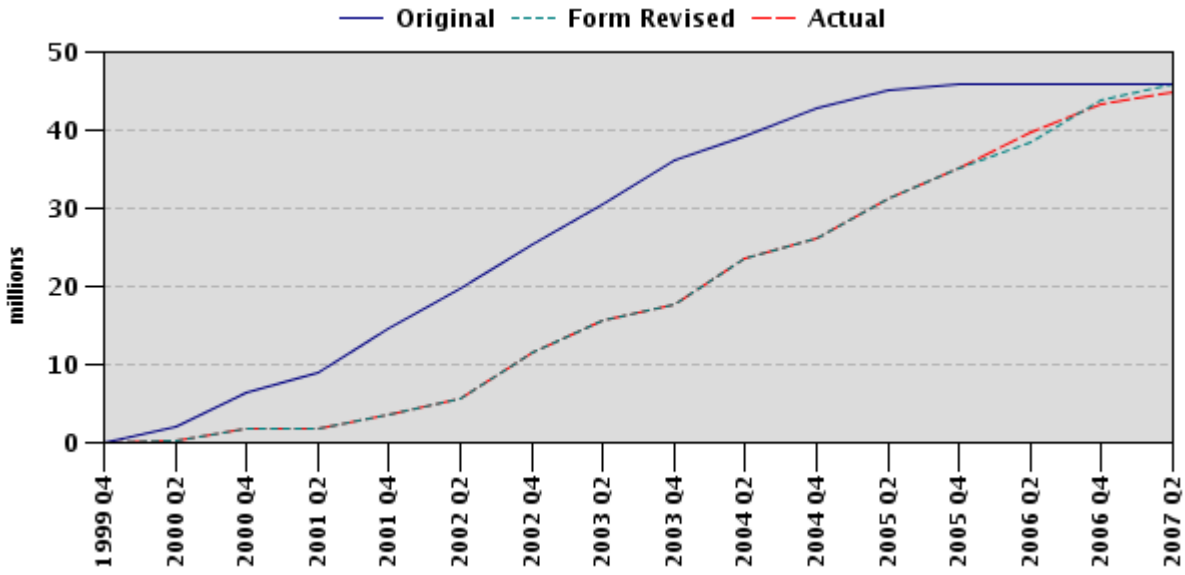
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	06/24/1999	Satisfactory	Satisfactory	0.00
2	12/23/1999	Satisfactory	Satisfactory	0.16
3	06/14/2000	Satisfactory	Satisfactory	1.44
4	12/06/2000	Satisfactory	Satisfactory	1.83
5	06/22/2001	Satisfactory	Satisfactory	3.62
6	12/04/2001	Satisfactory	Satisfactory	5.63
7	05/06/2002	Satisfactory	Satisfactory	8.98
8	11/27/2002	Satisfactory	Satisfactory	14.13
9	06/04/2003	Satisfactory	Satisfactory	17.71
10	10/30/2003	Satisfactory	Satisfactory	21.27
11	05/21/2004	Satisfactory	Satisfactory	24.79
12	11/05/2004	Satisfactory	Satisfactory	28.39
13	04/27/2005	Satisfactory	Satisfactory	33.54
14	11/30/2005	Satisfactory	Satisfactory	39.18
15	12/22/2006	Satisfactory	Satisfactory	44.78

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



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1. Project Context, Development Objectives and Design

1.1 Context at Appraisal
(brief summary of country and sector background, rationale for Bank assistance)

In the ten years prior to the start of the project, China had made significant gains in rural water supply, sanitation and hygiene promotion. Between 1985 and 1997, the number of rural residents with convenient access to improved water [1]had more than tripled, to over 848 million, or 88 percent of China's 954 million rural people. Of these, approximately 407 million people (48 percent of those with access to improved water) were drinking piped water. The remaining 441 million (52 percent of those with access to improved water) were using a variety of other sources, including hand pumps, shallow and deep wells and rainwater collectors.

Safe Water Supply. Having access to an improved water sources, however, is not equivalent to having access to safe water. While almost all piped water systems meet the government's standards for safe water quality, the same is not true for hand pumps and other systems. At the project start, only about 95 million beneficiaries of non-piped systems enjoyed access to safe water. The remaining 346 million rural residents used water which was improved, but nevertheless still did not meet the standards for safe water. Therefore, despite progress, more than 450 million rural Chinese continued to suffer from unsafe or insufficient water supplies at the time when the project began.

Sanitation and Hygiene. Traditionally, households use human waste as fertilizer, often without treatment. The main objectives of sanitation improvements were therefore to improve the standard of latrines and to make excreta reuse practices more hygienic. By 1997, 90 percent of rural households had some sort of household latrine, but most of these facilities were rudimentary at best. Only 29 percent of the rural population used 'sanitary latrines', usually defined as latrines with full walls and roofs, odorless and insect-free. The government of China (GoC) has made a concerted effort to promote good health-related behaviors. In rural areas, health education campaigns had been carried out by a number of government line agencies as well as non-governmental organizations (NGOs).

Bank's Rationale for Involvement. The sustainable supply of safe water, sanitary latrines and hygiene promotion services to rural people was and remains a high priority for the GoC. However, at the time the project was being designed, there had been little direct financing from the central government for rural water supply and sanitation. The majority of financing instead came from local government subsidies and user contributions. The IBRD loan and IDA credit, together with government counterpart financing, reduced the level of beneficiary upfront capital contributions required. Without this, most project villages would not have been able to invest in water supply improvements. The Bank was also able to support government efforts by bringing in international experience on the issues of health, sanitation education and improving technical aspects of water supply plants.

This project was the fourth project in a series of projects (Rural Water Supply Project 1985 - 1991 [Credit 1578-CHA], Rural Water Supply and Sanitation Project [Credit 2336-CHA] and the National Rural Water Supply and Sanitation Project [Cr.N027-CHA]), since 1985, supporting GoC's efforts to improve the living standards of rural populations through access to safe water, sanitation and hygiene promotion. The Country Assistance Strategy (CAS 1997 – 2002) highlighted human development as one of the five major themes in Bank support. Within that theme, poverty reduction played a major role.

[1]*Convenient access* refers to access (within one kilometer of the dwelling) to an adequate amount of water (at least 20 liters a person a day). *An improved source* refers to a household connection, public standpipe, borehole, protected well or spring and rainwater collection. Unimproved sources include vendors, tanker trucks and unprotected wells and springs.

1.2 Original Project Development Objectives (PDO) and Key Indicators (*as approved*)

The development objective of RWSS 4 was to reduce the time and cost for people in poor rural areas to obtain clean, safe water supply, while improving related sanitation and health behaviors through education and pilot investments.

The key (outcome/impact) performance indicators were:

1. Number of villagers newly served by project-supplied water meeting national rural water quality standards;

2 (a). Number of sanitary latrines constructed in villages in the project counties in addition to the school and household demonstration latrines constructed in each village under the project; and

2 (b). Percentage point improvement compared to the baseline period in key water-related health behaviors.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

The PDO and Key Indicators were not revised during implementation. However, after the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, the Ministry of Health requested a reallocation of US$ 3.65 million from this IDA Credit for a SARS prevention program. Upon IDA's approval, a fourth component was added and the Credit Agreement was amended to include the following objective: "…to assist the Borrower in carrying out a program to control and manage the incidence and spread of SARS and infectious diseases". This component is ongoing and will be covered under the ICR for the Basic Health Services Project (Cr. 3075-CHA).

1.4 Main Beneficiaries

The project investment strategy targeted benefits on selected poor villages in the provinces of Anhui, Fujian, Guizhou and Hainan. The principle aim was to provide access to safe, conveniently located water to 3.1 million poor people in these provinces, and to improve related water and sanitation practices. Government staff from the

departments and bureaus of health and water resources and water plant managers, operators and accountants would also benefit from the project through training and capacity building.

1.5 Original Components (*as approved*)

Water Supply Component (US$74.2 million). This component was for providing safe water, sustainably financed, to poor communities lacking such supplies. The component included both piped (planned to serve over 99 percent of beneficiaries) as well as non-piped systems (i.e. hand pumps and rainwater containers). This component also provided support for training of water system managers, operators, and accountants to ensure low cost operation and project sustainability.

Sanitation and Hygiene Education Component (US$7.3 million). This component assisted ongoing rural sanitation and health education efforts. This component provided assistance by working with primary school teachers, village doctors, Women's Federation representatives and public health systems to improve rural water use and sanitation practices. It included support to demonstration programs to increase use of improved household and school latrines. It also included health education messages aimed at expanding the adoption of improved sanitation and hygiene practices among target beneficiaries and training of health education specialists.

Project Management Component (US$4.9 million). This component was to support an increase in project office capacity at national, provincial and county levels and to provide services to beneficiary villages. It encompassed training in project management skills such as procurement, financial management, water supply technologies, water quality protection, and health education. The component also included baseline and follow-up surveys and research on effective strategies to expand adoption of improved sanitation and to convey hygiene messages.

1.6 Revised Components

The project components were not revised during implementation. However, after the SARS outbreak in 2003, the Guizhou Provincial Project Management Office (PPMO) allocated US$3.65 million to support the local SARS and Infectious Diseases Response Program. Given project cost savings in the province, this reallocation did not have a negative impact on project implementation. Only about SDR 600,000 (US$ 840,000 equivalent) were actually drawn down by the SARS program. The remaining US$ 2.81 million of project funds were then reallocated to Zhengan County (an existing project county) and to an additional eight new project counties in Guizhou Province.

1.7 Other significant changes

Change to Participating Counties. Anhui Province substituted Mengcheng County for Guichi County in March 2000 due to a lack of counterpart funds in Guichi County. Guizhou reallocated part of the loan/credit proceeds to eight additional counties and Hainan to one additional county. Steps were taken to ensure the original poverty

selection criteria were followed. The total number of participating counties increased from 27 at appraisal to 36 by loan closing.

Closing Date Extensions. The closing date was initially extended 12 months to allow for full achievement of project objectives. The second extension for six months was required only for Credit 3233 to allow the SARS component to be implemented.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

The scope of the project was highly consistent with the government plans of the time and was also in line with the emerging priorities of a newly elected government with a strengthened mandate for reforms. The GoC was beginning to prepare for the Tenth Five Year Plan (2001 -2005) which focused on lagging central and western provinces and increasing investment in physical infrastructure. The project concepts and objectives were also in step with the Bank's CAS of 1997 and progress report of 1998, which both supported GoC in sustaining poverty reduction and rural development while reducing bottlenecks in infrastructure provision. The project supported the strategy outlined in the CAS for 'focusing on shortages that have constrained growth and affected the quality of life', including water supply, sanitation, drainage - a strategy which mirrored the main concerns of the government.

The project was built on the foundations of a well-established relationship with the central government in the sector and consolidated the lessons learned from previous projects. Two key lessons incorporated into the design of the project were the need to further improve and monitor the sustainability of water supply schemes and the need to include project training for water plants managers, operators and accountants. A better analysis of the roles, responsibilities and incentives of the national and provincial institutions involved, could have helped identify options for improving capacity for supervision and reporting and the option of decentralizing more responsibility for procurement from the central level to the provinces.

From the Bank side, project preparation and design was led by a sector specialist and the preparation was thoroughly reviewed at key stages by peer reviewers with financial, economic and sector experience. The Quality Assurance Group (QAG) did not review quality-at-entry. Careful consideration was given to all safeguard issues and clear provisions were made for adhering to Bank safeguards policies as presented below.

Environment. The Bank classified the project as category "B" because of potential adverse impacts from construction or a failure to protect water sources. A detailed environmental mitigation plan formed part of the project implementation plan. This included a set of design, construction, operation and supervision guidelines that would allow the project to meet the goals of both the Chinese and Bank environmental policy.

Land Acquisition/Resettlement. In expectation of modest but unknown land acquisition and resettlement impacts during implementation, a Policy Framework for Compensation, Resettlement and Rehabilitation of Project Affected Persons was developed and agreed during negotiations. This framework complied with Bank requirements on involuntary resettlement and was fully endorsed by the client. Each RAP would be reviewed by the respective PPMO and the National Project Office (NPO) for conformity to the framework.

Indigenous Peoples. A screening process identified ethnic minorities in three out of the four provinces. In Guizhou Province, ethnic minorities made up the majority of the beneficiaries. The Bank approach was to target ethnic minorities as project beneficiaries, due to their poverty status. In view of this approach and the participatory design of the project, a separate minority peoples' development plan was unnecessary.

Risk Assessment. The assumptions made at appraisal reflected a strong understanding of past performance in the sector. The project foresaw the government restructuring which was set to begin in 1999 and identified the potential risk to full staffing of PMOs and the need for close monitoring of this. However, more stringent mitigation measures for over optimistic projections of beneficiary consumption levels, leading to system over-design and difficulties in cost recovery could have been better identified.

2.2 Implementation

(i) Factors outside the control of government or implementing agency. Two key factors which were outside the control of government or implementing agencies affected implementation. The first factor was the outbreak of SARS in 2003. During this time, movement around the country was extremely limited, Bank operations were scaled down and the project staff were limited in their availability to travel over a six-month period. The second key factor was natural disasters. Most provinces were affected by typhoons and droughts and these had short-term negative impacts on the functioning of the water plants in some areas, particularly during droughts when groundwater levels became low. In November 2003, typhoon Nepartak affected nearly 2 million people and destroyed nearly 1,000 homes in Hainan Island. The storm also affected many reservoirs across the province but fortunately there were no long-term effects in project areas. Another big typhoon hit Hainan province in September 2005 and also affected Fujian province but was less detrimental than the one in 2003.

(ii) Factors subject to government control. Firstly, a number of key sector policies and plans issued by the central government favored project implementation. Clear, specific targets for improvements in both safe domestic water supply and hygienic sanitation services were set. There is a strong awareness of those targets and strong commitment by officials at central, provincial and local levels to achieve them. Secondly, however, ongoing water quality management still requires further attention. Thirdly, shortfalls in counterpart funding in some counties led to delays in project implementation and the contracting of civil works as well as the need to identify additional counties. Finally, clarity on the issue of water treatment plant ownership could have strengthened post-

construction management arrangements, leading to greater commitment, sustainability and better service.

(iii) Factors generally subject to implementing agency control. Project management was reasonably effective and the coordination role of the NPO was particularly important in a project covering four provinces. However, there was some inefficiency in the overall reporting system established and progress reporting and audit reports were often tardy. The PPMOs played an important role in coordinating the many project counties and played an essential role in guiding county level implementation and transferring information about project principles and techniques. Project progress relied a great deal on the enthusiasm of the provincial staff and the time they devoted to working with the County PMOs (CPMOs). Given the number of project counties and the remoteness of project sites, the support and oversight in the design of schemes and post-construction management varied. If further project funds had been allocated to project authorities to capacity building activities, greater support could have been given to improving the management of water plants in terms of financial management and accounting practices.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Due to a lack of existing data sources for monitoring project progress, a project-based M&E system was designed at appraisal (or during implementation). In comparison to the previous Bank-support rural water projects, the design of the M&E system was significantly improved. In addition, baseline and follow-up surveys were designed which would provide a more in-depth assessment of the project outcomes in a sample of villages. There was still room for improvement in the design of the indicators and M&E system and further input in the implementation phase was required.

During implementation it became clear that some of the basic information required for monitoring the project was not available, such as current number of people with access to water and the financial performance of water plants. Basic formats for reporting legal covenants and safeguard requirements also required improvement during implementation. The supervision teams made efforts to improve the reporting formats over time and used these as a basis for providing recommendations during supervision missions. However, progress reporting was delayed on a number of occasions and the information available did not completely meet requirements for monitoring and evaluation. While the M&E system has basically served the purposes of project supervision and evaluation and will be used in the short term for project monitoring, the NPO has already identified the need for long-term follow up review and evaluation of the project impacts.

2.4 Safeguard and Fiduciary Compliance

Land Acquisition and Resettlement. The actual responsibilities for land acquisition rested with the CPMOs and during implementation were guided by a Resettlement Policy Framework. The PPO and NPO were to review conformity to the framework. Considerable flexibility existed in the siting of the water supply plants so that housing or other buildings did not need to be acquired and no-one needed to be relocated. Use of cultivated land was difficult to avoid and required that occupants be compensated to a

level that maintained or increased their standard of living. In general, the resettlement impact of the project was deemed to be very minor. Supervision missions independently investigated land acquisition and followed up any issues that deviated from the agreed framework. These are discussed below.

During the project mid-term review, the Bank team identified a number of land acquisition issues were identified, including: a) incorrect application of land compensation rates; b) inadequate payment to village land owners; c) lack of legal land approval documentation; d) unrealistic data in the reports submitted; and e) application of old tables of land acquisition for reporting at provincial and county level. In order to improve compliance with the Resettlement Policy Framework, the Bank requested that all CPMOs provide information about rehabilitation and compensation and prepare county summaries for all water plants completed. The PPMOs then collated all information and submitted it to the NPO for review. The Bank also increased the frequency of resettlement supervisions missions.

Land acquisition reporting still required regular review and follow up by the Bank and some problems lingered with the county supervision of land acquisition. Therefore, the following steps were taken: a) the CPMOs collected and kept all copies of contracts and disbursement receipts related to land compensation and provided the PPMOs/NPO with timely information; b) compensation gaps were identified and remedied; and c) all land acquired under the project had to receive formal approval from the County Land Bureau. Reporting improved and towards the end of the project, land compensation for each water supply scheme was reinvestigated and was confirmed sufficient.

Environment. The project's environmental impact was substantially positive. The scheme design stage was a critical period for recognizing and mitigating environmental problems and a number of organizations shared this responsibility depending on the system size and complexity. Guizhou Province also mobilized an expert team and a construction supervision company to ensure quality of project design and construction. During supervision, the Bank specialists recommended further improvements to environmental standards on a case by case basis, particularly during construction to protect water sources post-construction and to monitor water quality. However, towards the end of the project, the NPO reported that water source protection still needed further strengthening and water quality monitoring at the household tap should be carried out more regularly to determine if corrective actions are needed.

Auditing Requirements. Audit reports based on the project financial statements were due within six months after the end of each calendar year. While these were always submitted, Guizhou and Anhui provinces consistently handed them in late. While the disclosure of issues within the audit reports was satisfactory, the response by the NPO and PPMOs to the issues raised was less so. General issues raised on a reoccurring basis included: a) lack or shortage of counterpart funds which affected the progress of the project; b) protracted procurement and management of materials resulting in the supply of materials not keeping pace with the projects progress; and c) improvements required in project accounting and management, particularly at county level.

2.5 Post-completion Operation/Next Phase

The NPO, in consultation with the participating provinces, has given careful attention to the transition arrangements for the project after implementation and has prepared a policy framework for its continued operation. This is based on existing policies and regulations governing the rural water supply and sanitation sector and can be summarized as follows: a) the operation and maintenance costs of the project-financed water supply plants are financed by beneficiaries through water tariffs which are regulated by County Price Bureaus; b) appropriate institutional and management approaches are adopted in accordance with local conditions and involvement by local operators is permitted; c) water is seen as an economic good and providers of water supply services are allowed to recover costs and make profits from their operations; d) sector subsidies from provincial and local governments are considered only in exceptional cases; e) hiring of water plant staff is competitive; f) capacity building in management, engineering and financial issues is introduced for every water supply provider; g) water quality is the responsibility of the water supply providers and is monitored independently the by County Health Bureaus. The water supply provider is responsible for responding accordingly to the results of the independent water quality monitoring; and h) the National Patriotic Health Campaign Committee Office (NPHCCO) provides technical guidance and develops technical standards for constructing and maintaining sanitary latrines.

The basic operation model applied to the project is for county/township administrations to take over the management and operation of the water plants and for households to maintain latrines. However, timely physical reviews of water facilities, which are required for the proper accounting and transfer of completed schemes, need to be conducted more expeditiously. Water tariffs are being regularly collected and are generally able to cover operation and maintenance costs. In terms of the management arrangements, innovative variations are being experimented with. With the support of a grant from the Public Private Infrastructure Advisory Facility (PPIAF), the Bank was able to assist two provinces in drafting model management contracts on performance-based terms and for developing transparent bidding processes. A national workshop was held in 2005, which brought together representatives from 21 provinces to share the experiences learned from the PPIAF-funded pilot. In particular, the pilot provided lessons on a) drafting and agreeing lease/affermage and management contracts, on performance-based terms, between water plant managers and county governments; and b) developing and carrying out transparent bidding processes. All provinces reported the usefulness of this pilot but also highlighted the need for greater leadership by local government authorities to ensure transparency and accountability in applying these.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

The project remained consistent with Bank priorities through both a subsequent CAS (2003 - 2005) and the most current Country Partnership Strategy (CPS 2006 – 2010). Pillar 2 of the current CPS is poverty, inequality and social exclusion which are still well-

aligned to the project's development objective. In addition, despite being prepared in advance on the Millennium Development Goals (MDGs), the project is extremely well-aligned with global priorities and the targets set for the MDGs. The project has supported the government in working towards both these global targets and those set out in its Five-Year Plans (FYP). The Bank and GoC kept the project relevant to the reform needs of the sector, notably in the development of alternative private sector management models. Given the great need to improve the efficiency of the sector, more innovative models for managing water supply facilities will be key.

By the end of 2005, there were still about 312 million rural people reportedly without access to safe water supply and 790 million rural residents without improved sanitation. Providing these basic services remains a high priority for GoC. The GoC's Eleventh Five Year Plan (2006-2010) for Rural Safe Drinking Water Supply has a target of providing drinking water to 160 million additional people. The plan emphasizes that poorer western regions, areas with serious water scarcity and quality problems, ethnic minority areas and rural schools will receive assistance. This project has provided lessons for the proposed Western Regions Rural Water Supply, Sanitation and Hygiene Promotion Project, which will directly assist the GoC in meeting its FYP targets.

3.2 Achievement of Project Development Objectives

ICR Rating: Overall achievement of Project Development Objectives is satisfactory.

(a) Reducing the time and cost for people in poor areas to obtain clean, safe water supply. The baseline survey found that prior to the provision of water supply through household connections, households were spending significant time collecting water from sources. Households were spending an average of between one hour and one-and-a-half hours per day, depending on the season, collecting water, some considerably more. All households connected to the systems received a pipe connection to the household or yard; so the time previously used to collect water can now be used for more productive purposes or for leisure or childcare.

The water supply schemes built under the project are designed to provide water to a total of 3.4 million people once they have reached their full design capacity. The design capacity of the water supply facilities is normally reached over a 10 to 15 year period. In terms of the ***number of villagers newly served by project-supplied water meeting national rural water quality standards*** by the end of the project period, the estimated number is 2.5 million or about 75% of the design population. Further details of the beneficiary numbers by province are provided in Annex 1.

During the follow-up survey, households who had not connected to the systems were asked about their reasons for not connecting. Their responses included that: a) piped networks had not yet connected to their area; b) the connection fees or tariffs were too high (affordability issues); and c) they preferred to use existing sources (lacked willingness to connect). The project was implemented in poor counties in all provinces, so project beneficiaries are all relatively poor. It is likely that some of the households not connecting to the system are very poor. High connection fees are one of the main barriers

preventing poor households from connecting to the piped water supply systems and these fees varied widely from place to place. The detailed results of the survey are provided in Annex 8.

Another supporting objective was ***to provide water at the lowest possible cost and to ensure its sustainability through good maintenance and accounting practices***. The achievement of this objective is generally satisfactory. The project set improved engineering design standards and established a rigorous review process to ensure least cost solutions in providing piped water supply. Where these were followed and enforced by the county and provincial PMOs, the systems were able to supply water at a low cost. The majority of water plants followed rational design standards but where the expected demand for piped water supply and/or the beneficiary consumption levels were over-estimated, the systems did not always meet design expectations. Therefore, the capacity utilization of some plants was lower than expected. In these cases, the price of providing water to households was higher than expected. Financial record keeping for the water plants improved during the project and, in general, was satisfactory.

A key indicator for the water supply component was the ***percentage of water systems meeting the tariff covenant by the second full fiscal year of operation.*** It was expected that after the second full fiscal year of operation, water charges would be established and collected annually at a level to cover O&M costs, administrative costs, taxes, and the greater of either interest charges and depreciation or debt service requirements. While it was not expected that all plants falling under this category would be able to meet the tariff covenant, the final percentage was less than the targeted level of 80 to 100%. The final assessment by the NPO found that 52% of the water plants falling into the two year category are meeting the tariff covenant. However, this varied greatly among the four provinces with Fujian and Guizhou both meeting the targeted level of 80 to 100% and Anhui and Hainan falling well below the target levels, with only 31% of water plants in both provinces meeting the tariff covenant. The reasons for the differences between the provinces can be attributed to some of the factors raised in the previous paragraph.

Over 80% of all plants operating for two years or more were covering operation and maintenance costs, which is the critical factor in terms of the sustainability of the water supply systems. The tariff covenant used for this project is the same as used for urban water supply projects financed by the Bank. In hindsight, it was unrealistic to have expected that water supply schemes in the project in poor rural counties would be able to meet this tariff covenant. The fact that around 50% of water supply schemes are also covering depreciation and debt servicing is an even better outcome. The table below summarizes information on the tariff covenant for each province, separating this out to highlight the percentage of schemes meeting operation and maintenance costs and the percentage covering the full tariff covenant.

Table 1: Percentage of Water Supply Plants Meeting the Tariff Covenant by the Second Full Fiscal Year of Operation.

	Anhui	Fujian	Guizhou	Hainan	Total
Total Number of Water Supply Plants	89	64	51	99	303
Number Operating for Two Years or more	52	28	18	39	137
Number Operating for Two Years or more Meeting O&M Costs and % of total	29 (56%)	28 (100%)	17 (94%)	39 (100%)	113 (82%)
Number Operating for Two Years or more and Meeting the full Tariff Covenant, and % of total	16 (31%)	28 (100%)	15 (83%)	12 (31%)	71 (52%)

(b) Improving sanitation and health behaviors through education and pilot investments. Progress reporting recorded the ***number of sanitary latrines constructed in villages in the project counties in addition to the school and household demonstration latrines constructed in each village under the project.*** The progress reports have shown that the number of household latrines being built in project villages in addition to those financed by the project has been considerable, about one-third more than targeted. According to surveys from a sample of villages, the overall rate of having a *basic latrine* in the village has increased from 77% during the baseline survey to 93% in the follow-up survey. The coverage of *sanitary latrines* (meeting government standards) has grown from 10% at baseline to 37% in the follow-up survey. The most recent national figures for access to improved sanitation suggest an increase from 7% in 1990 to 31% by 2005. Therefore, the coverage of sanitary latrines in project villages is higher than the most recent national estimates of access to improved sanitation. In relation to school latrines, this indicator was less relevant as schools are not in such a good position to mobilize funds for sanitation.

In relation to the ***number of villagers using their own resources to construct additional sanitary latrines,*** progress reports show that around 7000 villagers have built latrines using their own resources and the technical assistance provided by the project. Further evidence suggests that coverage of both basic and sanitary latrines in the project villages has increased, but directly attributing the construction of new latrines to the demonstration latrines is uncertain. However, given that government financing for rural sanitation is limited and the majority of financing for rural sanitary latrines comes from either village committee funds or users themselves, it is likely that most of the latrines were built with village or user funds. The cost of demonstration facilities is still high compared to villagers' annual disposable income, and there were limited means of providing financing for these assets to non-demonstration households or information on how to purchase and construct low-cost sanitary latrines.

In relation to ***improvements in key water-related health behaviors*** in the project, progress reports suggest that overall health behaviors have exceeded the targeted improvement of 5%. Hygiene promotion has been a key part of efforts to improve health through investments in safe water and sanitary latrines. The baseline and follow-up

surveys have provided information on behavior change in key target members of the population, including housewives and schoolchildren. The results of the survey are provided in detail in Annex 8, and are summarized below.

For ***housewives***, the level of health knowledge was already very high at the start of the project but appears to have increased markedly. The *practice of washing hands before food preparation* across the provinces ranged between 37 - 70% during the baseline survey. This increased to 80 - 93% by the follow-up survey. The practice of *keeping dishware clean* has increased from between 50 - 73% during the baseline to 93 - 98% during the follow-up survey. The practice of *not wiping dishware with cloth* (which are generally very dirty) has increased from between 59 - 78% during the baseline survey to 91 - 98% during the follow-up period.

For ***schoolchildren***, the baseline and follow up surveys also looked at the status of school latrines, hand-washing facilities, health education and the health knowledge of students. The survey found that approximately 94% of the surveyed *school latrines were kept clean* and approximately 86% of the *schools had hand-washing facilities*. The proportion of schools having *health education courses* has increased from 60% during the baseline to 94% during follow-up survey. The proportion of schools having health education homework or tests has increased from 32% to 66%. In terms of students' knowledge of good behaviors, the *knowledge of washing hands* was very high in both baseline and follow-up surveys, over 90% in the baseline survey and over 99% during follow-up survey. The knowledge of *washing hands after defecating* has increased from a low level, ranging from 40% to 63% during the baseline to a range of 78% to 95% during the follow-up survey. Hand washing, in particular, is expected to have a significant positive impact on health outcomes.

3.3 Efficiency

No NPV, ERR or FRR was calculated for the project at the time of preparing the PAD and available data were insufficient to carry out a detailed economic analysis of the project at closing. It was decided that generating the information required to calculate NPVs for each of the water supply systems would be excessively costly, and nearly impossible to calculate at an acceptable level of certainty. As an alternative, villages were required to pass a test of revealed demand – a willingness to supply capital and levy water tariffs that cover the full operating costs of and loans incurred by the system. Thus, the water supply investments would be justified in terms of private demand.

3.4 Justification of Overall Outcome Rating

Rating: Satisfactory

The project was highly consistent with the CAS and remains relevant in the CPS, which both emphasized rural development and improving living standards in China's poor provinces. The key aims of reducing the time and costs for people in rural areas in obtaining safe water and improving sanitation and hygiene practices have been achieved for a significant number of people.

3.5 Overarching Themes, Other Outcomes and Impacts
(a) Poverty Impacts, Gender Aspects, and Social Development

Poverty – The project was in the Bank's program of poverty targeted interventions. It was targeted at poor villages where households were spending a great deal of time and effort in collecting water from the source. Access to safe water and appropriate sanitation and hygiene services leads to significant health benefits to the poor. It is well-recognized that poor families suffer worse health conditions than those with higher incomes. Improvements in health result in more productive days available, particularly for poor households. Household spending on medicines can be a significant proportion of their disposable income; health improvements, therefore, can reduce medical expenditures, thereby generating significant cash savings.

Education– Safe water and access to sanitation increase the opportunity for children to attend school, especially girls. The project provided gender-segregated school latrines with handwashing facilities and provided targeted health education activities in schools in collaboration with teachers. Reducing the incidence of water-related illnesses and diseases can in turn reduce the number of days lost through illness and improve student performance in general.

Gender – Access to conveniently located water supply reduces the burden of domestic tasks and frees up time for children and for economic activity, particularly for women. While many domestic tasks in rural China are shared between male and female household members, the absence of many male household members due to out-migration means the burden for water collection, cooking and cleaning duties, childcare and firewood collection often falls on women.

(b) Institutional Change/Strengthening

Given the limited amount of investment for rural water supply, sanitation and hygiene promotion, to date, the project has demonstrated improved ways of implementation. In particular, the capacity of local institutions to deliver improved water supply and sanitation services has improved as a result of the project. It has also demonstrated how to bring together different sectors involved in implementing water supply, sanitation and hygiene promotion investments through one program. One area that has seen particular innovation, in regard to the long-term development of rural water supply and sanitation, is the piloting of Private Sector Participation (PSP) models. Also, a concerted effort was made during the project to identify training needs for water supply plant operators and staff. In particular, training around operational sustainability and improved management practices, especially financial management and accounting activities was carried out.

(c) Other Unintended Outcomes and Impacts (positive or negative, if any)

Enterprise development. In addition to an increase in household productive activities, one **positive** spin-off of the project is the establishment of small, local, private and township enterprises. Anecdotal evidence from a survey of the wider economic benefits

of the project, carried out by the NPO, revealed that this was a common occurrence. The provision of conveniently located water supplies of sufficient quantity and quality provides business opportunities which previously did not exist. The PMOs also noted that the steady water consumption of township and private enterprises helped to guarantee the water plant revenue in the early stages when water consumption from households was low. One example is the establishment of a small tannery in Youmei village, Pinghe County, Fujian Province which is supplied by the Wuzhai Water Supply Plant. The establishment of the tannery has had positive benefits in terms of employment for local residents. Another example is Yingzhou town, Lingshui County of Hainan Province which is now engaging in vegetable farming and fisheries. Prior to the project, vegetables and marine products could not be rinsed and iced, resulting in poor quality products going to market, low prices and limited levels of production. Since the construction of the project water plant, a terminal market for rinsing vegetables and a fishery have been opened, which has provided employment for local residents.

Environmental concerns. While the provision of improved water supply has promoted the development of local small-sized enterprises, some of these are pollution-generating enterprises which require significant quantities of water. If the development of enterprises is a positive spin-off of the project, then the potential for these to consume large quantities of water and to pollute the environment through the discharge of untreated waste water is a potential **negative** consequence if not dealt with properly. Thus, local government and related departments need to strictly regulate the use of water resources and the production of waste water from enterprises in project areas. In relation to those users with a high demand for water, government departments will have to take a long term, developmental view to managing water resources to ensure that rural residents have priority over pursuing economic benefits in the short term.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

While this was a core ICR, given that the Bank has supported rural water supply, sanitation and hygiene promotion projects in China for over two decades, it was felt worthwhile to specifically consider the experiences of the project implementing agencies and beneficiaries. Client feedback is detailed in Annex 6.

4. Assessment of Risk to Development Outcome

Rating: Low or Negligible

China bears no foreseen risks in terms of political or economic instability which would negatively impact the development outcome of the project. GoC ownership of the project is strong and increasing access to water and sanitation services remain a high priority for government at all levels. The legislation supporting the sector is well developed and government staff have sufficient capacity to support the project in future. There are a number of reforms in the water and sanitation sector which will further support the project's outcomes, including development of a more integrated approach to water supply, sanitation and hygiene promotion. For beneficiaries and local stakeholders the benefits brought by access to safe water are clear.

The rate at which household connections increase may determine how long it will take some water supply schemes to become financially viable. While not all water supply schemes are meeting the full financial sustainability covenant, a high proportion are covering operation and maintenance costs after two years of operation. This sets a good basis for the sustainability of the systems. This sustainability covenant, which is used in urban water supply projects, should be carefully reviewed for any future rural water supply project and revised according to the rural context. The risk of natural disasters, given previous experience in the provinces, is present, but, it is difficult to evaluate the impact of a future natural disaster on the development outcome of the project.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry
Rating: Satisfactory

The project design and preparation were supported by a team of Bank experts with a range of appropriate skills and with a careful assessment of the previous three projects. There was clear step-by-step lesson learning between the previous projects, and this project included substantial improvements, such as: training for water plant operators, new approaches to both sanitation and hygiene, and advanced surveying methods. In terms of the tariff covenant, RWSS 4 adopted a covenant that is more commonly used in urban water supply schemes and should have been more appropriate to the rural sector.

In terms of safeguards and fiduciary requirements, these were adequately addressed at the preparation stage. Issues arising during implementation were difficult to control for during preparation or appraisal. However, further improvements could have been made to the institutional arrangements, in terms of developing new, more effective management and reporting structures by further decentralizing procurement responsibilities to provincial levels and below. The project could have done more to formally bring in wider technical departments at the provincial and local levels to support the project and to better integrate water supply, sanitation and hygiene promotion services. Strong integration of these services helps to maximize the potential health impacts. Integration of these services requires that all technical agencies have clear roles and responsibilities in project preparation and implementation from the beginning and are represented in the PMOs.

(b) Quality of Supervision
Rating: Satisfactory

Supervision missions were consistently carried out twice each year, apart from a small disruption due to the SARS outbreak. Supervision missions were well-staffed and maintained a sound relationship with the project offices nationally and within the provinces. Despite the number of provinces and counties as well as budget constraints supervision missions were able to cover the majority of project counties. The expertise of the team members was high and the teams averaged five members per mission and included a good mix of international and national expertise. The project supervision was

always field-based (in Beijing) which helped to resolve issues quickly. Specific technical RWSS expertise was brought in from the Bank's headquarters to support the project and a Chinese speaking international engineer was also enlisted as a consultant to improve communications and quality control. However, the task team leader did change several times and this caused some dissatisfaction from the borrower.

The early supervision missions concentrated on implementation issues such as construction standards, procurement and safeguards requirements, while later missions looked at broader issues such as reporting requirements, management arrangements and procedures, water plant accounting, improving design standards and the development of private sector models and sustainability. The sharing of lessons on the private sector models nationally was an important benefit of the support provided by the Bank, made possible with a PPIAF grant. Interactions with wider donors, including the UK Department for International Development and the UN Fund for Children (UNICEF) who were invited on supervision missions provided additional expertise. One area where the Bank could have performed better was in communications with senior levels in the Ministry of Health regarding key lessons from the project which could be fed into policy development for the sector. This lesson was raised by the borrower at the end of the project and has been factored into the proposed Western Provinces Rural Water Supply, Sanitation and Hygiene Promotion Project (FY07) which will look at replication of project lessons in wider provinces and into national planning.

(c) Justification of Rating for Overall Bank Performance
Rating: Satisfactory

Quality at entry and supervision were both satisfactory, so the overall rating is satisfactory.

5.2 Borrower Performance

(a) Government Performance
Rating: Satisfactory

GoC's performance was satisfactory. GoC is fully committed to ensuring improved health through water supply, sanitation and hygiene promotion services, particularly to the poorer regions in western China. The government appointed well-qualified teams to manage the project at all levels and has been making efforts to improve the policies supporting the provision and management of infrastructure services in western regions. The main area where the government could have performed better was ensuring sufficient counterpart funding was available. More timely provision of funds is likely to have resulted in (a) less changes in participating counties; and (b) improved implementation and bringing project benefits to beneficiaries in a faster manner.

(b) Implementing Agency or Agencies Performance
Rating: Satisfactory

Implementing Agency	Performance
NPO	The enthusiasm and dedication of the team members at all levels were critical throughout implementation. The **NPO** was staffed with experts who had been involved in the sector and Bank projects for many years. These experts were important for maintaining institutional knowledge. However, the project reporting, including progress reporting and auditing, was consistently late. This was in part due to the difficulties in managing a multi-province project but also due to multiple layers of reporting which slowed the submission of reports to the Bank. Towards the end of the project, as the availability of loan funds diminished, the NPO was less able to exert influence over the participating provinces in order provide timely reports and updates.
PPMOs	The **PPMOs**, worked effectively and supported implementation in a number of counties. The PPMOs were responsible for the appraisal and approval of water supply designs, a critical task with implications for the sustainability of the constructed system. The PPMOs took this task seriously and towards the end of the project, clear improvements could be seen in the water scheme designs. Greater support and oversight by the PPMOs could, however, have strengthened and improved the accuracy of the projected beneficiary consumption levels used in the design of schemes and further assistance could have been provided to improve the management of water plants, in terms of financial management and accounting practices.
CPMOs	The **CPMOs** levels were also adequately staffed, despite the difficulties some of the poorer counties faced. The CPMOs coordinated a number of agencies responsible for providing water supply, sanitation and hygiene services and managed this task well. With so many county project offices it is difficult to generalize about performance. However, where the county magistrate had taken a keen interest in the project, this often resulted in a better-staffed and better-run office. The ability of county and township levels to ensure the participation of households in the planning and construction of facilities is extremely limited by a lack of staffing, capacity, resources and time for fieldwork.

(c) Justification of Rating for Overall Borrower Performance
Rating: Satisfactory

For the reasons stated above, the overall performance of the borrower was satisfactory.

6. Lessons Learned

Lessons Learned are divided into two categories: those which apply to all four of the projects financed by the Bank in China's rural water supply and sanitation sector (i.e.

overarching issues and lessons); and those which are derived specifically from the RWSS 4 Project.

A. Overarching issues and lessons:

1. ***The design of water supply plants needs to be developed based on a combination of cost-effective technical specifications, appropriate and well-defined design standards and accurate forecasting of future demand for water consumption.*** High-cost technical specifications and inaccurate forecasting of future water demand can jeopardize the sustainability of the facilities constructed.
2. ***Positive hygiene behavior change is a long-term process that requires targeted, effective and sustained hygiene promotion messages which are delivered in innovative ways through a range of communication channels***. The methods and techniques for hygiene promotion have developed over time and capacity has increased. However, significantly more budget and a range of communication methods are required to sustain behavior change and to increase demand for safe water and improved sanitation facilities.
3. ***In order to maximize the benefits of the projects, it is important that sufficient attention be given to sanitation and hygiene promotion and these should be well integrated and coordinated with water supply investments and activities.*** The development outcome of the project could have been enhanced by considering how to integrate and coordinate these activities in the preparation, planning, implementation and post-construction stages of the project and setting this out in a workable way to be followed by the project implementers.
4. ***Ensuring community participation in the design, planning, implementation and post-construction management of the project is challenging if insufficient project budget is allocated at the project design stage for these activities and there are insufficient capacity and mechanisms to support such participation***. Every effort was made to involve communities in the project, and given the limited funding allocated to community mobilization activities, the project staff did well. In recent years, GoC has placed greater emphasis on people-centered development and future programs will need to consider the costs and activities needed to better support participatory and people-centered approaches.
5. ***The principle of user financing has worked effectively in China and is an example for global dissemination. However, in some of the poorest villages specific guidelines for reaching the very poorest, including subsidies and lower service levels should be considered.*** While the water supply schemes have been for the most part financed by beneficiaries, it is clear that there are still significant barriers preventing households within project areas from connecting to the project-supplied water. The provision of subsidies or the option of paying connection fees in installments were available in some cases and were decided at the village level. However, specific procedures and rules need to be adopted on a project-wide basis to ensure maximized coverage.
6. ***Clarity on the issues of water supply plant ownership and ways to expedite the hand-over process for completed plants would strengthen post-construction***

management arrangements, leading to greater sustainability and better service. The handing-over of water plants is often delayed by complex reporting requirements and a lack of clarity over final ownership of the plant.

7. ***Given the Bank has 20 years of experience in the sector in China, it is timely to review the experience to date, play a greater role in coordinating with wider international agencies working in the sector and to provide stronger support to central government in finding ways to scale up these basic services.*** Not only has there been sufficient experience in the sector to justify a review of the current policies for rural water supply, sanitation and hygiene promotion but also the CPS is moving towards supporting more basic service delivery programs in rural areas and western regions.

B. Lessons from RWSS 4:

1. ***In order to substantially increase the coverage of sanitary latrines, households need to be offered a choice of affordable sanitation options as well as adequate information in order to make an informed decision.*** The project provided technical assistance to those who could afford to build latrines themselves and very limited financial assistance to a few households in order to develop a few demonstration latrines within villages. However, as there is very little local knowledge, capacity or locally available materials, there are still barriers to households building latrines themselves.
2. ***Better coordination amongst the many line departments with responsibilities for the sector would help to improve the efficiency of the project and the skills available for implementation***. Where there was a good working relationship among different departments, implementation improved in terms of either efficiency or the ability to mobilize wider funds for further activities within the project areas.
3. ***The main lesson from the PPIAF PSP Pilot are that new management models need to be developed to increase plant sustainability and deliver improved services, especially with participation from local operators.*** The PPIAF pilot showed that there is demand from private operators but that regulation is important as well as the need to have transparency in the bidding, awarding and contracting processes.
4. ***The potential impact of natural disasters, such as typhoons and droughts, needs to be considered when assessing the availability of water resources and emergency preparedness.*** Some provinces were affected by typhoons and droughts, which had implications on the availability of water resources in some water supply plants. Future project planning should take into account the potential for natural disasters affecting both the availability of water resources but also any requirements for emergency preparedness planning.
5. ***Consideration needs to be given to the increased wastewater produced by increased water consumption, particularly in densely populated areas.*** The additional water supplied by the project, particularly in densely populated areas, and where small enterprises may develop as a result of the new water supply, needs to be taken into account when designing the schemes and appropriate solutions developed.

6. ***Any covenant which is set to ensure the sustainability for the water supply schemes, should be developed taking into account the actual requirements for rural water supply schemes and the affordability of beneficiaries.*** The covenant developed to monitor the sustainability of water supply schemes is the same as the one used for urban water supply schemes and is not appropriate for rural water supply. Rural water supply schemes should be designed to cover operation and maintenance costs and where possible (in large multi-village schemes) a very small proportion of debt servicing and some depreciation costs.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

(b) Cofinanciers

(c) Other partners and stakeholders

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in US$ Million equivalent)

Components	Appraisal Estimate (USD M)	Actual/Latest Estimate (USD M)	Percentage of Appraisal
WATER SUPPLY	74.2	74.2	100%
SANITATION AND HEALTH EDUCATION	7.3	7.3	100%
PROJECT MANAGEMENT	4.9	4.0	82%
SARS TRAINING AND TA	0.0	0.9	
Total Baseline Cost	**86.4**	**86.4**	100%
Physical Contingencies	0.0		
Price Contingencies	5.4		
Total Project Costs	**91.8**		
Project Preparation Facility (PPF)	0.0	0.0	0.0
Front-end fee IBRD	0.2	0.0	0.0
Total Financing Required	**92.0**	**86.4**	**93%**

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD M)	Actual/Latest Estimate (USD M)	Percentage of Appraisal
International Bank for Reconstruction and Development		16.0	14.5	91%
International Development Association (IDA)		30.0	30.0	100%
Government and Beneficiaries		46.0	41.0	89%
Total		92.0	85.5[1]	93%

1 The difference between the total project financing and the total project costs is US$0.9million allocated to the SARS Training and TA

Annex 2. Outputs by Component

(a) Water Supply. The original target for piped water supply systems, at appraisal was a total of 479 water facilities, of which 454 were planned to provide direct household connections. According to appraisal estimates, a total of 120 household rainwater collectors and 173 deep-well hand pumps would be constructed to serve communities where the population is dispersed and/or ground and surface water are scarce. A revised target of 288 piped water supply schemes was set at the beginning of the project. In total, 303 piped water supply systems were constructed, exceeding the revised target by fifteen schemes. No non-piped water systems were constructed.

(b) Sanitation and Health Education.
Households and School Latrines. The target for the construction of household latrines was exceeded, with 17,401 latrines built in comparison to the target of 10,500 estimated at the time of appraisal. The project provided technical assistance for villagers willing and able to construct latrines at their own expense and where villagers were able to contribute at least half the cost of an improved latrine in labor and materials, but not the full capital cost, the project would make a limited amount of funding available to each village to assist in purchasing inputs for not more than three households. School sanitation facilities were built with full subsidies. The project aimed to finance three to five village school composting latrines per county. The total number built by the end of the project was 151, compared to the 132 number targeted at appraisal.

Health Education. The majority of materials developed for health education purposes were prepared by NPO. The NPO not only has particular expertise and experience in health education but was also able to bring in lessons from other provinces in China. The Provincial and County PMOs were responsible for implementing a very logical and phased program of health education in the project areas that corresponded with the timing of the physical investments. This was carried out through the lifetime of the project in the following phases: i) raising awareness of the project, ii) raising awareness of environmental and sanitation promotion, iii) safe water utilization, and iv) improving hygiene behavior.

(c) Project Management. The project management component supported the establishment and operation of the project offices, which were critical to implementing the project. For the first time, the project included a technical assistance program to support project personnel and water plant managers. An important aspect of the component was the baseline and follow up survey, which provided essential information for analyzing the project outcomes. The role of the project office in managing and supervising project implementation, particularly the support provided by the NPO and PPMO to county and township staff was key to the successful implementation of the project. Based on the project reporting, training of PMO staff in project management, procurement, operational management, and sanitation and health education far exceeded targeted levels. The overall number of courses far exceeded the targeted level suggesting a healthy regard for training needs.

Annex 3. Economic and Financial Analysis

A. Project Benefits

(i) Health-related Benefits. Improved health is the benefit most commonly used to justify drinking water supply, sanitation and hygiene promotion projects. However, to quantify it through health records or epidemiological studies would be time consuming, costly and would not necessarily provide accurate information. The main health benefit of water supply, sanitation and hygiene interventions is a reduction in diarrhea, although impacts on other diseases are substantial. While information on the incidence of diarrhea was not collected, households were asked whether they perceived the incidence of diarrhea to have changed since the project started. Throughout the four provinces between 88% to 95% of household surveyed said they perceived a decrease in the incidence of diarrhea cases since the project started. None felt that the incidence of diarrhea had increased. While the rigor of the survey would not hold up against academic tests, it does suggest that households perceive that diarrhea rates have decreased through the project intervention.

(ii) Time-savings. The baseline and follow-up surveys have showed that households who use the improved water supply facilities have saved significant amounts of time from fetching water, time that can be used for other activities, including more productive activities. This will have had a particularly positive impact on women, who have the main responsibility for collecting water. The average time spent collecting water was lowest in Anhui Province during the rainy season and highest in Hainan Province during the dry season. The saving is not quantifiable because applying a precise monetary value on the time of poor rural individuals is difficult.

However, taking the minimum daily wage rate in rural areas as 20 Yuan and assume a 10 hour work day, the hourly rate would be about 2 Yuan or US$0.25. Assuming this valuation of an hour of time, and that water bestows a minimum average saving of 27 minutes per day (in the rainy season in Anhui), this yields a conservative estimate of the value of time saved at US$41 per year or 328 Yuan per year. Using the same valuation for the average time taken per day in the dry season in Hainan Province, the value of time saving benefit would be US$219 per year or 1750 Yuan per year. During the follow-up survey, the per capita annual income of project villages across the four provinces was Y2089. Therefore, the average percentage of annual income saved by households was between 16 to 84%.

Therefore, the costs resulting from time saving are significant compared to the annual per capita income of many households. The economic value of time saving alone is sufficient to justify investment costs in piped water supply systems. Also, health benefits can be maximized where existing sources are furthest away and water consumption is lowest, and people are most likely to seek the need for improved, more conveniently located water. Those who benefit most in terms of convenience – that is, where the time

savings are the greatest – are the most likely to switch to the improved water supplies, with potential benefits.

It is also possible that reductions in water-related or water-borne diseases in the project areas due to the improved water supply, sanitation and improved hygiene practices have resulted in more productive time or non-sick days for households. It might also be expected that due to a reduction in disease incidence, there would be a corresponding reduction in medical expenses.

B. Wider Benefits

Social Benefits. Improved water supply is known to include wider social benefits, such as reducing tension in the community, women's empowerment, women's hygiene, family quality time, improved school attendance (especially for girls), teachers accepting rural posts etc. These relate more to quality of life and a wider definition of health and well-being that go beyond just the absence of disease. While difficult to assign a monetary value for these aspects, they clearly benefit poor households, in particular women.

Efficiency gains in public administration and public spending. Project management tools developed under the project can be introduced in large-scale national programs. In addition, training materials and hygiene promotion materials developed for the project will also be available for use under future programs. Quantification of such benefits is beyond the scope of the ICR. The public sector alone is unlikely to be able to be the main provider of access to water and sanitation. A recent study by the World Bank in the sector estimated that China would need to invest US$ 4.1 billion per year to meet the MDG targets by 2015 and US$5.4 billion annually to meet universal coverage. Actual expenditure over recent years is estimated to be around 56% of targeted requirements. The new FYP program released in 2006 for rural drinking water supply has set out a plan for significantly increasing funds for the sector. The project has piloted PSP management models which have shown how public-private partnerships can be developed for rural water supply services.

C. Regional and Global Benefits

Globally, 1 billion people are currently without access to safe water supply and 2.6 billion have no form of improved sanitation services (Joint Monitoring Program figures for 2002). Most of these people live in Asia and Africa. China has approximately one-third of the global population without access to water supply and access to sanitation. Therefore, increasing access in China and demonstrating how to scale up water supply and sanitation services has important implications for global sector targets.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/Specialty
Lending			
Supervision/ICR			
George Plant	Urban Specialist	EACCF	TTL (Preparation & Appraisal)
Dawn Vermilya	FM Specialist		Financial Management
Mats Andersson	Sector Coordinator	EASUR	Project Management
Zhentu Liu	Sr Procurement Specialist	EAPCO	Procurement
Xiaofeng Li	Senior Program Assistant	EACCF	Project Administration
Ping Huang	Social Specialist	China Academy of Social Sciences	Health Education
Shunong Hu	Water Engineer	EASUR	Water Supply and Procurement
Eddie Ke-Siong Hum	Water Engineer	Consultant	Water Supply
David I	FM Specialist	EAPCO	Financial Management
Osmo Tammela	Engineer	EASUR	Project Management / Former TTL
Thomas L. Zearley	Lead Operations Officer	EASUR	Project Management / TTL
Zou Youlan	Safeguards Specialist	EASES	Land Acquisition
Dong Yi	Disbursement Specialist	EAPCO	Disbursements
Parameswaran Iyer	Sr. Water Supply and Sanitation Specialist	EWDWS	Rural Water Supply and Sanitation / TTL
Songling Yao	Safeguards Specialist	EASES	Safeguards
Mark Wu	Economist	Consultant	Economics
Joanna McLean Smith	Water & Environment Specialist	Consultant	Rural Water Supply and Sanitation

b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY98		7.86
FY99		169.48
FY00		-0.02
FY01		0.00
FY02		0.00
FY03		0.00
FY04		0.00
FY05		0.00
FY06		0.00
FY07		0.00
Total:		**177.32**
Supervision/ICR		
FY98		0.00
FY99		0.00
FY00	11	30.30
FY01	17	36.27
FY02	19	57.28
FY03	21	64.40
FY04	10	81.74
FY05	15	87.69
FY06	4	66.16
FY07	1	15.04
Total:	**98**	**438.88**

Annex 5. Beneficiary Survey Results

Summary Results of Baseline and Follow-up Surveys

Introduction. In accordance with the Loan and Credit Agreements, a follow-up survey of the project was conducted in 2003 and in 2005 and the results were analyzed against baseline surveys carried out in 2000, 2001 and 2002. The implementation plan for both the baseline and follow-up survey were developed by national and provincial experts. These experts organized training for the persons who would pilot and conduct the survey work. The survey was conducted in 196 project villages of 27 counties of Anhui, Fujian, Guizhou and Hainan Provinces. By the end of the project, the number of counties involved increased by nine, to a total of 36 project counties. However, the survey was conducted based on the 27 original counties involved in the project. During the follow-up survey, the sample included 112 villages from the original 196 villages due to slow progress in construction in some areas.

Contents of the Survey. The survey consisted of three questionnaires: (i) status of project villages (ii) primary school pupils' health knowledge, and (iii) related behavior of housewives. In each village, the teams surveyed a random selection of the following target respondents: housewives aged between 20 to 45 years old (except village leaders, teachers and doctors); all primary school students in grade 4; headmasters of the primary schools; and managers of the water plants. The survey covered 112 villages which were supplied by a total of 93 water supply systems.

Key Findings. The key findings of the survey, as they are relevant to the project development objectives and key performance indicators are summarized below:

A. WATER SUPPLY

The following information represents the average time taken in each province for one journey to collect water. It is estimated that households would conduct around two to three journeys per day for consumption purposes only. These are the results from the baseline survey carried out before the project supplied water was provided.

Table 1: Time for Rural Residents to Fetch Water

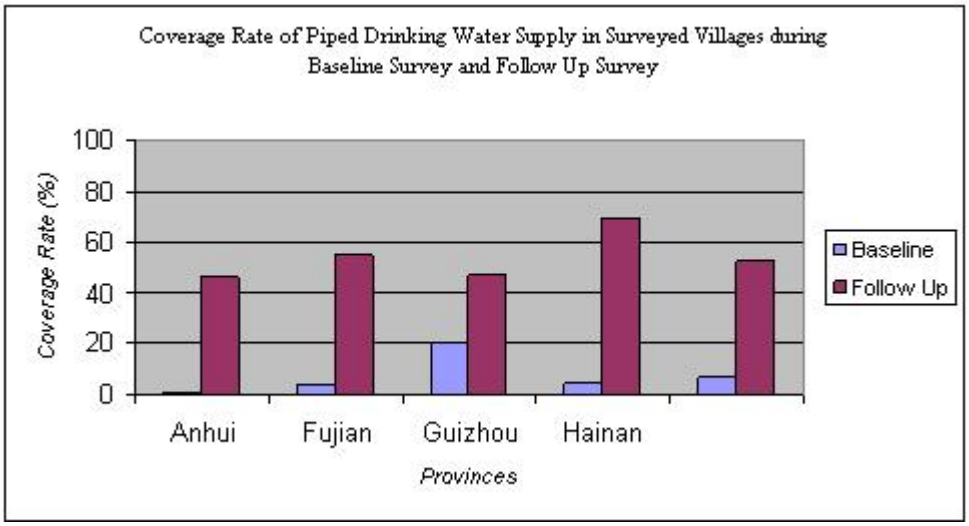
Province	Rainy season	Dry season
	Single Journey (Minutes)	***Single Journey (Minutes)***
Anhui	9	11
Fujian	18	22
Guizhou	27	45
Hainan	19	48

The following table shows the tap water coverage in surveyed village during the baseline and follow-up surveys.

Table 2. Overall Tap Water Coverage in Survey Villages

Province	Survey Time	Total Households	Households with Tap Water	Coverage Rate (%)	% Change
Anhui	Baseline	31,327	346	1.10	45%
	Follow-up	24,608	11,346	46.11	
Fujian	Baseline	24,986	1,042	4.17	50%
	Follow-up	19,806	10,777	54.41	
Guizhou	Baseline	23,934	4,801	20.06	27%
	Follow-up	11,766	5,511	46.84	
Hainan	Baseline	14,514	628	4.33	66%
	Follow-up	9,658	6,753	69.92	
Total	Baseline	94,761	6,817	7.19	45%
	Follow-up	65,838	34,387	52.23	

Figure 1:



The survey results show that there are still households within the project villages that have not connected to the project piped water supply system. The main reasons cited by households were: a) Construction progress has been slow and they have not yet received connections; b) Poorer households cannot afford the water tariffs; c) In some areas, the connection fee is too high (i.e. unaffordable); and d) Some residents did not see the benefit of paying for piped water supply over their existing sources of supply.

Table 3: Reasons Given for not Using Tap Water（%）

Province	Slow progress	Insufficient Income	Using Existing Sources	Other
Anhui	44	34	30	8
Fujian	37	45	22	6
Guizhou	47	26	21	16
Hainan	83	54	47	18
Average	48%	38%	23%	12%

B. SANITATION

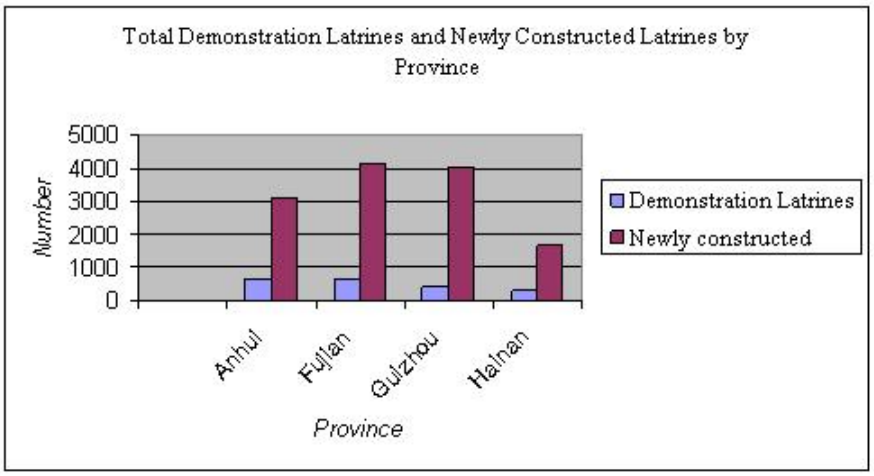
Table 4. Basic and Improved (Sanitary) Latrines in Survey Villages during the Baseline and Follow Up Survey.

Province	Stage	Households with Basic Latrine	Percent with Basic Latrine	Households with Improved Latrine	Percent of Households with Improved Latrine (Coverage)
Anhui	*Baseline*	30,807	98%	2835	9%
	Follow up	23,633	96%	8315	34%
Fujian	*Baseline*	16,176	65%	2993	12%
	Follow up	18,970	96%	7376	37%
Guizhou	*Baseline*	21,520	90%	874	4%
	Follow up	11,707	99.5%	4142	35%
Hainan	*Baseline*	4070	28%	2904	20%
	Follow up	6917	72%	2511	26%
Total	*Baseline*	72,573	77%	9606	10%
	Follow up	61,227	93%	22344	37%

Table 5: Construction of Household Sanitary Latrines in Survey Villages

Province	Number of Demonstration Latrines	Median number of Demonstration Latrines per village	Newly constructed	Percentage of New (Median)
Anhui	666	4	3128	17%
Fujian	654	10	4133	21%
Guizhou	441	17	4021	35%
Hainan	335	10	1645	20%
Total	2096	41	12927	22%

Figure 2:



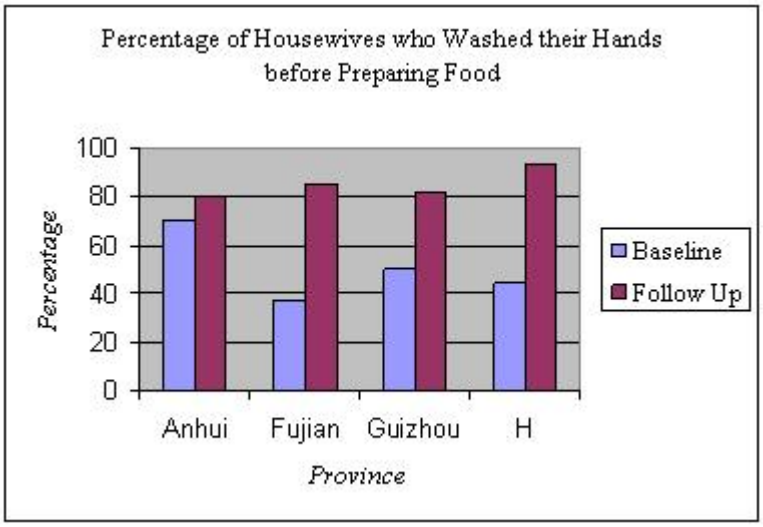
C. HYGIENE PROMOTION

1. Results through survey questionnaire of housewives (baseline and follow up)

a) *Housewives Washing Hands before Preparing Food* (see figure below)

Anhui: Improved by 10% (from 70 – 80%)
Fujian: Improved by 48% (from 37% - 85%)
Guizhou: Improved by 32% (from 50% - 82%)
Hainan: Improved by 49% (from 44% - 93%)

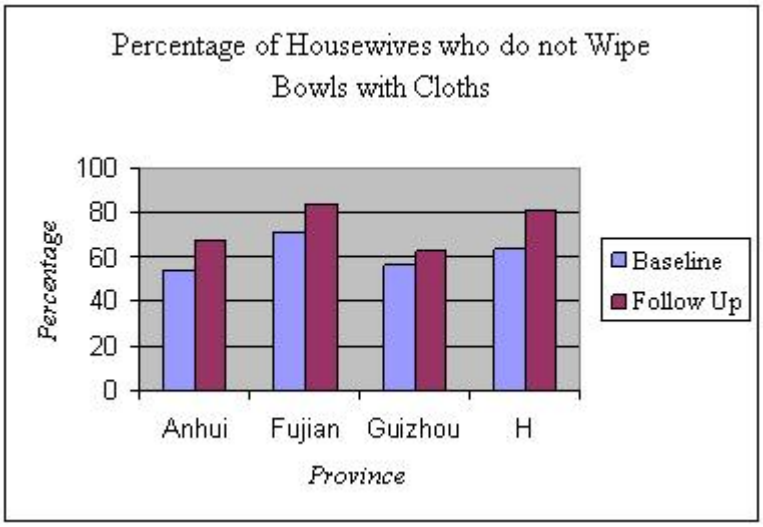
Figure 3:



b) *Housewives not wiping bowls with cloths (see figure below)*

Anhui: Improved by 15% (from 53 - 68%)
Fujian: Improved by 12% (from 72 - 84 %)
Guizhou: Improved by 6% (from 56 - 62%)
Hainan: Improved by 18% (from 63 - 81 %)

Figure 4:



2. Results through observation of housewives

a) *Housewives Not Wiping Bowls with Dirty Cloths (i.e. Keeping Dishware Clean) (see figure below)*

Anhui: Improved by 26% (from 71 - 97%)
Fujian: Improved by 15% (from 73 - 98 %)
Guizhou: Improved by 33% (from 60 - 93%)
Hainan: Improved by 47% (from 50 - 97 %)

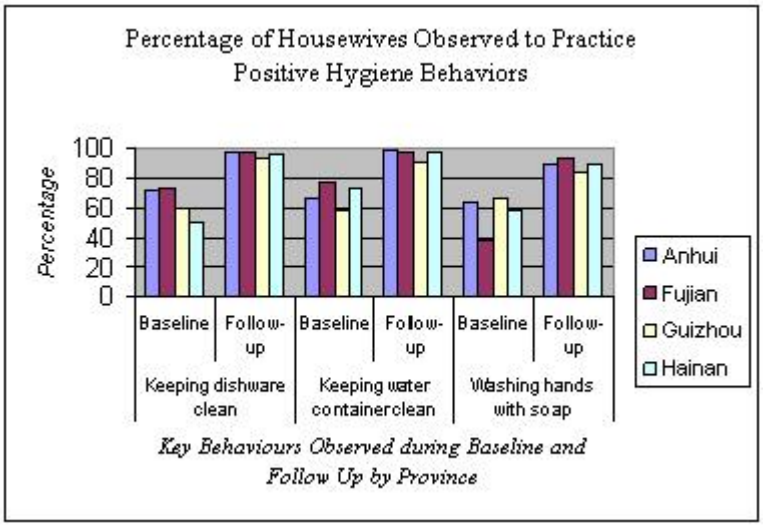
b) *Housewives Keeping Water Container Clean (see figure below)*

Anhui: Improved by 31% (from 67 - 98%)
Fujian: Improved by 19% (from 78 - 97%)
Guizhou: Improved by 32% (from 59 - 91%)
Hainan: Improved by 24% (from 74 - 98%)

c) *Housewives Washing Hands with Soap (see figure below)*

Anhui: Improved by 26% (from 64 - 90%)
Fujian: Improved by 55% (from 39 - 94%)
Guizhou: Improved by 17% (from 67 - 84%)
Hainan: Improved by 31% (from 58 - 89%)

Figure 5:

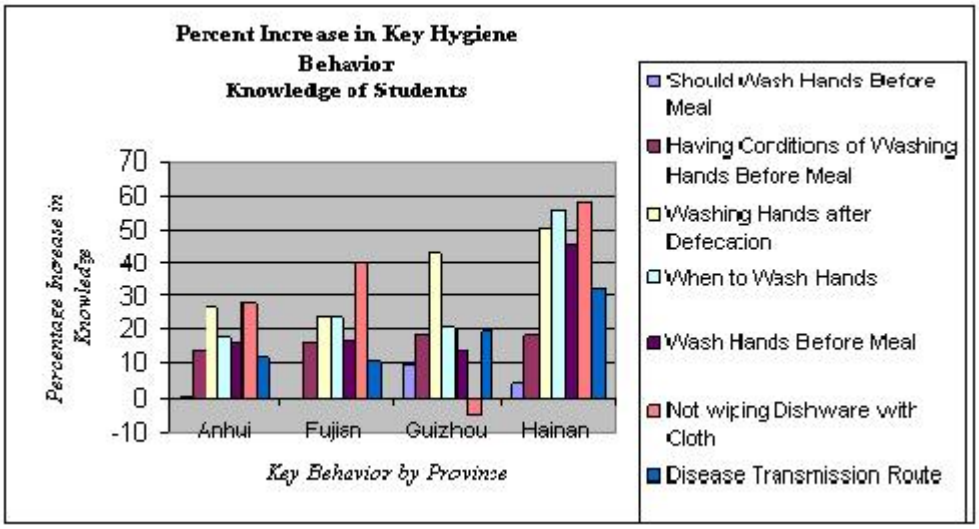


3. Results through survey questionnaire of students (Baseline and Follow up)

Table 6: Percentage Increase in Key Hygiene Knowledge of Students between Baseline and Follow-up Surveys

Province	Should Wash Hands Before Meal		Having Conditions of Washing Hands before Meal		Washing Hands after Defecation		When to Wash Hands		Washing Hands before Meal		Keeping Dishware Clean		Disease Transmission Route	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Anhui	99.10	99.93	82.81	96.58	51.23	77.68	74.14	91.62	79.48	95.26	37.31	65.20	83.01	94.77
Fujian	99.23	99.34	81.63	97.22	63.43	86.74	70.04	93.45	74.86	91.08	43.99	84.26	83.44	94.03
Guizhou	90.56	100	75.20	93.22	40.41	83.58	65.88	86.32	72.80	86.16	67.74	62.84	77.30	96.47
Hainan	94.39	99.22	81.96	99.94	44.34	94.88	38.50	94.25	52.47	98.45	31.27	89.29	65.58	97.52

Figure 6:

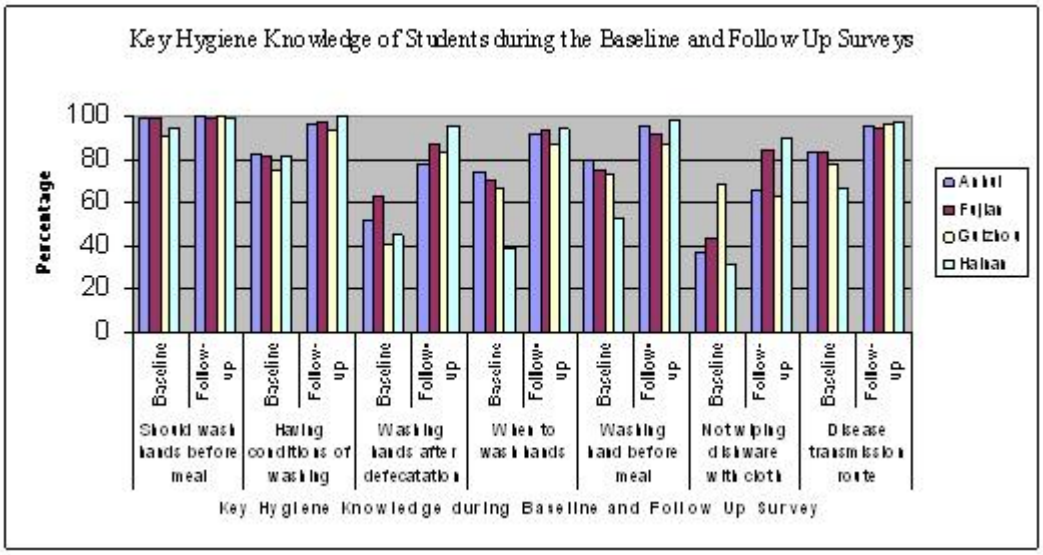


The proportion of schools having health education courses has increased from 60% during the baseline survey to 91% during the follow-up survey. The proportion of schools having health education homework or tests has increased from 32% during the baseline survey to 66% during the follow-up survey.

Table 7: Key Hygiene Knowledge of Students during Baseline and Follow-up Surveys (Questionnaire)

	Should wash hands before meal		Having conditions of washing hands before meal		Washing hands after defecatation		When to wash hands		Washing hand before meal		Not wiping dishware with cloth		Disease transmission route	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Anhui	99.1	99.93	82.81	96.58	51.23	77.68	74.14	91.62	79.48	95.26	37.31	65.2	83.01	94.77
Fujian	99.23	99.34	81.63	97.22	63.43	86.74	70.04	93.45	74.86	91.08	43.99	84.26	83.44	94.03
Guizhou	90.56	100	75.2	93.22	40.41	83.58	65.88	86.32	72.8	86.16	67.74	62.84	77.3	96.47
Hainan	94.39	99.22	81.96	99.94	44.34	94.88	38.5	94.25	52.47	98.45	31.27	89.29	65.58	97.52

Figure 7:



4. Perception of the Incidence of Diarrhea

Changes in perception of the incidence of diarrhea after project implementation are shown in Table 8. Approximately 88% of the survey households think the incidence rate of diarrhea decreased markedly after the provision of piped water.

Table 8: Perception of Rural Residents on the Incidence of Diarrhea Cases after the Supply of Safe Drinking Water (%)

Province	Increase	Unchanged	Decreased
Anhui	0	5%	95%
Fujian	0	8%	92%
Guizhou	0	19%	82%
Hainan	0	12%	88%

Annex 6. Stakeholder Workshop Report and Results

While it was not possible to carry out a complete stakeholder workshop, given the number of provinces and project staff involved, the Bank was able to: a) elicit feedback from the provinces during two ICR missions; b) attend a workshop led by the NPO to discuss the lessons learned in the previous Bank RWSS Projects, c) review recommendations developed by the NPO as part of the follow-up survey completed in early 2006; and d) hold a completion meeting with the NPO to discuss project lessons and ask for feedback on Bank performance. The results of these activities have been analyzed and are summarized below:

A. Key Lessons Learned during Implementation.

(i) ***Multi-province Project.*** In designing multi-province projects, more consideration should be given to the differences among the provinces, particularly in regard to the levels of development, economic conditions and capacity. Guizhou Province felt that, as one of the most under-developed provinces of China, its status should have been considered in terms of support to the province and when assessing the outcomes of the project. Guizhou lies in a land-locked mountainous part of South-West China and is ranked second to bottom of all Chinese provinces in regards to the UN Human Development Index (HDI). In contrast, Anhui (eastern central China) is ranked 7th from the bottom and Hainan and Fujian (both in south eastern China) figure in the top half of the HDI ranking.

(ii) ***Private Sector Involvement***. In all provinces, there is evidence that small-scale providers are becoming involved in providing drinking water services. However, this is happening with varying degrees of success and transparency. All provinces recognized the need to develop this in a step-by-step way and for this to be carefully monitoring and evaluated. The provinces felt that the PPIAF study arranged by the Bank to pilot private-sector involvement in the management of some schemes in Hainan and Gansu (RWSS 3), and the subsequent national workshop in 2005, were extremely useful.

(iii) ***Coordination of Different Agencies with Sector Responsibilities.*** Where provinces or counties were able to encourage the coordination of the many different line departments responsible for rural water supply, sanitation and health, this greatly supported the smooth implementation of the project and improved effectiveness. For example, during the typhoon in Hainan in 2003, the government mobilized a range of agencies to address rural drinking water problems. This included the Provincial Development and Reform Commission and the Provincial Poverty Alleviation Office. Through this, Hainan was able to bring together funding and expertise to expedite project implementation.

(iv) ***Changes in Leading Group or Senior Project Leaders.*** Some provinces suffered negatively from either a change of Leading Group or a change of provincial leadership which had negative repercussions on the speed of implementation and the ability to

mobilize counterpart funding. While it is not possible to control this type of issue, it is important that steps be taken to ensure a smooth transition and to maintain project momentum. In addition, the NPO changed leadership three times and their host organization during the project lifetime. The Bank Task Manager also changed a number of times.

(vi) ***Ownership of Water Plants.*** A number of issues were raised in relation to the handing-over of water plants. Firstly, as there was no clear policy for the hand-over of water plants, the decision on ownership of the plants was not always linked to the parties that invested in the water plants and the process for handing over the water plants was slow.

(vii) ***Capacity of Water Plant Managers***. While training programs were conducted for water plant managers, it was felt that in general, the capacity of water plant managers was limited, particularly in the areas of book keeping and operations & maintenance. The provinces felt that regular training for plant staff on the management of water plants, as well as retention of trained staff had a positive impact on the sustainability of the water plants.

(viii) ***Collection and Management of Water Fees.*** Some water plants had problems ensuring the collection of water fees and in managing these in an effective way. It was felt that future Bank-financed projects should include support for improving the efficiency of fee collection and management, such as computerized billing systems and collection systems.

(ix) ***Changing Poor Hygiene Behaviors.*** Changing ingrained behaviors is difficult and requires sustained efforts and funding. However, the limited funding available for hygiene promotion made it difficult to have an impact on hygiene behaviors. Hygiene promotion needs to use innovative methods and be carried out over a sustained period in order to have an impact.

B. Key Lessons Learned during the Previous World Bank-supported RWSS Projects.

(i) ***The Bank has Brought Added Value***. The Bank was recognized as adding value to the sector in China, particularly through individual task managers.

(ii) ***Review Experience and Increase Policy Dialogue***. It is suggested that the Bank review experience and prepare a policy paper on RWSS in China. The Bank has financed four similar lending projects since 1985 but has never carried out an analysis/post-evaluation of them and ICRs are often done too early to show socio-economic impacts. The Bank should issue an in-depth policy paper on issues and suggestions for the sustainable development of RWSS in China based on the evaluation of the four Bank-financed projects.

(iii) ***Integration of Bank Programs with Domestic and International Programs***. To enhance sustainability and increase impacts, the Bank should consider integrating its

projects more with local programs for RWSS. The people trained under the Bank project are also not always used in subsequent work. There are a number of international organizations including the Bank, UNICEF, UNDP and DFID who have much international experience but still require coordination to translate these experiences within the Chinese context. The Bank should take the lead in this regard and develop an integrated and multi-donor approach to work with China.

(iv) ***Assistance from International Organizations***. Based on the latest survey conducted by MOH, there are more than 300 million farmers who still have limited access to safe water, less than 30% of rural households have improved latrines, and awareness of hygienic behavior remains low. The Bank, as a knowledge institution, should make the best use of the opportunity provided by the Eleventh FYP, which calls for 'Building a New Countryside Construction Program (i.e. Rural Development Strategy), and take a lead in the sector. The Bank has a role to advise on key sector issues such as least cost technologies, community participation and hygiene promotion.

C. Good Practice Examples from the RWSS 4 Project.

Good Practice	Example
Accessing Additional Poverty Alleviation Funding for Latrine Improvements in Project Villages	Hainan Province was able to access additional funds, from outside the project, to facilitate the increase in latrine coverage within some participating villages. As the project had limited funding for sanitation, this was a particularly useful additional resource.
Encouraging the Involvement of Medical Students in Hygiene Promotion and Health Education	Guizhou Province enlisted volunteer medical students to support hygiene promotion and health education activities in rural areas. The students spent time in project villages providing lessons and advise to the project.
Piloting of Private Sector Participation (PSP) Models	Hainan Province, with the support of Bank consultants hired under a PPIAF grant, piloted new PSP management models in two counties and shared their experiences in a national workshop in 2005 attended by representatives from nearly all Chinese Provinces.
Computerized Billing Systems	Some counties have invested in computerized billing systems in some of the larger water plants. For example, Qianshan County in Anhui Province.
Using a Performance Incentive System	Anhui Provincial PMO set up a performance incentive system in order to reward top performing counties in terms of achieving the project targets. This type of practice helped to improve efficiency.

Setting Aside Funds for Debt Servicing	Wuwei County in Anhui Province set aside 1% of gross revenues and 5% of net profits from water plants for debt servicing.
Monitoring Private Sector Investment etc	Fujian and Anhui Provinces have been monitoring wider private sector investment in water plants in the provinces to gain experience for future investments. Private sector financing has been used outside the project in both these provinces, while being innovative, still raises issues around accountability and transparency as well as proper legal and regulatory frameworks.
Designing Water Plants that Match Levels of Consumption and Demand	Later water plants built in Hainan Province were well-built and commensurate with actual water consumption and projected demands.
Hiring Construction Supervision Company	Guizhou Province hired an independent construction supervision company to ensure quality of construction.
Developing a Strong Relationship with Other Departments	Anhui Province developed a strong relationship with the Provincial Finance Department in order to speed up the rate of disbursements.
Making a Concerted Effort to Extend Networks	Hainan Province made a concerted effort to extend network coverage in order to meet the design capacity. This is reflected in the findings of the follow up survey.
Innovative VCDs on Hygiene Promotion	The NPO and a number of provinces prepared VCDs for hygiene promotion, which if well made, are a cost-effective way to deliver hygiene messages.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

Comments from the NPO on the RWSS 4 Project

The RWSS 4 project was appropriately identified as a key area for support by the World Bank while at the same time meeting the demands of the government and people of China. The overall design and planning of the project was reasonable and the organizational arrangements and management at all levels (Bank, NPO, PPMO and CPMO) was effective. The project objectives have basically been achieved, including water supply, sanitation and health education, and capacity building components. The project has surpassed most of the objectives set out and has resulted in positive benefits to participating communities, increased capacity of government staff and has resulted in a satisfactory project. The NPO provided detailed comments for developing the ICR and on a draft final version of the ICR and these comments have been taken into account in the final ICR Report.

The following is a summary of the key project achievements, positive lessons learned and suggestions for future projects from the perspective of the NPO.

A. Achievements

RWSS 4 has:

a) Helped to develop rural water supply and sanitation services in rural areas, particularly poor rural areas;
b) Introduced advanced/scientific management methods and procedures and fostered the technical and management capacity of staff at local levels;
c) Promoted the development of basic theories and techniques for implementing rural water supply and sanitation projects;
d) Set a good example for the construction and management of rural water supply nationally;
e) Set a good foundation for the implementation of the counties' safe drinking water programs and sanitation programs, including technical procedures and specifications;
f) Pioneered the three-in-one approach (water supply, sanitation and hygiene promotion) in China and explored the mutual benefits of this approach;
g) Shown its impact on poverty reduction, provided socio-economic and health benefits and has had a positive impact on the quality of life of rural residents;
h) Contributed to the development of rural water supply and sanitation globally, in particular has helped contribute to progress in achieving the MDG targets in China and Internationally; and
i) Demonstrated technical innovations in rural water supply which can serve as a lesson to other countries.

B. Positive Lessons

The RWSS 4 project has developed the following positive lessons:

a) Good cooperation between departments contributed to successful project implementation. The project enhanced the developed of interdepartmental cooperation and overall arrangements for project management, including cooperation at national, provincial and county levels as well as between the GoC and the Bank.

b) Established standardized procedures and methods for the management of rural water supply, sanitation and hygiene promotion project implementation.

c) Scientific and standardized management systems have been developed. Implementation was enhanced by fully staffed agencies with procedures and rules set by both the GoC and guidelines and rules set by the Bank.

d) The success of the project depended on the participation of local government and local populations. The project was in line with the development needs of project regions and the demands of rural people.

e) Local implementation of the rural water supply schemes, including design, O&M and unit costs has been advantageous. The unit cost for the project was half that of national projects (i.e. 200 Yuan instead of 400 Yuan). The market-orientated aspects of the project helped to keep costs down.

f) Attention to both construction and management has helped ensure sustainable development. The emphasis that the Bank gave to post-construction management was greater than for national projects and has had a positive impact on sustainability.

g) The focus on skills development, quality and management aspects has had a great impact on the sustainability of investments.

h) While some of the water supply schemes do not yet have a high standard of financial record keeping, it is clear that there is a strong basis for the sustainable management of the schemes in the long-term.

C. Suggestions for Future Projects

a) *Identification / Design Stage*: The domestic counterpart funding ratio should be reduced, especially in poor rural areas.

b) *Appropriate Procurement*: The NPO recommends the use of National instead of International Competitive Bidding (ICB) for the lump sum contracting model. The detailed implementation of procurement is better left to the provincial agencies who often have difficulties with the ICB procurement.

c) *Integration with Overall Master Plans*: Projects should be developed in accordance with the local and regional master plans, including the FYPs and the Rural Safe Drinking Water Plans.

d) *More Flexible Bank Requirements*: Some Bank requirements are too rigid to ensure that projects are integrated with national plans, such as the rule that no more than 25% of beneficiaries can be township residents, the majority must

be rural residents. This is not in line with future domestic plans for developing suitably scaled water supply works.

e) *Well-designed Monitoring Indicators*: The design of indicators requires more thought to ensure that they are suitable.

f) *Tariff Covenant*: The requirement that after two years of operation, the water supply schemes should cover O&M plus debt service is not in line with the development of rural water supply.

g) *Stable Management Staff*: Keeping the management staff stable (both GoC and Bank) is important to the project.

h) *Careful Selection of Project Regions*: Selection should take into account the different economic development of regions and be in line with development of water supply in rural areas. International financing institutions should consider working in central and northern parts of China where the economic situation is better.

Annex 8. List of Supporting Documents

The following is a list of key documents relating to RWSS4:

1. The World Bank: Project Appraisal Document: Fourth Rural Water Supply and Sanitation Project dated May 10, 1999, Report No. 19226-CHA.
2. The World Bank: Fourth Rural Water Supply and Sanitation Project - Loan Agreement between China and the International Bank for Reconstruction and Development,
3. The World Bank: Fourth Rural Water Supply and Sanitation Project – Development Credit Agreement, September 17, 1999. Credit Number 3323 CHA.
4. National Project Office: Bi-annual Progress Reports.
5. The World Bank: Preparation, supervision and completion mission Aide Memoires, Back-to-office reports and ISRs from 1999 to 2006.

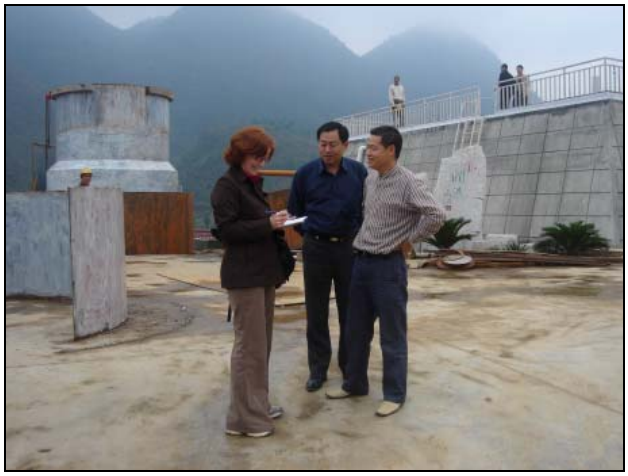
Annex 9. Pictorial Evidence of the Project Activities and Achievements

A. PROJECT ACTIVITIES IN PICTURES

(i) Project Management, Training and Capacity Building

Pictures above: Training courses for project staff, including both classroom based and on-site training.

(ii) Supervision



Pictures above: A World Bank supervision mission reviewing: the book keeping of a functioning water plant in Hainan Province (on the left) and inspecting a newly constructed water plant during a site visit in Guizhou Province (on the right).

(iii) Sanitation

Picture above: Construction of Composting Latrine

(iv) Hygiene Promotion

Picture: China has a long history of Hygiene Promotion – see old poster above which says, '*Practice Hygiene to protect against disease*'.

Picture: More modern techniques, such as role play and video, have been developed to promote hygiene messages, along with traditional approaches.

B. PICTORAL EVIDENCE OF THE PROJECT ACHIEVEMENTS - BEFORE AND AFTER PICTURES

(i) Water Supply

Before

After

Pictures above: A young student washing his hands with soap using the new water supply (on the right) situated beside the old water supply source (on the left).

Before

After

Pictures above: The leader of the village All China Women's Federation showing the original water source; a 30 minute round trip from the village. On the right, a farmer using her newly built piped water supply source conveniently located in her yard.

(ii) Sanitation

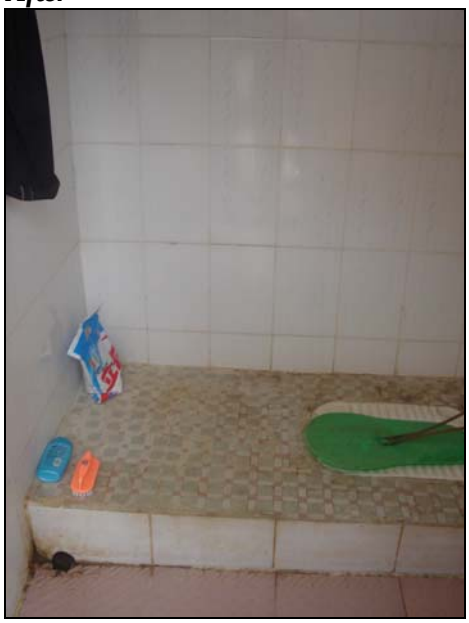
Before

After

Pictures above: On the left an old latrine situated in unhygienic conditions and close to a water source, posing a risk to health. On the right, a demonstration latrine built in hygienic conditions and away from any water sources.

Before

After



Pictures above: On the left is an original latrine which consists of wooden slabs and where the waste is collected in an unlined pit and used for night soil. On the right, is a picture of a demonstration latrine built under the project where the waste is collected in a septic tank and composted.

Before ***After***

Pictures above: The picture on the left shows a village where the pigs and chickens roam freely creating an unhealthy village environment. The picture on the right shows how the building of a pig pen and biogas latrine can contribute to an improvement in living conditions.

Before ***After***

Picture: An additional benefit of the biogas latrine is the use of gas for cooking (on the right). On the left is an original outdoor cooking stove which uses straw and wood to fire (which needs to be collected by the households).

(iii) Hygiene Promotion

Good Hygiene Behaviors

Risky Behaviors

Pictures above: On the left, a farmer spreading night soil on her fields. On the right, a household washing vegetables with piped water in their home.

Pictures above: Students having a hygiene education class and healthy young children playing with safe water.

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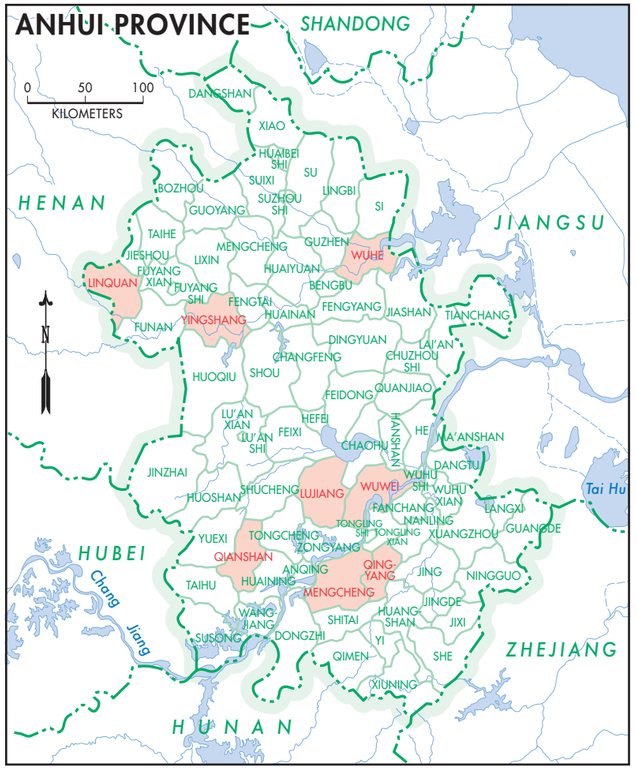
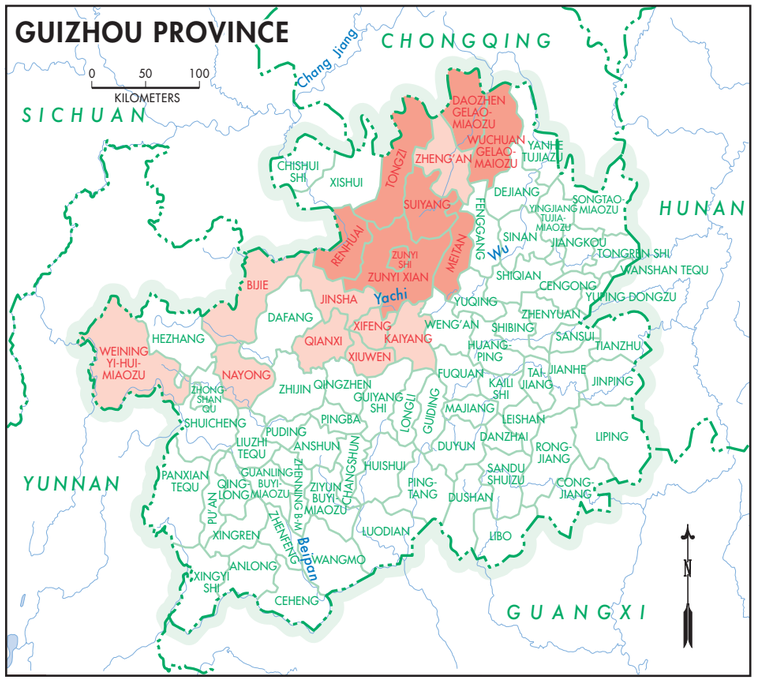
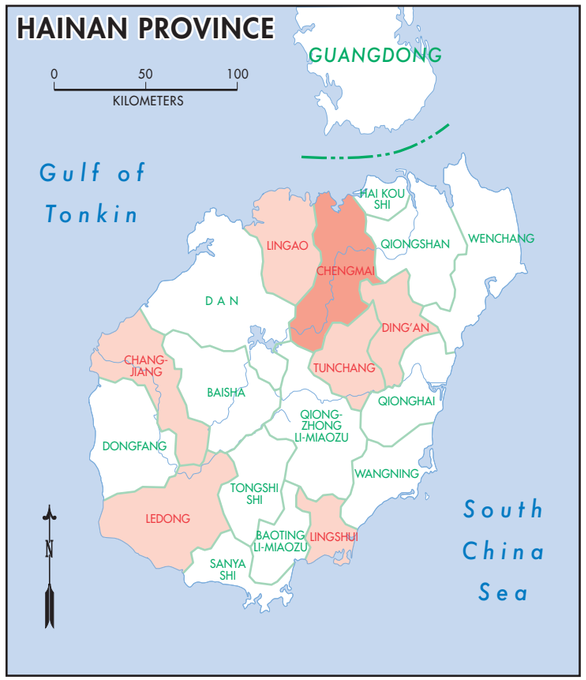
CHINA
FOURTH RURAL WATER SUPPLY AND SANITATION PROJECT







PROJECT COUNTIES

PROJET COUNTIES ADDED DURING IMPLEMENTATION

PROVINCE BOUNDARIES

COUNTY (XIAN) BOUNDARIES

RIVERS

INTERNATIONAL BOUNDARIES (INSET)

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